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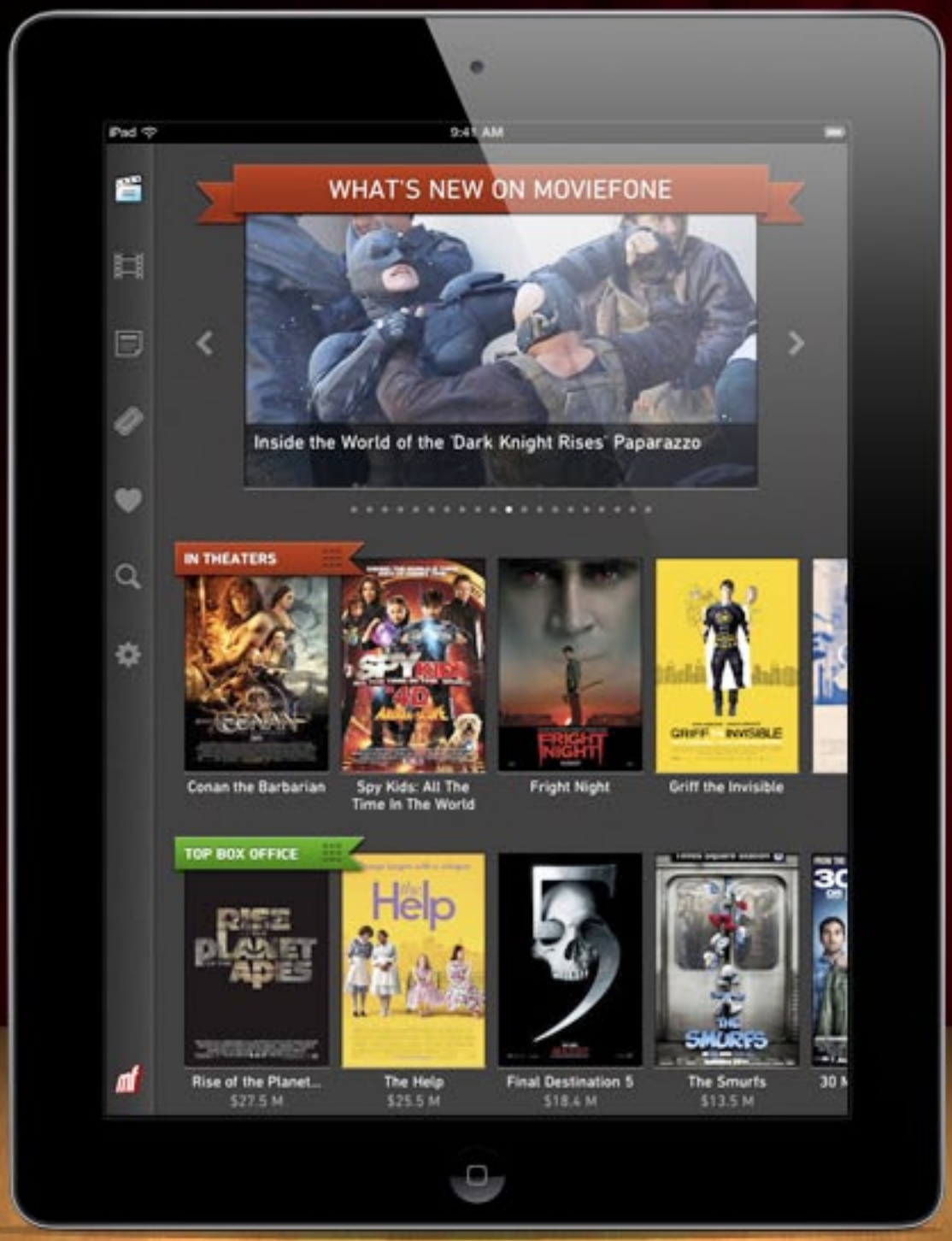

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Kindle gets new competition and HTC launches its latest superphone

editor's letter

Hungry for Honeycomb? Got beef with our Pentax Q review? Now's your chance to sound off. Shoot us a line at distroletters@engadget.com and include your name, city and state / country. If you're lucky, you might just get a response in next week's issue.

It wasn't long ago that Amazon threw a slew of new products at us — a cheaper Kindle, another one without a keyboard, a third with a touchscreen, plus a fully ignited tablet — and this week it was Barnes & Noble's turn to return the serve. While Amazon played with the Kindle name with the Fire, B&N instead went with a more bland title: Nook Tablet. We might have preferred Corner or Cubby.

It's a $249 Android device with a seven-inch IPS panel that looks to have more functionality than the Nook Color, yet is still a far cry from a standard Honeycomb tablet. Netflix and Hulu Plus will be streaming their content on it, but full access to the Android Market will naturally not be on offer.

The tablet offers the same distinctive styling of the Color, most notably a little hoop on one corner that you could theoretically use to tie this thing on to some other thing. It's a cheeky styling cue that I like,

but I wish B&N had done something to differentiate this from the Color. Put the two side-by-side and there's really nothing to differentiate them other than a slightly lighter hue on the Tablet. Maybe some racing stripes or fender flares would help.

Meanwhile, the twin Color got a $50 price drop, making it a buck under $200 but still no more appealing when compared to the Kindle Fire. Finally, the touchscreen Nook at long last has a name: Simple Touch. It's simply $99 and has "no annoying ads." That puts it on par with the Kindle Touch and makes everyone wonder which is the better buy.

HTC officially launched the Rezound, assigning a formal title to the device previously known as Vigor, and setting a new record for the quickest change from awesome to awful name. Despite the perplexingly bad moniker, the device itself looks pretty hot -- a 4.3-inch 720p display backed by a dual-core 1.5GHz processor, 1GB of RAM and 16GB of internal storage plus a further 16GB on microSD. It's

running Gingerbread, but the company promised Ice Cream Sandwich for early next year.

Speaking of curious names, Nokia explained that the Lumia 800 was not indeed named to honor history's oldest profession but instead is to inspire feelings of "light" and "style." Nokia's other new line, Asha, is rather less abstract: it means "hope" in Hindi.

Motorola finally made its 10.1-inch Xoom 2 and 8.2-inch Xoom 2 Media Edition official, both offering 1.2GHz dual-core processors, 1GB of RAM, 16GB of storage and Android 3.2 Honeycomb — specs that look a lot like the original Xoom.

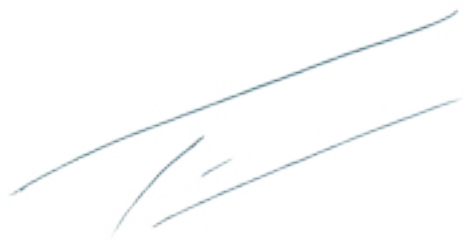
It was a good week for camera geeks, with Canon launching its new C300 cinema shooter, taking on the likes of RED and Alexi with a Super 35mm sensor, 4k stills and 1080p footage. The cost? A mere $20,000. At the very same time RED launched its own new camera, the Scarlet, which will do 5k stills and 4k footage and costs half as much, just $9,750. It's an amazing time to be a budding cinematographer.

Upstart e-reader company Kobo got bought by Japanese retailer Rakuten, a move that will presumably see it focusing more on the Asian market, which the Kindle has yet to conquer. Amazon, meanwhile, further sweetened its Prime deal by letting Kindle owners check out one book a month from a selection of thousands, including about 100 current *New York Times* Bestsellers. We are now fully counting the days until Amazon is forced to raise the price of its $70 Prime service, and dreading the time when that comes to pass.

Speaking of curious names, Nokia explained that the Lumia 800 was not indeed named to honor history's oldest profession...

Finally, we looked cautiously to the heavens as NASA confirmed that, back in 2007, its Landsat-7 and Terra AM-1 satellites were... compromised by actors unknown -- though many suspect they were state-sponsored Chinese hackers. These intruders gained complete control of the satellites but, for some reason, chose to do nothing with their newfound power. Presumably the next batch of intruders won't be so kind, so thankfully NASA is working on a protection program to keep our orbital eyes free of intruders. Where exactly it will find the funding for such work is, of course, beyond us.

This week we have our review of the Lumia 800, so you can see for yourself whether Nokia's Last Great Hope is really good enough. We'll also look at Motorola's Droid RAZR, a phenomenally thin phone that offers LTE and style, but isn't all that into battery life. We'll examine the geeky past of *HotHardware* Editor-in-chief Dave Altavilla, hear what expert analyst Ross Rubin has to say about the iPod nano, take a peek behind the scenes at AT&T and give a tour of NASA's Orion. It's out of this world, but, as ever, best read when comfortable. So, kick off those shoes and enjoy.



TIM STEVENS
EDITOR-IN-CHIEF,
ENGADGET

This way in

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Kindle Gets Competition and HTC Launches its Latest Superphone

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A Day With Orion, NASA's Next-Gen Spacecraft

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BY MICHAEL GORMAN

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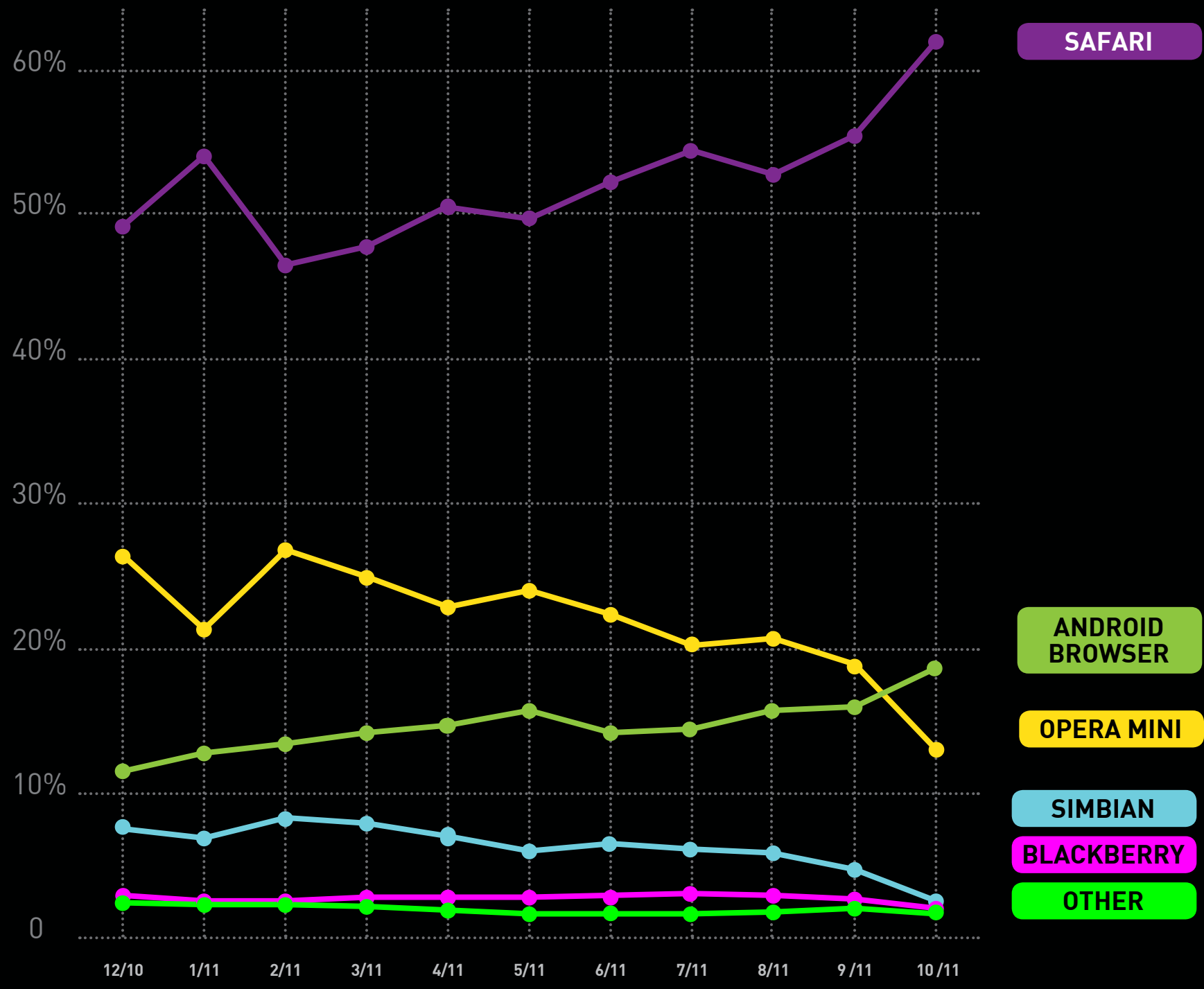

SOURCE: NETMARKETSHARE.COM

Android Browser leapfrogs Opera Mini, but Safari increases its lead

Browser warriors have some more statistical firepower to play with, following the release of Net Application's mobile browser figures. Google's vaguely titled Browser inched up from 16.3 percent last month to 18.7 percent, while Opera Mini declined from about 19 percent to 13.1 percent. Similarly, Symbian and BlackBerry dropped a few points, down to 2.6 and 2.4 percent, respectively. While rumors of a mobile-friendly Chrome continue, there remains a substantial gap between second-place Android and the current mobile boss, Apple's Safari, which has extended its dominance from 55.6 percent to 62.2 percent. The battle of the browsers wages on. — *Mat Smith*

the weekly stat

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WHAT'S NEXT FOR THE NANO?

SWITCHED ON

BY ROSS RUBIN
ANALYST

For all the grousing about the minimal changes from the iPhone to the iPhone 4S, Apple's fastest smartphone incorporates sweeping shifts compared to what the company did with its iPod line. From keeping the waning iPod classic in the lineup to leaving the still potent iPod touch untouched, save for a blanching and price reduction, the venerable digital media player line seemed all but ignored at a time of year when Apple once primed the holiday pump for MP3 players. ¶ Yet, while the iPod touch may not have received the processor boost or Siri-ousness of the iPhone 4S, it at least

continues to remain vibrant via access to Apple's app store. That's not the case for the nano, once the flagship of the line. While Apple's smallest touchscreen device gained new software that enlarged the main icons and brought new clock faces, these improvements are also being offered to owners of the last-generation iPod nano via a software update.

Virtually unchallenged in its price range, the nano can surely survive for years untouched, much as the iPod classic has. However, will it merely hang on as its feature set — long stripped of video capture and playback capabilities — gets sandwiched between a lower-priced iPod touch and a slew of commodity music players priced under $100?

With its new time-telling facades, Apple seems to have humored the idea of the nano as a watch; such usage doesn't hold up well today in the real world. However, the iPhone 4S' support of Bluetooth 4.0 – which includes the low-power specification that began as WiBree – may tip Apple's hand a bit as to its ultimate intentions for the nano. The nano does not yet

support Bluetooth 4.0 (or any version of the specification), but the standard has been seen as a key component in helping reduce power consumption for such a product. There are also lower power display technologies — such as Sharp's Memory in Pixel LCD on the forthcoming Meta Watch — from which Apple has abstained.

Turning the nano into a glanceable display like the Sony Ericsson LiveView or the more recent MOTOACTV, discussed in last week's Switched On, could help Apple considerably in the widget war. As an interactive window for iOS devices, a revamped nano could make the device even more palatable to those who purchased iOS products such as the iPad. In iOS 5, Apple has revisited the idea of iPhone widgets — differentiating them more from other iPhone apps — in the drop-down notification center. However the nano could support not only a widget architecture for iPhones, but also revitalize widget development for Dashboard, which seems to have languished since its debut in Tiger and has been somewhat sidelined as a Space in Lion.

Turning the nano into a glanceable display like the Sony Ericsson LiveView or the more recent MOTOACTV... could help Apple considerably in the widget war.

Those widgets could even be useful as an addition to Apple TV or an element of an Apple-branded television, should Apple pursue that oft-rumored path. Finally, with the advent of Siri, an iPhone-connected nano could retrieve bits of helpful info that could be formatted for the nano's 240 X 240 display or, of course, spoken back through the headphones.

When the iPhone was introduced, it had one of the largest touchscreens on a mobile device. These days, it seems compact compared to pocket-packing behemoths such as the Samsung Infuse, HTC Titan or Galaxy Nexus. But while the iPhone may not represent as much of a handful, there are still times that it — like any phone — isn't as close as you might want it. A reinvigorated nano could help create a bridge during those times and further tap the creativity of Apple's developer base.

Ross Rubin (@rossrubin) is executive director and principal analyst of the NPD Connected Intelligence service at The NPD Group. Views expressed in Switched On are his own.

Growing Up Geek: Dave Altavilla

BY DAVE ALTAVILLA

Welcome to Growing Up Geek, an ongoing feature where we take a look back at our youth and tell stories of growing up to be the nerds that we are. Today, we have the Editor in Chief of HotHardware, Dave Altavilla.

Growing up on Cape Cod, Massachusetts has its pluses and minuses. Certainly, in the summer time, being so close to the seaside made for fantastic boyhood memories at the beach, but in the off season you need to find ways to keep yourself busy. My fascination with technology and computers began with an Atari 2600. Then it was called a "Video Computer System," but now we all know better. That joystick marked it much more akin to a console, but don't hold that against me. Regardless, many hours were logged in on the Atari in scenic South Yarmouth, at least when it wasn't a beach day or if Dad wasn't heading down to the harbor.

