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**th**  
Anniversary



# F1 to F12

Celebrating 12 years of Digit



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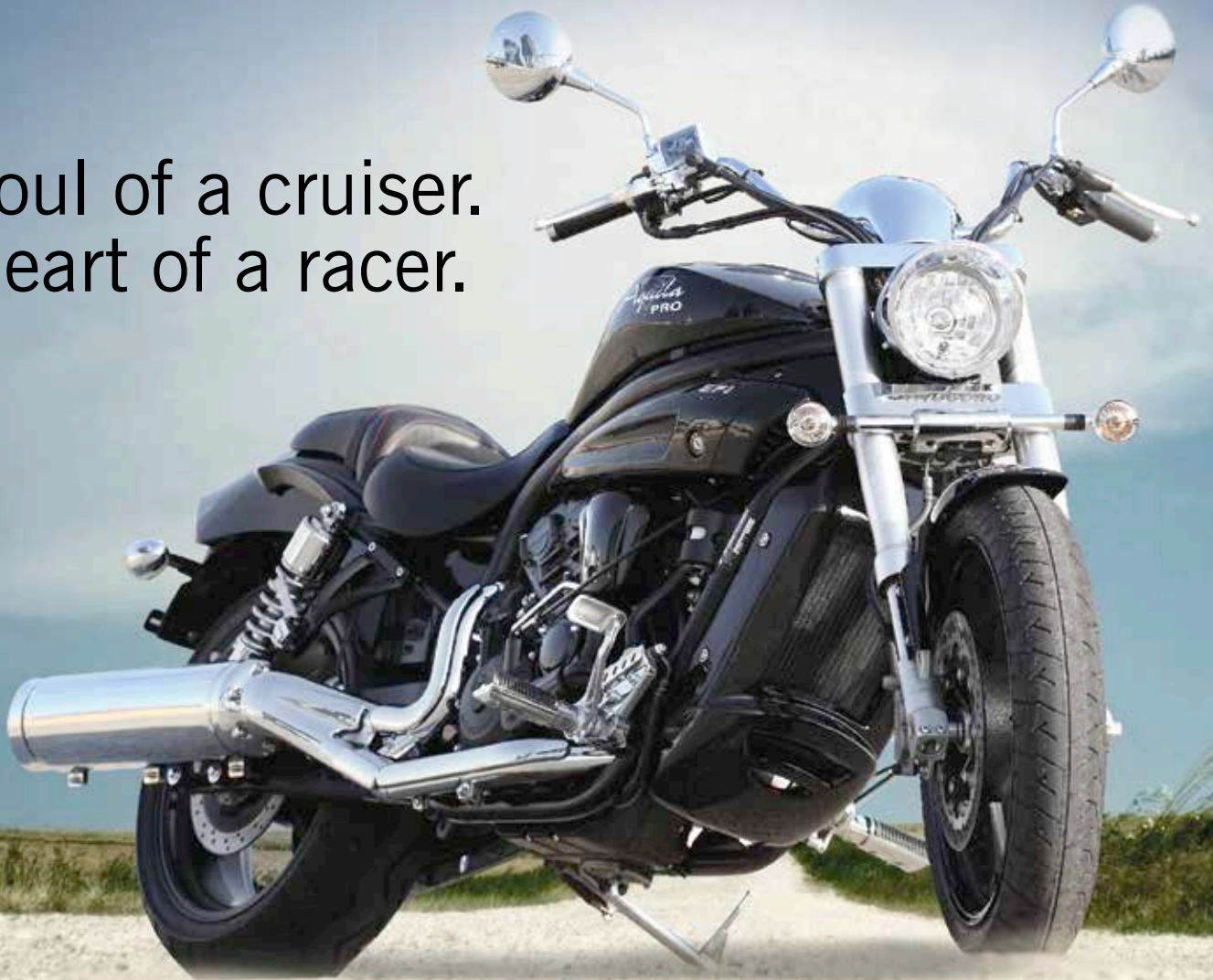


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# Function(al) Technology

For our twelfth anniversary, we wanted to continue the theme of using the number to signify something, because it might be some time before we can do that again. Numbers after 12 aren't really something people easily relate to – 10 is a decade, 12 is a dozen, but 13 to 19 are not really numbers that lend themselves to catchy themes. We'd have to wait another eight years till we got to 20 before we'd be able to really exploit numbers again.

However, 12 really did fit well this year for another reason: it's a fitting farewell (of sorts) to aspects of the keyboard, especially the function keys, which went from being super-important shortcuts to something we almost never use anymore. Technology changes, we change, our needs and wants change, and this change is the only constant.

What is technology really, and what does it do for us? Is it just an enabler, allowing us to do what we couldn't before? Is it a simplifier, that helps make tedious tasks easier and quicker to achieve? Perhaps technology is just something that helps us "function" better – at work, at home, in school, as human beings, as organic constructs prone to breakdowns... you get the drift.

Looking back at the 12 years of Digit thus far – while going through all the PDFs of the past issues (find them on the DVD) – apart from all the sentimental reminiscing that occurred, it was obvious how much technology has changed our lives. It was also obvious how much this magazine has evolved.

Back in 2001, the need of the day was information. People wanted to learn about this almost alien, yet wonderful thing called technology – the PC, the web and technology in general was something novel. The "function" of this magazine back then was clearly teaching you about technology, how something works, how to tell good products from bad, how to use them better, etc.

Of course, the primary objective of this magazine will always be to open your eyes to the "new" (and not always "improved"), but you have more advanced needs now. The function that technology plays in your life has changed, and technology itself is the one that changed it!

From the days when we'd look at a humble PC in awe, today all of us can interface with new technologies with ease. The latest phone with a

brand new OS that we've never used is not even a challenge anymore. Sure we might fumble a few times in the beginning, but we get used to it in no time. Is that because the technology has become simpler to understand and use, or is it because we've been exposed to technology for so long now that it's almost intuitive, and we learn quicker? A little of both is perhaps the reason, but the result of that is what's important – we no longer need to get in on the ground floor of a new technology to be able to use it effectively.

Take a simple function of commuting – what we did on foot became horseback riding, then the wheel brought forth the cart, followed by the automobile, then airplanes and finally space shuttles. Technology helped make it possible for us to travel thousands of kilometers in a few hours, yet it's also technology that reduced the very need to travel itself.

From having to travel to meet a friend who stayed far away, first we made it possible to write to him, then we reduced the time between responses by inventing the telephone and fax, then came email, video chats and finally social networking. Today, a lot of us are able to feel connected to people we haven't met face-to-face in years. We're also able to e-commute to work, be available anytime, anywhere... our functional need of being connected – to friends and to work – has never been better served by technology.

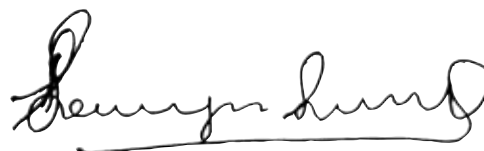
This is just a miniscule example of one of the thousands of ways technology has changed the way we function. The technologies and services that will win out in the end are those that best serve our thousands of varied yet important functions – meet people, learn something, pay bills, earn money, clean my room, help me live longer, snoop on friends, entertain me, expand my vision, give me ideas...

Put simply, this is what Digit's been doing over the past 12 years as well – ensuring that you always find the most functional path forwards, by being your technology navigator. Here's to many more years of collaboration between you and this brand we all love. Please keep the feedback coming – how else will we know how you function, and how we should function for you? 



**Robert Sovereign-Smith**  
Executive Editor  
[editor@thinkdigit.com](mailto:editor@thinkdigit.com)

**"The function that technology plays in your life has changed, and technology itself is the one that changed it!"**



Liked or hated this column?  
Write in to [editor@thinkdigit.com](mailto:editor@thinkdigit.com) and let me know your thoughts.

JUNE 2013

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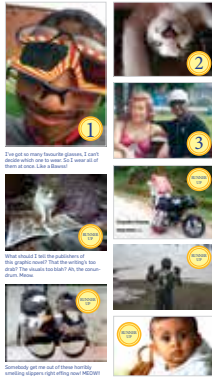
Sometimes you've announced the Digit Photography contest where we asked you to send us your best image in an effort to win a monetary prize. Here are the photos that won!

The theme was "The Funny Side of Life" and you to our call you were both, captured and sent in hundreds of photos full of fun, worthy moments.

How we present you the top 5 winners and 5 runner up!

Step 5 winners get 6 months subscription of Digit magazine and the runner up get 3 months subscription

So onwards to the next page minutes and have a few laughs :-)



Can you perhaps be a professional? Well, you can be a professional in the eyes of others. But the funniest thing is that you can be a professional in the eyes of your friends. There is a party in town, and you are the star of the show!

Look here and what do you see? A professional in the eyes of others. But the funniest thing is that you can be a professional in the eyes of your friends. There is a party in town, and you are the star of the show!

It's not that I'm a professional in the eyes of others. But the funniest thing is that you can be a professional in the eyes of your friends. There is a party in town, and you are the star of the show!

It's not that I'm a professional in the eyes of others. But the funniest thing is that you can be a professional in the eyes of your friends. There is a party in town, and you are the star of the show!

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- Anim8or
- Appetizer
- ArtRage
- Audacity Portable
- AutoHotkey Portable
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- CCleaner Portable
- Evernote
- Portable ExtractNow
- FileZilla Portable
- Portable Firefox
- Portable foobar2000
- Foxit Reader Portable

### Sponsored apps

Kaspersky PURE 3.0 (2 months trial)

### Games

- Cave Story
- MultiHero
- Trials Evolution demo
- Nitronic Rush
- Octodad
- Open Tyrian
- SCP Containment Breach
- Spelunky
- Battle for Wesnoth
- Wonderputt
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### Learn

Intel app development kit and tutorials

### Trailers

- Captain Phillips
- Dirty Wars
- Enders Game
- Monsters University
- RIPD
- Thor- The dark world and more...





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Published, Printed and Owned by Nine Dot Nine Interactive Pvt. Ltd. Published and printed on their behalf by Kanak Ghosh. Published at Bunglow No. 725 Sector - 1, Shirvane, Nerul, Navi Mumbai. 400706. Printed at Print House (India) Pvt. Ltd. R-847, TTC Industrial Area, MIDC, Rabale, Navi Mumbai 400701. Editor: Anuradha Das Mathur

**Disclaimer**  
 For every Digit contest, there will be only one winner, unless specified otherwise.  
 In the event of a dispute, the Editor's decision shall be final.

**PRODUCTS REVIEWED THIS MONTH**

**Bazaar**

- Samsung Galaxy S4
- HP 2000 - 2202 TU notebook
- Sone Xperia SP
- HP Officejet Pro 3620
- Converge: Rest and recharge
- ASUS Vivobook S550
- Nokia Lumia 720
- ZOTAC ZBOX ID89 PLUS
- ASUS GTX 670 DirectCU II Mini
- Sapphire HD 7790 Dual X
- BenQ L32-7000
- Corsair Obsidian 350D
- Circle Aura
- Intex Aqua Style
- SanDisk Ready Cache 32GB
- Corsair M95
- Fujifilm FinePix X20
- Kaspersky Pure 3.0
- Avast! free edition
- BullGuard Internet Security 2013
- Norton Mobile Security
- NVIDIA GeForce GTX 780
- Rapoo E9080
- CORsair M65

**Android Tablets**

- Acer Iconia B1
- Aoc MG 97DR-16 -9.7"
- AOC MG70DR-8 7"
- Asus FonePad / Nexus 7
- Asus Transformer Pad TF300 TG
- BSNL Penta T-Pad EDGE
- HCL Me Tab G1 / U2
- HCL Me Y3
- iball Edu Slide
- iberry Auxus CoreX2 3G
- iberry Auxus CoreX4 3G
- Intex ibuddy
- Intex ibuddy 3
- Ira Icon
- Ira Thing 2
- Karbons A37 TA-Fone/ Kommunicate 3G
- Karbons Smart Tab 10
- Lava E-Tab Xtron
- Mercury M-Tab 7
- Mercury mTAB StreaQ
- Micromax Funbook 3G
- Samsung Galaxy Note 800 / Tab2
- Spice Stellar Pad Mi-1010
- Videocon VT75C
- WickedLeak Wammy Desire II
- Zync Dual 7 / Quad 8



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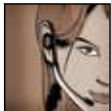
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ASUS recommends Windows 8.



**CG8270 (i7)**

<b>CPU</b>	: 3rd Generation Intel® Core™ i7-3770 Processor
<b>OS</b>	: Windows 8
<b>Chipset</b>	: Intel® H77
<b>Memory</b>	: 8GB DDR3
<b>Graphics</b>	: GT 640 3GB DDR3
<b>HDD Storage</b>	: 1TB
<b>Optical Drive</b>	: Blu-ray writer



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**CG8580 (i7)**

<b>CPU</b>	: 3rd Generation Intel® Core™ i7-3770K Processor
<b>OS</b>	: Windows 8
<b>Chipset</b>	: Intel® Z77
<b>Memory</b>	: 8GB DDR3
<b>Graphics</b>	: GTX 680 2GB GDDR5
<b>HDD Storage</b>	: 1TB
<b>SSD Storage</b>	: 128GB
<b>Optical Drive</b>	: Blu-ray writer



**CM6830 (i5)**

<b>CPU</b>	: 2nd Generation Intel® Core™ i5-2320 Processor
<b>OS</b>	: Windows® 7 Home Basic
<b>Chipset</b>	: Intel® H61
<b>Memory</b>	: 4GB DDR3
<b>Graphics</b>	: Integrated Intel® HD Graphics
<b>HDD Storage</b>	: 500GB
<b>Optical Drive</b>	: 24X SuperMulti DVD burner



**CM6731 (i3)**

<b>CPU</b>	: 2nd Generation Intel® Core™ i3-2120 Processor
<b>OS</b>	: Windows® 7 Home Basic
<b>Chipset</b>	: Intel® H61
<b>Memory</b>	: 2GB DDR3
<b>Graphics</b>	: Integrated Intel® HD Graphics
<b>HDD Storage</b>	: 500GB
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**Buzz**

We tell you everything you need to know about the Xbox One in one place

**Twitter login verification**

Twitter has unveiled a two-factor login authentication system to protect your account in a better way using SMS. <http://dgit.in/120DI5H>

✉ I'm a big fan of Digit. I've been reading it since the past 5 years or so. Digit has changed a lot since then and that too in a great way. World View is great and so is the new Dgt magazine. And this month's Fast Track to Mankind's Top 100 Inventions was the best Fast Track I've ever read. I'm going to preserve it to read it again and again. Also, the news snippets you add on almost every page are fun. But there are also some kinks which you can iron out.

1. You have two Q&A sections – one in the Toolbox section and one in the Agent 001 section. Why not have just one? I know the Agent 001 Q&A is for buying new components, but still, it will make reading and exploring simple.
2. This month's Agent 001 was meant to be about which graphics card to buy. Instead of this, Agent described how he went and what he bought (though it was good in its own way). You should have elaborated on what to look for when buying a graphics card (such as number of cores) or which to buy in what budget range.

Also, in last month's Agent 001 about overclocking, you built a rig costing more than one lakh for overclocking. There are also other good and cheaper options such as the AMD FX series or Intel Core i5 3570k instead of Core i7.

3. I suggest you put a user article section. Like you give a topic every month and accept views or an article from users on that topic. You select the best article/view and print it.
4. The snippets are great, but sometimes they're repeated on different pages. I really appreciate your magazine and the work you put in. Digit is really a great magazine. Thank you for bringing it to us all.

*Siddharth Pathak*

- 1) You've answered your question there yourself. If you notice we have sections in the magazine – Agent Q&A comes under Street Smart section and the Toolbox Q&A comes under the Toolbox section. Toolbox Q&A is about troubleshooting issues and Agent Q&A is about buying decisions. Although both are in a Q&A format, the purpose served is different for each.

**Feedback for the May 2013 issue of Digit**

- 2) Agent001 is part of the Street Smart section, so it involves actually going to all the electronics shop to get a market reality. Agent001 is basically Digit personified and the idea is to make gadget buying an interactive task, so Agent001 is written in such a way that it reminds you of talking to your friend about buying gadgets. Maybe we fell short when it came to elaborating on the things to look for in a graphics card, but we'll avoid it in the future. We'll surely do a budget overclocking guide soon.
- 3) If you look at our Community page towards the end of the magazine, we do print user discussions from our forums and Facebook pages. As for a dedicated user article section, that's a good idea. We'll discuss it in our next edit meet.
- 4) We're sorry about that and will be more vigilant going forward. Thanks a lot for your feedback and keep reading Digit.

*Nimish*

✉ I'm a reader of Digit and I love your magazine. I would love to write articles for your magazine, and if you have some space for me in your precious magazine please allow me to do the same. I'm a technology lover and don't need a penny for the articles. Awaiting

your reply, following which I'll send you articles via this email.

*Pranjal Pandey*

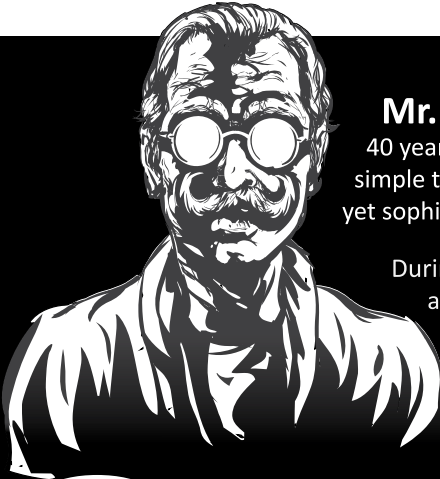
It's good to know that you'd like to write for us. We do take submissions. Mail across your write-up to [editor@thinkdigit.com](mailto:editor@thinkdigit.com). If we like what we read, it will be printed in the magazine and you'll be paid as well.

*Siddharth*

✉ As a member of the Digit Squad, this is the first time I'm writing to the most awesome techies in the world. Before I make a suggestion, I'd like to make the reasons for the suggestion clear. Techies are often approached with troubleshooting problems or how-to queries. If you check the forum too, it's well and clear. Many of my friends and I have been saved by the Fast Track to Troubleshooting Your PC (March 2006). It's a treasure trove!

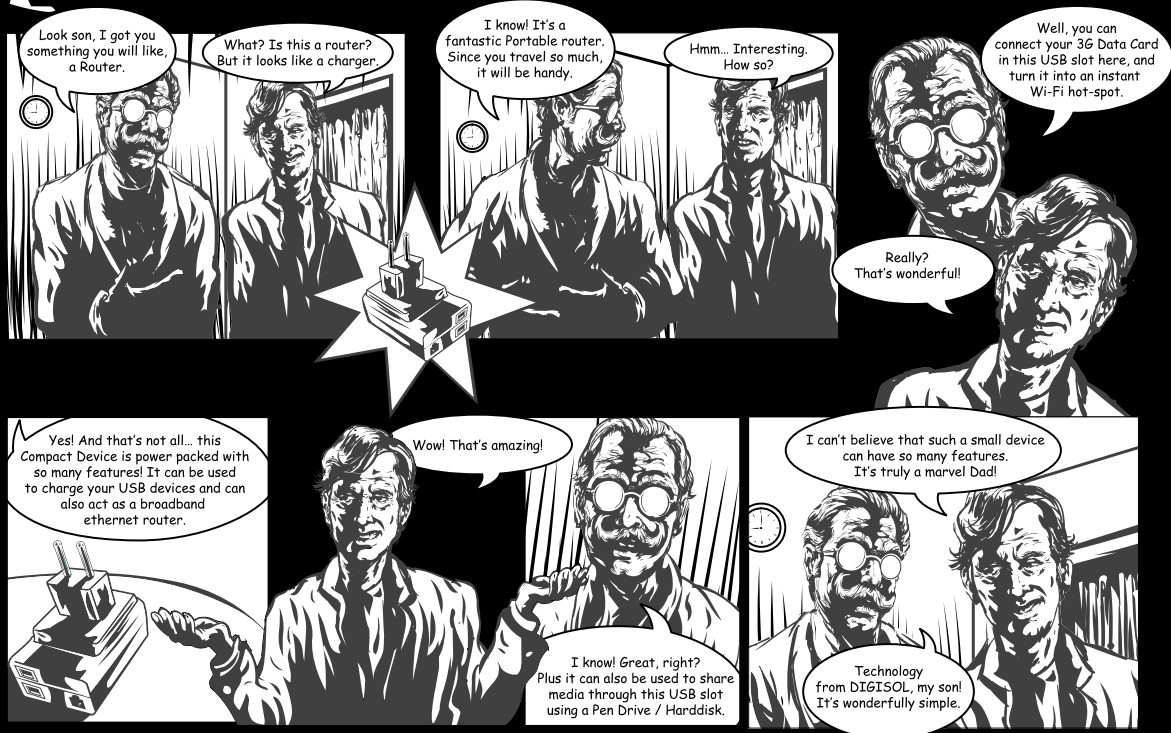
So it would be a good idea to deliver the basics to the readers in a way similar to Digit 101 – Motherboard (October 2012). I still have that fantastic piece of paper that described all the aspects of motherboards. I was looking forward to more informative IOs, but couldn't find any.