If you've ever watched Discovery's "Deadliest Catch" (and who hasn't?), that was pretty much the life my Dad

led, at least for a decade or so. Though he was a stone and brick mason by trade, being a Capey (as we affectionately like to call ourselves, but you can't). Dad got bitten by the fishing bug. He was a Lobsterman for about ten years, probably the best ten of my boyhood. On weekends and summer days off from school, I would go with Dad to the Saquatucket Harbor in Harwich, MA. Sure, I played some ball and whatnot around the neighborhood like the other kids did, but at "Satchweetucket," as Dad like to call it, that's where the magic was. Dad would work on his boat, a 55 footer or so, with a crew of up to three sometimes, and I would explore. I made my own fish stories. The scup, fluke, dogfish and eels weren't safe. And in between fishing there was all sorts of trouble to get into, not to mention colorful people and other fishermen to meet around the docks.

For Dad it was a tough, gritty gig, but he loved it. I went on a few trips with him when the waters were mostly calm. I have been out in ten foot seas. Even on a 55 foot boat, you get slammed around like a pinball. Somehow I figured out how not to barf continuously. He navigated 50 footers and survived, just barely, more than once. If there was ever a lesson I learned from Dad, it was about toughing it out and "building character," as he liked to call it. And from my saint-like mother, I learned tolerance and acceptance, as she stayed home taking care of me and my two sisters, with an Italian mother's love and home cooking.

The masonry and construction work I helped Dad with was also back-breaking, of course. Going up a ladder with a 100 pound chimney flue on my shoulder when it was 95°F in the shade, he'd say "that's why you're going to college, right?" You bet my tired, ragged ass I was.

I went to Fitchburg State College. It wasn't Harvard or MIT, but hey, we were working-class folks and school at the time was a bit tedious to me. Fitchburg State had three primary solid programs back then, Business, Nursing and Communications. Though I was a Business major (zzzz... where is the keg party tonight?), I hung around with a lot of the Communications types and had a good job at the college radio station as an afternoon DJ. 91.3FM – WXPL – "pray for waves." It was the thick of the 80s. Depeche Mode, New Order, Gang

of Four – all the good stuff. Oh, and I was Class President all four years that I attended, though I ran unopposed for two of them. I wasn't much of a politician and frankly I think most of us were more concerned about when or where the next party was anyway.

Regardless, little did I know that my Communications experience back then, though my degree was in Business, would help me so much later on in life. Out of college I was fortunate enough to land a job from an ad I answered in the Boston Globe 'Help Wanted' section. I spent the next 17+ years in the semiconductor industry in various sales roles and that's when the tech bug bit me as hard as fishing got a hold of Dad. I built my first computer sometime around the early 90s. It was a 486DX-33. Yeah baby. I can't recall what the hard drive size was but it was probably around a couple of GBs, with 16MB of RAM. It was the pre-Pentium era. I had a Vesa Local Bus video card in there (Tseng Labs?) and my favorite games were *Wing Commander* from Origin and *F15-E Stike Eagle* from Microprose.

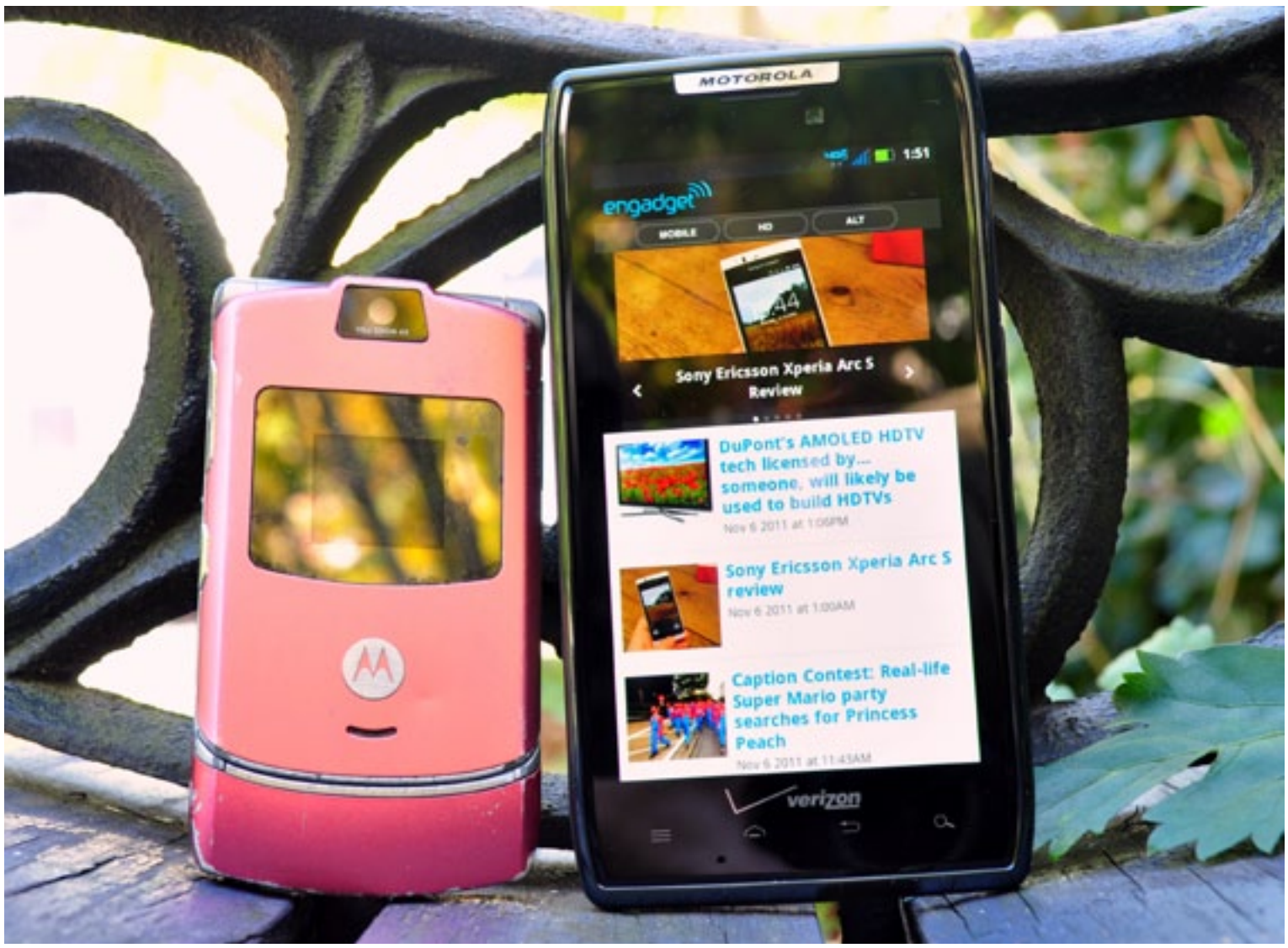
We had 14.4K modems as I recall, and I played co-op missions with a buddy of mine over that modem, if you can believe that. There was no internet back then, but gaming kept us connected. We even had in-game chat. Pure sweetness. There was no turning back from there. I educated myself about computers, intimately, from a hardware point of view, so much so that it was becoming a costly hobby with each new generation of technology and the inevitable upgrade. At one point, a small online reseller friend of mine sent me a motherboard to look

at, and then helped me setup a static HTML website that I decided to name "Hot Hardware." The vision back then was to test, evaluate and review the hottest computer hardware on the market. Slowly but steadily the business took off and I met my right hand man Marco Chiappetta, who offered to help with the testing and writing.

Today we've greatly expanded our team of writers at HotHardware.com, as well as our product coverage scope, but the mission is the same. We're all technology and computing enthusiasts at heart, whether on the desktop, laptop or in our pockets.

I try to keep our small team focused on two primary goals: delivering the best site experience we can for our readers, as well as delivering the best, fair and objective product evaluations and tech analysis we can. We like to give back to the community as well and hold monthly sweepstakes, where folks can win full gaming and multimedia PCs, just for hanging out with us and joining the conversation. Moving forward, we hope to bring folks more of the same, only bigger and better.

HotHardware's reviews and breaking news coverage has been regularly featured on Engadget. HH focuses on in-depth coverage with just the right amount of technical detail for the die-hard geek, but not so much that the mainstream enthusiast is left slack-jawed and drooling. Dave is also one of the geeks that host the weekly "Two and a Half Geeks" webcast at HotHardware, along with Marco Chiappetta and Iyaz Aktar.



Motorola Droid RAZR

BY TERRENCE O'BRIEN

The RAZR brand has a long and storied history, starting in the halcyon days of 2004. Back then it was a premium line — set apart from the crowd by its extremely thin profile and aluminum construction. Shortly after launching as an expensive status symbol, Motorola chopped the price and turned the V3 into one of the best selling handsets ever. In the years that followed there were countless revisions, colors and would-be successors that ultimately turned the once-hyped product line into a euphemism for obsolete technology.

Motorola has certainly had success since, particularly with the iconic Droid and Droid X, but alas, the Droid stamp belongs to Verizon. To once again make the name Motorola synonymous with cutting-edge tech, the company has returned to the well and resurrected the RAZR name. Has Moto managed to reclaim the magic and mystique of the V3, which had many a gadget hound coughing up some serious dough upon its initial release? Or is the Droid RAZR

a successor in title only, more akin to the ill-fated MOTORAZR maxx? Keep reading to find out.

Hardware

To say the Droid RAZR is thin doesn't do it justice. At only 7.1mm thick it's almost unbelievably svelte. Heck, the Galaxy S II, which impressed us with its sleek physique just a few months ago, measures a comparatively beefy 8.49mm. The RAZR does bulge out at the top to about 10.6mm around the 8 megapixel camera, but that's hardly enough to make the handset cumbersome. Besides, the hump is the only place with enough room to house the headphone, HDMI and micro-USB jacks. Along the right side you'll find all of the physical buttons. The textured power key sits roughly an inch above the rather flimsy volume rocker, which has almost no travel. The bottom of the handset is unadorned, but the left edge conceals the Micro SIM and microSD slots under a door that's more than just a *little* tough to pry open. The RAZR ships with a 16GB card pre-installed, a nice complement to the 8GB of internal storage.

The shell of the phone is a stunning mix of aluminum, Kevlar and Gorilla Glass. Handsets simply don't get much more premium-feeling than the Droid RAZR. It may be extraordinarily light, but there's just enough heft to reassure you it won't shatter into a few dozen pieces on the first drop (though, we make no guarantees about the second or third). Good thing, too, since the synthetic fabric backplate is very slick, which makes it quite easy to get in and out of even

your tightest jeans, but could make for a few accidental spills. Our one and only complaint is the sizable bezel. The fortified glass panel alone is the size of a Droid X, and that extra millimeter or so of width is just enough to make reaching across the screen with your thumb uncomfortable.

Towards the top of that slab of glass is a 1.3 megapixel camera for video chats, which stands out oddly thanks to the small square of transparent glass that interrupts the otherwise stark black bezel. Underneath the mirror-like sheet of Gorilla Glass is a 4.3-inch 960 x 540 qHD Super AMOLED Advanced panel. We didn't have any major complaints about the display, but it didn't quite live up to our expectations either. It was sharp, contrasty and bright enough to satisfy, but had a slight green hue that was very apparent at lower brightness settings. It also couldn't match the brightness produced by the old-school TFT LCD on the Droid X or the IPS panel on the iPhone 4, though, its contrast levels were noticeably better.

The RAZR also has more accessories than you can shake a fine print-laden two-year contract at. We didn't get any in time for our review, but the two main attractions are the Lapdock 500 and Lapdock 100. These laptop-style docking stations (14- and 10-inches, respectively) turn the RAZR into a portable (if underpowered) computer running Webtop.

Performance and battery life

The TI OMAP 4430 inside the Droid RAZR isn't the most cutting-edge mobile processor on the market, but its dual 1.2GHz cores should be enough to satisfy even the most demanding smartphone nerds. Gingerbread 2.3.5 and the extremely flashy don't-call-it-Blur hum along relatively smoothly. We encountered a few odd hiccups and

stutters, primarily while placing and resizing widgets, but we'll chalk that up to Moto's liberal use of 3D animations. For the most part, though, transitions were smooth, navigation was speedy and apps were plenty responsive.

Benchmarks didn't turn up many surprises. The RAZR notched an average of 2,798 on Quadrant, which puts it a bit behind the Galaxy S II, but ahead of the 1.5GHz Snapdragon-powered Amaze 4G. Moto's sleek handset and the S II essentially traded victories, with the latest Droid beating Sammy's flagship on the multi-threaded Linpack test (but not the single-threaded) and eking out a triumph in Neocore with 59.98 fps to 59.8 fps. But it lost the Nenamark 1 battle, pulling off just 50.34 fps, while the S II managed 59.8 fps. The one shock the phone had in store for us was blowing through SunSpider in just 2,140ms, putting it well ahead of most of the Android pack and even besting the iPhone 4S, which averaged 2,200ms. And that's great news since you'll want your browser to chew through code as fast as possible to take advantage of the RAZR's blazing LTE radio. In our limited testing, we averaged just a hair shy of 19 Mbps down and 6.5 Mbps up.

Motorola promises that the non-removable 1,780mAh battery will deliver up to 8.5 days of standby time and 12.5 hours of talk, but it survived just five hours and one minute in our battery rundown test. In our less scientific testing we managed a full day of moderate use. After an afternoon of browsing the web, syncing our data and placing a few phone calls, the RAZR was still going relatively strong, only dipping below the 15 percent mark as we approached midnight. Under light usage you may be able to squeeze two days out of it, but most likely you'll need to plug it in every night before you go to bed. If you're the type who really pushes their phone to the limits, we suggest you pack the charger — without a removable battery you'll be stuck when the integrated power pack gives up the ghost.

Camera

The camera in the RAZR is quite similar to that found in the Bionic. Both are 8 megapixel shooters capable of capturing 1080p video with a single LED flash and they produced very similar results. Pictures taken outdoors in broad daylight were decent, though the colors were a little muted. While indoor shots under artificial lighting were acceptable, you could easily detect some noise in the images without the flash. The phone actually takes surprisingly good macro shots, allowing us to get up close and personal with our keyboard and a flower (before the winter chill snuffs them all out). It was quite easy to fire off shots in quick succession thanks to the very short shutter lag, but the autofocus couldn't keep up with our taps and often had trouble zeroing in on its target.

Video performance was certainly above average. The 30-second 1080p clip we captured was compressed down

sample images

to a surprisingly miserly 59.3MB, but the video still looks relatively crisp. Color reproduction was good and it managed to capture a decent amount of detail in the shadows. The camera has an image stabilization feature which is far from perfect, but certainly makes video captured by some of our more shaky editors less nausea-inducing. The pair of mics can also be switched between several different configurations, the most useful of which is "wind reduction" — for canceling out extraneous noise when you're narrating from behind the lens.

Software

Like most Android skins, Motorola's tweaks are a love-it-or-leave-it affair. It's not quite as intrusive-feeling as Sense, but if you're a fan of vanilla Gingerbread the customizations will leave you feeling cold. Sadly, where we found the Not-Blur shipping on the Photon 4G and X2 to be pleasantly restrained, the RAZR is more akin to the Bionic and loaded with gaudy animations that distract from — rather than add to — the Android experience. Linux users may spot a few similarities between Compiz and the wobbly widgets and zoomed out wall of home screens on the RAZR. Still, the OS is instantly recognizable as Android, and, outside of the overzealous use of superfluous eye-candy, it sticks to all the Gingerbread paradigms you're used to.

There are, of course, some carrier and manufacturer apps loaded on the handset, many of which fall firmly in the crapware category. But, a few are welcome additions to the standard Android setup. Some of the pre-installed apps can easily be uninstalled, like Blockbuster and *Let's Golf 2*, but those specifically bearing the Verizon or Motorola brand cannot. Like many of its Moto siblings, the RAZR comes loaded with QuickOffice, Citrix and MOTOPRINT, but the real standout, and new kid on the block, is Smart Actions. Similar to Tasker, Smart Actions lets you choose a set of rules that trigger particular actions. Motorola is primarily pitching this as a way to extend battery life, but it's loaded with possibilities. It can do anything from

turn off the ringer and data syncing at a certain time of night, to send out a text message whenever you're in a particular neighborhood (great for those friends and family members who complain you never visit).

Wrap-up

So has Motorola succeeded in reclaiming the prestige that once belonged to the RAZR brand? Unequivocally, yes — the handset is just physically stunning. It's thinner than almost any phone on the market and makes no sacrifices to attain its slim physique. It's solidly constructed from premium materials like diamond-cut aluminum, Gorilla Glass and a sheet of super-slick Kevlar. Few phones out there can even be put in the same category when it comes to build quality. It's not the most ergonomically sound handset on the market, but for those who cherish form over function (the very targets of a so-called fashion device), that's a sacrifice worth making.

Don't get us wrong — the RAZR's beauty is not only skin deep. The LTE radio, 1.2GHz dual-core processor and 1GB of RAM make sure this sleek number is ready to run with the big boys. It kept pace with, and in some cases clearly outclassed its high-end competition. Despite its deficiencies in the display department and underwhelming battery life, the RAZR looks to be a perfectly viable alternative when considering the similarly-pricey Rezound and Galaxy Nexus, but we'll have to wait for our full reviews of those devices to say for sure. And don't forget: this one will only get better when ICS comes to Moto's slim slab of sexy.

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

BOTTOMLINE

Motorola Droid RAZR

$299 *with contract*

PROS

- Stunning style
- Top-notch build quality
- Speedy 1.2GHz CPU
- "Smart Actions" opens a world of possibilities

CONS

- Unnecessarily flashy UI customization
- Non-removable battery

The latest addition to the Droid family does the RAZR name justice with its solid build quality, striking design and brisk perfomance.

HOW AN AT&T SMARTPHONE COMES TO LIFE: BEHIND THE SCENES

BY BRAD MOLEN

DISTRO EXLCUSIVE
READ IT HERE FIRST

HAVE YOU

ever wondered what happens behind the scenes to get a phone pushed to market? If you have, congratulations on advancing to the next echelon of mobile geekhood. We've often pondered the same thing ourselves, but the industry has been historically tight-lipped about the ins and outs of designing, testing and launching a smartphone. Fortunately, our thirst for knowledge was quenched by none other than AT&T, which happily loaned us the time of two senior product managers, the folks that make the magic happen. ¶ Dante and Chris (last names withheld, per request) have the ultimate geek dream job: they don't just play with the latest prototypes, they're the ones who make sure they get *made*. Pretty plush gig, right? They're the ringleaders — the decision makers responsible for making AT&T's smartphone lineup come to life, and their duty is to do it in a way that keeps the carrier at the front lines of innovation. So what drives these two men? What goes into their thought process, and what exactly happens behind locked doors in order to produce a groundbreaking smartphone? Read on to learn some of their secrets.

The life of a product manager

We met up with the duo at the AT&T campus in downtown Redmond, WA. This three-building facility is where all of the smartphone magic takes place; the product teams and testing labs are all based here. Although Western Washington was rainy and gloomy — anyone who's paid Seattle a visit knows this isn't out of the ordinary — the weather didn't seem to affect anyone we met. There was no mistaking that these two gentlemen love what they do.

We'd like to think that being a product manager simply means that you get to play with cool gadgets that nobody else gets to see, but there's a lot more to developing the latest and greatest innovations than just playing around with prototypes: those in this position have a colossal influence on which devices make it into AT&T's lineup, and how well they're received once they get

to market. Needless to say, it's a huge responsibility. Dante, the man calling the shots on the development of the Motorola Atrix 4G, lives or dies by how his products fare. He accepts the blame if the phone's a failure, but he's quick to dish credit out to everybody on the team when it's a success.

AT&T is a polarizing company, to say the least. Poll two different people on their opinion of its wireless network, and more often than not you'll get completely opposite answers. But whether you love or hate the company, the gentlemen we sat down with at least seemed genuinely concerned in how their products are received. "We have a service contract with customers," Chris said. "We have to honor that — it's sacred to us." What exactly does that mean, though?

In short, it's the product manager's job to produce a phone capable of lasting the entire length of a customer's contract, typically a full two years. "There's a misconception that we want you to buy a new phone every six months," Chris told us. "On the contrary, we're trying to create a lifetime relationship with our customers." The terms "sacred" and "service contract" were brought up several times throughout our discussion, indicating that user experience is one of their primary focus points. Whether or not they actually succeed at this is a burden that rests squarely on their shoulders — as hard as they may work to make it an enjoyable phone, all of the fingers of blame point back to them if you loathe your handset.

But producing a phone doesn't just happen overnight. The development cycle of a typical smartphone — going from conception to a full-out launch — usually ranges from ten to eighteen months, and each handset faces a long and arduous journey along the way. AT&T considers itself one of the toughest cookies in the biz, and won't slap its logo on just any 'ol device. OEMs that want access to 100 million potential customers are required to meet stringent criteria and submit their hardware to intense testing.

One of the most intriguing smartphones of 2011 was Dante's project, the Motorola Atrix 4G. It was going to be

TIMELINE

LATE (Q4) 2009
AT&T REQUESTS HIGH-END, GAME-CHANGING DEVICE

AT&T's crown jewel, a flagship product with groundbreaking features. It was the first dual-core mobile device in the US, it offered a fingerprint sensor that doubled as a power button, and the most unique part of the project was Motorola's new game-changing Webtop environment and laptop dock. But a phone like the Atrix doesn't appear out of nowhere, so we were eager to talk to Dante and Chris about the process.

RFP - Request for Proposal

The RFP cycle encompasses the full genesis of the device. It begins with the creation of a formal document that lists the various traits and features AT&T desires. Since it takes so long to crank out a phone, the company needs to predict what the market's going to look like over a year in advance. This means our friends Dante and Chris have to ask themselves a few questions to hone their forecasting skills. What will be considered state of the art by then? How can we offer a truly groundbreaking product at that time? What will be on the low-end? What are customers going to want their phones to do? Answering these questions isn't easy, which is why AT&T has an advanced planning group that looks into all of the chipsets, displays and other components on the horizon.

The length of time a phone takes from conception to launch depends on a few factors: if the project was initiated by AT&T and the OEM needs extra time to work all of the crucial conceptual stuff, there are loads of extra vetting, testing and refining that need to take place before the final product is ready. However, if the vendor brings a phone to the table that's already in development — like the Samsung Galaxy S II, for instance — the testing phase can be considerably shorter. The same rules often apply for second and third-gen models, as they usually use the same platform and UI and have less wrinkles to iron out.

As for the Atrix 4G, it was conceived to be a truly game-changing and innovative product, something AT&T arguably hadn't had since it signed the iPhone exclusivity agreement. Its RFP began in the final quarter of 2009. To offer perspective, this was right when the HTC Tilt 2 — a Windows Mobile 6.5 smartphone — was released. AT&T didn't

JANUARY 2010

MOTOROLA PITCHES EVORA CONCEPT TO AT&T (AT CES 2010)

have a single Android device in its smartphone lineup at the time; the very first phone sporting Google's mobile OS was the Motorola Backflip, which didn't launch until March 2010. Yet Ma Bell desperately wanted a game-changing Android device that would revolutionize the industry. It wanted the best idea from each vendor.

AT&T didn't have a single Android device in its lineup at the time, yet it desperately wanted a game-changer that would revolutionize the industry.

Each request includes a list of the various attributes, features and characteristics AT&T is looking for. The carrier doesn't have a specific OEM in mind when the RFP is sent out; instead, it goes to every OEM that's expressed interest in participating. Each one has the opportunity to respond to the document with questions of their own, those queries get formally answered, and the process goes back and forth until the vendor's ready to submit its proposal.

In the case of the Atrix, Motorola met with senior AT&T officials (Chris and Dante's bosses) at CES 2010 to show off its concept, codenamed "Evora." It was far from a polished Atrix, of course — at this stage in the game, it was just an image of the phone's screen with some electrical circuitry. But every phone has to start somewhere, and the cost to

MARCH 2010

AT&T SELECTS EVORA PROJECT, FURTHER REVIEW OF DEVELOPMENTS (AT CTIA 2010)

Oddball phones like the Pantech Pocket (above) are used to test the market for new form factors.

manufacture just a few fully-functional prototypes for each proposal is simply too high; cost naturally decreases with mass production, so most OEMs won't put a live model out until "marriage" (the magical time when carrier and vendor get fully committed to a product and it becomes an official project).

OEM proposals come in droves, and the phones submitted to AT&T will vary from crude drawings on a piece of foam all the way to a realistic dummy unit similar to what you'd see shown off in a retail store. During our meeting, we were given a rare look into a box full of proposed devices which covered a three-month period and contained at least 60 different units, averaging out to one per business day — and that doesn't even include proposals that don't come with a tangible portrayal. The team sifts through a lot of candidates before finally settling on a short list of devices that it really likes, and only a select few of those get to taste the sweet privilege of being displayed in front of 100 million customers.

After sharing the Evora concept, AT&T came back to Motorola with feedback: in short, it told the OEM, "here's what we like and what we don't, but we're interested enough to continue moving the concept forward." The two companies volleyed the idea back and forth — the vendor refining it based on the carrier's preferences and receiving more commentary in response — until, by the time CTIA 2010 rolls around in March, Motorola's crafted Evora to a point where AT&T loves it and is ready to get married. All in all, the time between the original request and the happy couple exchanging vows is around three or four months.

While most products follow this kind of courtship, there are a few exceptions. The BlackBerry Torch 9800, for instance, was a product AT&T got the ball rolling on. Instead of making a mass request to every vendor, it instead approached the OEM with a specific idea: can you make a touchscreen BlackBerry with a full QWERTY slider? Not only did RIM take on the project, it liked the finished product so much that it floated the model to other carriers — causing the lackluster Torch to spread

around the world like a disease.

AT&T takes risks from time to time by throwing handsets against the proverbial wall — not literally, of course — in hopes that one or two will stick. These guys know it may not crank out stellar sales, but the only way to hit a home run is to swing for the fences, right? This strategy brings to mind the Motorola Backflip and Flipout, but the Pantech Pocket, with its 4-inch 800 x 600 SVGA display, is the most recent example of such an oddball device. We spoke with Michael Woodward, Vice President, Mobile Device Portfolio (and Dante and Chris's boss), who explained:

APRIL-JUNE 2010

PRODUCT CONCEPTS REFINED, "PUSH THE LIMITS" APPROACH, EARLY SAMPLES EVALUATED

PROJECT: EVORA

We first saw [the Pocket] a year and a half ago and we thought, man, we've never seen something with an aspect ratio like that before; we could see a youth-oriented person liking it, but we really had no idea. It's kinda cool, kinda different... we could be surprised.

There doesn't appear to be any set rules or parameters for the selection process, but that's unsurprising due to the dynamic nature of the mobile industry. After all, it's difficult to come up with a standard selection process when dozens of vendors are cranking out hundreds of phones every year, and hardware evolves at a breakneck pace. Thus, AT&T weighs all of the proposals and chooses the phone that it deems the best fit for the desired feature set or customer segment. The project managers convene to narrow the field of potential candidates down to a few of the team's favorites, and take the finalists to senior management as their recommendation. It's then up to executives such as Jeff Bradley — SVP of Devices at AT&T — to give the green light. From there, carrier and OEM are bonded together in an oh-so-beautiful marriage.

Product Definition

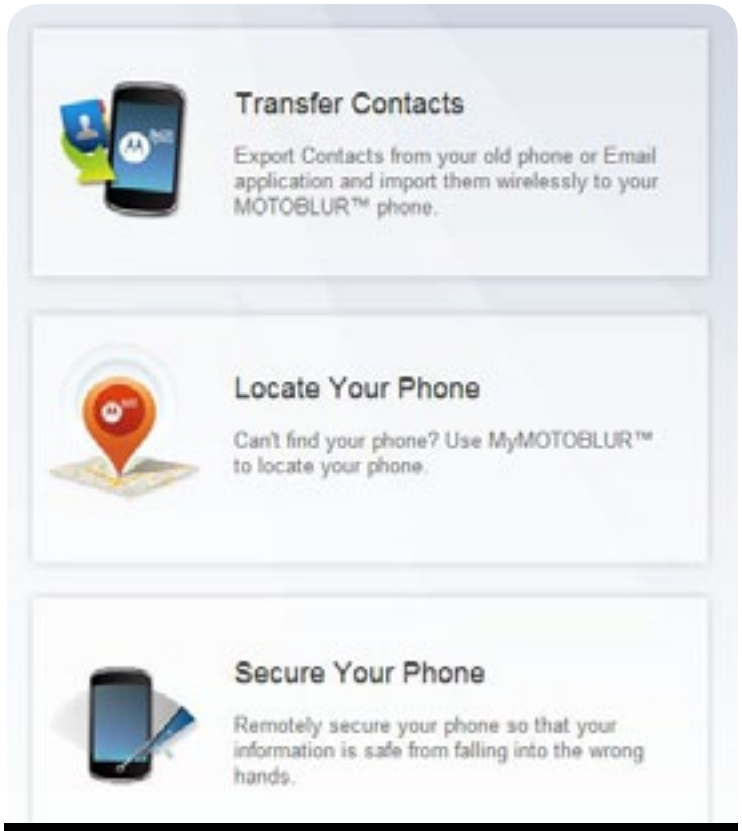
Marriage license (award letter) in hand, it's now pedal to the metal for the remainder of the phone's development, all the way up until its launch. The goal for the Evora at this point was to get the handset on shelves in time for the holiday season, which made the project the company's top priority. Normally this kind of flagship phone project would take 18 months, but Dante's team was trying to shave over half a year off that timetable. So, the challenges facing the team were absolutely massive.

This is where the intense collaboration and negotiations began. For AT&T

to tackle the Evora project, it wanted to exert considerable influence on all aspects of the phone — its look, feel, and the component hardware as well. With every phone, the final product never turns out quite the same as the manufacturers envisioned, though. DANTE EXPLAINS:

We don't know of a single instance in which [the OEM] has shown us something and we say 'yes, we'll take that exact phone.' There's always compromises and iterations that we go through.

Evora's product definition took place between April and June of 2010. This is when the device went from a crude drawing on a piece of foam to a real-life prototype that's ready for testing. Teams on both sides sat down to hash out the nitty gritty details: form factor, colors, materials, display size, OS and basic pricing. It was rigorous and complex, and the negotiation was incredibly intense in this stage.



A sample of the features found on Motorola's MotoBlur UI, the skin chosen to drive the Atrix 4G's user experi-

Once the concepts and specs were set, the project turned its focus to apps and services. In a nutshell, it's where the user experience gets fine-tuned. The two parties work together to determine the UI — MotoBlur, in this case — and every element of the full user experience, down to little things like the available options in the firmware's menu structure. Every aspect of the user experience is examined and no stone's left unturned. An entire team on AT&T's side is dedicated to developing for the UX and working directly with Motorola. CHRIS SUMS UP THE COMPLEXITIES OF THIS SEEMINGLY SIMPLE PROCESS THUSLY:

We want to give our customers latitude to learn new things about their phone, but we also don't want to be so loud and in the customer's face that it distracts from the basic utility of the

JULY 13, 2010
AT&T KICKS OFF EVORA INTERNALLY (NO DOCKS DISCLOSED AT THIS POINT)

device... we make judgement calls and weigh them, see if [each aspect of the UX] is too much or too little, and what can we do to make sure that we're putting out services compelling to the customer without being too obnoxious.

There's a fine line, it seems, between coming across as over-the-top and being too conservative — in this case, an Evora with too much UI saturation versus a plain vanilla Android. 'Course, we believe the Atrix's entire MotoBlur experience should've qualified as too invasive, but admittedly Motorola's recently tweaked its UI to be less in-your-face.

AT&T also encouraged Moto to push the limits a bit further this time — what's the bleeding edge in our industry, and how far can we push that? As it turned out, that approach resulted in a few significant improvements in the Atrix down the road, as we'll cover shortly. Early evaluation samples of the Evora were looked over, and the two product teams continued to flesh out the finer details and early bugs.

The team was ready to begin the official kickoff within the company, which basically means that the major details about the device were fleshed out and AT&T's internal testing teams could then be alerted to the project. Virgil — the codename for Motorola's Webtop and Lapdock — remained highly confidential and wouldn't be brought up for yet another few months.

Bloatware

Speaking of overall user experience, August 2010 witnessed the final decision on what apps would come preinstalled on the Evora. Have you purchased a smartphone only to find a litany of preloaded games and programs that are of no interest to you, but you can't delete them? These apps, not-so-affectionately known as "bloatware" and "crapware," have become an ubiquitous part of the smartphone experience. Ironic, considering the universal ire they draw from the general public. Yet carriers continue to include the stuff in nearly every single handset. Worse still, very few of them are removable, which means these apps forever remain on your phone, taking

up precious storage space. So, what's the big idea?

Many of the apps, according to the gentlemen at AT&T, haven't been deletable in the past because they weren't available on the Android Market — in other words, once they were gone there was no way to get them back (aside from wiping your phone and losing all of your other data and apps in the process). No matter the reason for their existence, however, eliminating choice doesn't help the user experience. Most customers want the option to do whatever they'd like with their own phones, and don't take kindly to apps that you can't get rid of — regardless of what findings come up in UX research.

AUGUST 18, 2010
MOTOROLA AND AT&T PRELOADS LOCKED

Fortunately, the problem isn't as rampant as it used to be: the carrier now has its own hub within the Market where it can offer re-downloadable bloatware. That's why (at least in part) the Atrix 4G was the first device offered by the carrier to feature deletable preloads. This wasn't a fluke, either — many of the smartphones in the lineup, including the Atrix 2, now allow branded apps to be uninstalled. Much like its CDMA competitor Sprint, AT&T received a flood of negative feedback associated with preinstalled apps and is working to streamline their numbers (compare the Atrix with the amount of bloatware Verizon releases on its typical Android phone and you'll see the difference).

Believe it or not, there's a method to the madness: AT&T put the Evora through a vetting process to determine the breadth and scope of the apps and services to be featured. First, the carrier came to an agreement on a cap. After all, there's such a thing as too much, so they figured out where to draw the line. If there were too many apps, it'd be time to re-evaluate what got placed on the device and pull something out.