It would be great if you could provide a poster in each issue explaining the basics for things such as motherboards,



**Mr. Dutt** is a 65 year old, retired Brigadier. He has a son, 40 years old, staying abroad, and a 15 year old grandson. A man of simple tastes, and stern disciplines. He likes everything subtle, yet sophisticated.

During his son's business trip, Mr. Dutt gifted him a **DIGISOL 3GB Broadband Router & Media share**. Being an Army man, he doesn't purchase something without understanding it competely. He likes technology, which is simple yet convenient.



GENESIS

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- **USB Port** to charge your Electronic devices.



## 3G Broadband Router & Media share

Know more about this product at [wifi.digisol.com](http://wifi.digisol.com)

## AX8 Race and AX9Z Race

Indian mobile manufacturer Maxx Mobile has launched two Android-based smartphones, the AX8 Race and AX9Z Race for ₹8,875 and ₹12,375 respectively.

## 5G Wi-Fi combo chips

Broadcom Corporation has introduced its first 5G Wi-Fi combination chips targeted at entry level consumer devices – PCs, notebooks, tablets and smartphones

### LETTER OF THE MONTH

✉ A very warm hello to my favorite magazine. Before writing anything else, first of all, I'd like to thank you guys for transforming a shy little kid into a technical geek and transforming my outlook towards technology since over more than a decade. This is my first letter to you in the last 12 yrs. And yes, I've been associated with you guys, though as a passive admirer even before you were christened as 'Digit'. I must say that you've grown by leaps and bounds over the decade, and with you I've grown up from being a shy little kid to a doctor – which my friends still doubt I am. Not because of my lack of expertise in the medical field, but due to my over-abundance of knowledge in the technical field. All this is due to you guys.

Now, not wasting more of your time, here's the link to my Facebook album: <http://goo.gl/pqSeX> Digit's 'My



Collection Contest' on Facebook came at an opportune moment, as I was already thinking of taking pictures of my collection and posting it to you on your anniversary. Now I stand to win a Swiss knife too along with it :)

Thanks for being an important part of my growing years.

*Satwik Sharma*

It feels really wonderful when we hear from readers who have been reading Digit since we started. We have all grown together and it is only because of loyal readers such as yourself that we are motivated to keep doing better. Your collection makes us quite emotional specially as Digit enters its 12th year this month. We really hope you like our 12th Anniversary issue. We would also like to thank you for sticking with Digit for so long.

*Robert*

mechanical keyboard/mouse and GPU components with exploded views where possible. It's just a suggestion, and I don't know how many will like it but it will help a few for sure.

*Dileep*

📌 Your suggestions are quite interesting and we will surely discuss them in future editorial meets.

*Jayesh*

✉ I've been a Digit subscriber for the past three years, and every month I read the magazine from start to finish. However, I've never written to you guys and had to write this time because of Digit's heart-warming May issue. The main reason for my email is the cover page design for 'The Great Green Lie'.

The font used for the cover story on the front page is a mind-blowing creation. The burning and smoke effect makes the pages look like they're actually

ablaze. It shows the reality of this world. It's not only the design that's good; the cover story is also fabulous and touches my heart.

In the articles, you very well describe the main issues related to going green in the world today and how the public wrongly feel that they're living in a safe world.

Because of your excellent cover story and design, I felt I should write in at least once with my sincere praise. Keep it up dear sir.

*Ashutosh Dave*

📌 Thanks a lot for your kind words. We'll make sure to send your message across to our design team. To be honest, it's not every day that we receive email about our cover page, behind which there's a hardworking design team. We're really glad when people their efforts.

*Robert*

✉ Your story about what's wrong with Windows 8 is drivel. What you've done is overemphasise on the lack of a Start menu, which you've been used to since about a decade and half.

What you're trying to say is plain dumb. Tap on the start screen and you'll find a big icon named PS. Launch it. It's easier than clicking Start and looking for PS in the All Programs menu.

Yes, touch is the future unless there's a much better way to navigate the GUI. The bad thing about Kinect is you can't use it up close to your PC, where you normally get most of your work done. When you're working close to your screen, touch is a much better option than dumb gestures.

What Microsoft is trying to do is unify both, desktop computing and mobile computing. So you can have the same seamless experience across all the devices. The unignorable fact is that Windows 8 is much more intuitive than any of the previous operating systems. Finally those full-screen apps let you focus on one thing without any unwanted distractions. Bringing back the Start menu to Windows would be like taking back the PC to the dark ages by a decade or so.

Everything transcends and the death of beautiful things doesn't mean that they're gone forever; it just means that something more beautiful takes their place. The entire computing industry works this way, and if you cling on to the old school way of doing things, you just can't enjoy something more beautiful. And my final words: there's nothing wrong with Windows 8 but there's something wrong with your head.

*Bhavasagar*

Now, now; name calling is uncalled for. You're entitled to your opinion, which is why we're publishing this letter, but you should know that Windows 8 has been a failure for precisely the very reasons that were listed in the story. Microsoft has indirectly admitted this by announcing the Windows 8.1 update. Besides, if you notice in your mail, you used the important word "tap" which we cannot do on a desktop, and thus the article. Sure it's OK for the tablet, but as a desktop OS, it leaves a lot to be desired. And the world agrees.

*Robert* 📌



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<b>CPU</b>	Intel® Core™ i3 3220 Processor	Intel® Core™ i3 3220 Processor	Intel® Pentium® G645 Processor
<b>OS</b>	Windows 8	Windows 8	Windows 8
<b>Memory</b>	6GB DDR3 at 1600MHz	4GB DDR3 at 1600MHz	4GB DDR3 at 1333MHz
<b>HDD</b>	1TB HDD	500GB HDD	500GB HDD
<b>Display</b>	21.5"(54.6cm), 16:9, Full HD 1920x1080, LED-backlight	21.5"(54.6cm), 16:9, Full HD 1920x1080, LED-backlight	20.0"(50.8cm), HD+ 1600 x 900, LED-backlight
<b>Graphics</b>	NVIDIA® GeForce GT610M 1GB	Intel® HD Integrated Graphics	Intel® HD Integrated Graphics
<b>Touch</b>	Multi Touch Screen (10 Fingers Touch)	Multi Touch Screen (10 Fingers Touch)	Non-touch Screen
<b>Keyboard / Mouse</b>	Wireless Keyboard & Mouse	Wireless Keyboard & Mouse	Wireless Keyboard & Mouse



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**Disclaimer:** "Apps from Windows Store; vary by market".



## Happy Birthday YouTube!

This month our favorite, YouTube turned 8. Let's have a sweet cake and say "Happy Birthday, YouTube!"

## About.me goes premium

It won't be available for free anymore. Now you can add your own domain name for US \$4 per month. Good deal, eh? What do you think? <http://www.about.me/>

# Xbox One: All You Need To Know!

The Xbox reveal event hosted by Microsoft indeed lived up to its name, where the company showed off the console in its entirety, along with showcasing some of the amazing new features it will bring to the table.

Abhinav Lal

[abhinav.lal@thinkdigit.com](mailto:abhinav.lal@thinkdigit.com)

## The Xbox One: Designed to Kill

The Xbox One has been completely redesigned inside-and-out. The console looks pretty much like a black box, but with elegant cuts and fins for ventilation, and while it is slightly bigger than the previous generation Xbox devices, Microsoft says it runs at least four times quieter. The Kinect sensor and the controller too have received a redesign, with the sensor also going for the clean, industrial look, very similar to the console itself.

The controller, on the other hand, still retains its basic layout and shape, but has received many tweaks. The D-pad has improved, the joysticks now have a nice textured finish and the XYBA buttons have a new look. The real noticeable changes, however, are the fact that the battery compartment is now integrated into the controller, meaning no more awkward humps at the bottom. The other major change is that the new controller includes not two, but four vibration motors.

## Hardware: Next Generation on Steroids

In an attempt to bring it at par with PC gaming, the first thing to change is the fact that the console is now running on x86 architecture (64-bit), meaning all our Xbox 360 games are



effectively incompatible with the new console. In exchange, Microsoft is offering some serious power under the hood.

For starters, the paltry 512MB of RAM that graces our current Xbox 360 models has been swapped out for a face-melting 8GB of RAM. There's a custom built AMD SoC on board that packs an 8-core CPU along with a DirectX 11.1 capable GPU. In order to keep the insides as slim as possible (we're assuming for better airflow and lower operating temperatures) and minimise parts, the 40 nanometre SoC features the CPU/GPU chip, the memory, the controller logic, the DRAM, and audio processors all built onto it. In comparison, this much horsepower is spread over two 90 nanometre chips on the Xbox 360. There's also a 500 GB hard drive and a custom built Blu-ray drive in there.

Microsoft hasn't revealed much about ports and connectivity except that it will sport an HDMI in and an HDMI out port. All USB ports will be USB 3. There's a redesigned Kinect sensor port as well, making us feel that the existing sensor will not be compatible with the new console. For internet connectivity, the Xbox One has the usual gigabit Ethernet port, along with three Wi-Fi (802.11n) antennae.

## Big Brother, the New Kinect

The new Kinect sensor makes the old one look like a severely under-developed piece of tech. We start with the camera itself, which has gone from a resolution of 640x480 pixels in RGB colour space to full HD (1920x1080) in the RGB space. What this allows the sensor to now do is sense even the minutest of movements. It

can tell when you smile, when you rotate your wrists, it can measure the depth of your movements to a much finer degree, and for all the fitness enthusiasts, it can even monitor your heart rate. It also recognises the new Xbox controller and syncs player profiles accordingly, apart from resuming game you were last playing from where you left it off. The new Xbox One console will ship with the new Kinect sensor, instead of being a separate, expensive accessory.

## An all-in-one console for your home

It was very clear from the very beginning that Microsoft was setting out to create a device that would soon become a permanent and necessary fixture in everyone's living rooms. While the Xbox 360 fulfilled that role rather beautifully, the Xbox One takes it to a whole new level. Remember that HDMI In port we mentioned earlier? Yes, that is essentially to take in cable input, instantly turning your gaming console into a DVR box. Microsoft mentions that the cable capabilities are limited to certified set top boxes, so whether it will work with our Indian providers such as Tata Sky, Airtel, Dish TV etc., is still not known. Regardless, there is a Blu-ray drive built into the console this time, so you can go through your movie collection on the Xbox One at ease.

For more details about the Xbox One, refer to our online coverage (<http://dg.in/18hnmnV>)!



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**Mobile Watch**

Affordable quad-core smartphones, announcements from BlackBerry as well as some eye-candy from Nokia and more...

**Security Watch**

A roundup on the risks and preventive actions from around the globe that are relevant to safety and online security.

# Globular Clusters

A lot has happened in the logosphere since we last met, from interesting partnerships and acquisitions, to new products and services being revealed by some of the biggest names in the business.

## Croma and Groupon Partnership

Croma and Groupon have announced a partnership that will certainly warm the hearts of those who are always on the lookout for gadgets deals. The partnership commences with the launch of a special micro-site, [gadgets.groupon.co.in](http://gadgets.groupon.co.in) which will feature deals on smartphones, tablets, laptops and cameras. Croma is a leading electronic retailer in the country, from the house of Tatas. Groupon is a leading player in the daily deals business.

On day one, we did notice some interesting schemes. One of them is the Apple iPad 2 (64GB – Wi-Fi) available for ₹26,500, and this version usually retails for around ₹30,000 in stores. Another is the Toshiba Canvio portable hard drive, 1TB with USB 3.0, retailing for ₹4,499. This drive, in most stores, retails for ₹5,500. Over time, we expect the variety of products to become wider and the deals to become even better, and will hopefully be calculated on market prices and not the MRP.

## Outlook.com gets Skype

Skype has been gracing Windows 8 Pro and RT for some

time, including the Windows Phone 8 OS, and finally, last month, it is expanding its reach to web services. Skype just got released as a web-plugin for Outlook.com integration, but only in the U.K.

Skype for Outlook.com is currently only available in the U.K., with U.S and Germany getting the feature over the coming weeks. Globally, the feature is set to be available by



“summer,” which could be as late as August. Skype for Outlook.com requires a one-time download of a plugin, which is available for the most recent versions of Internet Explorer, Chrome and Firefox. Users can connect to Outlook.com using their Microsoft account. People who already have existing Skype accounts can link it to Outlook.com, which will allow them to add their Skype contacts to the email service. The process seems a little complex, but once the corresponding accounts are all linked together, using the features is suppos-



edly seamless. Let's hope that this solution is all that it's hyped up to be.

## YouTube subscription announced

Google has officially launched its much talked about paid video subscriptions service for YouTube. Google says it's currently a “pilot program” with subscription plans starting at 99 cents a month. The paid channels are currently being offered with 14-day free trial and could be available at discounted price if user chooses to subscribe for a year at a time.

YouTube's paid video subscriptions service currently features 53 channels, featuring content from HDNet, UFC and the PGA Digital Golf Academy. Some of the subscriptions are priced as high as \$9.99 a month. Once you have bought a subscription to a paid channel, you'll be able to check out videos on any device.

## LinkedIn now at over 20m users in India

LinkedIn's subscriber base in India has gone past 20 million. The company says it has grown by 500 percent since it kicked off India operations in November 2009. The pro-

fessional networking service had hit 10 million users in the country in June 2011.

India's 20 million subscribers account for about 9 percent of LinkedIn's global subscriber base at 225+ million. The U.S. continues to be top market for LinkedIn with a subscriber base of over 74 million.

“The growth of our member base and clients in India over the last few years is a testament to the value we are adding to our members' lives every single day. And that is the result of the disruptive power of the LinkedIn platform and the passion of our people,” says Nishant Rao, LinkedIn India's Country Manager.

## Yahoo's Tumblr Acquisition, Flickr Revamp, Twitter Partnership

Yahoo has been undergoing some nice changes lately under the leadership of Marissa Mayer. From revamping Flickr to introducing a new weather app for iOS, the company has been doing a good job with breathing new life into existing services, and today, they have announced a new partnership that should extend the endeavour. Yahoo and Twitter have announced





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## App Watch

We look at the myriad changes in the world of mobile and tablet apps, since we met last month



## Chrome 27

Chrome 27 is finally here, supporting FileSystem API for helping users sync their data to Drive. Download and install it on your system. <http://dgit.in/LhRFTE>



a partnership which enables users to see tweets in their Yahoo! newsfeed.

What Yahoo and Twitter want to deliver isn't just a barrage of Tweets in your feed, for that's what Twitter is for. Instead, you will only be seeing selective tweets based on your topics of interest. The Tweets making their way into your Yahoo! Newsfeed will come from various sources such as sports, movies, music, business and any other topic of news you could possibly think of. The Yahoo! newsfeed Tweet-integration will start rolling out to US users first, showing up in both their desktop and mobile versions of Yahoo. The rest of the world is going to have to just wait for a little while.

Coming to the Tumblr acquisition, we learnt that in May, Yahoo paid \$1.1 billion to acquire New York-based blogging site, Tumblr. Tumblr was founded by David Karp in the year 2007 in his mother's apartment in New York. Karp was just 21 years old back then, and within a fortnight his service had 75,000 users. By January 2012 it reached a figure of 42 million. There are about 110 million blogs on the site as of today and investors such as Sir Richard Branson have invested \$125 million in the company. Marissa Mayer along with the Board of Directors have agreed that it will let Tumblr function as an independent business.

Elaborating on the Flickr revamp, the new Flickr is quite different from the old, at least at first glance. The first thing that hits you is a revamped UI and a jaw dropping number of new features, all built and running on the trusted user experience that made Flickr so popular. If you're wondering what the new Flickr is all about, here's the lowdown on the changes.

Flickr is now offering 1TB of storage space to all users, regardless of what sort of account you hold or have held. They've even put up a real fancy meter to figure out how many photos you can cram onto your allotted space given the resolution of each image.

There are no more pro accounts on Flickr. Since there aren't any more paid accounts on Flickr. The site throws up ads in between the images. It's a rather jarring visual break when looking at the slick interface that Flickr has designed. That might be a small price to pay for that storage. If you want an ad-free experience, you will need to shell out \$49.99/year. For



more details, refer to our online coverage (<http://dgit.in/16Jpd7A>).

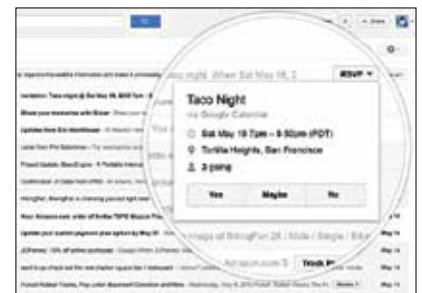
## Google I/O 2013

At the annual Google I/O event, the search giant announced a bunch of new offerings including a better music service, improved maps, Hangouts and more. The company introduced Google All Access, a service that will put together all the songs that you already have in your cloud storage along with millions of other tracks available for streaming for a monthly subscription fee of \$10.

By doing this, Google plans to give other competing online music subscription streaming sites like Spotify a run for their money. The service has been available in the US since mid-May, and is expected to roll out in 12 more countries where Google sells music online, including U.K., France and Germany, Australia and New Zealand and more. There is no information on when the service will be available in India.

Google is also adding a whopping 41 features to its social networking site, Google+. There is a new photo-managing tool making an appearance in the service. All users need to do is upload a bunch of photos and Google will automatically reject the ones where people aren't smiling or the image is blurry. Users now have 15GB instead of 5GB storage for full resolution images on the social networking account. Google also announced that Gmail will be receiving Quick Action Buttons, which should make going

through your inbox a whole lot simpler. The Quick Action buttons are designed to get you through your inbox a lot more efficiently and are designed to work with certain types of emails/content. For example, emails that require an RSVP would get the "Yes", "No, and "Maybe" Quick Buttons which will pop up when you hover on the email. Google also said that they would expand this to show information such as flight information or show ratings for restaurants you may have visited or plan to visit.



Along with Quick Action buttons, Google's also integrated its Wallet service with Gmail, making it a lot easier to pay for services and transfer money to contacts. The option is only available to those who have a Google Wallet account (which must be linked to your bank account, or have Google Wallet balance). The feature, as of now, will only be rolled out to American Gmail account holders over the age of 18 years in the coming months.

For details about what all Google unveiled at I/O 2013, refer to our online coverage (<http://dgit.in/10sqCul>).

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**Gupshup Cricket Icons**

Cricket lovers, have your share of fun during the current season of cricket using "Cricket Icons" launched by Gupshup Messenger. <http://dgit.in/GupShuP>

**Yahoo! acquires Tumblr**

After the tons of rumors and guesses, Yahoo! finally acquired Tumblr for \$1.1 billion, promises "not to screw it up" <http://dgit.in/19Juwj0>

# Market Mutability

Affordable quad-core smartphones made a splash this month with lot of local players announcing such phones as well, BlackBerry had some announcements, Nokia gave us some eye-candy with its newest Asha phone launch and much more...

Abhinav Lal

[abhinav.lal@thinkdigit.com](mailto:abhinav.lal@thinkdigit.com)

**T**he biggest India launch in recent times has been that of the Samsung Galaxy S4 at ₹41,500! However, a lot of other developments this past month have made waves in the mobile space. The biggest of these is the announcement and launch of affordable quad-core devices from major international manufacturers such as Samsung, Panasonic, and Acer, apart from a bevy of such devices from domestic manufacturers.

There were other revelations in the mobile space this past month, such as Nokia's new Asha OS and Lumia 925, BlackBerry's Q5 and BBM for Android/iOS, and Jolla's unveiling of the spanking new Sailfish OS and phone, which is as yet unnamed.