DANTE TOLD US:

We'll go to the app team and say there's one slot for games, two spots for entertainment apps. Normally, I'll take in what they recommend unless it conflicts with the positioning of the device, and that rarely happens.

Dante goes on to explain that phones with large screens, for example, should feature games and apps that showcase its display size in order to enhance the user experience. As long as the customer has the option to get rid of them,

SEPTEMBER 15, 2010
CIO MEETING (CITRIX)

that idea holds a lot of traction.

We were curious to find out why certain apps were featured more often than others, but there doesn't appear to be any hidden revenue-generating partnerships between carrier and dev — if any exist, the company's keeping them hush-hush. AT&T's app team works directly with both high-caliber development companies like EA and Gameloft, but it also sponsors hack-a-thons and device giveaways to stimulate and encourage smaller developers. The carrier seems to gravitate toward a few preferred apps for the majority of its lineup, but Dante and Chris insist that no special partnerships or agreements are negotiated between them and the developer.

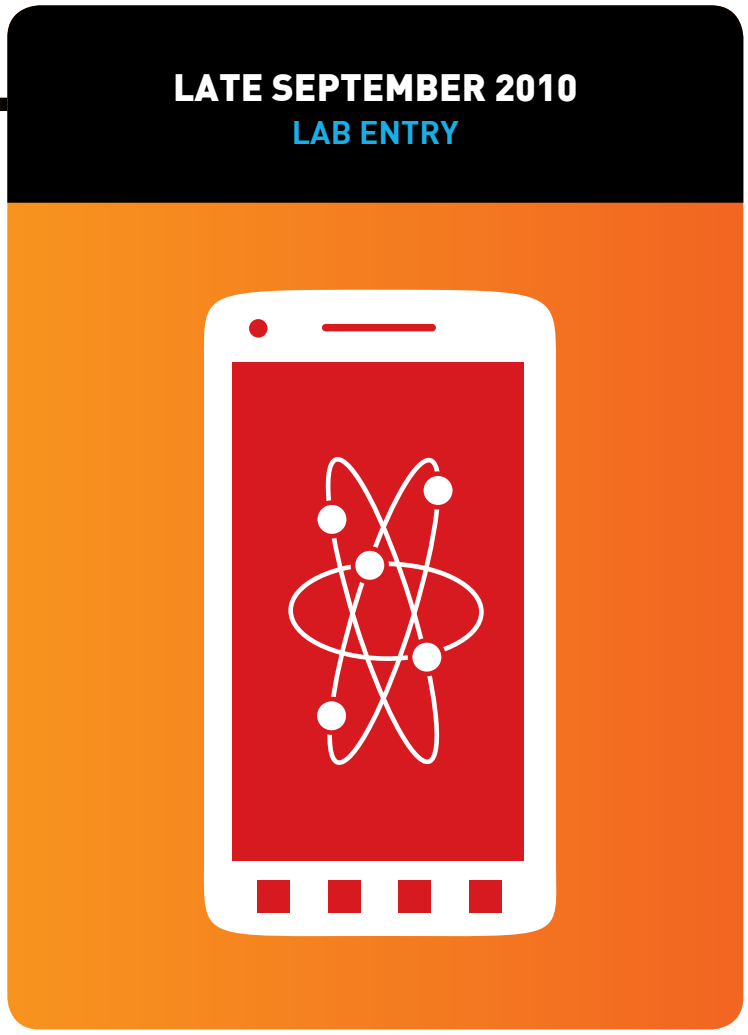
THINGS THAT GET TESTED
Battery life
Compliance review
OTA updates
Radio
Streaming
Accessory Compatibility
Bluetooth
DLNA
Hardware reliability
Settings
UI
Acoustics
Browser
Downloads
Music
Security
Usability
aGPS
Camera
Email
Network selection, speed and quality
Stability / resets
WiFi... and more
Third-party apps

TESTING

Every facet of the phone's development is important, but making sure the device actually does what it's supposed to do is understandably mandatory. AT&T praises itself for having some of the highest standards in testing, though it's impossible for us to verify without being able to compare notes with the other US carriers.

The lab cycle

After all of the collaboration back and forth between AT&T's and Motorola's



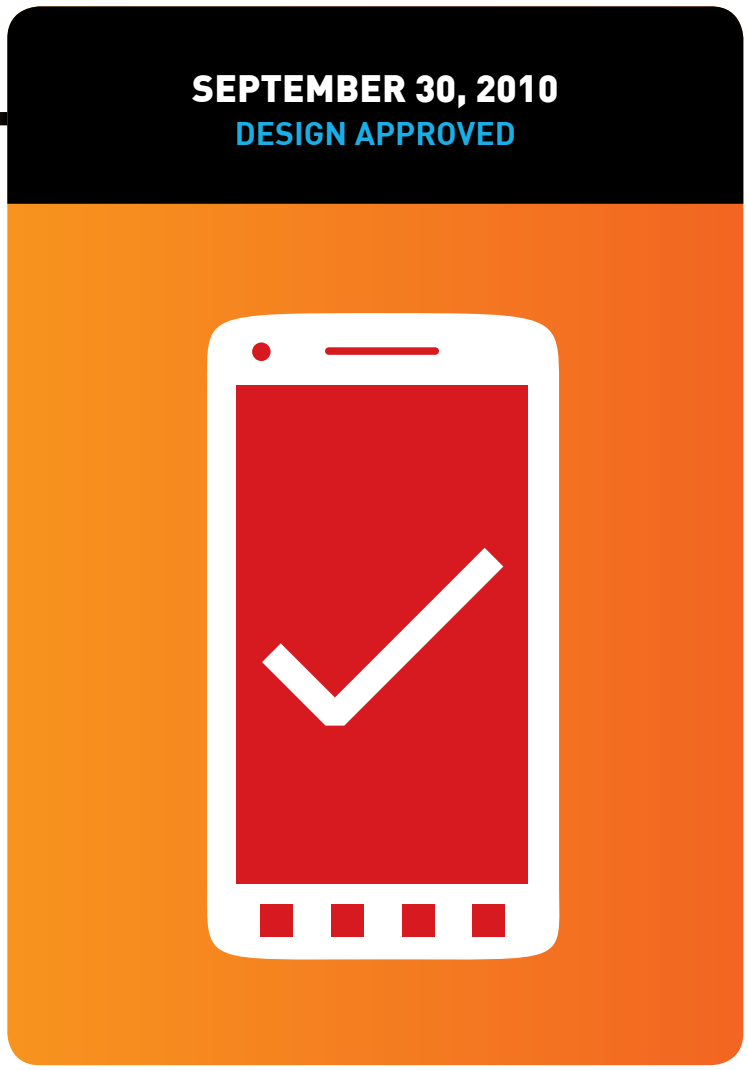
product teams, doesn't it feel like the Evora should be a polished product by now? Nope, not even close. It was September 2010 when the phone reached the testing labs. Making it to this stage was no small feat in and of itself, but the device still had a long road ahead of it. Think about it this way: Ma Bell wanted to have the product ready to ship in time for the holidays, and Black Friday was a mere two months away. The Lapdock hadn't even been sent to testing yet at this point, which goes to show how much was left on the team's plate before the phone would be ready to hit shelves. We know what it's like to have an impossible deadline, so it's easy to relate.

The carrier wants its test devices to be completely defined, with all of the specs as close to final as possible — and it requires that the OEM gets its handsets validated by a third party to ensure all of AT&T's quality metrics are met.

After reaching the labs, the Evora had to endure thousands upon thousands of test cases. AT&T has the ability to mimic and simulate virtually any type of network condition or environment that it can possibly think of, and runs the device through all of them to see if it can reproduce any issues. The test labs contain 1,200 servers and 25 cell sites, which allows them to simulate specific cities, frequencies and technologies. Every simulation's run in a copper cage — no bigger than your run-of-the-mill walk-in closet — that's capable of blocking out all outside signals so as to not interfere with the tests (or leave them out in the open to be discovered by curious folks, for that matter). These labs also run tests on firmware updates, radiation, audio quality and any accessory that gets sold in AT&T retail stores. They've set up a bug tracking system that both companies' teams have access to; bugs are assigned a severity level as a method of prioritizing phone issues

that need to be resolved, and the process to close out each individual bug is incredibly detailed and closely tracked.

Severity level one is anything that negates service, and absolutely none are acceptable in a final product. These



types of issues aren't simply referring to things like dropped calls or network frustrations, though that certainly comes into play in the labs. Anything that prevents service or possible use of the phone is slotted into the top echelon of priority. To give us an example of something that's considered service-negating, Dante showed us one of the Evora units used during testing and had us go into the web browser. Once there, he asked us to try pressing the home key — and nothing happened. The inability to properly use all of the buttons should be a top-priority fix, naturally.

Severity level two issues are those that are seriously frustrating to the user, and affect their enjoyment of the device: copy and paste doesn't work properly, the phone won't let you switch calls or perhaps the speakerphone doesn't work quite as well as it should. Too many infractions on this level will pause the phone's progress and it can't continue until they're fixed, though one or two penalties might be pushed through if the OEM commits to fixing it as soon as possible. Good to hear that these types of issues are taken care of before reaching final approval; could you imagine owning a phone that wouldn't let you switch or merge calls?

Finally, a level three issue is basically an improvement ticket — a small bug that AT&T would like fixed in a post-launch maintenance release, and is something to be addressed in future products to ensure it doesn't show up again.

Usability testing

The usability tests for the Evora began in October, which means they were run at the same time the device was still in the lab. Each product goes through a slough of usability tests to help the two companies learn more about how people interact with it. The teams watch multiple people as they use the device to see if they can use it easily and comfortably. Can testers navigate through a certain menu structure quickly enough? Are they tripping up somewhere on the

A group of ten CIOs was selected to test the Atrix's Lapdock and Webtop, codenamed Virgil.

phone? If anything is found that adversely affects the user experience, the teams try to incorporate new things into the phone to make sure it doesn't keep happening. "If we look at incorporating best practices and improving user experience and take out extra steps, the customer becomes satisfied and becomes recommenders," Chris told us. As mentioned earlier, we maintain skepticism that testers were completely happy with MotoBlur, but we digress.

There are some areas of the user experience on which only a few people seem to trip up. When these issues arise, the team begins to look at other avenues to take care of the concern. For instance, is it something that could be addressed by adding a small blurb into the Quickstart guide that comes with the phone? If not, that particular case — and others like it — is worked through in one of the Evora's post-launch maintenance releases and incorporated into any future Motorola phone with similar features.

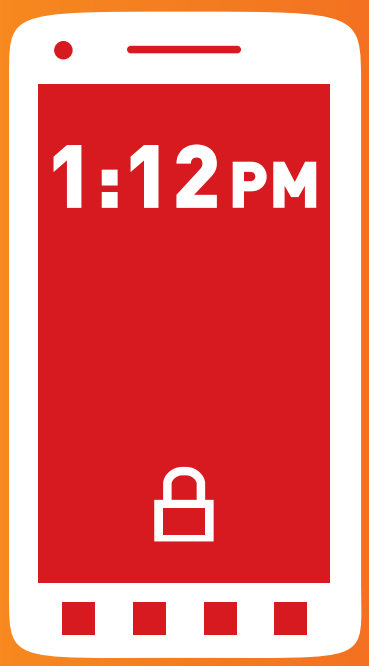
OCTOBER 4, 2010
VIRGIL NDAS SENT OUT

LAPDOCK AND WEBTOP

Motorola's unique Webtop environment and accompanying laptop dock were born alongside Evora and given the codename Virgil to differentiate its development. It was going to be a brand new product, a concept that nobody had really tackled head-on before. And not just that, it was the perfect fit for AT&T and Motorola's vision of a groundbreaking device that would completely change the industry. Because it was such an unknown, both companies were going to be taking a huge risk by bringing it to market, because the costs involved in developing the laptop dock and the full Webtop experience were astronomical. How would it be used? What direction should we take the vision? What value will this be to customers? Can you get this thing to do what you need it to without having a PhD?

Since the Lapdock was primarily geared toward the business professional, AT&T

OCTOBER 13, 2010
EVORA USABILITY TESTING



needed feedback from legit sources to get it right. On September 15th, the carrier invited CIOs from ten different companies to meet together under a Non-disclosure Agreement (NDA). These executives had no idea what they were going to see; it could've been a data card, for all they knew. The unveiling consisted of a few carefully crafted demos, since the Lapdock was so early in its development that not everything was working properly. But the mission was a success: the idea of incorporating Citrix functionality was brought up at the meeting, not to mention a few other additions that were either included in the first-generation models or pushed to later versions (details on those other additions weren't given). Citrix made it into the final first-gen product, but barely made the cut.

The Lapdock made its way into the labs near the end of September, not even two weeks after the CIO meeting. Again, the device met AT&T's rigid stability requirements, but it still had plenty of bugs to work out. The lab would find issues and send the trouble tickets over to Motorola, which would then be addressed by spinning new software updates to the labs and repeating the cycle over and over.

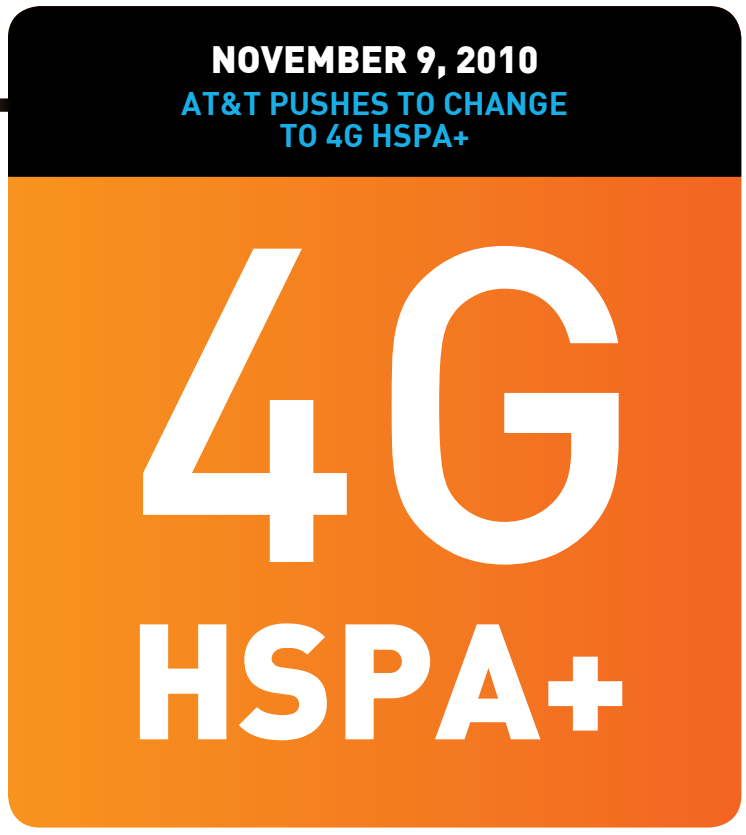
Virgil was ready for usability testing in October, but it was still such a secretive process to this point that none of the internal teams even knew about it — it had only been on an exclusive "need to know" basis so far. So, NDAs were issued to the usability testers, which is a pretty burdensome deal. Why? Not just anyone can be given access to something with such a high level of confidentiality; Dante had to go through a vetting process to determine who would be offered the NDA, and the lucky contestants were required to read and acknowledge it before any more progress could be made on the project.

The testers were faced with a rather tough challenge when Virgil showed up. Here was a completely new product that they'd never seen before, which meant that a full set of test cases had to be thought up. With such a tight

deadline to make this work, Dante admits that he wasn't the most popular guy in the world for a while. "But," he said, "we had to do what we had to do."

Prepping for launch

By the time October and November rolled around, the teams knew Evora and Virgil weren't going to be ready in time for the holiday season, but at least a CES deadline was somewhat feasible. Launching a game-changer at the largest consumer electronics show in the world would give the carrier a boat-



load of publicity, not to mention the momentum AT&T needed going into the device's release (after all, we *did* deem it to be the best smartphone of the show). It still wasn't going to be easy though: it was red alert from this time forward, and nobody got much sleep the rest of the way — we can envision several of them asleep at their desks, empty coffee mugs in hand. There were some huge last-minute changes that needed to be made before making the final launch preparations.

Hardware changes and delays

There's a huge reason AT&T doesn't like to make last-minute hardware changes on any of its devices unless it's an absolute must: it involves a hard tradeoff. Even the slightest adjustment usually translates into six to eight weeks, since the OEM has to first manufacture the product and push it through the full test cycle another time. Any hardware or firmware change requires the complete litany of tests all over again, because even the smallest of adjustments can break something else on the device that'd previously worked perfectly fine. Ah, the fun life a software tester leads.