## 'Affordable' Quad-Core Smartphones

Panasonic launched its P51 dual-SIM Android smartphone in India in mid-May, based on Jelly Bean. Apart from dual-SIM (WCDMA-GSM), the biggest USPs of the Panasonic P51 is the bundled capacitive stylus and handwriting recognition support, its large 2,500 mAh battery, and its 5-inch IPS HD (1280x720 pixels) display. It will also ship with a smart magnetic flip cover. The P51 has been priced at ₹26,900.



Samsung Galaxy Grand Quattro

The Panasonic P51 runs on a 1.2 GHz quad-core processor (the MediaTek MT6589 chipset we've been seeing in the recent budget quad-core handsets), coupled with 1GB of RAM. It bears 4 GB of built-in storage, expandable up to 32GB via microSD card. Weighing in at 135 grams, with a thickness of 8.5 mm, the P51 features an 8MP autofocus camera with LED flash, and a front-facing 1.3MP camera.

Samsung also announced the launch of the Galaxy Grand Quattro in India. The Galaxy Grand Quattro is powered by 1.2GHz quad-core processor, 1GB of RAM and Android 4.1.2 (Jelly Bean) preloaded. The phone has a 4.6-inch display with a resolution of 480 x 800 pixels. There is a 5MP rear camera onboard as well. Sam-

sung says the price of the 8GB version in India is ₹17,290, and it is already retailing on Samsung's own online store for ₹16,900. Speaking of storage, the Quattro has a memory card slot as well. A lot of the additional features in the Quattro are the ones seen on the higher-end Galaxy range of smartphones, including Easy Mode, Smart Alert, and Motion UI gesture control.

Acer also entered the budget quad-core smartphone race with the launch of the Liquid E2 in Europe, and is expected to hit India soon, priced somewhere between ₹15,000 and ₹20,000. The Liquid E2 will run on the MediaTek MT6589 chipset, with the quad-core 1.2GHz CPU, and 1GB of RAM. It has 4GB built-in storage expandable up to 32GB via a microSD card. The rear of the Acer Liquid E2 has an 8MP AF rear camera with an LED flash and a BSI sensor. The front of the smartphone has a 2MP camera. The display is 4.5-inches with a qHD resolution. A dual-SIM variant will also be available.

As for the smaller, domestic manufacturers, we saw a lot of affordable quad-cores being launched in India, such as the Lava Iris 458q for ₹8,999, Gionee Elife E3 for ₹14,999, Micromax Canvas Doodle A111 at ₹12,999, Celkon A119Q Signature HD at ₹12,499, Xolo Q700 at ₹9,999, and Karbonn S2 Titanium at ₹10,790.

## BlackBerry Announcements

In the beginning of May, the Canadian smartphone company started to roll out the first major BlackBerry 10 OS update, v10.1. While BlackBerry has not released a detailed changelog, we know from previous reports that the new BB10.1 update would bring improvements in PIN to PIN messaging, HDR stills functionality, an enhanced BlackBerry World store, new help demos and walkthroughs, APN editing, the ability to turn off alerts for particular apps, text highlight feature in green, and more.

BlackBerry Live 2013 had some interesting announcements, such as the BlackBerry Q5, a cheaper Q10 device, with a full physical keyboard and a 3.1-inch touchscreen display. The good part is that the Q5 is targeted at emerging markets and effectively India should be seeing



BlackBerry Q5

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## Microsoft's Glass?

Microsoft has filed patent for technology that could rival Google's Glass.  
<http://dgit.in/14nz6DT>



## Budget iPhone next

The new iPhone could be an attempt to make it affordable  
<http://dgit.in/10ezd0L>

shipments soon. The Q5 will be available in various colours as well: red, pink, black and white.

The biggest announcement was that BBM will roll out on Android and iOS within the next few months. "For BlackBerry, messaging and collaboration are inseparable from the mobile experience, and the time is definitely right for BBM to become a multi-platform mobile service. BBM has always been one of the most engaging services for BlackBerry customers, enabling them to easily connect while maintaining a valued level of personal privacy. We're excited to offer iOS and Android users the possibility to join the BBM community," said Andrew Bocking, Executive Vice President, Software Product Management and Ecosystem, at BlackBerry.

BlackBerry also announced BBM Channels, which allows individuals and groups to create a dedicated channel and share information and updates with the immediacy that BBM offers. BBM customers around the world will be able to connect and share information, broadcast about themselves to their channel, or join their favorite communities and share their experiences of the channel with their BBM contacts.

## Nokia Asha 501 and Lumia 925

The Finnish mobile manufacturer in May introduced the first of its new lineup of Asha smartphones, Asha 501, featuring a revamped design philosophy, and a brand new OS, in hopes of revitalizing its struggling smartphone ambitions. The Asha 501 will start shipping in June, and has been given a suggested price of \$99 (roughly ₹5,400) before taxes and subsidies. The Asha 501 will be made available in more than 90 countries.



Nokia Asha 501

The Asha 501 is the platform lead device for the new 'Nokia Asha software platform 1.0', based on Smarterphone's OS, a company Nokia acquired back in 2011. Unfortunately, this does mean Nokia will have another nascent ecosystem on its hands again, and will be releasing SDK/APIs for developers soon. Java-compatibility will ensure S40 apps from the Nokia Store can be easily ported over. The phone will launch with \$75 worth of EA games, and some major apps, like Facebook (with deep native integration) and Twitter will be pre-installed.

Featuring a 3-inch 320x240 pixel 256k colour TFT capacitive touchscreen, the Asha 501 weighs in at 98.2 grams, is 12.1mm thick, and bears a 3.5MP camera. It will be available in single or 'EasySwap' dual-SIM models. For more specifications of the Asha 501 and details about the new OS, refer to our online coverage (<http://dgit.in/10IcXv5>).

Coming to the Lumia 925, we see as expected that Nokia has released an aluminium version of the Lumia 920, with a few other subtle differences. The device has a 4.5-inch display, 1.5GHz dual-core processor and an 8.7MP rear camera. The Lumia 925 is relatively slim at 8.5mm and is quite light too at

139 grams. They are powered by a 1.5GHz dual-core Qualcomm processor and have a 4.5-inch OLED display with a 1280x768 pixel resolution. It also supports 1GB RAM and 16GB built-in storage and houses a 2000mAh battery. Refer to our online coverage at (<http://dgit.in/17pn00c>).

## Jolla Sailfish Phone

If you were wondering where the successor to MeeGo, Sailfish OS, went, then we have some news for you. Jolla, the Finnish mobile startup comprising ex-Nokia employees, has finally unveiled the first Sailfish OS smartphone, an as yet unnamed device. It will be available to pre-order for around €399 (roughly \$513). Jolla co-founder Marc Dillion also revealed that the company will be offering freebies to customers who are willing to pay a little extra.


Jolla has revealed some of the smartphone's specs. The phone will be powered by a dual-core processor. It has 16GB of onboard storage with an extra SD card slot. It will include an 8 megapixel camera and 4.5-inch Estrade display. Jolla, started by ex-Nokia employees, is 4G compatible which will depend on carrier support. Jolla also revealed that the

device will come with a backplate that would allow customisation of the phone's user interface.

## Windows Phone ousts BlackBerry

IDC's Worldwide Quarterly Mobile Phone Tracker, May 2013 report showcased some pretty major developments in the space for mobile and OS manufacturers. According to the market research firm, Android and iOS made up for 92.3 per cent of all smartphone shipments in Q1 2013, with roughly 199.5 million devices shipped, up 59.1 per cent from 125.4 million units shipped in Q1 2012. Android devices make up 75 per cent of the global smartphone market in Q1 2013, whilst iOS devices make up 17.3 per cent. Samsung made up for 41.1 per cent of all Android devices shipped in the quarter, with all other vendors only managing single digit figures.

Windows Phone, now in third place, occupies 3.2 per cent of the market, up from 2.0 per cent in Q1 2012, whilst BlackBerry fell from 6.4 per cent in Q1 2012 to 2.9 per cent in Q1 2013. About a million BB10 devices were shipped in the first quarter of this year, making for a strong showing for the debuting platform (essentially, just the Z10), though obviously, BB7 devices made up the majority of the volume shipped.

Interestingly, Nokia's Lumia devices made up 79% of all Windows Phone shipments (20.3 million devices), major drivers for the platform. Linux, in fourth place behind BlackBerry, has a 2.1% share of the market, down from 2.4% last year. Symbian, which has fallen to sixth place, has experienced the biggest drop in the same period, from 6.8% to 0.6%. IDC expects Symbian shipments to continue till 2014, with swiftly dropping volumes. 



Jolla Sailfish OS phone

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9 Benefits - 1 Device

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## 3G Home Router



### DWR-113

- Supports wide range GSM/CDMA 3G Dongles
- Easily Connect 4 Wired Devices
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- Send and Receive SMS



## SIM Based 3G Pocket Router

### DWR-730

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## Firefox Student Ambassador

Firefox's student ambassador program is now open to register. Interested people can go through this link to uncover the details <http://dgit.in/12jpfwm>



## SanDisk Cruzer Force

Enclosed in a metal casing, SanDisk Cruzer Force is a new USB flash drive available in capacities up to 32GB. <http://dgit.in/SaNdIsK>

# Treading securely

A roundup on the risks and preventive actions from around the globe that are relevant to safety and online security.

## Operation Hangover

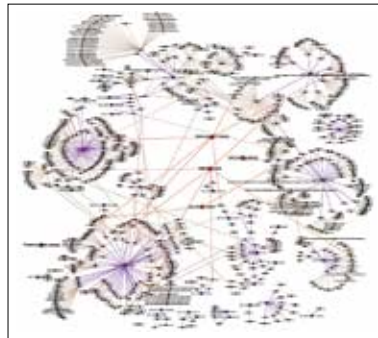
India is fast becoming the breeding ground of advanced persistent threat (APT) activity, according to reports. Researchers at a Norway based security firm named Norman released a report that has disclosed an espionage-for-hire service hacked into Norwegian carrier Telenor and recently created a Mac malware to spy on an Angolan activist.

The chief researcher at Norman's, Snorre Fagerland, began examining the group after Telenor, Norway's largest carrier revealed it was compromised in a phishing attack on executives in the month of March.

Fagerland revealed that the group responsible in the Telenor attack have built an extensive network of over 600 domains that have been used to distribute hundred pieces of 'key logger and other malware', or 'host phishing pages'.

"The data we have appears to indicate that a group of attackers based in India may have employed multiple developers tasked with delivering specific malware," Fagerland said. The group targets a range of countries including Pakistan, US, China, Iran, Thailand, Jordan, Indonesia, the UK, Norway, Germany, Austria, Poland and Romania.

Fagerland was sure about the fact that the spyware found on the Angolan activist's computer, was signed with a valid Apple Developer ID account and designed to ward off screen shots from victims. The hackers are not sophisticated enough



Map of intrusions

and depend on exploits for older patched Internet Explorer, Java and Microsoft Word defects. However, the group is well organised, says Fagerland.

## New National Cyber Security Policy

The National Cyber Security Policy, approved by the Cabinet Committee on Security (CCS), is aimed at providing a secure computing environment, along with adequate trust and confidence in electronic transactions in the country, as well as strengthening the current infrastructure.

"CCS met and approved the National Cyber Security Policy, which sets a road map for strengthening cyber security of the country by building capacities in the country, training manpower etc," reports quote a source as saying after the meeting.

According to a senior official in the Department of IT, the policy will also strive to develop trust and confidence in e-transactions. "This policy caters for the whole spectrum of ICT users and providers including small and home users, medium

and large enterprises and government and non-government entities," the official added.

The National Cyber Security Policy also envisages a security framework that is supposed to resolve all pending issues. You can download the policy with this link (<http://dgit.in/1a87TP9>).

## Kaspersky is Ferrari's internal IT Security partner

Scuderia Ferrari's official sponsor, Kaspersky Lab, announced recently that it was chosen as the new IT security provider for the sports car manufacturer. Ferrari has had Kaspersky Lab as an official sponsor since the May 2010 Spanish Grand Prix and KL branding has been seen on Ferrari's F1 cars for three consecutive seasons. "A partnership in sports is now a partnership in technology", as Aldo Del Bò, Managing Director, Kaspersky Lab Italy said at the press conference held in Ferrari's manufacturing facility in Maranello Italy.



Kaspersky Lab CTO Nikolay Grebennikov (right) with Ferrari Head Of IT, Vittorio Boero at the announcement conference

Del Bò also emphasised that the arrangement is not "free" but strictly commercial and has been vetted for suitability. Kaspersky Lab has custom made this end-point security solution in conjunction with Ferrari's Information and Communications Technology (ICT) department in order to meet Ferrari's demands. According to the companies, this new solution development process took six-months as it included compliance testing and benchmarking comparisons with other security solutions providers. The solution will be installed on about 4,000 computer systems and this number will increase more when a complete rollout of the solution happens over the next year which will cover Ferrari's entire application landscape and the devices in it. Vittorio Boero, Ferrari Chief Information Officer, said that Ferrari has been at the receiving end of several intrusion attempts over the years considering the sensitive and potentially valuable information available on their networks. Alexander Erofeev, Chief Marketing Officer of Kaspersky Lab, said: "Growth in the B2B sector is currently one of Kaspersky Lab's key strategic goals".

Closer to home and in the consumer space, KL is competing closely with local competitor Quick Heal for the No. 1 position in terms of sales volume. In the B2B space, the company holds a position among the top 4. KL's clients in India include the railways, a large airline fleet in India and other establishments. 



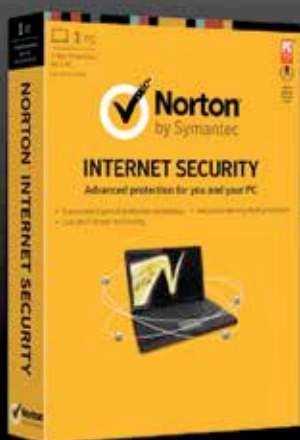
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## D-Link DIR-810L

D-Link recently unveiled its next generation DIR-810, a wireless AC750 dual band cloud router. <http://dgit.in/Z7ws6l>



## DOMO's entry level smartphones

DOMO recently introduced two entry level 4-inch Android smartphones, powered by 1 GHz processor and 3G support

App Watch

# Healthy Appetite

We look at the myriad changes in the world of mobile and tablet apps, since we met last month

Abhinav Lal  
[abhinav.lal@thinkdigit.com](mailto:abhinav.lal@thinkdigit.com)

## Nokia rolls out LiveSight to Here Maps

Nokia last year promised to soon integrate its sight recognition technology to its Here Maps app. Well, Nokia has finally kept its promise and announced adding its LiveSight augmented reality feature. The feature was previously only available via the CityLens app. LiveSight pulls up information about nearby locations, displaying useful information such as type of business, address, contact details and even customer ratings.

“At HERE, we believe that this technology is going to shape the future of mobile devices and the way we interact with them. Whether they are smartphones, the windshield of a car or something completely new,” says Here team in a post.

“Because sight is the sense we depend on most for exploring, and because it helps us bridge the virtual and real

worlds, we’re investing heavily in sight recognition technologies. In particular, when we marry sight recognition with accurate 3D models of the real world and live map information, you get what we call LiveSight.”

Users can access LiveSight mode via a dedicated control in the Here interface. On activating, users can explore points of interest, either overlaid on the standard map or Google Street View-like mode. The LiveSight in Here Maps works offline as well.

## Google+ for Android, Google Hangouts goes standalone

Google at I/O 2013 unveiled new features for Google+ social networking service. The update, which brought in 41 new features, is now rolling out to Android counterpart of Google+. Version 4.0 Google+ for Android improves the ways photos are handled on the network with new features such as auto-highlight and auto-enhance functionality that automatically edits the pictures as

well as lets you choose which in the lot are the most interesting for the uploads.

The update includes some of Snapseed’s popular photography tools such as Drama and Retrolux in a bid to provide more specific controls like saturation and contrast within the app. The update also makes it easier to share location as well as sharing with desired circles. If someone shares his/her location, you’ll see current status on their Google+ profile.

On tapping the new ‘Locations’, you will see friends’ current locations on a map. Google also makes it easier and gives the user more control over sharing their location, and with whom.

Now the feeds look more interactive and easy to navigate. Users can use popular #tags, appearing at the top right of individual posts, to check streams on a particular content. Google has also improved the notifications layout, added ability to edit additional profile fields on the go and one tap-access to the all new Hangouts app. The updated Google+ for Android is now available via Google Play store.

Google updated the Hangouts app, making it a standalone one for iOS, Android and the PC. The app is fast, free, and includes a number of features such as real-time activity indicators, conversation history,

and the ability to see notifications on one device. If you clear the notification on one of your android devices, it won’t pop up on another. You can have individual chat or group chats via the app as well. You can also integrate you SMS’s into hangouts, something that the Face-



book messaging app on Android already offers. On your Android device, Hangouts replaces the talk app.

Google has also introduced new features to the maps app available on Android and iOS. If you search for restaurants, your search result will give you their names along with ratings. You can swipe through the restaurants horizontally to see the information. You will also be able to see Groupon Inc. and LivingSocial deals through your search results.

## Instant messaging app, WeChat officially launched in India

WeChat, a mobile social communication application with 300 million registered user accounts worldwide, introduced its latest brand campaign in Mumbai yesterday. The campaign is aimed





## Canvio Connect

Toshiba unveiled Canvio Connect, a portable hard drive that lets you access, share and back up your files anywhere, anytime. <http://dgit.in/1613KXN>



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at boosting its marketing effort in the subcontinent and to this end ropes in Bollywood rising stars Parineeti Chopra and Varun Dhawan as brand ambassadors.

The campaign heavily focus on the app's voice messaging feature amongst others such as group chat, moments and special emoticons. The voice messaging feature or 'Hold-To-Talk' as its called is supposed to be a feature unique to WeChat while Moments allows WeChat where to post images or text and share with their selected friends in a secure way.

One of the biggest questions to come to mind is why is Tencent (WeChat's parent company) spending big bucks on endorsements and TV commercials? What could be the revenue model at play here? "Currently the focus of WeChat is on product improvement and growing the user engagement. WeChat has already caught the imagination of the youth and also of organizations in India. On using it, they understand the value WeChat provides to them. When we gather sufficient mass, that would be the time to discuss the revenue model and we shall surely share details with you," said Mr. Rahul Razdan, Head of Tencent India. Furthermore Mr. Dennis Hau, Head of International Product Center, Tencent International Business Group made it a point to assure the audience that "WeChat will remain free."

One of the possible ways to monetise the app could be in the form of a feature called "Official Accounts" which helps companies "companies and merchants to build interactivity with their fans in a new and innovative way". Brands like Café Coffee Day, Big Bazaar, Tradus and others have already started



with their Official Accounts on WeChat in India.

The app already had a soft launch last year in July 2012, when WeChat was made available in India across iPhone, Android, Symbian, and Windows Phone platforms. Few members of Team Digit tried out the app and found that no more than eight contacts from each of our address books were using the app. The app's 190 million strong active user-base doesn't yet include too many Indians, we figure. And hopefully this new campaign will change things upwards for WeChat.

## Facebook Home reaches 1mln downloads, gets minor update

Social networking giant Facebook announced that its new Facebook Home app launcher for Android has reached a not so massive figure of one million downloads in just a month. Facebook initially launched the home screen app launcher a month back, within 10 days of its launch, it passed the 500,000 downloads mark and has added 500,000 more in 3 weeks.

With decent download statistics in such a short period, Facebook is also seeding out a minor update for Facebook Home. As of now there isn't anything unique about the update

apart from a minor bug fixes and improvements in performance. Facebook will however be rolling out more updates in the coming months that will enhance user experience. The new updates will include dash bar, very similar to an IM buddy list that will be used for Chat Heads. Facebook Home is currently compatible with devices which include the Samsung Galaxy S III, Samsung Galaxy S4, Samsung Galaxy Note II, HTC One and HTC One X.

However, Android users appear disappointed by the Facebook Home app launcher with a majority giving it a bad rating on the Google Play store. The average review on Google Play is 2/5 stars for the software. Going through the user reviews reveals that while some users find Facebook Home worthwhile, many others have criticized it for negatively affecting battery life, limited customization options and hogging mobile data.