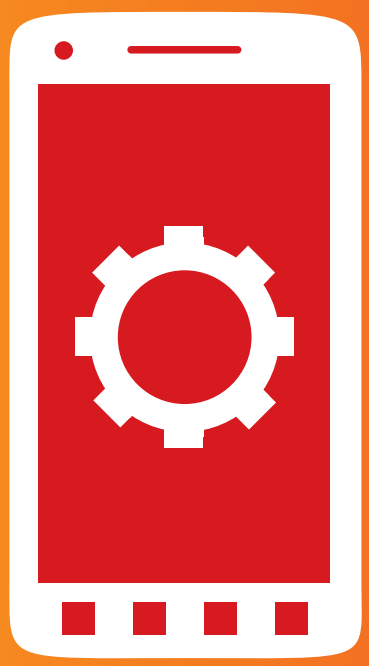
Delays like this become even more costly when you consider how compressed the lifespan of a phone has become. The Atrix is a great example of this, since its sequel launched not even nine months later. Taking six weeks out of a product's nine-month lifecycle to fix issues or make changes means there's that much less time to sell the device before the market changes and the phone becomes obsolete. Thus, lost revenue opportunity — not hilarity — ensues. With such a groundbreaking device on the line, further delays were simply unacceptable.

Two key factors can cause delays. First, there's a serious quality issue that prevents the phone from reaching Tech-

nical Acceptance (final software certification) and the problem isn't being solved by new builds. Second, the market changes and AT&T sees a need to incorporate a different feature into the phone to make it as successful as possible. "Sometimes we decide [together with our OEM partner] that it just has to be done in order to push the product forward," Dante said.

Of course, tiny wrinkles happen all the time in device launches, and teams are so used to dealing with these types of unforeseen circumstances that these obstacles hardly ever affect the timing of the handset's release. Just because the screen protectors designed to fit the Atrix 4G don't function properly, doesn't mean the train stops moving. So many things move along in parallel, and if one item gets completed en route to launch, more resources are reallocated to strengthen the other parts of the phone's development.

NOVEMBER 15, 2010
MOTO PROVIDES NEW HARDWARE CHANGES



But the Evora project had a couple hardware-related concerns that were more significant than mere wrinkles, neither of which we're able to speak on. However, Motorola and AT&T made excellent use of the opportunity to update other components in the phone as well; in such a dynamic market, prices can come down swiftly and market trends can move incredibly fast. One of the big changes AT&T wanted to make was the inclusion of HSPA+ — the Evora was originally designed without the next-gen tech in the works.

Looking back to the first quarter of last year, Verizon was busy making preparations to launch its LTE network around the same time the Atrix was supposed to come out, so leaving HSPA+ out of the phone's design seems like a bit of an oversight. Our theory is that HSPA+ wasn't a hot-button issue when the phone was originally designed. This may have been because the tech was still in AT&T's long-term future and wasn't scheduled to show up until sometime in 2011, and the radios were likely too expensive to

NOVEMBER 23, 2010

AT&T CHOOSES ATRIX NAME, PASSES ON CATAPULT AND GLORY

include at the time. Granted, it's hard to imagine the Atrix, a smartphone marketed as the carrier's top-of-the-line flagship, being released without at least 14.4Mbps connectivity — not in 2011, at least. But regardless of why it was initially looked over, Motorola was adding a few things to the spec list already, so why not make sure the upcoming flagship device had all of its other components completely up-to-date as well? Motorola updated the hardware rather fast, delivering the new hardware build to the labs in the middle of November, and the testing began all over again. It was becoming clear that the device would, at the very least, be ready to announce at CES.

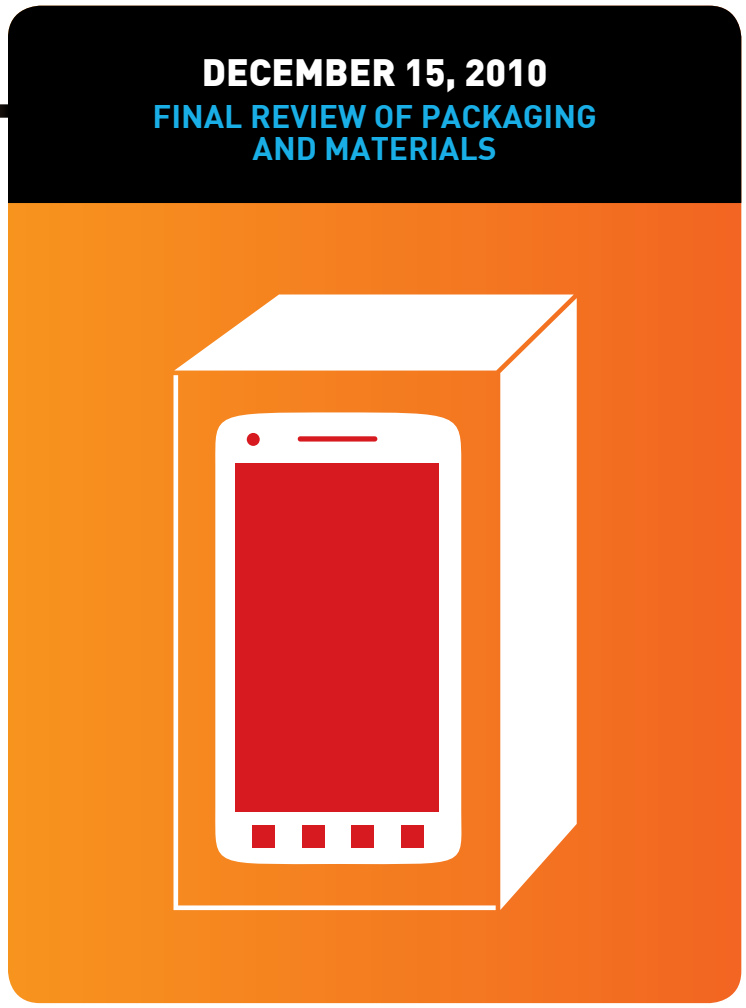
Naming the device

What's in a name? In this industry, everything. When titles like Inspire, Revolution and Transfix reign supreme, it's just way too easy to mock phone names on a regular basis, and we doubt we're going to stop anytime soon. We get it, though — the value companies take in finding a marketable name that's easy to remember is obviously priceless. Evora is just a codename, of course, so how did it turn into Atrix and why?

In general, the carrier and OEM both have a hand in a phone's name, but AT&T prefers to be in the driver's seat. The team generates a list of possible names to take to their legal team, which performs a trademark search and whittles it down to roughly one-tenth of the size — and usually it's the worst from the list (all the best ones, we presume, are already taken). If they can't decide on a name, the process repeats until they stumble upon something good.

The Evora was ready to obtain an official name in November, and it had a couple top contenders that had passed legal muster: Glory and Catapult. Dante's team felt that Glory just didn't mesh well with the features they were trying to perpetuate, and Catapult just sounded too... medieval. But everyone loved "Atrix." Since it's a bleeding-edge phone for the tech enthusiast, it should have a futuristic name. Not only that — starting with the letter A is always good, there aren't too many syllables and the X at the end adds an element of coolness. Making up words can definitely be cool, but it's a gamble. Dante educated us on the danger of diving into the realm of made-up names too often:

One of the nice things about a made-up word is that your message is the



assigned value to it... the problem is, if you do it too often, you start sounding like you're coming up with baby talk or gobbledy-gook and it no longer makes sense. There's a fine line there.

Pricing

We weren't able to glean a lot of information from Dante or Chris on how the pricing of phones is determined. The process is incredibly complex and depends on a number of factors, such as component pricing (which, due to the dynamic industry, is always changing), the carrier's target segment and, as you'd expect, some influence from the OEM. Sometimes pricing can even be affected by either partner's willingness to promote the device (more on that later).

The carrier's decision to begin selling the Atrix 4G at a $200 price point was nothing that warranted shock value. The cost of Motorola's Lapdock accessory, however, was. We loved the idea of a laptop dock with Webtop built-in, but it certainly wasn't worth $500. AT&T was stuck between a rock and a hard place here: the carrier wasn't oblivious to the fact that the device was highly priced, but a much different business model applies to unsubsidized accessories. SAYS DANTE:

When you're working with an OEM who's used to carriers using one model and that's how they price, and then they price to us the same way to something we can't apply that model to, it doesn't work out very well.

In other words, without attaching a contract to accessories, AT&T was constrained to keep the Lapdock at standard retail pricing, though it was willing to take a hit on profit by bundling the phone and device together in one purchase.

Motorola spared no expense in making the Lapdock, which not only included a stellar battery for the form factor, a durable magnesium enclosure and individual metallic keys, but also incurred significant R&D costs associated with a first-gen device *and* a new ecosystem. We're witnessing some validation of that, as the next cycle of the Lapdock — namely, 100 and 500 — is coming to market at a significantly lower cost.

Controlling leaks

Leaks. They're a fact of life for the tech media, the proliferation of which we participate in daily. Rumors of the latest and greatest (heck, even the blasé)

handsets roam free across the internet like a pack of wild buffalo, whether they're true or not. As we learned in our meeting with Chris and Dante, leaks like these frustrate product managers to *no end*. It stings, but why? ACCORDING TO CHRIS:

We have an investment. If there's a leak, it can have a detrimental impact on the perception, or when there's a misquote and an assumption is made, then Dante has to work twice or three times as hard to try and convince people that's not what the product was, it never was that, but the decision has already been made, the court of opinion has already been flawed.

Dante went on to explain that each phone AT&T launches has a unique story to tell, since they're meant to reach different segments of the market and hit various groups of people based on what they care about. It's all about projecting the company's vision to the customer. Leaked phones tell no tales, because media organizations report on what components they feature and what they look like, rather than the "story" the carrier's hoping to portray. This especially speaks volumes to any device that isn't considered state of the art and may get negative points for not having the best specs on the market. "They can never set the right expectation," he said.

Since product managers like Chris and Dante are forced to go into damage control mode as a result of leaks, we asked if they ever seed a counter-leak to resolve the problem. THEY TOLD US:

We've never personally been involved with a purposeful leak... it's not in our best interest. It's like one thing can go right while 99 things go wrong. We don't know how that makes sense.

The managers went on to say that no matter how something gets leaked, the information goes through the telephone game: no matter what you say, it'll be different once it gets to the other end, and the perception of the truth is altered. Granted, we didn't see a horrible alteration of the Atrix 4G when it was leaked as the Olympus, but that isn't the case with every phone. We'll give kudos to Dante and his team, however, for keeping the Lapdock virtually leak-free.

JANUARY 2011
CES ANNOUNCEMENT: TO BE RELEASED "IN THE COMING WEEKS"

Promoting and marketing the device

This part of the process is when the

claims come out to play: "the world's most powerful phone," "the world's fastest phone" and other similar marketing terminology is pushed through AT&T's legal team to make sure the company remains free from the threat of any possible lawsuits.

It's also the time when the product managers determine if the Atrix 4G will be a hero device. Ultimately, a phone is a hero candidate when it either moves the ball forward from a feature standpoint or offers some type of value proposition — the Impulse 4G is an excellent example of a hero that gets a lot of TV time for this very reason. The carrier will also negotiate with vendors to promote devices, which in turn can lower the price.

"Even though we do a lot of phones, it's not really a cookie cutter process," Dante explains. "New things become important... in general, we have the baseline for each launch. The idea is always to build on that. With each launch we're working with OEMs on new ways to promote it." Samsung and AT&T teamed up to sponsor the most recent Keith Urban US tour, which involves the superstar shooting video with an Infuse 4G. The opportunities to market phones are incredibly diverse, which forces the carrier to get creative.

First Article Inspection

Just as the Atrix spent time getting tested in the labs, pre-production units are seeded to a decent number of field testers to try out in real-life situations. But as these aren't the final units coming off the actual production lines, AT&T wanted to make sure that devices destined to wind up in customers' hands are as good — if not better — than what's been tested already. This is where Final Article Inspection (FAI) comes in.

To obtain the coveted FAI status, Motorola sent AT&T a few hundred devices from the final Atrix production line to go through the entire suite of tests one last time. Sounds so sentimental, doesn't it? Once the phone passed, the vendor got the green light to begin flooding all of the available distribution channels — a process that took around two weeks.

Know why AT&T will, more often than

not, announce that a device is heading to stores "in the coming weeks?" FAI may occur two weeks before the phone actually gets shipped out; if something goes wrong and it doesn't receive that approval, everything the PR reps promised is no longer true and everyone has egg on their face.

The carrier may elect to announce a phone at CES or CTIA but prohibit the device from being turned on, handled or photographed — much to our chagrin, of course. This happens because those handsets haven't yet reached FAI and officially aren't finalized. AT&T gets nervous when it comes to negative first impressions and hands-ons because the software may be pre-production quality. We'll offer an example: the Samsung Infuse 4G was announced alongside the Atrix 4G at CES 2011, but media wasn't allowed to touch it or get any up-close shots. The phone wouldn't officially launch until May — roughly four months later — and was nowhere near achieving FAI. It was definitely not the carrier's style to announce new phones so early, but AT&T's reason for doing so was to further emphasize that it was making some huge leaps to embrace Android. Still, we're not completely sure that its message was clear, and may have done more harm than good in this situation.

Preparing all channels

Now that it has the official name and has made its way through the proper legal channels, the Atrix is ready to get a final review on the packaging and materials. The box, accessories, Quickstart guide,

and so on are all given the thumbs-up here. Which accessories are included is typically related to keeping the device cost as reasonable as possible, while accentuating certain customer experiences — such as HDMI cables or stereo headphones, in some cases.

The last few weeks before a device's launch are the most hectic. It typically involves achieving FAI for the final go-ahead, getting all of the marketing materials ready to go, training employees, communicating the proper information to PR reps so they can talk about the device intelligently to the press, distributing review units and shipping out the Atrix to retail, third party and eCom channels. So many elements work together simultaneously to make sure everything is aligned correctly and the launch will be a success.

LAUNCH DAY AND BEYOND

Team Dante's hard work didn't stop the moment the Atrix 4G was released; far from it, in fact. The device was solid and in great working condition, but there were wrinkles that still needed to be ironed out after its official outing. So now what?

Rapid response

The first day of sales was all hands on deck and a war room was set up for rapid response (we can't help but picture a standard red rotary phone in the middle of a conference room), so any snafus that showed up could be worked out: if the SKU didn't ring up in the register at the corporate stores, for instance, it needed to be resolved immediately.

From that point on — day of launch and beyond — Dante was constantly on the lookout for any feedback he could get. Media reviews, social networking (Twitter, for instance) and word of mouth are very important to determining what went wrong and how to correct it in this device and in future models. This is where maintenance releases and bug fix updates become crucial.

Firmware updates

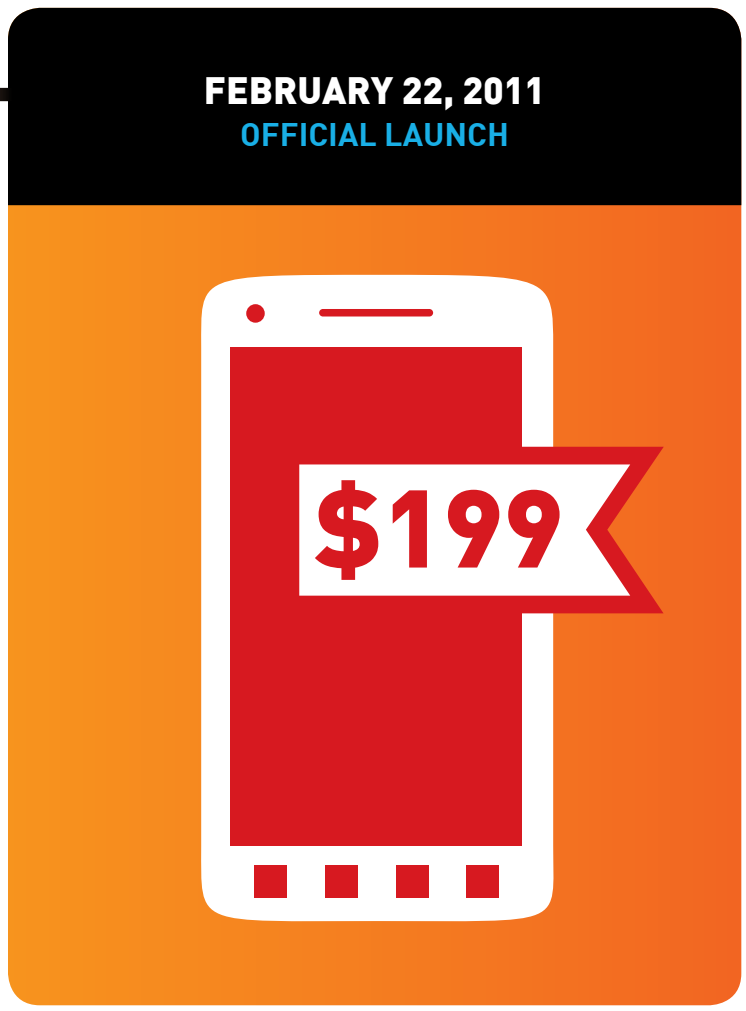
People begin using the phone in ways the product managers never imagined. Feedback on bugs and other issues gets back to the team. The next version of the OS comes out. All of these scenarios occur with every device, which means Dante and Chris need to be on the ball in cranking out updates and maintenance releases. As often is the case, these refreshes take a while to push through. The main reason for this is that placing new firmware on existing hardware involves much more than just the click of a button. CHRIS TOLD US:

Just like in the labs [the first time around], when new software is introduced we have to go through the full gauntlet of tests from this end to that end all over again. New software can always introduce new bugs in areas that were fine before, and the last thing you want to do is take a person who's

happy with their phone, and they update it and it doesn't work as well anymore. People think with upgrades that they're getting more. You don't want to break anything. That's why we go through the same rigorous testing in these updates, we don't want to have a negative impact on a customer experience.