## Apple's App Store Marks Historic 50 Billionth Download

Apple in May announced that customers have downloaded over 50 billion apps from the



App Store. Customers are downloading more than 800 apps per second at a rate of over two billion apps per month on the App Store. The 50 billionth app was Say the Same Thing

by Space Inch, LLC, which was downloaded by Brandon Ashmore from Mentor, Ohio who received a \$10,000 App Store Gift Card to commemorate the historic milestone.

"Apple would like to thank our incredible customers and developers for topping 50 billion apps downloaded," said Eddy Cue, Apple's senior vice president of Internet Software and Services. "The App Store completely transformed how people use their mobile devices and created a thriving app ecosystem that has paid out over nine billion dollars to developers. We're absolutely floored to cross this milestone in less than five years."

The App Store opened in July 2008 with 500 apps. Since its introduction, Apple's incredible developer community has created an app for doing almost everything imaginable on an iPhone, iPad and iPod touch.

"We were blown away with our success on the App Store back in 2008," said Rich Riley, CEO of Shazam. "And almost five years later we continue to be amazed with how much people love using Shazam on their iPhone or iPad. With the App Store, we can effortlessly provide users with updates that give them great new features while making it easy for new users to discover and download Shazam for themselves."

The Apple App Store offers more than 850,000 apps to iPhone, iPad and iPod touch users in 155 countries around the world, with more than 350,000 native iPad apps available. App Store customers can choose from an incredible range of apps in 23 categories, including newspapers and magazines offered in Newsstand, games, business, news, sports, health & fitness and travel. 

# ASRock

No. 1 in Motherboards



Tom's Hardware System  
Builder Marathon, Q1 2013



## ASRock Triumphs with Three Consecutive Wins!

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- \* Socket 1155, Intel Z77 Chipset
- \* All Solid Capacitor design
- \* Digi Power
- \* 4 DDR3 2800+(OC)
- \* 1 PCIe 3.0 x16
- \* AMD Quad CrossFireX, CrossFireX
- \* Dual-VGA : D-Sub, HDMI
- \* 7.1 CH HD Audio (ALC892)
- \* 2 SATA3 + 4 SATA2
- \* 4 USB 3.0 + 10 USB 2.0

### Z77 Extreme4

- \* ATX
- \* Socket 1155, Intel Z77 Chipset
- \* Premium Gold Caps
- \* Digi Power
- \* 8 + 4 Power Phase
- \* 4 DDR3 2800+(OC)
- \* 2 PCIe 3.0 x16
- \* AMD Quad CrossFireX, CrossFireX
- \* Multi-VGA : D-Sub, DVI-D, HDMI
- \* 7.1 CH HD Audio (ALC898)
- \* 4 SATA3 + 1 eSATA3 + 4 SATA2
- \* 6 USB 3.0 + 8 USB 2.0

### Z75 Pro3

- \* ATX
- \* Socket 1155, Intel Z75 Chipset
- \* All Solid Capacitor design
- \* Digi Power
- \* 4 DDR3 2800+(OC)
- \* 1 PCIe 3.0 x16
- \* AMD Quad CrossFireX, CrossFireX
- \* Dual-VGA : D-Sub, HDMI
- \* 7.1 CH HD Audio (ALC892)
- \* 2 SATA3 + 4 SATA2
- \* 4 USB 3.0 + 10 USB 2.0

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# Astronauts: A day in their life

How things are done under zero-gravity situations...

Nimish Sawant

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**G**oogle Commander Chris Hadfield and you will come across news of his team's recent Earth landing, fascinating space photographs, some quirky videos from inside the International Space Station and so on. We can safely say that no other astronaut has used social media this wisely to create excitement about astronomy, spacecrafts, spacewalks and so on. No wonder he has 960,000 plus followers on Twitter and by the time we go to print, expect that number to cross the million mark.

We all know that astronauts carry out a lot of experiments on board, plus there is maintenance work to be done on the space station – all in zero gravity. While understanding that is a topic we would love to explore sometime in the future, for this month we decided to cover the absolute basics. How do you perform regular everyday tasks in the absence of gravity?

## Hygiene

The first thing we do on waking up – at least most of us – is brush our teeth. Some of us do it before sleeping as well. Having a bath is the next logical step. But both these things involve the use of lots of water, something a lot of us take an unnecessary advantage of. But up in space, there is a different way of doing things.

Most of the liquids taken inside a space craft are carried inside pouches which have a straw coming out of them. You squeeze out water from a pouch just like you squeeze out toothpaste from a tube. Since you do not have access to running water, a couple of drops of water cover the toothpaste on your brush. The foam

residue generated due to brushing cannot be spit out as there is no gravity here to drain it. So you either wipe off the foam on a disposable cloth or like most astronauts – swallow it!

Taking a shower is again out of the question, as water will just float in microgravity and won't really fall on your body or drain out. So the next best way to clean up is using a damp cloth. Special kind of rinseless shampoos are employed inside a space craft which will generate very little or no foam. Astronauts can shampoo their hair with their clothes on as the shampoo just tends to stick to their hair. They need to gently massage their hair to clean them and then wipe off the shampoo.

## Space Potty

Going to the toilet is one ritual all of us go through on a daily basis, the process helped in major part by gravity. In a microgravity environment, you can just imagine the difficulty in performing this task and of course you just cannot use the same terrestrial implementations to deal with poop and urine. Enter a special Space Commode!



Space Potty

The commode appears different from the ones seen on earth. For starters, they have a base to hold your feet in position and thigh restraints to hold you in the seated position. In case you want to urinate standing up, you have toe-bars under which you slip in your feet. The commode opening is minor when compared to the western style commodes we are used to and there is a separate pipe with a funnel-like implement at its mouth for urination. The commodes have a suction mechanism to suck all the waste material. So flush is basically flowing air (instead of water) which pulls the waste away from the astronaut's body.

You need to make sure that you aim right. Trainee astronauts who are not very sure of their 'alignment', have a 'Positional Trainer' commode, which resembles a real space potty with one minor addition – the trainer has a camera placed within, which is hooked up to a monitor where the trainee can adjust his/her seating alignment! There are a variety of disinfectant wipes available to wipe up once the business is done.

But what happens during a spacewalk? Well, according to Cmdr Hadfield, astronauts on space walks use special 'absorbent undergarments' like an adult diaper, to take care of waste.

The next logical question that may be bothering you is, 'Where is the waste disposed off?' Solid waste is dried and all the moisture is removed, compressed and kept in an on-board storage container. It is then disposed off when the spacecraft lands on earth. As for liquid waste, it is either sent into space or on the International Space Station it is recycled through a special water treatment plant and turned back into drinking water (Eew?!)

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## A Reddit AMA like no other

Here Cmdr Chris Hadfield replies to the many queries common people have about astronauts. This also happened to be one of the top Reddit AMA posts: <http://goo.gl/he2yK>



## Space music video

This can safely be called the first ever music video recorded in space! Space Oddity by Cmdr Chris Hadfield <http://goo.gl/5Ay1J>

### Eating

Food carried inside a space shuttle has to meet certain requirements. Carrying packaged food such as the type available in supermarkets is not an option, as the food needs to be stored for longer periods of time. Care also has to be taken that the food does not become a breeding ground for bacteria and fungi. Since moisture is the primary cause for micro-organism growth, the food packets found inside a space shuttle are partially or completely dehydrated. Meats are exposed to radia-



Space food packets

tion to give them a higher shelf life. Forget using salt, pepper and other condiments in their natural state inside a spacecraft. In a microgravity environment crumbs and particles floating around can be hazardous.

So each food packet will have a dehydrated food with a small opening which goes into the water dispensing station which dispenses hot or cold water so that the food can be rehydrated. The ISS also has forced-air convection ovens to warm rehydratable, thermostabilized and irradiated food items. All drinks are had through a straw to prevent liquid from escaping.

Astronauts are given an eight-day menu decided by the space agency, which contains balanced meals with a calorie count of 1900 to 3200 calories per day depending on the weight and gender of the astronaut. Of course, the astronauts do get the option to carry some of their favourite food items which goes in the bonus containers, provided it is suitable inside a spacecraft.

As you must have realised by now, most of the food consumed on a spacecraft is sticky in nature. Also food aromas cannot really be smelt in zero gravity which in turn affects taste. Most food

tastes bland - at least till the time the astronauts blood flow is regularised (as blood tends to be pushed to the brain which fills up the sinuses and affects sense of smell and taste).

### Exercise

On earth we are always working against the gravity which keeps our muscles and bones in good condition as they are constantly being used. But in space in a zero gravity scenario, our bones and muscles aren't really being put into as much use. As a result your bone density drops and you tend to lose muscle mass as they are no longer employed to support your weight.

Exercising inside a space shuttle is not just a lifestyle decision, but mandatory to keep the bones and muscles in working condition. Astronauts have to be healthy to carry out work on the space station which includes spacewalks. On the ISS, the astronauts are expected to exercise for two hours daily and their exercise routine is monitored and can be adjusted according to data from daily exercise routine.

Astronauts use a treadmill (which has a harness system to secure the astronaut to the treadmill) for cardiovascular exercise, maintaining neuromuscular patterns for locomotion and a cycle ergometer which is like your stationary bicycle for cardiovascular exercise. Advanced Resistive Exercise Device (ARED) uses vacuum



Advanced Resistive Exercise Device



An astronaut inside his sleeping bag

cylinders which apply loads of upto 600 pounds to allow astronauts to simulate weight-lifting exercises in space.

All the exercise equipment comes with a vibrations isolation system, to prevent astronauts who are working out from disturbing others on-board.

Some enterprising astronauts such as Sunita Williams have even completed a triathlon in space.

### Sleeping

In zero gravity, where you float most of the time, sleeping can seem like a task. For starters, you have no need for mattresses or pillows here. On the International Space Station there are six sleep-pods, each of which contains a sleeping bag tied to the wall. All the astronaut has to do is get in them, zip up and float to sleep.

One thing to note with the ISS is that it witnesses a sunrise every 90 minutes, so the circadian rhythms that we are used to on earth, go for a toss in space. Also the constant whirring noise heard inside a space station can be distracting. They are provided with ear-plugs and eye-masks to drown out the noise. Most astronauts are used to taking sleep-promoting medications. Although 8-8.5 hours is the preferred sleep duration, most astronauts have reported that they just need 6-6.5 hours to feel fully rested.

NASA has a tradition of Wakeup Call songs: <http://goo.gl/d5mCB>

And just in case you were wondering, yes, it is possible to snore in space. ■



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**Sony Xperia Tablet Z**

Sony announced the worldwide availability of its ultra-thin Xperia Tablet Z, with a price tag of \$499.99

# Imagining Tomorrow's Imaging Tech, Today

A peek into the future of cellphone cameras which is spelling doom for basic point and shoots

Swapnil Mathur

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The idea of being able to capture real life onto a still frame was something that spurred thoughts of witchcraft. At least that's how it was back in the dark ages, until the 1800s when innovators like Louis Daguerre, Joseph Niépce and Thomas Wedgwood shot the first set of photographs using a "camera obscura." Cut to some two hundred and thirteen years later, and here we are again, talking about camera tech that could, once again, only be out of something like science fiction, but that's the beauty of life.

Imagination fuels science fiction, and science fiction fuels the fascination of the select few who would love to see the imaginary get turned into real. That pretty much has become the premise of all inventions, every fascinating gadget we see coming out these days. But let's go back to photography here. We've seen some remarkable improvements in imaging technology in the last 10 years. Going from a digital camera that required a shoulder pack for power and storage to cameras that can fit into our pockets and store thousands of images at a time. We can shoot images of race cars that defy their top speeds, or shoot objects so tiny that even our eyes don't register them, yet, there is room for more. Scientists and engineers are working round the clock to bring to your camera today, some impressive technology of tomorrow and we're going to tell you just what they are.



Lytro Red Hot camera

**F\*\*K The Focus**

When Lytro was demoed on October 19, 2011, the world held its breath in sheer awe of what they were seeing. The camera created images which could be refocused after being shot, so that you would always have the perfect shot and not worry about missing focus. This camera also had promising implications for journalists, for whom not having to worry about critical focus would have greatly improved their chances of nailing their award winning shot. But Lytro didn't pick up as much as everyone had thought it would simply because the final resolution of the images from the camera was just a little over one megapixel.



Apple iPhone 5 Pro concept featuring a 1.2MP 3D camera and a projector

Cue the future, as it is being envisioned and developed by Pelican Imaging. These guys are essentially developing tech very similar to the Lytro, but unlike Lytro and other array-based or so-called plenoptic cameras, it uses a small array of traditional imaging elements. Each of these elements is sensitive only to a single color. Pelican's unique approach provides it with one huge differentiator — its sensor module is self-contained, with no additional lens required.

What the Pelican developed sensor will be able to do is not just capture light, but also capture the direction of that light. What it also does is divide its entire imaging surface into "mini cameras", each of which capture only one colour. The information from each individual "mini camera" is then compiled together through mathematical wizardry to yield data worth 16.7 megapixels, which finally results in an 8 megapixel image. The best part, everything in the image, from the foreground to the farthest object in the background will be in focus. There really won't be a need to refocus the image after its shot, which is the best part. Now imagine this tech making its way into your camera phone. Rumour has

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### Windows 8 on Chromebook

Watch this video showing the Chromebook Pixel running Windows 8 remotely using the Chrome Remote Desktop App. <http://dgit.in/YWjyFZ>

### Triple storage with Google

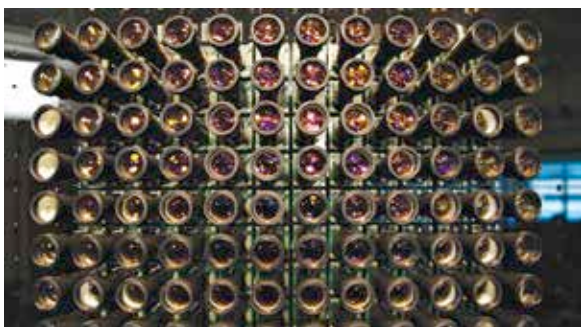
Instead of having 10 GB for Gmail and another 5 GB for Drive and Google+ Photos, now get 15 GB of unified storage for free. <http://dgit.in/12Gv4FV>

it that Apple, HTC and even Nokia have been experimenting with the technology and could implement it into their devices in the coming years.

### Super Sensors to the Rescue

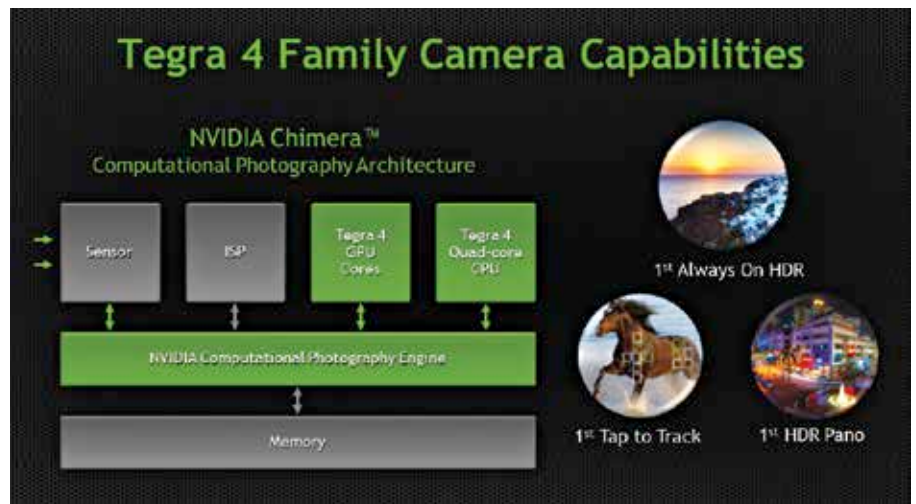
Lenses may be part of the magic, but EVERYTHING rests on the sensor's ability to capture the intended subject matter. It's not just about the silicon, but also about how individual photosites are arranged (think Bayer pattern sensors vs. Fuji's X-Trans sensors), how the wiring matrix is designed (think regular CMOS sensors vs. Back-Side Illuminated CMOS Sensors) and how the micro lenses filter the light coming in. Each of these properties has just recently begun to get refined, with the micro-lens array being the primary focus at the moment, with Panasonic doing some major ground breaking work in the field.

At the moment, a conventional imaging sensor employs micro lenses that only let either red, blue or green wavelength through to the respective photosite on the sensor. What this results in is the sensor getting only a fraction of the light, meaning for a particular colour to register, there must be a lot of light. Panasonic's new "micro colour



Stanford prototype Plenoptic Light Field camera array

splitters" are micro lenses which are able to separate the three primary colours and redirect them to their respective photosites using diffraction. The result is extreme sensitivity to colour information even in ridiculously low light, since none of the incoming light is being wasted. While Panasonic has a working prototype of the sensor ready, they say it is currently at the laboratory stage and still a few years away from finding its way into your camera. However, we wouldn't be surprised to see this technology becomes mainstream in the next five years.



While Panasonic is working hard to make the sensor far more efficient within the existing parameters (the micro colour splitters can be manufactured using existing technology) NVIDIA is developing its own architecture known as Chimera which is expected to be a mean little sensor. Taking advantage of the Tegra 4 processor which NVIDIA hopes to infuse many of the future smartphones with, the Chimera architecture will utilize the CPU and GPU capabilities of

Tegra 4 to generate real time HDR photos and videos. As of now, HDR video is only possible through the incredibly high end RED EPIC (which costs close to \$20,000) and even there, it is only in experimental stages. Imagine being able to shoot HDR video AND stills simultaneously using the Chimera architecture.

### Game of Optics

There's a lot of sensor talk, but what about optics? Nokia has already revolutionized this arena with their first ever Optically Stabilized lens arrangement in the Lumia 920, but that's just one of the many innovations. What about the ability to change lenses on your camera phone, just like in a DSLR. The idea isn't so farfetched if you think about it. Currently, camera phones utilize a fixed lens design to ensure a slim form factor. If this was taken out of the equation, it could be possible to design the sensor assembly

in such a way so as to accept different kind of lenses. It could be something as simple as a "drop-in" lens block. Companies like Olloclip are already making lenses that can be attached to the front of the camera assembly on various smartphones, and while the results are pretty neat, there is some obvious loss in quality to do a not-so-optimized optical design. Being able to just replace the stock lens with a "telephoto" block or a "fish-eye"

### The Endless Possibilities

As of now, we're seeing real development on the actual sensor, with light-field architecture being one of the main points of focus, while NVIDIA is trying to beef up the processor to a point where it can do far more in one go than previously imaginable. But what if one day, the light-field guys and the NVIDIA guys sit down at some café in South of Florence and decide to let their powers combine? Imagine having a camera phone with a light-field sensor, capable of shooting HDR video and HDR stills simultaneously. The possibility of being able to swap out the stock lens on your camera phone for a special macro lens or a telephoto lens makes the prospects of cellphone photography seem so much more promising. What's great is that we are seeing some "primitive" form of all these technologies be developed today and at the rate at which science performs miracles, it won't be long before your cellphone replaces your regular point and shoot for good. ■

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# Unlocking the maze, extending Wi-fi, deleting USB registry entries and more

We scour our sos@thinkdigit.com account for more such queries

## Q Extending wi-fi range

I would like to extend my wi-fi modem-router range. I have D-Link 2750u ADSL 2+ modem rated at 300 Mbps. The router's range is limited to my room, but I would like to extend it further. Please guide me.

*Sajal Garg*

**A** You're going to have to place it in a way to extend signals further in the house. You will need to experiment a bit to know the best location.

Download insider (www.metageek.net/products/insider) and use that to see if some channels are less noisy than others. Switch the router to a channel that has the least amount of wi-fi networks on it.

You can also get a trial of Wirelessmon from passmark.com and use that to find ways to improve the wi-fi coverage and signal strength.

You will find a few tricks to improve wi-fi signal coverage by using aluminium foil. Just google for "wi-fi signal aluminium foil" and see some videos on the topic. Put the router as high up as possible. Nearer the ceiling is better than nearer the floor, for instance. Make sure

it's somewhere near the centre of the home - if the hall is most central, it should be there, if it's a bedroom, then place it there, etc. Keep it away from power mains, electrical wires etc. If all else fails, you'll have to buy an access point (also called a wi-fi repeater) and use that to extend the range to other rooms.

## Q BIOS locked

My PC configuration includes an Intel Pentium dual-core 2.5 GHz processor, 2GB of RAM and a Gigabyte motherboard. One of my friend locked the BIOS and forgot the password. Please help me unlock it.

*Abhijeet Bhattacharjee*

**A** Take out the BIOS/CMOS battery, leave it powered off for a couple of hours. Disconnect from mains. And then replace battery and try again.

## Q Maze locked

I have got Samsung Galaxy Y and my problem is that I have lost the maze lock



Insider screenshot

screen combination of my phone. Now it asks me to enter my email and password there. I would have signed in, but my data network is off so please help me out.

*T Durden*

**A** We are sorry to hear about the problem. From what your mail leads us to believe - you are unable to get past the lock screen on the phone, and the device is pretty much unusable.

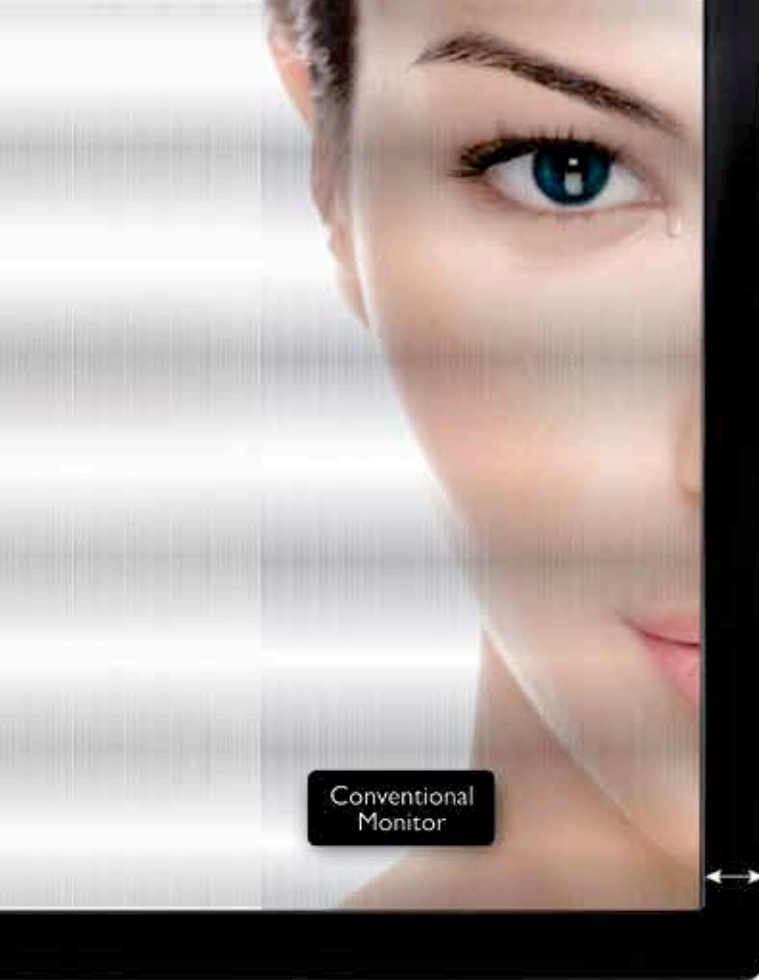
Step one would be to attempt a restart. Long press the power key till the screen turns off. After a couple of seconds, it'll come back on again, and Android should boot as it does normally.

If you have Samsung Kies desktop software installed, we would advice plugging the phone to the PC and taking a backup, if possible (we don't know the exact state of your phone). After that, try uninstalling the Maze Lockscreen application via Kies itself.

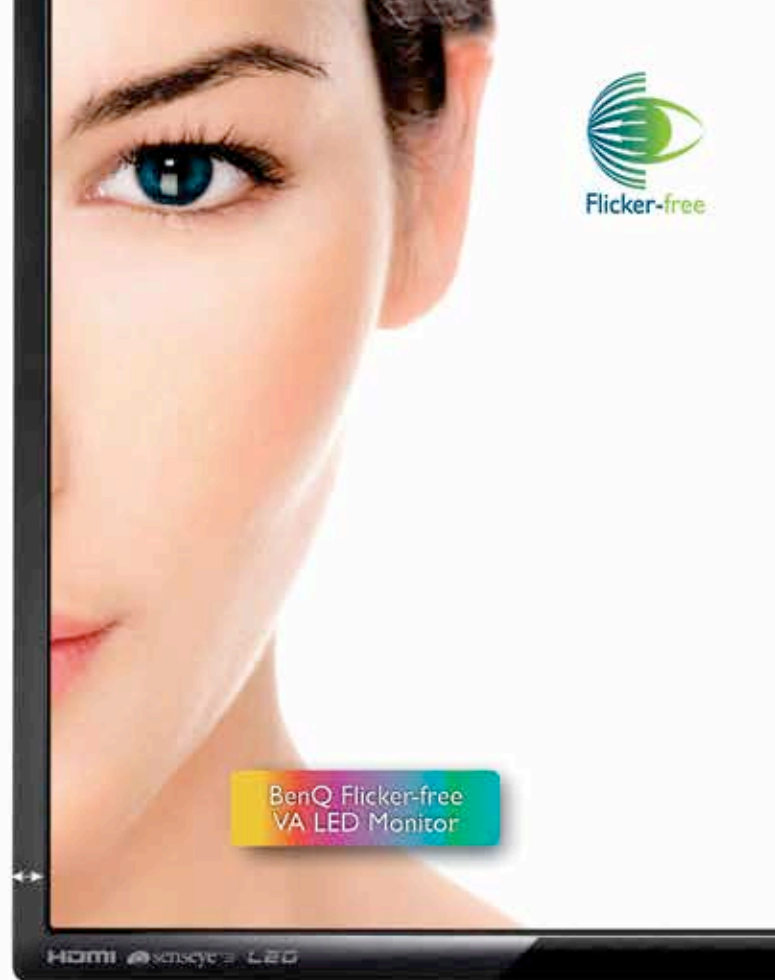
If these steps still take you back to the earlier issue, you need to restart the phone with the power key and the volume key pressed simultaneously, till you get to a ROM settings screen. Here, there will be an option of "clear storage". Select that. All data on the phone will be completely wiped, and the will be restored to factory settings. We hope you have your messages and contacts synced on the Google account.



Insider screenshot



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## Yahoo's next acquisition

After buying Tumblr for \$1.1 billion, Yahoo has acquired a cross-platform gaming software called PlayerScale



## Lumia 928 Camera v 2.0

The new Nokia 928 features same hardware specs as 920 but 6 camera lens and New OLED display. <http://digit.in/16LpKFr>

## Toolbox

### Windows 7 taking ages to start up

My full PC configuration is as follows:

- Processor: Intel dual-core 2.7GHz
- RAM: 1 GB
- HDD: 320 GB

In my PC, Windows 7 setup taked about 10 minutes to start, but in my friends PC it tkes only 5 seconds. His computer is a much older Intel Pentium 4 processor-sporting one. Could you let me know what is the problem in my PC?

*Prashant Singh*

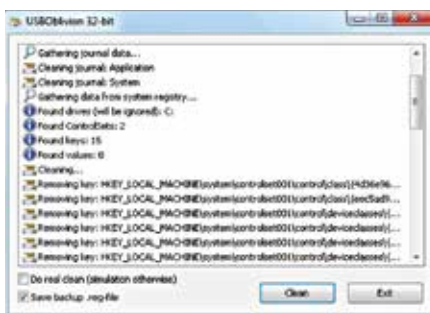
**A** The problem is probably your DVD drive. If you can, borrow your friend's DVD drive and connect that to your PC. If the setup starts fast you will know that the DVD drive is to blame.

Also check BIOS to ensure all settings are correct, and the DVD drive is set to first boot device. Even then it shouldn't take so long to boot. Ensure there are no USB sticks connected to your PC when booting.

### Delete USB entries in Registry

I want to delete USB devices list from USBSTOR tab in registry edit in Windows 7 and Vista so that noone can know how many devices and which brand of device was connected with my PC. I don't want my auditor to know about this.

*Surendra Ahlawat*



### USBOblivion

**A** You can clean the USBSTOR registry entry using tools such as USBOblivion (<http://goo.gl/eRfnA>) Download the utility, unzip it and then run it. Before hitting clean, make sure to take a registry backup.

On the first instance, unselect the Do Real Clean checkbox. Hit Clean. It will scan your system for USB entries used in the



### Dedicated server settings

past. Once you get the whole list, just select the Do Real Clean checkbox and hit the Clean button again to delete those entries.

### Playing Counter Strike on LAN

I want to play Counter Strike 1.6 on two laptops over LAN, but I don't know how to connect it. Please guide me.

*Avinash Birua*

**A** First of all you need to make sure that both your laptops are connected on the same network/router. Once that is done, then follow these steps:

- Both laptops should have Counter Strike 1.6 installed on them
- Make a CS 1.6 server on one laptop. Open the game
- Go to C:\Program Files\Counter-Strike\hlds.exe Create a LAN server with hlds.exe

On opening it you will be asked to select the maps, give a server name and so on. Finally click on Create Server. This will make one of the laptop act as the server. Ideally you should keep the laptop which has better graphics as the server.

- On the other laptop, open CS 1.6 and Go to the Local tab. Click Find Servers and you should be able to see the server you just created in step above.
- Join Game (If you may have created a password for the server, you will need to enter that password when you join the game.

- The game loads up and the chosen map starts. Pick a side and enjoy the game!

## FROM THE FORUMS

### Dell XPS L50X heating issues

A few friends of mine and I own a Dell L50X each. We have been facing heating issues with the same. To give you an idea, my laptop was cooled in a freezer (wrapped in plastic) for about 10 minutes, but still when it was booted up, the cores touched 100 degrees Celcius. This after a few minutes on being idle and on a cooling pad!

So we know how to open the laptop, but just wanted some advice on how to clean the air-vents, as i think that is causing the heating issue. Also it would be great, if you could give some suggestions on which thermal paste to use. What is the amount of paste one would require to put on both the CPU and GPU? Would 1 gram for each be enough?

*Mirhawk*

- A** • Clean the old thermal paste with isopropyl alcohol.
- Clean other components with air can or a small brush.
- For thermal paste, I recommend Arctic Silver. See it's website for appropriate instructions.

The guide at Arctic Silver's website includes images and all details of amount and application pattern for various types of CPUs and heat sink. There is no single way which works on all parts optimally.

*Harshilsharma63*

### Spiral wounding SATA cables?

The SATA cables in my desktop are quite long and in general they clutter inside the cabinet! Is it ok to wrap them in a coil / spiral-like fashion say by wrapping along a pencil to reduce the length? Would it affect the performance or cause any issues?

*Patkim*

**A** IMHO, these cables are are flexible and hardy, so twisting/wrapping should not cause too many issues – having said that, it is always preferable to use zip ties. You won't face any issues if you wrap them in coil / spiral like fashion.

*Mario and Topgear*





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[www.techcomindia.com](http://www.techcomindia.com)



### Speed-charging your phone

Eesha Khare, an Indian-American teen has invented a 'supercapacitor' which can fit inside a cellphone battery and can charge it in 20 secs.

### Small-world machines

Coca-Cola released a short film on bringing two countries together with the help of its World Machines, a live communication portal for strangers. <http://dgit.in/10hClZY>

# Scratch

## Logo Redux!

An MIT Media Lab initiative to help you learn about programming and create mini-games of your own...

Jait Dixit

[readersletters@thinkdigit.com](mailto:readersletters@thinkdigit.com)

Computer lab sessions during school in the late 90's have been synonymous with one thing – Logo. This environment/programming language, call it what you may, has been the mainstay of computer lectures in nearly all schools across the country. Kids from the 3rd to 6th grade can be found carefully punching out the commands to solve the exercise and watch the 'turtle' zoom around doing their bidding. Behind the seemingly benign facade, Logo explored some of the very intricate aspects of functional programming and provided kids with an easy and an interactive way to pick up computer programming.

The only problem with Logo is that it's too bland, no one let alone kids like to stare at a blank white screen with a small triangle drawing squiggly lines all around the screen. Enter Scratch – a brainchild of the excellent people over at the MIT Media Lab, the same people who had come up with the revolutionary augmented reality technology called the Sixth Sense, a couple of years back. Imagine Logo with a colorful new interface, a Lego-like way of building your program from blocks, an online repository where you can share and discover new projects (a la Github) and above all the ability to replace the boring old triangular turtle with any graphic of your choice, the end result is Scratch. The program and the interface are quite explanatory (the least you can expect



Let your creativity flow!

from a programming language learning environment for kids). This workshop will cover everything from the setup and to some programming fundamentals.

### Get Scratch

Head over to Scratch download page at [scratch.mit.edu/download](http://scratch.mit.edu/download) and grab the latest version of the application for your operating system. The minimum requirements are Windows 2000 or later, Mac

OS X 10.4 or later, Ubuntu Linux 9.04 or later. The installation method will change if you're running Linux. On Ubuntu, just type in `sudo apt-get install scratch` in the terminal or look for Scratch in the Software Center. If you're running Fedora, you can grab an RPM from [goo.gl/zXFBX](http://goo.gl/zXFBX). On other Linux distributions you'll have to manually build the project from the source code which can be found here [goo.gl/BKX0E](http://goo.gl/BKX0E).



**Deezer's Xbox 360 app**  
Deezer launched its on-demand music streaming application for Xbox 360 to have some fight with Xbox Music. <http://dgit.in/164J01k>



**Opera for Android, finally.**  
Two months after launching its beta, company has finally unveiled its final version of Opera for Android. <http://dgit.in/Za3ToG>

Workshop

The Scratch team has also released a network installation executable so you can easily install and manage Scratch on multiple computers. Follow the instructions on [info.scratch.mit.edu/Network\\_Installation](http://info.scratch.mit.edu/Network_Installation) to install Scratch remotely on multiple machines. This can be especially helpful, if you plan to install it in the entire lab.

## Interface

The main Scratch interface is shown on the adjacent page. A Scratch project is built around what is called a sprite. A sprite behaves exactly like the one used in game development. You can change the 'costume' of a sprite, you can also change the sound and most importantly you can associate scripts with a sprite which define its actions on the stage.

### 1. Script blocks palette

The palette contains blocks, which can be dragged into the scripts tab to program



Program blocks for various functions

the sprite. There are eight types of blocks available – Motion, Looks, Sound, Pen, Control, Sensing, Operators and Variables. You can use any of these blocks to create scripts.

### 2. Sprite info area

The sprite info area shows the currently selected sprite's name, X and Y position of the sprite on the stage, direction and orientation, pen status and lock status.

You can play around with these settings to show how the sprite will look when it points in various directions.

### 3. Scripts tab

You can drop the blocks from the script palette in this area to build your program. You can stack multiple blocks to create a program. Clicking anywhere on the stack will run all the blocks from top to bottom. When you drag a new block into the scripts tab, a white highlight appears which indicates where you can drop the block to create a valid connection with other blocks. You can move around a stack by clicking and dragging the top block. If you drag from the middle of a stack, it'll take all the blocks below that block including itself. You can add comments to your code by right-clicking in the script area and selecting 'add comment'. You can attach a comment to the block by dragging it to the top of the block.

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## Movies on iOS devices

Vudu has updated the iOS version of their app to download and view movie offline.  
<http://dgit.in/14s439S>



## Galaxy Tab with Atom

The Samsung Galaxy 10.1 Android tablet is expected to sport a dual-core 1.6GHz Intel Atom CloverTrail+ chip.

## 4. Costumes Tab

In this tab you can view and edit a sprite's costume. As mentioned earlier a sprite can have an unlimited number of costumes. You can add costumes to a sprite in four ways:

- **Paint** – You can paint a new costume for the sprite in the bundled paint editor. It is much like the Paint bundled in Windows without any added functionality.
- **Import** – You can directly import JPEGs, PNGs or GIFs as they are from your hard disk
- **Camera** – You can use your webcam to click photographs and use them as a costume.
- **Drag and Drop** – You can drag and drop an image from your desktop or a website. You can export a selected costume as a new sprite by right-clicking on the desired costume in the costumes tab and selecting 'turn into a new sprite'.

## 5. Sounds Tab

You can record or import sound files in this tab which can be played along with your animation. Scratch recognizes MP3, WAV, AIF and AU files.

## 6. Stage

The stage is the place where all the action takes place. The sprites move and enact the actions specified in the scripts on the stage. The stage is 480 x 360 units in size. It's divided into a Cartesian grid with the center (0,0) in the middle of the stage. You can find your current position on the stage by checking the status tab at the lower-right corner of the Stage. You can switch sizes using the button on the top right corner. One thing to note, the stage itself is a sprite so double clicking on the stage or select the stage in the sprite list will open up it's script, background and sounds tab.

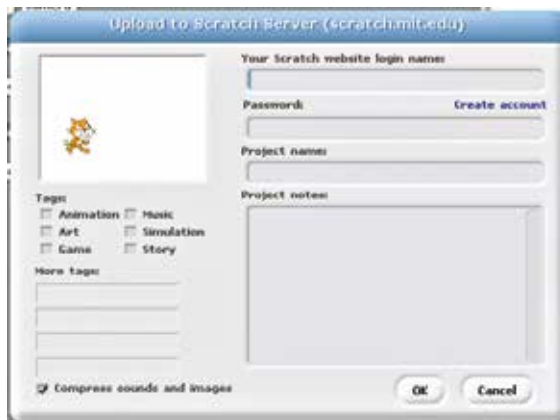
## 7. Sprite List

The sprite list contains the thumbnails of all the sprites inside a project. Double-clicking on a sprite opens it's script, costume and sound tab, the select sprite

is highlighted with a blue border. Scratch defaults to a cat's sprite when you open it, you can add new sprites by using the buttons on top of the sprite list. You can export sprites to a .sprite file which can then be used across various projects.

## Programming

Scratch is billed as an environment/programming language which "makes it easy to create interactive stories, games, and animations". Albeit a toy language which is used for teaching, it contains nearly all constructs of a modern functional programming languages – variables, conditional statements, loops, operators and events.



Share away!

The blocks mentioned in the section above which are used to construct the scripts are divided into three sections.

### Stack Blocks

These blocks have indentations on the edges which look like bumps and notches. Multiple such blocks can be snapped together to form a stack. Some blocks have input fields inside them which allow you to modify the menu either by typing it in or selecting one from a dropdown. Some stack blocks are C-shaped which allow you to place other stacks or blocks inside that block.

### Hats

These blocks have a rounded top and must be placed on top of the stack for them to work. They listen for particular events and when the event is triggered they execute the block/stack attached below them.

## Reporters

These blocks behave like variable and go into the input areas of some of the blocks of the other two types. Reporters with rounded borders will return string or numbers which can be used by other blocks, while the reporters with pointed ends return boolean values i.e. True or False. You'll usually find them being placed inside blocks with conditions. Click on any reporter to see it's current value. Some of the reporters will have a checkbox next to them, when you check such reporters a monitor appears on the on the stage which shows the current value of the reporter.

Scratch also allows you to create and manipulate lists. List is a type of variable and can be created from within the variable block palette. When you create a list, a monitor will appear on the stage. It will show all the items in a given list. You can enter items inside a list using a monitor. Scratch can also handle strings and user input. You can find the user input blocks in the Sensing block palette.

## Sharing

Perhaps the most interesting aspect of Scratch is to share your code with the entire world, right from the interface itself. It's like Github but for mini games and stories. Everyone has the access to everyone's code, you can download anyone's project and start modifying the same is true vice-versa, such projects are called remixes. You're free to view and modify anyone's image on the scratch website. This will help you learn interesting ways in which Scratch can be used to solve problems and a great way to learn new things about Scratch.

To start sharing your code you'll have to open an account on [scratch.mit.edu](http://scratch.mit.edu). Once done with that you can put in the username and password in the share dialog in the interface, enter an appropriate project title and description and you're good to go. In case you're having problems uploading your project (the maximum project size supported is 10MB) you can try compressing the images and sound files from the edit menu in the application.

## OPTIMISE FIREFOX

It's been quite a while since we last shared tips for your favorite Firefox browser. Finally, the wait is over! All the mentioned tips and tricks have been tested on the latest Firefox 20.0.1. So if you don't have an updated version installed on your system, go to **Firefox > Help > About Firefox > Check for update**, or you can manually install the latest Firefox from its website: <http://www.mozilla.org/en-US/firefox/new/>

## Manage downloads

The latest version of Firefox enables you to manage your downloads more easily than ever before. The enhanced download manager has a library that keeps a record of your downloaded files. The older dedicated download panel is replaced by a new toolbar button which shows your downloaded files in a drop-down list. Once downloading is started, the arrow button gets converted into a timer bar which keeps you updated about the current progress and remaining time. To access your download library, click the arrow button and then "Show All Downloads". A button next to each one of your files will take you to the directory where your file is being downloaded. You can easily pause, continue, cancel, or even retry your downloads.