There's a fine line between ensuring a good upgrade experience without actually making it worse for the user. But because of this, updates have a tendency to take longer to roll out. Android devices, for instance, appear to be the most difficult. Google announces Gingerbread, OEMs finally get their hands on the source, they push it through their own development cycle to build their own user interface onto it (such as MotoBlur, in the case of the Atrix), and then it has to undergo QA (Quality Assurance) tests to ensure the firmware update can even get into AT&T's labs — and that's when carrier testing can finally begin. Sometimes, as the managers claimed was the case with the Samsung Captivate, new versions of the OS can take longer to push out on older hardware. ACCORDING TO CHRIS:

Dealing with devices that are mature in their lifecycle, getting software with new features that are built for newer hardware, means even more grueling regression tests to make sure it doesn't break the phone or any other aspect of the product. Anything that doesn't meet the criteria has to go through the process all over again.



Where's the 4G uploading?

Prior to the Atrix's release, Dante's team already had items on the list for a post-launch maintenance fix. One of these, if you may recall, was the enabling of HSUPA speeds. Here was a device advertised as having 4G capabilities, but only HSDPA — the download portion of the next-gen network — actually came enabled on the Atrix when it launched (as well as the HTC Inspire 4G, launched in the same timeframe).

We were left utterly confused as to why this was the case — was it the biggest oversight in the world, or was AT&T leaving it out on purpose? No matter the answer, the carrier either looks stupid or mean. We asked Dante, who insists it was the

latter, but not because the carrier wanted to be a jerk. Instead, it was a result of Ma Bell's last-minute addition of HSPA+ back in November; additional time was apparently needed to push it out.

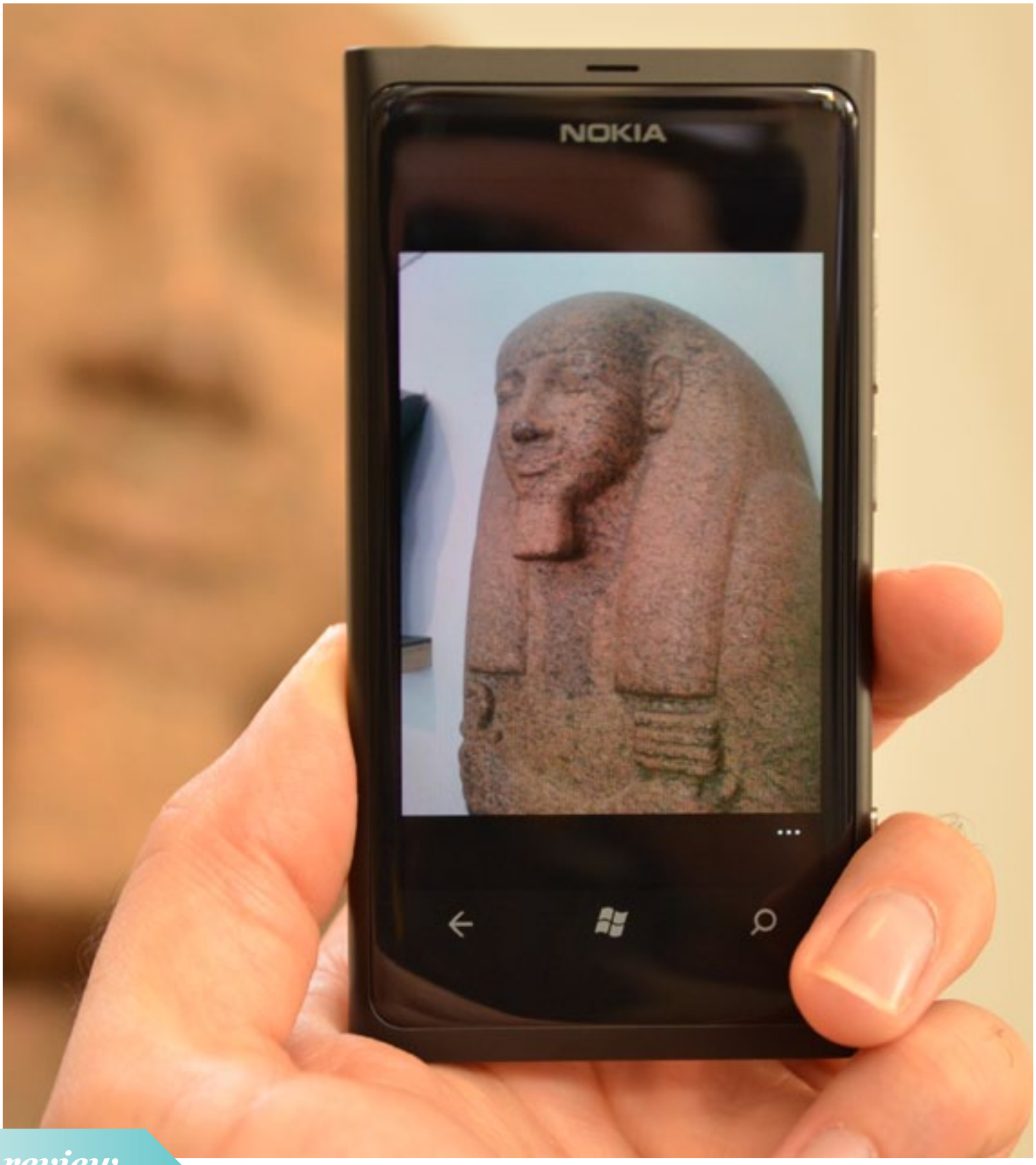
We thought, what can we make happen in time? That's how we ended up where we did. We got our MR out as fast as we possibly could to address it, but my rationale was — as long as you can download your videos at a good clip, you don't sit there and wait while you're uploading something... we wanted it in there. But we had to get the product out there; we didn't want to delay any further.

It's understandable that software changes can take a fair amount of time to implement correctly. But if the uploading capability had been done in concert with HSDPA, how much longer would it have been delayed?

Wrap-up

Knowing the journey helps us come to a greater appreciation of the destination. It's not an easy job to come out with a smartphone lineup that pleases everyone, and we certainly got a sense of the pressure Dante's team felt in getting a landmark phone ready and in shipshape condition. The Motorola Atrix 4G wasn't a perfect handset, of course, but it reached its intended goal: it was supposed to be a game-changer, and it's hard to deny that it was. And while we still — and likely always will — have questions about the decisions these carriers have to make, we cannot refute the fact that Dante and Chris gave us a new perspective on what actually goes into creating a fine masterpiece.

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



review

Nokia Lumia 800

BY SHARIF SAKR

You might hear it said that Nokia is on a knife-edge, and that this old king of mobiles will live or die based on the success of its latest flagship phone. We love melodrama as much as the next guy, but such talk is overplaying it. Sure, the great manufacturer has its troubles, and yes, the Lumia 800 bears a heavy burden of responsibility on its 3.7-inch shoulders. However, now that Nokia's CEO Stephen Elop has set his company on a new path, there will no

doubt be a slew of new products, both hardware and software, over the next few years. In fact, the Lumia 800 was probably rushed to market, having been designed and built within the space of six months and intended as a placeholder for greater things to come. Nokia simply grabbed the overall design of its orphaned N9 handset, threw it together with Windows Phone Mango and then whatever the Finnish is for *baddaboom*, *baddabing*. So, does the Lumia *feel* rushed? Or is this the first stirring of something special? Read on and we'll tell you what we think.

Hardware

Elop has gone on record claiming that the Lumia 800 is a "refinement" of the N9. That's not a good use of English and we can't let it slide, because every hardware difference between the two devices leaves the Lumia 800 worse off. There's no globetrotting pentaband 3G, which means no AWS support for T-Mo USA's network. The front-facing camera and notification LED have evaporated. The screen is slightly smaller due to the intrusion of the Windows Phone buttons. There's only 512MB of RAM instead of 1GB. Onboard storage maxes out at 16GB rather than 64GB with the N9. NFC is also inexplicably lacking, so the phone can't pair up with Nokia accessories and it probably won't be able to keep up future innovations that Nokia says its working on for Windows Phone 8 (aka Apollo).

On the other hand, many of the best features of the N9 have made it through. The machined polycarbonate shell radiates precisely the same industrial style, while simultaneously giggling in the face of scratches. The convex Gorilla Glass screen flaunts some of the best workmanship we've ever seen on a mobile device and it fits so perfectly that barely a speck of dust can get caught in its frame. The proximity and light sensors are neatly hidden behind the glass, leaving the front face of the phone almost entirely undisturbed, except for the earpiece, Nokia logo and Windows Phone symbols.

The left side of the device is a blank expanse, while the volume rocker, power / lock button and camera button are all on the right side, and they're made of metal, not plastic. There's a neatly drilled speaker grill on the bot-

tom, which also houses the mic. On top we find the 3.5mm jack and next to it a flap for the MicroUSB port, which you push on one side to open. Only when the flap is open can you slide and pop the micro SIM slot.

It's hard to contemplate the overall beauty of this device without getting emotional, and we already blubbered enough in our N9 review. Nevertheless, this design is not without its failings, and some of those make us want to cry too. Most importantly, the plastic flap over the microUSB port is too fragile. We managed to bend it trying to close it while the drawer was still slightly open, and we didn't jam on it hard, mind you. Exactly the same thing happened with our N9, so it's no freak accident. If you buy this device, please be careful, the flap is replaceable, luckily, but we envisage a long queue for spares.

The absence of a notification LED is annoying. The N9 had a faint 'always on' clock and notification area on the screen, but that's gone here. Aside from the fact that you have to switch the device on to see any notifications, there's another drawback: if the device is totally discharged, it doesn't even

have enough energy to tell you whether it's charging when you plug it in. At that point it's pure guesswork as to when or if your device will be ready to use again.

We had a couple of random power-related incidents. The phone once died suddenly in the middle of a call and flashed the battery warning, but then it switched itself back on and revealed that the battery was still at 52 percent. On another occasion, the phone initially refused to charge with an official Nokia micro-USB charger, albeit not the one that came in the package. Both issues were short-lived, but we're keeping an eye on the behavior of our review sample and will update if anything new arises.

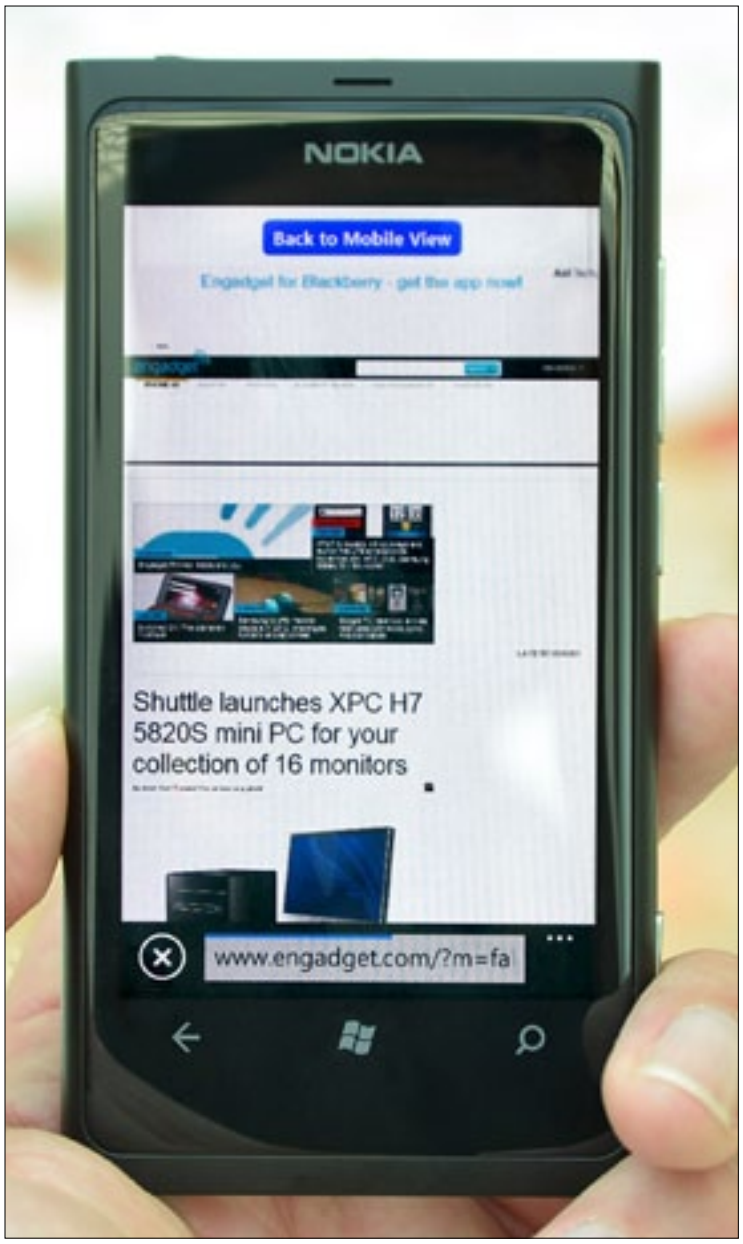
One more thing: the sharp corners and relatively thick 12.1mm (0.48-inch) profile might not suit everyone's pocket. If we look at HTC's rival Windows Phone, the Titan, it has rounded corners and a mere 9.9mm waistline, so it manages to pack a 4.7-inch display without feeling much chunkier than the Lumia 800. As we said in our full review, the aluminum also has extremely high build quality, albeit with a completely different design.

Performance and battery life

The Lumia 800 packs a Qualcomm MSM8255 single-core processor, exactly the same System-on-Chip that powers the Titan, except that Nokia has decided to clock the Lumia slightly slower at 1.4GHz instead of 1.5GHz. Does this make a difference? Not really. In everyday use, we sometimes experienced minor lags when opening up Nokia Drive or Nokia Music, and occasional judders when using a processor-intensive app like Local Scout, but the Titan was no better.

Surprisingly, though, the benchmarks gave the Titan a clearer lead than we might have predicted. WPBench gave the Lumia 800 an overall score of around 86, versus the Titan's 96. Part of this difference was in proportion to the slower CPU clock speed, but a bigger cause of the disparity was actually the Lumia 800's tardiness in shifting large chunks of data between its memory and storage. Likewise, the Sun Spider Javascript benchmark gave the Lumia 800 a score of 7,200ms for surfing on the Web Kit browser, versus 6,500ms for the Titan. Overall, we don't think there's anything to be too concerned about here, but we don't expect to see any Lumia-owning geeks on the performance leaderboards.

The battery is only 1450mAh, compared to the Titan's 1750mAh behemoth. However, the Lumia's smaller and more power efficient display cancels out this disparity and the two phones end up being roughly on a par. With heavy use, with a fair amount of photography, e-book reading and so on, the 800 will probably die by late evening. With more normal use, involving calls, push email and a bit of music, it could stretch to a day and a half. In the WPBench battery test, the phone lasted two hours and 40 minutes, against three hours from the Titan.



Nokia knows how to build phones, so reception and call quality were both reliably average when using the Vodafone network in and around London. There's no HSPA+, but the phone was quick to establish a 3G or HSDPA connection when available. Importantly though, the Lumia doesn't do internet tethering, whether by WiFi or cable, whereas the Titan does.

Display

Mango, say "hello" to AMOLED. The Lumia might not be the first to make this happy pairing, but it's a powerful union here nonetheless, and if you've never used an AMOLED phone before, then you're in for a big treat.

The key selling point is that any black areas on the screen are completely black. Deep, true, outer space black. Nokia has its own name for this effect, ClearBlack, but it's really just the same end result as Samsung's Super AMOLED technology, which is not a bad thing.

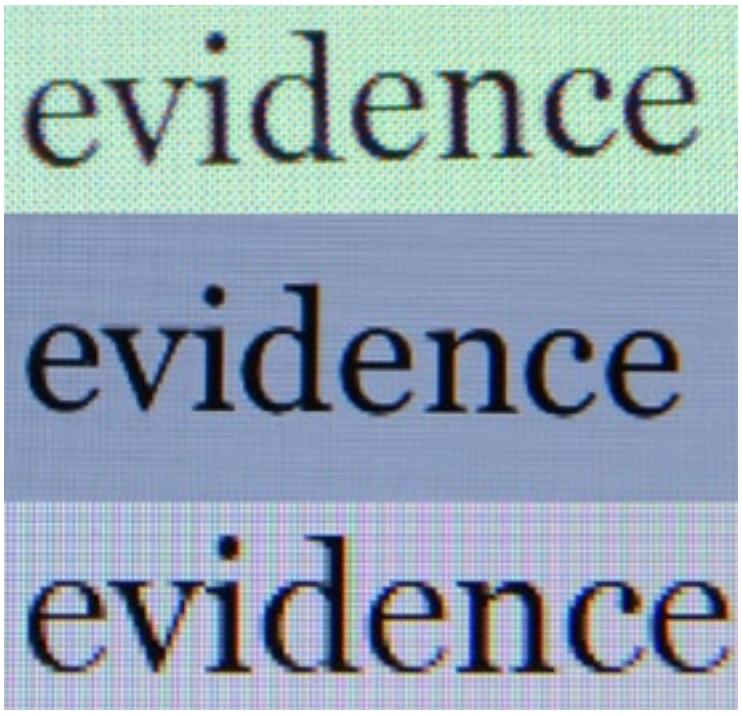
In comparison, LCD panels are just a very dark grey. What's more, when you bump up the brightness on an LCD, you can take a hit on contrast, because that background grey gets steadily lighter. But with AMOLED, the blacks remain implacably perfect no matter how high you push the brightness, producing a level of contrast on the Lumia 800 that can make your eyes throb if you deliberately mess with the settings while indoors.

In practice, AMOLED gives the Lumia's display much better outdoors performance. The brightness pierces through smudges and reflections on the glass, while also delivering powerful color saturation. We wouldn't want to use it for reading e-books in direct sunlight, we've got e-ink for that, but the bold live tiles of Windows Phone seem tailor-made for the Lumia 800's display and we'd certainly choose it over LCD for everyday use in the fresh air.

Go indoors, however, and it's a different story. Nokia is an extremely savvy player when it comes to building smartphones to a price point. With the Lumia 800, it's opted to use the slightly cheaper PenTile type of AMOLED display. Some phone users take issue with

this technology, because it lowers the sub-pixel count and can impact on color rendition due to the excess of green sub-pixels. In the case of the Lumia 800, the green tinge isn't awful, but the strange pixelation can be often be distracting, like a multicolored mesh or grid sitting on top of an otherwise high-res display.

Photos generally look fine, but fuzziness is clearly visible to the naked eye. When it comes to text, in particular, characters in a thin font seem to 'hum' slightly at their edges, which is a shame because such fonts are a big part of the Windows Phone aesthetic. The picture above shows a snapshot of a single word displayed on the Kindle app, shown on the Lumia 800's PenTile AMOLED, then the iPhone 4's Retina Display, and then the Titan's SLCD at the bottom. Ultimately, whether this is a cause for concern depends on your eye-sight and how you tend to use your phone. If you enjoy reading e-books on your phone, then it's worth trying the Lumia 800 in-store before you commit.



Camera

The eight megapixel camera on the Lumia 800 is exactly the same unit that we reviewed on the N9. It's been around for a while and it suffers from a few foibles, but the underlying hardware is top-notch. The Carl Zeiss Tessar lens opens to f/2.2, which is up there with the best camera phones on the market and makes for relatively good low-light performance. Coupled with the Windows Phone OS, which has a fast and easy-to-use stock camera app, as well as the AMOLED screen which is great for framing and viewing pics, this Nokia is a capable stills shooter.

There are two ways to take a picture: you can either press down halfway on the two-stage dedicated camera button to set exposure and focus and then press fully to snap, or you can simply tap the screen on whichever subject you like and it will make all the necessary adjustments and take the shot all in one go. We found ourselves using the latter method more often, simply because it's so blazingly fast.

A tap on the 'cog' button provides ready access to flash control and a dream-like array of manual options, including ISO, exposure compensation, metering mode, white balance, contrast, saturation, focus mode and resolution. What's more, you can save your settings so they don't get lost when you exit the camera or switch to another scene mode. The only thing missing is a setting for how much compression you want. However, the

sample images

camera software generally preserves a good level of information, with file sizes mostly ranging from 1MB to 1.3MB, but occasionally reaching 2.2MB for a shot with lots of detail. The same goes for video: 720p files generally came in at around 80MB to 100MB per minute, which is far in excess of many rivals and also slightly better than the HTC Titan.

Of course, the Titan also has a f/2.2 lens, the same maximum resolution and the same underlying camera software, so we took the two phones out for a spin in the British Museum in order to get a more detailed comparison. Our verdict? It was a close contest, and ultimately we'd be content with either camera in our pocket, but there are a few differences worth mentioning.

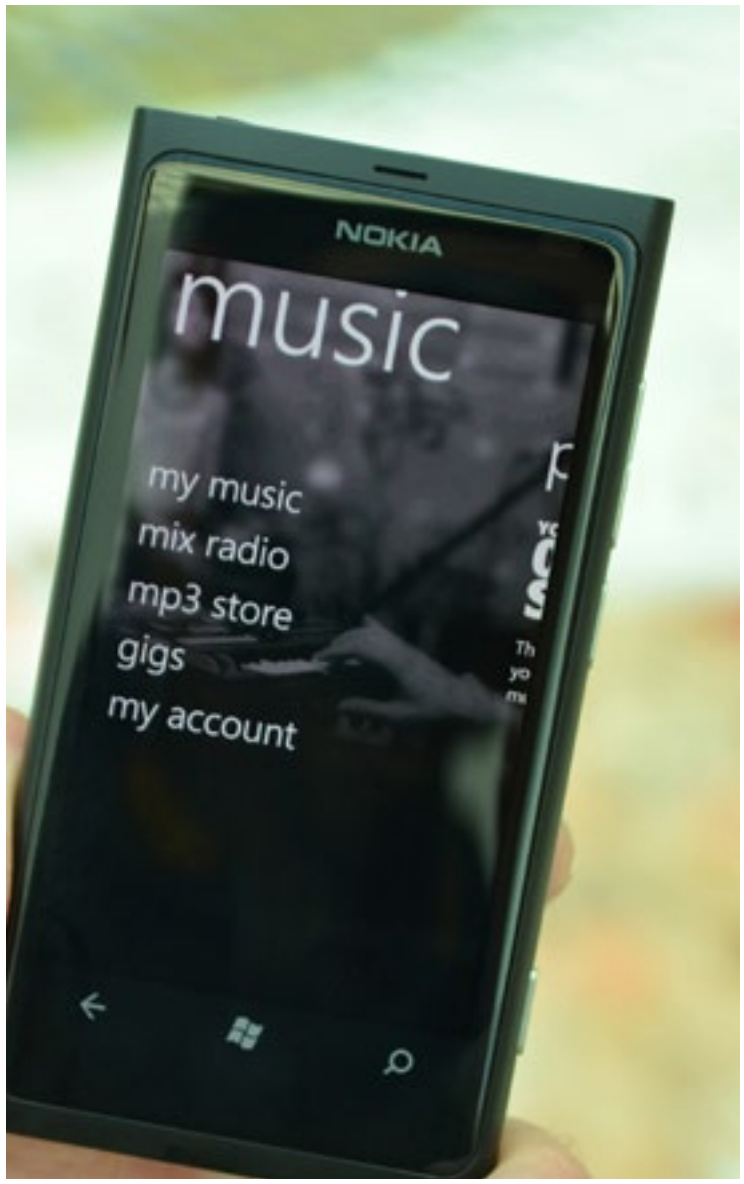
The Lumia 800's auto white balance often struggled with the varied lighting at the museum, which has artificially lit displays underneath big tinted windows in the ceiling. We had to manually set white balance on a couple of occasions, whereas our Titan generally seemed to pick the right compromise. A highly zoomed-in section from the Lumia shot shows a pink cast. Below that is the equivalent from the Titan, which is more accurate. While shooting video, we moved the camera from very blue light to very warm light and it actually coped quite well. It's the more subtle stuff it struggles with.

Our video session also revealed that the Lumia's autofocus was occasionally slow during recording. It wasn't always that bad, but it was certainly inconsistent. Exactly the same can be said of the Titan, though. Neither camera handles autofocus very well during video, unless your subject is inorganic with lots of straight edges. Any fast motion or panning also destroyed the quality of our 720p video, largely because the compression couldn't keep up, VGA mode handled motion a lot better, but who wants to shoot in that? But again, the Titan also suffers from this, and in fact the Lumia's compression system copes marginally better. Overall, we need better bit-rates and better autofocus on smartphones before we stop carrying our little video camera around with us.

Returning to still images briefly, we also found that the Titan's were generally sharper and had slightly higher contrast by default. However, this doesn't necessarily mean the Titan's pics were better, and in any case the Lumia could easily be re-configured to deliver the same results. However, the Titan also has useful Panorama and Burst Shots modes, which are missing on the Lumia 800. Factoring in the white balance issue, we'd have to give the Titan's camera a slight edge in this contest, but phones on other platforms, like the iPhone 4S, Galaxy S II and Galaxy Note have all-round superior cameras.

Software

There's a good chance that the Lumia 800 will be your first Windows Phone, so it's worth checking out the quick overview in our software video. If you want the full low-down, then please peruse



our in-depth Mango preview, as well as our review that was updated when the OS update was finalized.

If you'd prefer a very quick summary, then take it from us that this OS is fast, fluid and nice on the eyes. Its visual design is a boon not only for ease-of-use, particularly for people with poor eyesight, but also in terms of its sheer sassiness, which will be appreciated by anyone who wants to stand out from the iOS and Android crowds.

The navigation system rarely throws too many options at you, and often cuts out more advanced options altogether. In particular, we miss USB mass storage, a feature we rely on with our Android phones. It's also a shame that you can't display multiple Google calendars, the OS will only display the primary calendar for any account, which is out of keeping with this otherwise very productivity-focused OS.

The WP keyboard, as always, gets a special mention for being extremely easy to use. It works great on the Lumia 800's screen, but we found ourselves making slightly more mistakes compared to the Titan, whose keys are easier to hit simply because they're bigger.

Although Windows Phone is still lacking many of the apps that have become popular on other platforms, including Spotify, Dropbox and countless oth-

ers, it handles core functions rather well, such that you don't necessarily need extra apps in order to handle basic social networking, photography, maps, search, music recognition and purchasing, cloud storage, folder syncing, and other daily tasks. These functions aren't perfect, advanced Tweeters may struggle with the limitations of the integrated software, for example, which requires you to use SkyDrive for hosting your pictures. However, the Marketplace is growing daily and will offer more dedicated apps over time, after all, it has the full weight of Microsoft behind it.

Nokia is going way beyond the call of duty in providing its own apps, which already help to distinguish the Lumia 800 from the competition and will certainly become more of a selling point over time, particularly when Nokia's Pulse social networking platform emerges from beta testing. In the meantime, Nokia's proprietary offering amounts to three key apps.

First and foremost, Nokia Drive turns your handset into a fully featured sat nav, based on the Navteq platform that covers 90 countries and also works with offline maps. Need to get from A to B in Mozambique? Then download the 15MB file and off you go. The coverage puts Google Maps and TomTom to shame. You get full voice instructions too.

Nokia Music adds to the stock player by giving you access to Mix Radio. This is a neat little radio player with eclectically titled categories (e.g., "Golden Era Hip-hop"), which let you narrow down your genre while still leaving it open enough for some unexpected tunes, so long as you have WiFi access or a cheap cell data plan. The audio quality is on a par with the free version of Spotify, for example, so it won't satisfy audiophiles, but it's fine for listening on the go or plugging into a small dock.

Finally, Nokia also supplies an app discovery tool called App Highlights, which suggests essential apps like Kindle, eBay and AccuWeather as well as promoting others you might not be aware of. It also has a little gimmick where you shake your phone to be shown a surprise app, completely pointless, but it emphasizes the underlying purpose, which is simply to encourage you to savor the generally high-quality offerings cherry-picked from the Windows Phone Marketplace.

Wrap-up

Nokia's Lumia 800 is a sophisticated and capable smartphone that melds its hardware beautifully with the Windows Phone OS. Whether it's the best phone for you right now depends on certain factors.

First, you need to establish whether you're a Windows Phone type of person. If you're thrilled by dual-core processors, extremely high-res screens, large camera sensors, customizable widgets, expandable storage, USB mass storage and other such features, then you'll be better off with Android or, to a slightly lesser extent, iOS, because that cutting-edge stuff is currently absent on Redmond's OS. On the other other hand, if

you want to be part of a carefully crafted, simple and generally happy emerging ecosystem, then look no further.

The next question is whether you'd choose the Lumia 800 over another Windows Phone, such as the Titan. The Titan's camera is slightly better, but not enough to be a deciding factor. Conversely, the Lumia 800's design is arguably superior, but not massively so. Instead, it's the display that's the more important issue. If you want a bright and colorful screen for media and general use, and you're not too fussed about the PenTile pixel issue (which you ought to see for yourself before buying), then the Lumia 800's AMOLED display wins hands-down. However, if you prefer a bigger screen that does a better job of displaying text, then go with the Titan.

Some people will notice that Nokia is building a special relationship with Microsoft, to the point where the manufacturer is able to deliver more exclusive features in its phones and push for things to be added in later revisions. If you're a WP fan, then there might be an argument for committing to Nokia in order to benefit from all those good things to come. However, we think that's premature. Drive is a nice exclusive feature, but there's not much else yet. If anything, the Lumia 800's hardware risks being left behind as Nokia develops apps and platforms based on NFC, front-facing cameras and other (unknown) features that are likely being prepared for Windows 8 Apollo. The Nokia-Microsoft relationship will certainly become more important, but that's not enough to sway a purchasing decision today.

Sharif is a British tech journalist with ten years' experience filming and reporting news for the BBC and other broadcasters.

BOTTOMLINE

Nokia Lumia 800

£399 *(UK)*

PROS

- Genius, tactile design
- Mostly excellent build quality
- Brings out the best of Windows Phone
- AMOLED screen is great for general use

CONS

- Tethering and other advanced features are missing
- Phones on other platforms have better cameras and performance

This is an attractive option if you're a fan of Windows phone and great design. It's far from perfect, though, and Nokia's best is yet to come.

A day with Orion, NASA's next-gen spacecraft

BY MICHAEL GORMAN

It's not every day that America designs an entirely new spacecraft. Rarer still is the creation of a vehicle that can carry man, not just machine, beyond the earth's gravitational pull. In the history of the world, there have been only seven such human transports: the Vostok, Voskhod, and Soyuz capsules from Russia, the American-made Mercury, Gemini and Apollo capsules, plus

SPACE PHOTO: NASA

the Space Shuttle, and China's Shenzhou spacecraft. That list is going to get a new member soon, as NASA (with a big assist from Lockheed Martin) is building the most technologically advanced spaceship the Earth has ever seen: the aptly-named Orion.

In ancient Greek mythology, Orion was a hunter born of the earth who was eventually placed among the heavens by Zeus. NASA's Orion is a multi-purpose crew vehicle that looks similar to the Apollo capsules and is here to replace the venerable Space Shuttle. It's capable of taking us further into the cosmos than we've ever been — to asteroids, the moon, and even Mars. This mission flexibility and interplanetary reach is what sets Orion apart from previous manned spacecraft, but that adaptability requires some heavy duty engineering and extensive testing to guarantee its ability to handle any NASA mission with aplomb.

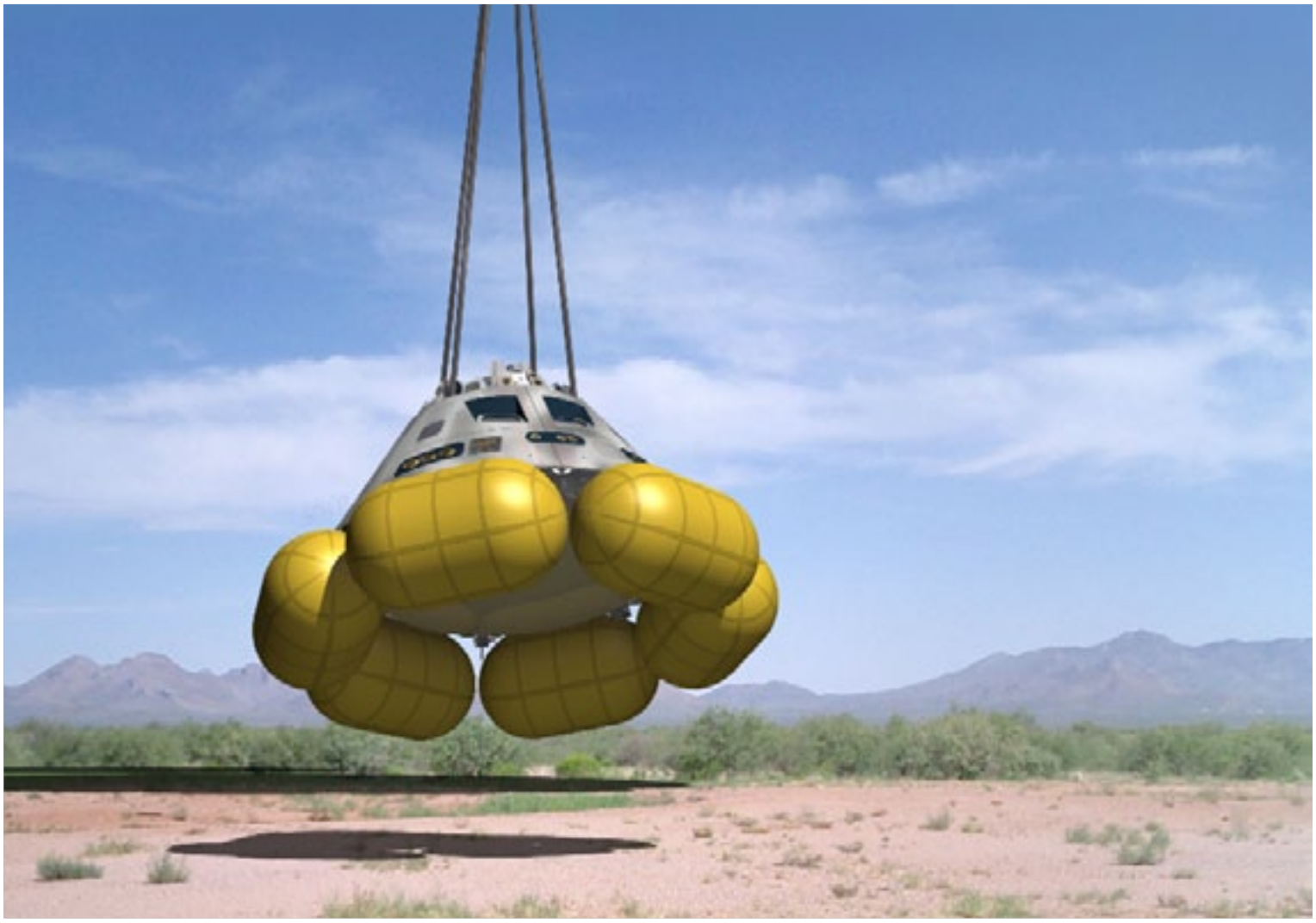
Recently, Orion went through an acoustic test at Lockheed Martin's Waterton facility just outside of Denver, Colorado, to simulate the noise conditions of a launch. We were on-hand to witness the test (look for the film on the next Engadget Show) and check out some of the gear being used to design and build this next-level spacecraft.