The all new Downloads panel

## Get Firefox theme for Chrome

It's rare to find a Google Chrome user employing a Firefox theme



**Optimise Firefox .....27**

**Hack your Smartphone .....29**

*Tips & Tricks has its own page numbers, and does not follow the rest of the magazine's page numbers. This is done to ensure that you can cut out and save T&T in a separate folder for later reference.*



Firefox theme on Chrome

so you can be an exception. This theme is available on Chrome Web Store for six different screen resolutions. We used "Firefox 1280x1024". To install this theme on your Google Chrome browser go to <http://dgit.in/178TsnY>

## Save text to a file

This is a simple browser add-on which helps you create your own text files right from the web page you're on. All you have to do is highlight the text you need

and save it as a file to your specified directory. Your files will be saved in .txt format, and you can later add or replace content in this file that you'd created earlier. To download and install this add-on to your Firefox browser go to <http://dgit.in/ZTAQUS>



Save text from a web page

## Get pinned tabs

Pinned tabs let you keep your favorite websites and online applications just a click away. Though similar to bookmarks, this feature lets you view your most used apps and important websites in a tab-like interface. You're probably wondering how pinned tabs differ from normal tabs. Pinned tabs have a smaller width and don't occupy as much space as normal tabs on your browser's



Pin a tab to your browser

tab stripe. Pinned tabs are very handy and easy to create. Simply right-click on the tab you want to pin and select "Pin Tab" from the menu. If you don't need a pinned tab anymore you can simply convert it into a regular tab. Right-click on the tab you want to unpin and then select "Unpin Tab" from the menu.

## Feed your Facebook addiction

Facebook addicts, this is for you guys! Imagine this: you're busy working in one tab and have Facebook open in another. Whenever you receive an update, your attention is drawn to the Facebook tab indicating that there's something new there that you should check out. This tip will help you handle this distraction. Don't worry, it doesn't involve logging off the social site. Using "Facebook Messenger for Firefox" you can have your Facebook activities running within the same tab you're working in. To begin with, visit <http://dgit.in/17cLIBg> and simply hit the green "Turn on" button. Your browser will then prompt you



Feed your Facebook addiction using Messenger for Firefox

to enable this feature. In order to activate it, you'll need to log in to your Facebook account. Once done, a sidebar will appear with a few options regarding friend requests, messages and notifications at the top-right corner of your browser.

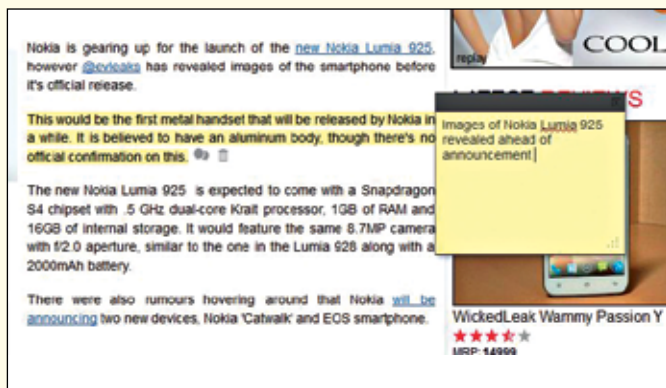
### Annotate web pages

Annotary is a Firefox add-on to highlight and annotate the web page you're on. You can create and share your notes with others, or even discover the notes and annotations made by your friends or colleagues. Once Annotary is installed, you

can easily highlight the blocks of text you want to annotate and create on-screen sticky notes. To save your notes, you'll need to sign up for your account on [www.annotary.com](http://www.annotary.com). Your notes will be saved to your Annotary account, and you can share these notes on social media or through email. Visit <http://dgit.in/10tieXB> to install the Annotary add-on.

### Browse privately

Generally, Firefox maintains a record of all your browsing activities such as the sites and pages you've visited, downloads,



Annotate web pages

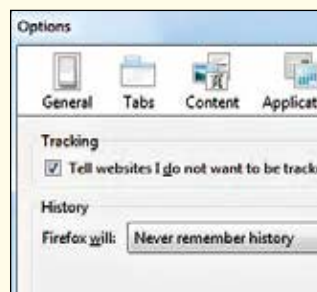


Privately browse on Firefox by activating just one setting

login sessions, etc. Similar to Incognito mode in Chrome, Firefox has a private browsing functionality which allows you to browse the internet without saving any information about the sites and pages you've visited, form and search bar entries, passwords, downloads, caches, cookies, etc. To start using Private Browsing, go to Firefox > File > New Private Window or simply press [Ctrl+N]. If you always want to start your Firefox in Private Browsing mode, go to Firefox > Tools > Options > Privacy > Firefox will: Never remember history > OK. Restart Firefox. Note that hiding your data doesn't mean that you're browsing the internet anonymously, or that your IP address is hidden.

### Opt out of being tracked

Before talking about this feature let's find out what "tracking" is. Basically, major websites and advertisers track your web browsing behavior – including the sites you visit, products you purchase, reviews you check out, search terms you use, etc – to get an idea of how to better target their services and products at you. When you enable the Do-Not-Track feature your browser won't allow the websites you visit to track your behavior. To enable this feature on your Firefox browser, go to Firefox > Tools > Options > Privacy. Check "Tell websites I do not want to be tracked" and click "OK". This feature



The Do-Not-Track feature

is also available for Google Chrome and Internet Explorer.

### Sync Firefox

You can use Firefox Sync to synchronize your bookmarks, passwords, settings, history, add-ons and tabs with Firefox on other computers. We'll be looking at different types of Firefox Sync settings in a while. Once you create a Sync account you'll have all the rights to create, remove, and rename your devices. Finally, you can also delete your Sync account if you don't need one. So let's get started!

### Set up Firefox Sync on all your computers

In order to sync Firefox with your primary computer, you'll first need to sign up for an account. Go to Firefox > Tools > Options > Sync > Set Up Firefox Sync > Create a New Account. Fill the required details and filter all the preferences according to your needs. By default, your add-ons, bookmarks, passwords, preferences, history and tabs are synced. To change what information gets synced click on "Sync Options". Once that's done, select your computer name and hit "OK". Now you have your browser synced with your primary computer. Depending on the amount of information that has to be synced, the first sync could happen quickly or take more than 30 minutes.

To sync other computers, do this for each of them: Go to Firefox > Set up Sync > I Have an Account. A twelve-character code will be generated. Go back to the Sync tab under Options on your primary computer and click "Pair a Device". Enter the code from the other device in the next window, click "Next". Once you see a "Device Connected" message, click "Finish" to close the setup window.



Sign up for a Firefox Sync account

### Access Firefox from any computer

Once you have your browser synced with your primary computer, you can access it from any other computer. Open Firefox. Go to <https://account.services.mozilla.com> and enter your username and password. Click “Log in”. Your Firefox synced account management portal will load on your screen.

### Rename your device

Go to Firefox > Tools> Options > Sync. At the bottom of the window, you’ll find an option to change the computer name on which your synced account is running. Rename your device and hit “OK”.

### Change the password from your synced computer

If you want to change the password of your Sync account from your synced computer, go to Firefox > Tools > Options > Sync > Manage Account > Change Password. Enter your new password, then click “Change Password” to apply the change and “OK” to close the window. Note that your other devices will stop syncing if you don’t update them with the new password.

### Change the password from any computer

If you’re not on a synced computer but want to change your Sync account’s password, go to <https://account.services.mozilla.com>. Then go to Sign In > Change your password and click “Change your password” and press “OK”. Note that your devices will stop syncing if you don’t update them with the new password.

### Deactivate your synced account

Go to Firefox > Tools> Options > Sync > Deactivate This Device > Reset All Information. The data on your devices will no longer be synced with your account, and you’ll be logged out of your synced account.

### Delete your synced account


Go to <https://account.services.mozilla.com>. Then head over to Sign In > Delete your account. Enter your password and then press “Delete your account” to confirm.

## HACK YOUR SMARTPHONE

There’s no denying the fact that we’re seeing explosive growth

in smartphones both, in terms of features and specifications. As cliched as it may sound, it’s the absolute truth. Heck, we even have a satellite powered by an Android smartphone (Google Nexus One) orbiting around the earth which in fact was launched by our very own ISRO (Read more about it here: <http://goo.gl/pSVGI>). The crux of the matter is that we have a lot of computing power in our palms but it goes largely untapped due to the restrictions placed by the device manufacturers, carriers and the stock versions of the operating systems.

The methods discussed in the following pages will not only help you extract maximum performance and unlock advanced features on your latest smartphone but also help resuscitate older devices making them more usable. In this section of Tips & Tricks, we’ll cover all the dominant mobile platforms in the market, detailing how to jailbreak/root the devices on which they run. The hacks mentioned here will allow you to sideload, i.e. install third-party apps on your device, install a custom/modified ROM and give super-user access to the system which will enable you to tweak the innards of the device.

 With great power, comes great responsibility [DISCLAIMER]

The tools and techniques discussed here provide you with high privileges allowing you to alter low-level settings and data on a device. If not handled properly, such changes may result in unexpected and undesired behaviour which in turn may lead to damaging your device. Nine Dot Nine Media Interactive Pvt. Ltd is not responsible for any damage to your phone resulting from your actions based on this guide.

This article is accompanied with the customary disclaimer. What we’ll discuss here is dangerous and if not done carefully, you may brick your phone. Jailbreaking/rooting your phone is not illegal as long as it is limited to non-copyright infringement purposes, but jailbreaking/rooting your phone will void your device’s manufacturer warranty so proceed with extreme caution.

Before trying out any method mentioned in these pages, make sure that you take a full backup of your phone data using the method(s) mentioned for each OS. Please follow all the instructions provided here or the guides to which links are provided for a particular model or device to a tee. Not doing so can lead to extremely dire consequences.

### Android

Android is much more relaxed as compared to other platforms when it comes to allowing the user to install third-party apps which is perhaps the main reason for rooting/jailbreaking other mobile platforms. Rooting is the first step in extending the functionality that your phone has to offer – wireless tethering for older phones, custom ROMs, CPU overclocking and so on. Rooting in Android is very much akin to running a program as an administrator in Windows or running a program with the sudo command in \*nix systems.

### Back up your phone

All your contacts, mail, calendar and other Google account specific data will already be in sync with Google’s servers, so you need not worry about that. As far as the system data, apps and app data is concerned there are two ways to go about backing them up – using either the Titanium Backup app, available in the Google Play Store or ADB (Android Debug Bridge), a command-line utility

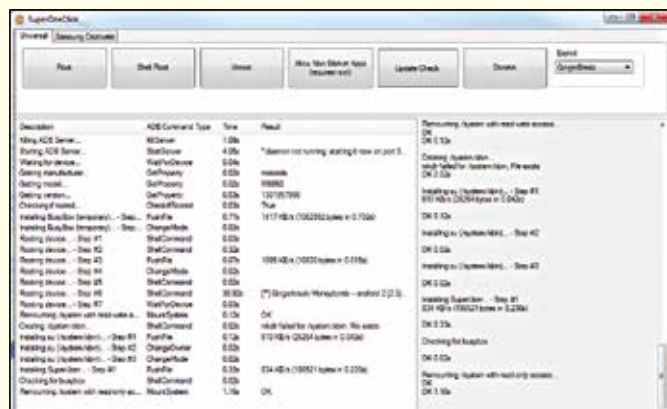


included with Google's Android SDK. The problem with the first tool is that your phone needs to be rooted to use Titanium Backup as it requires root permissions, and brings into existence the classic chicken and egg problem. Titanium Backup is useful on rooted phones that you plan on installing a custom ROM on. You'd want to make sure that all your installed applications, settings and the original firmware are available to you in case you run into any problems. Another advice here is to go for a Nandroid backup provided by the Clockwork Recovery Mod or your own custom ROM which saves an entire image of the device to the disk for future use.

For Android 4.0 and later, you can use the ADB backup. Just download Holo Backup, a GUI wrapper for conducting the backup, from its homepage at <http://goo.gl/Ya4sL>. Once you get the app running, hit "Backup all without system apps" and you're set. Since this functionality doesn't exist for Android 2.3 or lower, your best bet is to use an application like MyBackup Pro to back up your other data to the SD card or online and ASTRO File Manager to copy your application APKs to a safe location.

### Root your phone

The complication for Android is that there are a large variety of phones available in the market today. Now, while some methods do work for a very large cross-section of



SuperOneClick in action

handsets, there's no universal one-size-fits-all rooting solution for every phone out there. We'll start with the one tool that's able to root a lot of models, especially the older ones - it's called SuperOneClick. The catch is that it may or may not work for your phone, so you'll have to dig a little deeper for another tool, especially for older phones as they have their own little quirks.

Download SuperOneClick from <http://goo.gl/QMOIZ> and extract the downloaded zip file. On your phone make sure that USB Debugging is enabled under settings and then connect the phone to your PC. The next step is very important: make sure your SD card is not mounted before proceeding. Once your phone is detected by SuperOneClick, click on "Root" to begin the rooting process and wait for it to complete. That's it! Once the process completes, your phone will be rooted and you can then proceed to the post-rooting section of this guide.

In case you face any problem, search the SuperOneClick support thread on XDA Developers at <http://goo.gl/tzReR> for others with the same problems as you.

This app is known not to work with the following phones. You can use unrevoked.com instead to circumvent the NAND lock used by these phone.

- Sprint HTC EVO 4G (Super-sonic)
- HTC Droid Incredible
- HTC Desire GSM
- HTC Desire CDMA (BravoC)
- HTC Aria
- Droid Eris (HTC DesireC)
- HTC Wildfire (HTC Buzz)

One thing to note here is that there may be other methods as well by which you can root your phone. You'll have to find the one that suits you the best. For example, all phones from HTC released in and after 2011 are allowed by HTC itself to unlock their bootloader (<http://goo.gl/YyWlU>).

The only step you need to perform after this is flashing a custom ROM to your device to get the root access. Now other methods may exist which may do this for your phone in one click, it's entirely up to your discretion to select the method that you're comfortable with.

Some of the latest phones have different exploits and one-click root tools specifically made for them. They're listed in the table below along with links for the respective phone's guide.

You'll find that nearly all links point to XDA Forums. It is infact the mecca of smartphone hacking, rooting and development. Nearly all the developers congregate and collaborate here, making rooting toolkits and apps possible. Whenever in doubt just head over to XDA Developers forums. You'll find that someone usually has had the exact same problem as you, and in all probabilities you'll find an excellent solution here.

### Things you can do post rooting

Once you've rooted your phone, it will open up a host of hidden features on your phone. For starters, you'll be able to flash custom ROMs such as ParanoidAndroid, LiquidSmooth, Android Open Kang Project, Cyanogenmod 10 and Xylon to name a few. You'll find many threads online which deal with installing/flashing these ROMs



Paranoid Android running on Nexus 4



CyanogenMod 10.1 which provides a customized Jelly Bean experience

Rootable Phones	Links
Samsung Galaxy Note	<a href="http://goo.gl/LJfzz">http://goo.gl/LJfzz</a>
HTC One S	<a href="http://goo.gl/PLFyj">http://goo.gl/PLFyj</a>
HTC One X	<a href="http://goo.gl/OLJlu">http://goo.gl/OLJlu</a>
Sony Xperia S	<a href="http://goo.gl/WtunD">http://goo.gl/WtunD</a>
LG Optimus 4X HD	<a href="http://goo.gl/pNHfj">http://goo.gl/pNHfj</a>
Samsung Galaxy Note 2	<a href="http://goo.gl/CGdxX">http://goo.gl/CGdxX</a>
Google/LG Nexus 4	<a href="http://goo.gl/KtXz">http://goo.gl/KtXz</a>
Samsung Galaxy SIII	<a href="http://goo.gl/XHt82">http://goo.gl/XHt82</a>
Samsung Galaxy SII	<a href="http://goo.gl/7k8gp">http://goo.gl/7k8gp</a>
HTC Desire	<a href="http://goo.gl/4nWr4">http://goo.gl/4nWr4</a>



on your phone after rooting. You'll also be able to install applications which need root access such as Titanium Explorer, ES File Explorer, ROM Manager, CPU Master for overclocking and so on. There's this excellent thread at Stack Exchange (<http://goo.gl/8h0Rm>) that will blow you away with the possibilities post rooting of your phone.

## IOS

Hacking your iOS device, on the other hand, is called jailbreaking. In an ecosystem which is under tight control by the iron-fists of the Cupertino-based giant, jailbreaking allows the user to install a modified operating system by unlocking the bootloader, sideloading third-party apps apart from those from the App Store and provide root permissions to the user.

### Back up your phone

Backing up your iPhone is quite straightforward. You could either have your phone synced with iCloud or just manually create a backup from iTunes by right-clicking on your phone icon and clicking on "backup". An advantage of doing it this way is that you can restore it much faster. If you're upgrading from a jailbroken phone, make sure that you

back up your Cydia apps separately so that they can be easily restored after you've upgraded and jailbroken your phone.

You can back up your Cydia apps by downloading OpenBackup from Cydia's official repositories. The app is quite easy to operate: simply open the app and hit the Backup button; this backs up your Cydia data to either iCloud or iTunes. You also get a local copy if you want to manually save the backup file to your computer's hard drive. You'll find the backup file at `private/var/mobile/Library/Preferences/OpenBackup-Files`, and can use iFunBox to copy the files to your hard drive.

### Root your phone

As opposed to Android, not many methods are available for cracking your iPhone (infact this works for any iDevice, but we'll be limiting our discussion to the iPhones here). The table below details the various methods available for the different versions of the phone at different operating system versions.

The highlighted jailbreaks are tethered jailbreaks, i.e. you need to plug in the phone at every restart so that the jailbreak can be loaded; this patches the kernel in real time. This might sound quite cumbersome but

Jailbreaking Tools	Download Links
evasi0n	<a href="http://evasi0n.com">http://evasi0n.com</a>
Greenpois0n/absinth	<a href="http://greenpois0n.com">http://greenpois0n.com</a>
Redsnow	<a href="http://www.redsn0w.us">http://www.redsn0w.us</a>

it's the only way to go about doing it for the older versions of the operating systems. If you update your phone now, you'll be updated to iOS 6.1.3 and you won't be able to downgrade to 6.1.2 or lower so if you've not updated your phone you're still in luck, as you'll still be able to use evasi0n or the respective jailbreaking tool for your version of operating system. The evad3rs team is hard at work at



### evasi0n in action

bringing out a jailbreak for iOS 6.1.3. Follow them on Twitter (@evad3rs) for latest updates.

These jailbreak tools are incredibly easy to operate. For e.g. consider evasi0n. Just grab the latest zip file from the tool's download page and extract the file. Make sure that you remove the lock screen password before proceeding and avoid all iTunes

related tasks when evasi0n is running. In case the process freezes at any time it's safe to restart the program and reboot the device to try the process again. To jailbreak your device just run evasi0n and click on the jailbreak button for the process to begin. Your phone will restart a couple of times during the process, be patient. Eventually, the process will run its course and you'll be able to tap on the exit button. The phone will restart and Voila! You've just jailbroken your iPhone.

Both the other apps function in a similar way. When in doubt, visit the forums on the respective app's pages, and you're bound to get help there. Make sure that you find the exact version of your firmware and use the recommended jailbreaking tool from the table above.

### Access features post jailbreaking

You'll now have access to an amazing set of features which will let you modify the phone in some very interesting ways, the first of which being Cydia. This amazing little app will allow you



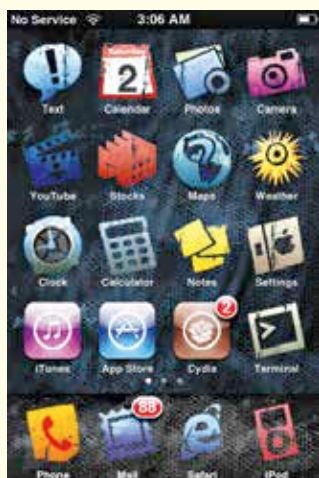
OpenBackup to back up your Cydia apps

Firmware Version	iPhone 5	iPhone 4	iPhone 4S	iPhone 3GS
6.0 - 6.1.2 **	evasi0n	evasi0n	evasi0n	evasi0n
5.1.1	-	absinth v2	absinth v2	absinth v2
5.1	-	Redsnow	-	Redsnow
5.0.1	-	Greenpois0n	Redsnow	Redsnow
4.3.4/5.0	-	Redsnow	-	Redsnow
4.3.3	-	Redsnow	jailbreakme.com*	Redsnow
4.3.2	-	Redsnow	-	Redsnow
4.3.1	-	Redsnow	-	Redsnow
4.3	-	-	-	-
4.2.7	-	-	-	-
4.2.1 - 4.2.6	-	Greenpois0n	-	Greenpois0n
4.0.1 - 4.1	-	Greenpois0n	-	Greenpois0n
4.0 - 4.0.1	-	jailbreakme.com*	-	jailbreakme.com*

\* You just need to point Safari to this URL for this jailbreak to work

\*\* This jailbreak wont work for users who've updated their phones to 6.1.3 which was released on 19th March

to download a host of third-party apps hosted on both, Cydia's own and other repositories. You'll be able to personalize the menu and its appearance along with the background and lock screen images. Advance task switcher, mods which let you run tasks in the background, folder enhancer, SSH and GCC are just some of the apps which form the tip of the iceberg. You can find quite an interesting list of possibilities compiled by Big Boss over at <http://goo.gl/KYhmY>. It lists



**UI Overhaul using WinterBoard**

some of the app mentioned here and many more interesting ones which can be installed once you've jailbroken your phone.

**Windows Phone**

Rooting a Windows Phone is comparatively trickier. There are three ways by which you can root/unlock Windows Phone: Developer Unlock, Interop Unlock and Full Unlock.

- 1. Developer Unlock:** This allows you to sideload third-party apps on your phone. The number is restricted to 10 and you need to register yourself at App Hub at \$99/year to unlock your phone. There's also a student account which allows you to sideload up to three apps for free.
- 2. Interop Unlock:** A new lock was introduced with the ear-

lier builds of WP7 Mango which required apps to have this lock to be able to access device drivers and other restricted areas such as the registry, root access, the file system and so on. Called the Interop Unlock by its finder Heathcliff from the XDA Developer forums, this unlock used exploits to target the vulnerabilities in some of the manufacturer specific software to unlock the phone.

- 3. Full Unlock:** As of now this is only possible for first generation HTC and Samsung phones. After unlocking the bootloaders and installing custom ROMs, you need to install Full Unlock packages which patches to remove the policy checks and gives you full access to the system. The problem here is that all apps then have full access to your system, even the bad ones.

**Back up your phone**

There are two ways you can go about backing up data on your Windows Phone. You can either use the WP7 Easy Backup Tool or the WP7 Backup app. You can grab WP7 Easy Backup Tool at <http://goo.gl/qM9bu>. The process is quite straightforward and the app is laid out like a wizard to guide you through the backup process.

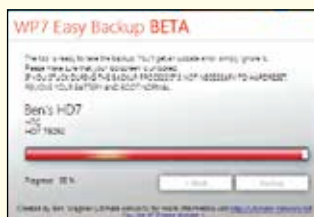
The app is a very clever piece of software and uses the Zune updater tool to back up your phone. This backup can be used by Zune to restore the device when you use the "Update" option under settings. This will

Unlockable Phones	Links
Samsung 1 <sup>st</sup> Generation Phones	<a href="http://goo.gl/mvk35">http://goo.gl/mvk35</a>
Samsung 2 <sup>nd</sup> Generation Phones (OS Version 7740 and below)	<a href="http://goo.gl/iYIsL">http://goo.gl/iYIsL</a>
LG	<a href="http://goo.gl/eauag">http://goo.gl/eauag</a>
HTC 1 <sup>st</sup> Generation	<a href="http://goo.gl/YREop">http://goo.gl/YREop</a>
HTC 2 <sup>nd</sup> Generation	<a href="http://goo.gl/jJGMO">http://goo.gl/jJGMO</a>
Nokia 710 and 800	<a href="http://goo.gl/o8Snj">http://goo.gl/o8Snj</a>



**WP7 Root Tools to tweak WP performance**

save everything right from the application settings to your texts inside the update. One downside is that any file changes, updates or other user specific data won't persist if they weren't present at the time of the backup. Check out the apps' XDA Developers thread here <http://goo.gl/305YK> for the download and exact deployment instructions.



**Use WP7 Easy Backup to save all your files on your PC hard-drive**

**Unlock/Root your phone**

Different brands, different OEMs and different versions will have their own unlocking method(s). We've compiled a list of brands and devices which can be unlocked in the table below. One important thing to note here is that Windows Phone 8 users won't be able to unlock their phones as there are no

unlocks available which allow you to root your phone.

Another possible method is Policy Unlock. Once you manage to get an Interop Unlock activated on your phone you can sideload WP7 Root Tools into your phone and then use the bundled exploits to attempt a full unlock of the phone. You can grab the latest copy of WP7 Root Tools from <http://goo.gl/OYwTj> You'll also need the Windows Phone SDK to deploy the app file (.xap) to the phone. You'll find the deployment program at the location C:\Program Files (x86)\Microsoft SDKs\Windows Phone\v8.0\Tools\XAP Deployment. You can either use this or XAPDeployX which can be downloaded from its XDA Developers thread here <http://goo.gl/bvhCb>. Note that this will only work once you've interop-unlocked the phone or on the 1<sup>st</sup> generation Windows phones with Developer Unlock.

**Things you can do post unlock/rooting**

A host of brilliant applications are made available once you've unlocked your phone, starting with Jaxbot's WPH Tweaks, which enables you to carry out a smorgasbord of much needed tweaks to the OS. Other applications include the installation of new themes, dynamic backgrounds, lock screen widgets, orientation lock, file explorer, screen capture, certificate installer and much more.

# worldview

OUR PICK OF THE BEST TECH ARTICLES FROM AROUND THE GLOBE

## (MUST READS)

### GOOGLE ISLAND

A story about a brave new Google World of the future. A story that will make you wonder what Mat Honan is smoking. It'll make you want to try some of what he's been smoking. A must read.

<http://dgit.in/gogisl>

### LOST CITY OF GOLD?

One year ago, a team of researchers traveled deep into the Honduran rainforest in search of Ciudad Blanca (not Eldorado, but still pretty cool). Recently they used a lidar system to penetrate the thick foliage of Mosquitia and made startling discoveries.

<http://dgit.in/goldiec>

### 8 INTERESTING THINGS ABOUT ELECTRIC CARS



Currently there are about 100,000 plug-in electric cars buzzing about on US roads. But they're still mostly a mystery to the average person. For example did you know that car batteries have an optimal operating temperature of 21 degrees celsius?

<http://dgit.in/teslarox>

### BANG WITH FRIENDS

Bang With Friends could be more than a simple hookup app. The Verge conjectures "What if you could talk about any embarrassing or obscure thing, knowing that another person already shares your interest?"

<http://dgit.in/bangsex>

## [ArsTechnica Corner]

### THE PAST, PRESENT AND FUTURE OF TOUCH



In a three part feature series ArsTechnica takes you on an incredible journey through the evolution of touchscreen technology. The stories go beyond the mundane historical facts and show you a future wherein if you're aware there's a computer there the interface has failed.

<http://dgit.in/arstouch>



#### Exploring Ubuntu Touch

It's far from done, but the "other" Linux OS for your phone has some good ideas it seems. Check out this detailed look at the still to be launched OS for smartphones from Canonical (the Ubuntu guys).

<http://dgit.in/wubuntu>



#### The rise and fall of AMD

With the Athlon 64, AMD was riding high. But since then the chipmaker has been on the ropes and it's been a largely downhill slide. Can AMD transform beyond a second-source supplier of Intel designs?

<http://dgit.in/wwamd1>



#### 25 indie games you must check out

From origami adventures to abstract e-sports, the indie scene is full of these wonderful gems which promise to keep you entertained for hours. Check out this link for ArsTechnica's top picks in this segment.

<http://dgit.in/arsgames>

### THE INTERNET OF THINGS IN ACTION

By 2015, six billion objects in the world will be connected to the internet. Startling isn't it? You have to check out this piece from TheNextWeb. It gives a great round-up of the current state and introduces you to the next phase in this realm – swallowable computers!  
<http://dgit.in/tiotsww>

### THE RISE OF BITCOIN



Our story last month gave you an abstract look into the world of Bitcoin. But if you want a straight forward primer on what the whole thing is about, this story is it. This is a must read story over at Engadget.  
<http://dgit.in/17QtCfO>

### 10 MUST-HAVE IPAD APPS

Everyone already has YouTube, Skype, and Fruit Ninja. Heck even the store recommends these apps and their ilk. What about rare finds? Here are apps that will make you ditch those old one time-favourites such as TweetDeck, iDisplay, and Zite, and make way for the new essentials!  
<http://dgit.in/wwipadap>

### WHAT 'THEY' KNOW

The 50 largest websites in the US, with 40% of all pageviews, installed an average of 64 files on a user device. These cookies track almost everything you do online. If you're concerned about digital privacy, and how much 'they' know about you, read this Wall Street Journal microsite.  
<http://dgit.in/wwwsjwtk>

# Everything you ever wanted to know about Google I/O, but were afraid to ask

- Siddharth Parwatay

Just as we were about to close the magazine and ship it off to print, three major events happened in the tech world. One was Yahoo's bid to buy out Tumblr, the second was the Xbox One reveal (if you can call it a major event) and the other was Google's I/O developer conference. In this compilation we'll give you the complete low-down on everything that happened at the event as well as different expert perspectives from around the world.

Traditionally the search giant has been known to make game changing announcements at this conference – relevant to both consumers as well as developers. In the past we have seen Google unveil Nexus devices like the Nexus 4, Nexus 10 along with the Android 4.2 Jelly Bean OS. In fact if you'll remember at the last I/O the biggest reveal was Google Glass and both the media as well as people at large still can't get enough of it. This I/O was no different when it came to announcements. However, if going by rumours you were expecting the much anticipated Android 4.3 flavour, or the Nexus 5 smartphone, you would be a tad bit disappointed. But hey we did get a whole bunch of announcements!

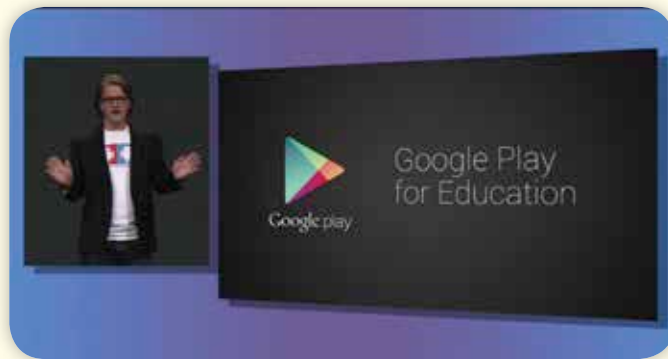
## From the horse's mouth

Perhaps the best place to get your info would be from Google itself. If you'd like to experience the excitement first-hand head over to <http://dgit.in/iokeynt> and experience the three and a half hour keynote in it's full glory. This is your closest chance to be one of the 6000

who actually attended the event on location at the Moscone Center in San Francisco. Of course if you're not all about the sound and glory there is always the official Google blog, aptly titled "Mo' screens, mo' goodness". Head on over to this link: <http://dgit.in/ioblogo>

## One handy list

So what exactly were the announcements? Well most of them were around Android, Google Play, Chrome, Google+, Search and Maps (You don't say, right?). But what about all the little fact, figures, and tidbits of information that were peppered throughout the



keynote? For instance there have been more than 900 million Android activations in total and 48 billion apps have been downloaded on Android! And the minor announcements too like Google launching store aimed at, and curated for, young children? Thankfully the good folks over at TheNextWeb have compiled a handy list so you can catch up and make sure you haven't missed anything. Head over to <http://dgit.in/iolistww> for your pint-sized dose of everything that was announced at the event.

## The live blogs

Despite live streams and worldwide video broadcasts, there's something inherently charming about auto-updating live blogs. Maybe it's the fact that you need to catch up with the pictures and text as they appear in one huge scrolling page, or perhaps it's the bloggers snarky commentary that goes along. Whatever the reason, live-blogs of events make good reading even if you're not following them live.

The best live blog coverage was done by two of the most well known tech websites out there – TheVerge and Engadget. (Verge: <http://dgit.in/wwwvgio> Engadget: <http://dgit.in/wwegio>) Even in retrospect both these long, almost endlessly scrolling pages are fun to go through.

## What google didn't announce

Google unleashed a barrage of new rollouts for all of its products at the Google I/O keynote, but like we said in the beginning there were some things that were sorely missed. We didn't see any sign of newer Android versions. Forget 5.0 (a.k.a Key Lime Pie), we didn't even see a minor update in the form of 4.3. On the hardware front Google announced a new version of the Chrome Pixel for Chrome OS and a stock Android version of the Samsung Galaxy S4. But still this was a disappointing showcase compared to last year. What could be the possible reasons? We leave you with this interesting analysis by ReadWrite: <http://dgit.in/wnnoshow>

## GOOGLE STREETVIEW AWESOMENESS

Those streetview cars have a tendency to capture some of the most amazing, awkward and sometimes inexplicable images. Here is a picture gallery of 20 of the most extraordinary moments captured on Google Street View, like a kid with an AK-47 in Romania, and more. <http://dgit.in/wwgsw>

## GOOGLE'S HARDWARE DREAMS



This year's I/O raised doubts about the common assumption that Google would go into the hardware business. Is Google's flirtation with being a hardware company finally over? Find out here: <http://dgit.in/whardg>

## 65 BOOKS YOU NEED TO READ IN YOUR 20S



Books that will move you, inspire you, make you cry, make you think, make you laugh and maybe even teach you a thing or two about life. The list is nicely classified into Novels, Memoirs, Poetry collections, and self-help books. <http://dgit.in/65reads>

## WHICH IS THE MOST RACIST COUNTRY?

Australia? So many stories of atrocities against indians, right? Or maybe it's the US? If you want to be surprised by the answer check out this fascinating map of the world's most and least racially tolerant countries. Apparently, 40 per cent of Indians don't like racially different neighbours! <http://dgit.in/wwracist>

# Is acquiring Tumblr the best way to solve Yahoo's troubles?

- Siddharth Parwatay

**L**ate last month the Board of Directors at Yahoo Inc. approved a \$1.1 billion bid in their attempt to acquire New York-based blogging site Tumblr. The whole web world including Twitter (and not to mention Tumblr hipster) went into a tizzy. Thoughts and opinions oscillated from kudos to anti-establishment fears. There were even a few stray voices wondering what would happen to all the porn blogs once Yahoo! takes over. However, most of the concerns were coming from Yahoo!'s track record with its acquisitions. Would they have another Flickr on their hands? Would Yahoo! screw it all up? In fact Marisa Mayer went so far as to state on record that she would not. "We promise not to screw it up. Tumblr is incredibly special and has a great thing going. We will operate Tumblr independently. David Karp will remain CEO. The product roadmap, their team, their wit and irreverence will all remain the same as will their mission to empower creators to make their best work and get it in front of the audience they deserve. Yahoo! will help Tumblr get even better, faster." she said – on you guessed it – a Tumblr blog post.

## So why did Yahoo! buy Tumblr?

Ostensibly the takeover is a bid to increase Yahoo!'s social quotient. As much as Tumblr is a blogging platform it's also a social network with its own culture and following. Yahoo! doesn't have a "cool" enough property in its fold yet. This very much in line with Yahoo's plan to show-



case Saturday Night Live clips exclusively beginning September.

## OK, but what's the real reason, seriously?

Going by a report on BuzzFeed (yes you read that right people), corporate image building has little to do with Yahoo!'s bid to buy Tumblr. And neither is Tumblr's impressive active user base. The real reason is the demographic that Tumblr has a stronghold over. "Tumblr's young demographic doesn't just ignore Yahoo! – they don't know what it is. When Yahoo! was founded, Tumblr's most important demographic wasn't even born", says the piece on BuzzFeed. Who are these people? The majority of Tumblr's user-base lies in the 18 to 24 segment. To read

the oddly spot on report head on over to: <http://dgit.in/I3M6Xa5>

## Is the Tumblr guy a billionaire now?

Oddly enough, he isn't. Tumblr founder David Karp, a highschool dropout started tinkering with the idea of a blogging site from his mom's apartment back in 2007. Since then he has remained a somewhat deliberate teen-adult figure possibly in a bid to associate more with the audience he caters to. The billion dollar deal however is going to leave him with just under \$200 million. Not a small amount, but not enough to get him on one of those coveted world's richest people lists. Read more here: <http://dgit.in/I1d0PIB> and here: <http://dgit.in/I3JGZ3x>

(worldview)

**RATEDRR**

Ever wonder what a 50 cal round does to an iPhone 5? Well the good news is that so does Richard Ryan, and he



actually does it. This guy has a penchant for using armour piercing rounds on the latest cellphones and tablets. In fact just recently he was sent a bulletproof case for iPhone 5. Did it survive? Check out his channel to find out. By the way, FPS Russia is too mainstream now.

<http://dgit.in/wratedrr>

(QR Code)



For a list of all the links from this section, head over to <http://dgit.in/101oRzF> Or point your phone to the QR code above

**(PRODUCT LAUNCHES)**

**TOSHIBA KIRABOOK**



Toshiba is clearly trying to reinvent itself. The 13-inch Kirabook is all metal, packs in 8GB of RAM (1,600 MHz), and a high-resolution 2,560 x 1,440 px display. Other specs include a 256 GB SSD and a core i5/i7 Ivy Bridge processor. Price: \$1599 onwards. <http://dgit.in/13k5MNh>

**XBOX ONE**



The long awaited next gen console from Microsoft is finally here. And packed into it this time around is an eight-core CPU, USB 3.0, WiFi direct, Blu-ray, 500GB HDD, HDMI input and output and 802.11n wireless. No word on the GPU yet.

**LUMIA 925**



With an aluminum body, dual-core 1.5GHz Snapdragon S4 Pro processor, 1GB RAM and 8.7-megapixel OIS camera, we hope the 2,000mAh battery will be able to keep the powerful components and 4.5-inch AMOLED screen powered. Price is a formidable \$600 (approx).

**WORDJUMBLE**

D	K	S	C	F	A	X	E	Y	V	M	A	H	G	X	H	P	V	X	B
W	N	E	R	A	W	E	E	R	F	A	J	Z	N	V	H	Q	G	G	G
X	O	D	H	G	N	I	K	C	A	H	N	P	I	A	Z	J	Z	V	L
W	C	G	O	S	A	P	F	I	R	E	F	O	X	V	P	T	E	T	Z
Z	I	A	T	E	U	E	J	G	O	O	G	L	E	A	W	T	G	P	I
B	V	M	M	I	K	J	Y	T	H	O	N	N	D	J	O	Z	F	I	N
N	A	M	A	U	U	J	S	W	X	M	Y	C	N	H	S	A	H	R	T
B	F	A	I	H	N	O	I	T	A	C	I	F	I	M	A	G	M	C	R
G	C	W	L	J	N	Y	Q	E	P	V	M	A	A	F	F	J	L	S	A
V	F	L	H	O	D	S	J	U	N	O	J	M	O	A	U	A	S	T	N
O	K	W	S	O	U	T	J	O	G	B	O	R	O	A	S	M	C	S	E
M	V	R	I	M	Z	I	I	H	P	J	T	D	A	L	K	M	J	O	T
M	B	D	Z	L	A	C	R	I	N	R	O	B	A	L	E	I	U	H	Q
M	Q	P	V	A	E	K	P	I	A	X	C	D	Y	H	R	N	T	G	R
X	N	S	U	B	G	F	A	N	A	U	C	Y	F	W	C	G	H	F	A

**ABSOLUTE TIMEPASS**

How well do you know the face changers of technology? Find the nine tech giants mentioned in this jumble

**Top 3 YouTube Picks**

Make sure your boss doesn't catch you goofing off with one of these videos playing on your screen



**Severe ADD**  
Duration: 1 min 3 secs  
What happens when you have the attention span of an ant on acid? This: <http://dgit.in/Zd6UEL>



**Xbox One**  
Duration: 1 min 41 secs  
Finally, a video that manage to capture the true essence of the Xbox One <http://dgit.in/13lHoif>



**DragonStar Z**  
Duration: 1 min 49 secs  
Can a Sayan ever cross paths with a Jedi? Neither did we, until now. <http://dgit.in/dbzjedi>

# digit KILLER RIGS

Everything you'll ever need to build your own PC. Whatever your budget.