To perform the acoustic test, Orion got gussied up in its full launch garb,

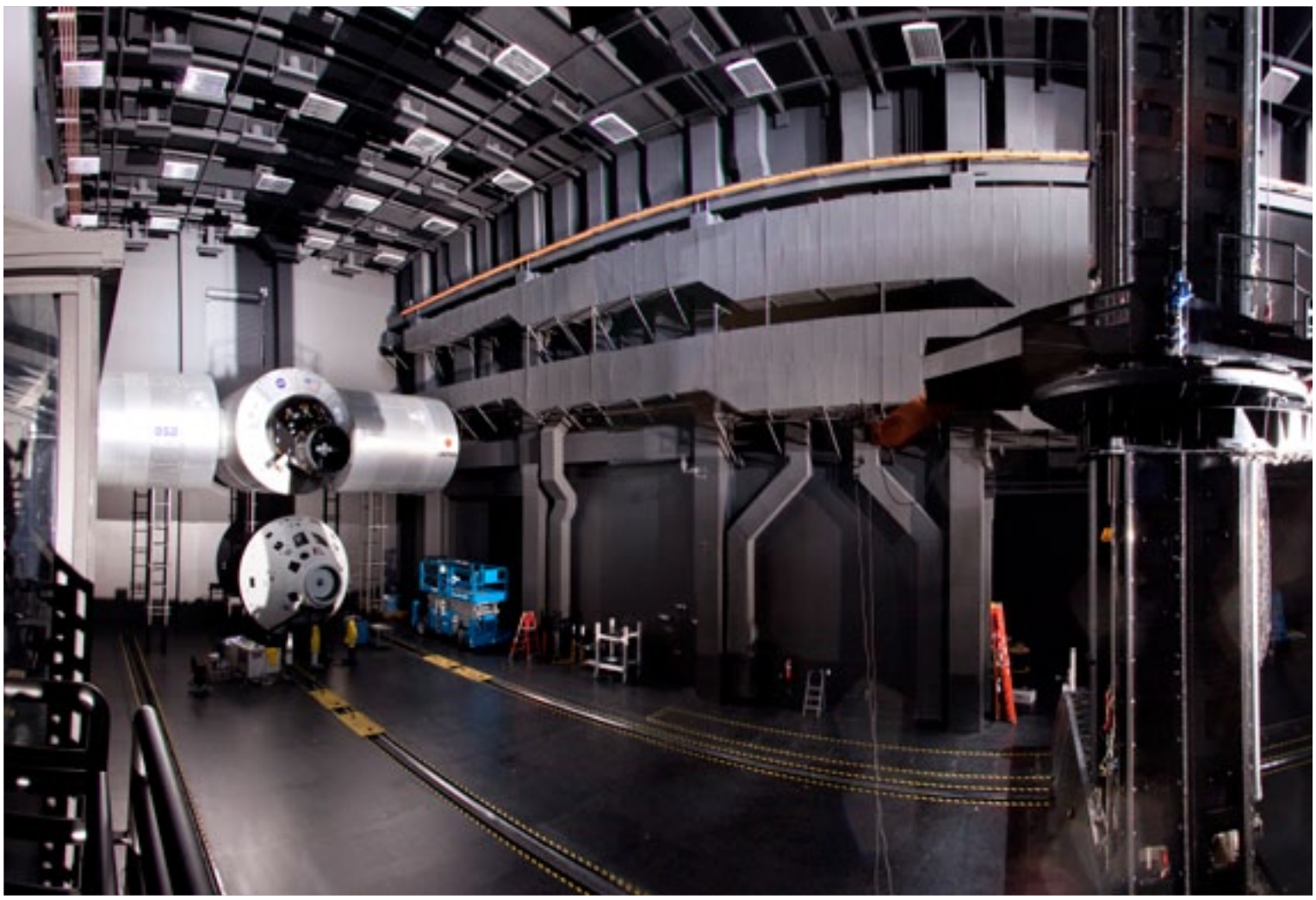
NASA's Orion is a multi purpose crew vehicle that looks similar to the Apollo capsules and is here to replace the venerable Space Shuttle. It's capable of taking us further into the cosmos than we've ever been — to asteroids, the moon, and even Mars.

meaning the five-story tall crew module and launch abort system were swathed in alabaster heat shielding. It was ensconced inside the sizable test chamber at Lockheed's Reverberant Acoustic Laboratory, surrounded by instrumentation to record how it would respond to the sound of rockets running at full bore, and then the chamber was filled with nitrogen to ensure accurate readings. The test itself sounded like an airliner passing close overhead. It was certainly loud, but there was a two-foot thick steel door filled with sand between us and the 150dB white noise bombarding Orion. We were told by Lockheed that the test was limited to 150dB — despite the fact that launch noises exceed 170dB — because that increase in volume would reduce their laboratory to rubble without some serious structural additions. The good news is,

SPACE PHOTO: NASA

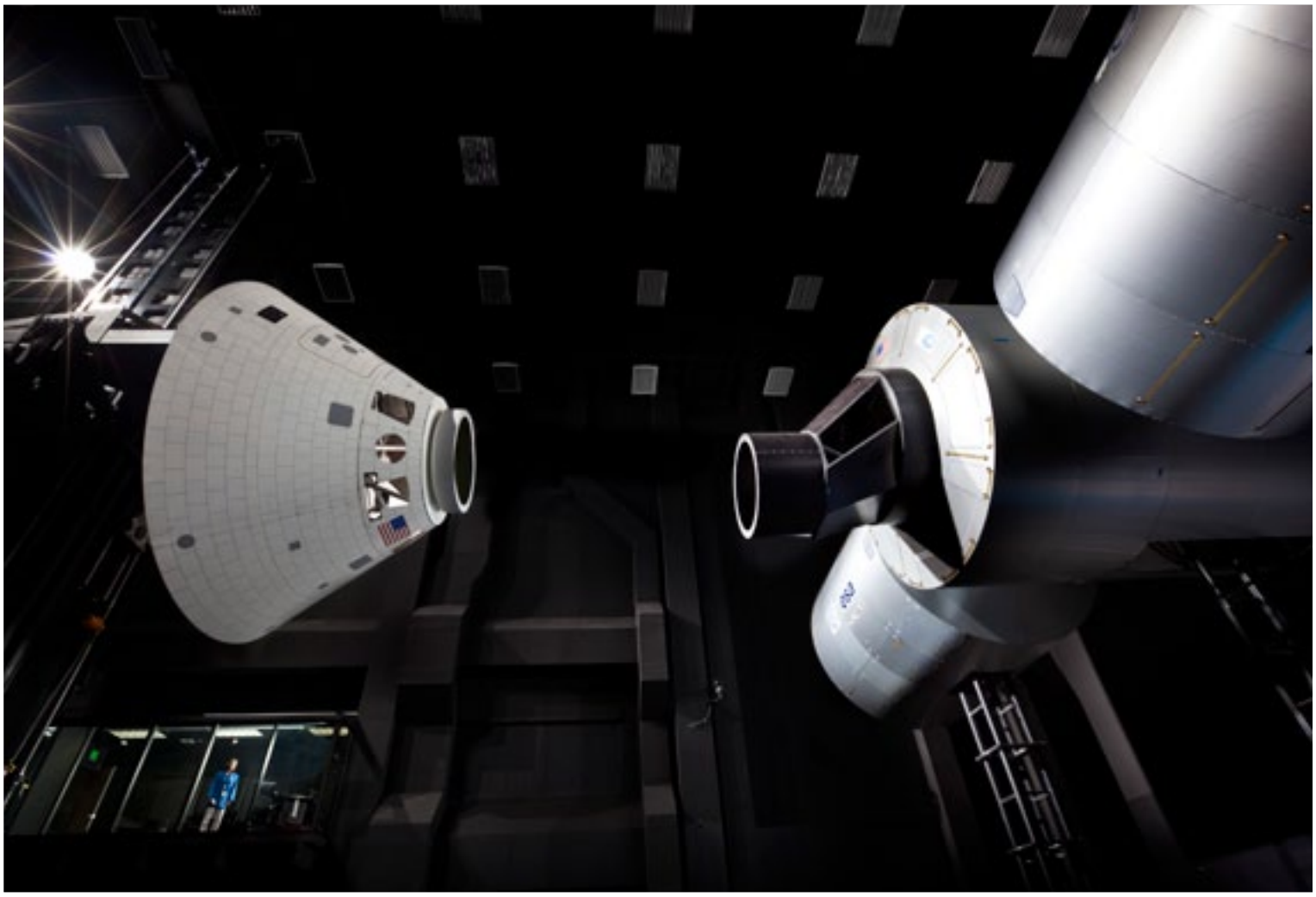


Parachutes do most of the work, but Orion’s got airbags to ensure the astronauts inside have a comfy landing.



The SOSC test bay, with the articulating base carriage on the right, and ISS and Orion capsule mock-ups on the left.

PHOTO: LOCKHEED MARTIN



Orion on final approach to the ISS -- only we're in Colorado, not outer space..

enough info is gathered from a 150dB test to extrapolate how the capsule will react come liftoff.

After seeing Orion in person, we got to tour the Space Operations Simulation Center (SOSC); a massive 41,000 square-foot facility meant to emulate the inky void beyond our atmosphere. The SOSC was built upon a unique geologic rock formation 1,700 feet thick and surrounded by sand. Constructing the center on top of that rock keeps it as seismically isolated as possible, which allows Lockheed to accurately simulate the stillness of space. Inside, the main attraction is a cavernous room painted matte black that houses powerful lights used to mimic the sun's unfiltered rays. There's also a huge six-degree-of-freedom motion base carriage with a robotic arm capable of maneuvering 1,000 kilograms of spaceship, sensors or other gear with extreme precision.

Currently, the room houses a full-scale mock up of the International Space Station's docking port, and while we were there, we witnessed a simulation of the Sensor Test for Orion Relative Navigation Risk Mitigation (STORRM). The simulation replicated the STORRM test performed on the second to last Shuttle mission (STS-134), and confirmed the SOSC's ability to accurately replicate the conditions of space operations. The STORRM package is an amalgam of cameras and sensors that will allow Orion to dock with the ISS or land on a foreign world on its own — no human input required, though an astronaut will have his hands on the control stick, you know, just in case.

After the SOSC, we toured Lockheed's

PHOTO: LOCKHEED MARTIN

There’s not a lot of room in the MPCV, as you can see.

This is the capsule encased in its heat shielding; black and white’s a good look.

PHOTO: LOCKHEED MARTIN

Orion under wraps: the capsule rides in style as it's ferried across the country.

PHOTO: LOCKHEED MARTIN

Collaborative Human Immersive Lab, or CHIL, for short (defense contractors do love their catchy acronyms, don't they?). CHIL is a virtual reality lab that allows engineers to design and modify Orion's parts for testing and validation without going through the expense of fabricating them in the real world. Using motion tracking and VR headsets, the folks building Orion can optimize assembly processes, so that those installing the various systems on the capsule don't get in each other's way. At its core, CHIL is an assembly ergonomics optimization tool. It makes sure that the mechanical elements of Orion will work well with the people who are putting them together. We donned the CHIL gear ourselves, and while we couldn't explore Orion's inner workings (state secrets and national security prevented us from doing so), we did get to poke around a simulated tank. The experience was somewhat disorienting, as the graphics are akin to what was cutting edge in the early 90s. But, as we examined the tank's tracks and weaponry virtually, we could definitely understand its usefulness in designing systems as complex as those found in Orion.

After seeing some of the facilities being used to build our nation's next-generation spacecraft, we were awed by the sheer scope and complexity of the Orion project. Orion itself is an amazing machine, but the gear being used to

design, build and test it is equally impressive. It's an astonishingly difficult task to develop a ship capable of taking man into deep space and returning him safely, which is why so much effort is being put into Orion's planning and construction.

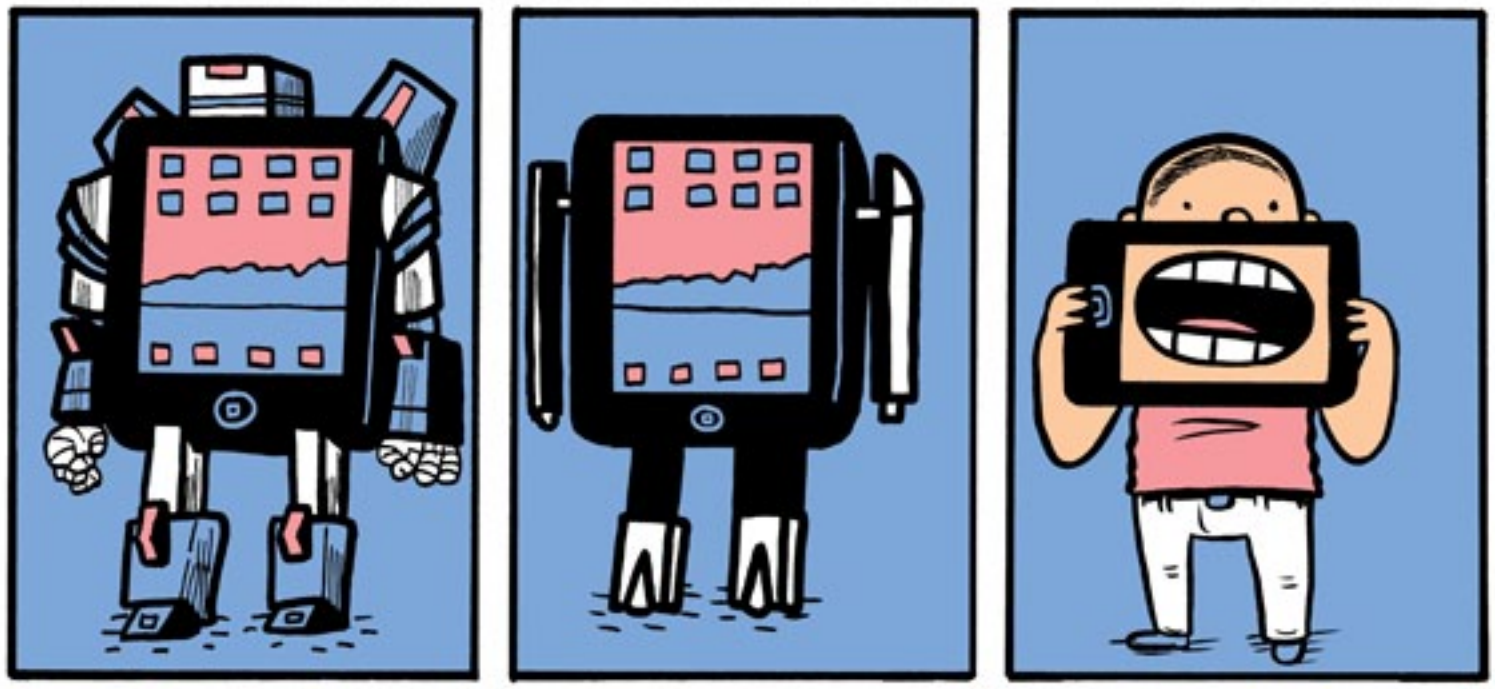
Once upon a time, Apollo allowed us to venture far beyond our terrestrial existence, and the time is rapidly approaching when Orion will take us further into the vastness of space than ever. The final frontier is calling, and with Orion's help, we'll be answering it soon enough.

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

PHOTO: NASA

iPad 3

LET THE RUMORS BEGIN



Transformer capabilities

Go-bot Capabilities (crappier version of Transformer)

Mouth Magnifier

Hoverboard (with wireless syncing)

Flippable e-pages

Switchblade (comic book sound f/x default)

the last word - Box Brown

engadget distro

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