■ Basic rig = ₹24,940 ■ HTPC = ₹25,380 ■ Entry-level gaming = ₹38,440 ■ Mid-range Compact System = ₹54,790 ■ Mid-range gaming = ₹63,850 ■ Ultra high-end = ₹1,83,591

## BASIC RIG

Processor	Intel Pentium G840	4100
Motherboard	Asus P8H61-M LX3	3100
RAM	Corsair 2GB DDR3 1333MHz	1100
HDD	Seagate 500GB 7200.12	3300
Monitor	ViewSonic VA2038WM	6500
Graphics Card	None	0
Cabinet	Huntkey T-91	1650
PSU	Corsair VS450	2500
Speaker (2.1)	Altec Classic Audio BXR1221	1200
Optical Drive	Samsung 22x SATA DVD Writer	950
Mouse	Amkette Ash Black (Bundle)	540
Keyboard	Amkette Ash Black (Bundle)	0
Sound Card	None	0
<b>Total</b>		<b>24,940</b>

## HTPC

Processor	AMD A6-3650	6500
Motherboard	ASRock A75M	4500
RAM	Kingston 2GB DDR3 1333MHz	1050
HDD	Western Digital WD20EZRX 2TB	5700
Monitor	None (your TV)	0
Graphics Card	None (HD6530D onboard)	0
Cabinet	Cooler Master Elite 120 Advanced	3000
PSU	Cooler Master CM 350 Plus	1780
Speaker	None	0
Optical Drive	Samsung 22x SATA DVD Writer	950
Mouse	Microsoft Desktop 2000 wireless combo	1900
Keyboard	Bundled	0
Sound Card	None	0
<b>Total</b>		<b>25,380</b>

## ENTRY-LEVEL GAMING

Processor	AMD A10-5800K	8600
Motherboard	ASUS F2A85-M Pro	8700
RAM	G-skill F3-10600CL9S-4GBNT	2400
HDD	Seagate 1 TB ST2000DL001	4100
Monitor	BenQ G2222HD	7000
Graphics Card	None	0
Cabinet	Huntkey T-91	1450
PSU	Corsair VS450	2500
Speaker	Altec Lansing V2621	2200
Optical Drive	Samsung 22x SATA DVD Writer	950
Mouse	Amkette Ash Black (Bundle)	0
Keyboard	Amkette Ash Black (Bundle)	540
Sound Card	None	0
<b>Total</b>		<b>38,440</b>

## MID-RANGE COMPACT SYSTEM

Processor	Intel Core i5-3570K	14900
Motherboard	ZOTAC Z77X-ITX A-E	7900
RAM	Corsair Vengeance 8GB DDR3 1600	4290
HDD	Seagate Barracuda 2 TB	5800
Monitor	Your TV	0
Graphics Card	ASUS GTX 650 Ti DC2T-1GD5	12700
Cabinet	Cooler Master Elite 120 Advanced	3000
PSU	Cooler Master Thunder 500W	3350
Speaker	None	0
Optical Drive	Samsung 22x SATA DVD Writer	950
Mouse	Microsoft Desktop 2000 wireless combo	1900
Keyboard	Bundled	0
Sound Card	NA	0
<b>Total</b>		<b>54,790</b>

## MID-RANGE GAMING

Processor	Intel Core i5-3450	11600
Motherboard	Gigabyte GA-B75M-D3H	4200
RAM	Corsair Vengeance 4 GB	2300
HDD	Toshiba 1TB + Kingston V100 64GB	7200
Monitor	BenQ G2420 HD	10200
Graphics Card	MSI R7850 PE 2GD5/OC	14500
Cabinet	Antec One - S3	3500
PSU	Corsair GS 600	4800
Speaker	Altec Lansing V2621	2200
Optical Drive	Samsung 22x SATA DVD Writer	950
Mouse	Razer Abyssus (bundled)	0
Keyboard	Razer Abyssus (Bundled)	2400
Sound Card	None	0
<b>Total</b>		<b>63,850</b>

## ULTRA HIGH-END GAMING

Processor	Intel Core i7-3770K	20300
Motherboard	ASRock Fatal1ty Z77 Professional	16500
RAM	Corsair Vengeance 8GB (2x4GB) DDR3 1600	4700
HDD	WD WD30EZRX 3TB + Corsair Neutron 120 GB	16000
Monitor	BenQ XL2420T	23200
Graphics Card	ZOTAC GTX 680 2 GB	34000
Cabinet	Cooler Master HAF - XM	9500
PSU	Cooler Master Real Power Pro 850W	11044
Speaker	Logitech Z906 5.1	18200
Optical Drive	LG Blu-ray WH14NS40 RW	6997
Mouse	Roccat Kone XTD	4750
Keyboard	Corsair Vengeance K70	7200
Sound Card	ASUS Xonar Phoebus	11200
<b>Total</b>		<b>1,83,591</b>

**CoD: Ghosts**

The first official trailer of Call of Duty: Ghosts. What are you waiting for? Do watch it NOW: <http://dgit.in/CoDGst>

**A View From My Seat**

A photo sharing app that lets users browsing and sharing photos from their favorite venues <http://dgit.in/10pP7ZO>

# SPEND SMART

In the market for a nice Monitor? Or you just want to buy a good set of speakers? Check out their prices and details here...



## MONITORS

Brand	Model	Display Size	Panel Technology	Native Resolution	Built-in Speakers	HDMI Port	Price (in ₹)
Acer	S240HL	24 inches	TN	1920X1080	No	1	10,500
Asus	VS238H	23 inches	TN	1920X1080	No	1	12,100
Asus	PA246Q	24 inches	P-IPS	1920X1200	No	1	38,540
BenQ	GW2250	21.5 inches	VA	1920X1080	No	0	9,000
BenQ	RL 2455HM	24 inches	TN	1920X1080	Yes	2	13,990
BenQ	GL 2450	24 inches	TN	1920X1080	No	1	12,000
BenQ	XL 2411T	24 inches	TN	1920X1080	No	1	24,000
BenQ	XL-2720T	27 inches	TN	1920X1080	No	1	35,000
BenQ	GW 2760 HS	27 inches	VA	1920X1080	No	1	20,000
Dell	S2240L	21.5 inches	IPS	1920X1080	No	1	10,000
Dell	S2740L	27 inches	IPS	1920X1080	No	1	30,500
LG	29EA93-P	29 inches	IPS	2560X1080	Yes	2	38,000
NEC	E231W	23 inches	TN	1920X1080	No	0	36,000
NEC	EA243WM	24 inches	TN	1920X1200	Yes	1	45,000
NEC	PA271W	27 inches	IPS	2560X1440	No	0	1,15,000
Philips	227E3QPHSU	21.5 inches	IPS	1920X1080	No	1	9,900
Viewsonic	VX2770smh	27 inches	IPS	1920X1080	Yes	1	24,000
Viewsonic	VP2770	27 inches	IPS	2560X1440	No	1	64,000



## SURROUND SPEAKERS

Brand	Model	Configuration	RMS	Chassis Material	Frequency Response	Price (in ₹)
Creative	Inspire T6160	5.1 Channel	50 W	Plastic	40-20,000 Hz	4,730
F&D	F3000U	5.1 Channel	79 W	Wood	20-20,000 Hz	4,800
Genius	SW - HF6000	5.1 Channel	200 W	Wood	40-20,000 Hz	12,500
Mitashi	HT 90 FU	5.1 Channel	70 W	Wood	40-20,000 Hz	4,940
Zebronics	ZEB-SWT9100RUCF	5.1 Channel	NA	Wood	20-20,000 Hz	6,100
iBall	Booster	5.1 Channel	120 W	Wood	20-20,000 Hz	4,995
Intex	5850 SUF	5.1 Channel	80 W	Wood	20-20,000 Hz	5,070
Logitech	Z906	5.1 Channel	500 W	NA	35-20,000 Hz	25,995
Philips	DSP 56U	5.1 Channel	75 W	Wood	20-20,000 Hz	6,070





## Print 3D photographs

How about printing your own photographs in 3D? Interested to learn more about it, take a look here: <http://dgit.in/119velc>



## Xbox One vs. PlayStation 4

The Xbox One is already here. Let's have a look at its comparison with PlayStation 4. <http://dgit.in/16KKY6Y>

Price Watch



## PORTABLE SPEAKERS

Brand	Model	Configuration	Battery Type	RMS	Chassis Material	Frequency Response	Price (in ₹)
Creative	D100	2.0 Channel	AA	NA	Plastic	20-20,000 Hz	3,900
iBall	Xpresso	2.0 Channel	Li-ion	2 W	Plastic	100-20,000 Hz	865
iBall	OPUS	1.0 Channel	Li-ion	4 W	Plastic	150-80,000 Hz	1,490
JBL	Micro II	1.0 Channel	Li-ion	3 W	Plastic	150-20,000 Hz	3,490
JBL	Flip	2.0 Channel	Li-ion	10 W	Plastic	150-20,000 Hz	5,990
Umeko	Dynamo	2.0 Channel	Li-ion	10 W	Plastic	NA	2,180
Zebtronics	NITRO	2.0 Channel	Li-ion	5 W	Plastic	80-20,000 Hz	1,120



## STEREO SPEAKERS

Brand	Model	Configuration	RMS	Chassis Material	Frequency Response	Price (in ₹)
Audioengine	A2	2.0 Channel	60 W	Metal	65-22,000 Hz	12,900
Audioengine	A5+ Bamboo	2.0 Channel	150 W	Wood	50-22,000 Hz	34,500
Circle	Aura	2.1 Channel	28 W	Plastic	NA	5,999
Circle	CT- 2.103	2.1 Channel	40 W	Plastic	55-20,000 Hz	2,500
Creative	SBS A120	2.1 Channel	9 W	Plastic	50-20,000 Hz	1,485
Creative	GigaWorks T20 Series II	2.0 Channel	28 W	Plastic	50-20,000 Hz	7,999
Creative	GigaWorks T40	2.0 Channel	28 W	Plastic	50-20,000 Hz	11,900
Creative	GigaWorks T3	2.1 Channel	NA	Plastic	30-20,000 Hz	15,000
Edifier	X220	2.1 Channel	22 W	Plastic	50-20,000 hZ	1,960
Edifier	M1385	2.1 Channel	28 W	NA	50-20,000 hZ	2,450
F&D	F680	2.1 Channel	70 W	Plastic	20-20,000 Hz	3,500
F&D	V620 plus	2.0 Channel	4 W	Plastic	90-20,000 Hz	1,190
Genius	SW-T2.1 1800	2.1 Channel	50 W	Plastic	50-20,000 Hz	3,840
Genius	SP - HF1800A 2	2.0 Channel	50 W	NA	20-20,000 Hz	4,350
iBall	Tarang Lion	2.1 Channel	40 W	Wood	20-20,000 Hz	2,700
Intex	IT 2475 Beats	2.1 Channel	40 W	Plastic	20-20,000 Hz	2,100
JBL	Creature III	2.1 Channel	20 W	Plastic	50-50,000 Hz	4,750
Klipsch	ProMedia	2.1 Channel	200 W	Fibre	31-20,000 Hz	11,500
Lenovo	C1530	2.1 Channel	NA	Plastic	30-20,000 Hz	1,490
Logitech	Z313	2.1 Channel	25 W	Plastic	NA	2,230
Logitech	Z623	2.1 Channel	200 W	NA	NA	11,000
Mitashi	HT 44 FUR	2.1 Channel	36 W	Plastic	50-20,000 Hz	2,690
Philips	SPA12	2.1 Channel	7 W	Plastic	NA	1,700
Sony	SRS-D9	2.1 Channel	60 W	NA	50-20,000 Hz	4,999
Tech-Com	SSD-2000	2.1 Channel	34 W	Plastic	30-20,000 Hz	1,230
Zebtronics	SW3200RUCF	2.1 Channel	44 W	Plastic	20-20,000 Hz	2,150



## codev for developers

codev is an online code-editor which has inbuilt support for SQLite editor, compiler, time tracker and automatic backup. <http://www.codev.it>



## IcoMoon – Free vector icons

IcoMoon lets you browse through its 3800+ free vector icons. You can even import your own vectors to build new fonts. <http://www.icomoon.io/>

### Monitor dilemma

Please help me out as I am very confused with monitors and their model numbers. My budget is about 10 to 20k. I need a 24- to 27-inch LED backlit monitor with good refresh rate and color output. It should have DVI, HDMI or DisplayPort connectivity options. All other fancy looks, USB hub etc are secondary preferences. I want more of performance. A quick search suggested these ones - HP Pavilion 27xi, ASUS PA24HQ, Dell UltraSharp U2412m.

Hoping for a (quick) response.

*Harshit Singhal*



Dell UltraSharp U2412m

**A** If you want a 27-inch monitor, we would suggest you go for the BenQ GW2760HS which comes for around ₹19,500. This monitor has one of the best contrast ratios that we have ever come across and it performs decently well while watching HD movies and while gaming.

Dell Ultrasharp U2412m is another good monitor for the price it is being offered. It comes for around ₹19,000 and has a 16:10 aspect ratio giving a maximum resolution of 1920x1200.

The ASUS PA246Q is a professional monitor, which is great if you are an imaging professional. It gives you countless options to tweak colours which is a prime necessity if you want accurate colours while working in Photoshop or while editing videos. But for pure home use it is an overkill as it is priced around ₹35,000 which is ₹15k over your budget. We would suggest you go for either the Dell Ultrasharp U2412m or BenQ GW2760HS.

### Different rigs

I am planning to buy a new PC to replace my 7-year old one. I have a 23-inch all in one PC

with TV on mind. A second option I thought of is Buying a led TV and a compact CPU with decent configs, which might be cheaper to buy. I checked out HP 23-inch AIO with intel i5, touch screen, TV and costs ₹60k.

Please give me your opinion so that I can make a decision. Thanking you in advance for an early reply.

*Praveen Dev*

**A** I would suggest you opt for an assembled PC in favour of an all-in-one for the simple reason that you can change your components as and when you feel the need in the future. With an all-in-one PC, your upgrading options will be limited. Unless you have very, very limited desk-space, I would suggest you get yourself an assembled PC.

Regarding touchscreens, well I personally think of it as a gimmick and it will not really help you much with productivity as such. A touchscreen makes sense on a 13-inch and lower laptop and on tablets, but having a 20-inch plus touchscreen monitor, does not really add any value to your overall productivity.

As for the other option that you suggested, of using a compact system and using your LED TV as the screen, well that can be an option provided you are willing to manage time between watching TV and using your system.

Keeping your ₹60k budget in mind, we will provide you with two rig options, one involving a mid-range gaming system and the other involving a small form factor system with an LED TV.

#### Mid range gaming rig

- Processor: Intel Core i5-3450 – ₹11,500
- Motherboard: Gigabyte GA-B75M-D3H – ₹4,200
- RAM: Corsair Vengeance 4GB – ₹2,500
- HDD: Seagate 1TB – ₹3,900
- Monitor: BenQ G2420HD – ₹9,800
- Graphics Card: ZOTAC GTX 650Ti BOOST – ₹12,000
- Cabinet: Antec One S3 – ₹3,000
- PSU: Corsair GS 600 – ₹4,800
- Speaker: Altec Lansing V2621 – ₹2,200
- Optical Drive: Samsung 22x SATA DVD writer – ₹950
- Mouse and Keyboard combo – ₹2,400
- Total – ₹57,250

#### Compact system with LED TV

- Processor: Intel Core i5-3450 – ₹11,500
- Motherboard: ZOTAC Z77X-ITX A-E – ₹10,100
- Corsair Vengeance 4GB – ₹2,500
- HDD: Seagate 1TB – ₹3,900
- Graphics Card: ZOTAC GTX 650Ti BOOST – ₹12,000
- Cabinet: Cooler Master Elite 120 Advanced – ₹2,799
- PSU: Cooler Master Thunder 500W – ₹3,400
- Optical Drive: Samsung 22x SATA DVD Writer – ₹950
- Keyboard and Mouse combo: Microsoft Desktop 2000 Wireless combo – ₹1,900
- LED TV: Samsung UA22F5100AR 22-inch full HD LED TV – ₹15,900
- Total – ₹64,949

### Which portable drive to get?

Q) I urgently require a 1TB portable hard disk and my budget is around ₹5,000. I short-listed three of them viz.

- 1) Seagate Backup Plus 1TB Hard Drive (Blue)
- 2) WD My Passport 1 TB External Hard Disk (Blue)
- 3) Adata DashDrive HD710 1TB External Hard Drive (Black-Blue)

I want to know which of the above is the best performer. I also want to know whether it is safe to buy it from Snapdeal or Flipkart?

*Roubhya Shankar Aluni*

**A** Of the three drives that you have listed, the Seagate Backup Plus 1 TB one is a better performer than the other two and also offers social media backup features such as backing up your Facebook and Flickr photos and YouTube videos.



ADATA HD710

## SocialBro for Twitter users

Are you a active tweep? You need some serious management. This web app lets you monitor your Twitter community more efficiently. <http://www.socialbro.com>



## Xbox One introduced

Here comes the Xbox One, supporting USB 3.0, WiFi Direct, Blu-Ray, and 8GB of RAM. Do watch for its specs: <http://dgit.in/16KAPqY>

Agent 001

Of the other two, the ADATA HD710 is a comparatively rugged drive with a rubber covering which is water resistant and shockproof as well. So if you are the kinds who is not very careful with gadgets, ADATA HD710 is an ideal drive:) But in terms of pure performance, all three drives are within a margin of error (speeds being 5-10 per cent of each other)

Buy the one which is offering you more warranty and lower price. It is alright to buy it online, as long as you have the warranty card. Also another thing you should consider is the availability of service centres of that brand around your locality in case the drive has any issues.

## Lumia 920 or Galaxy S4?

I need assistance regarding mobile purchase for my father. We have zeroed in SG 4, HTC One and Nokia Lumia 920.

He doesn't have a fetish for apps, games, SD Cards (NL 920 doesn't support that :( ) or big (huge screens) as well. He already has an old Android device and was asking me about NL 920. I told him about the current EMI and Wireless Charging Offers and mentioned that NL 920 has received favourable reviews as well. We are looking for a device which is future proof for some time although I do know that technology is moving at a rapid rate and today's technology becomes redundant after few weeks or may be within few months!! :(

Can you please guide me to choose a suitable device for him as you are an expert in this field? My father isn't that keen on owning Windows phone as he is already having an old Android model (Although, I am not sure about the model, but, I know its Samsung Galaxy).

*Rasesh Bhagwati*

**A** Among the phones that you have narrowed down on, I would recommend the Samsung Galaxy S4. There are multiple reasons for that. First, Samsung has a better service presence in India than HTC. This is a major point to consider, consid-

ering you will probably use the phone for 2 years at least. Things tend to go wrong, and a good service network is always helpful.

Second, while the One is a very powerful phone with an exquisite design, we aren't sure if your father will really be using Blinkfeed or the plethora of camera features packed into the phone. Third, Samsung will have the widest range of accessories for the Galaxy S4, something HTC may never be able to do with the One.



Samsung Galaxy S4

Why am I discounting the Lumia 920? First, it is a big and heavy phone. Not everyone appreciates that. Second, how many of the camera features will be regularly used by your father? Buying a heavy phone would now seem an even bigger sacrifice. The on-screen keyboard isn't very comfortable to use, which makes sending emails and SMSes a bit of an annoyance.

A couple of points based on the details you have shared. If your dad is already using an Android phone, shifting to a more powerful Android device will be a smoother experience.

The familiarity aspect remains.

If he isn't very keen on owning a Windows Phone device, it would be important to actually give it another shot by using it at a store, to give it one last shot at making an impression, before buying. The on-screen keyboard on the Lumia 920 (and all Windows Phone 8 devices) is very cramped and slightly inconvenient to use. But then again, that is a very subjective thing, and varies from person to person.

## Budget laptop

I'm planning to buy a notebook. I have a budget of ₹25k. I'm a professional working in an IT company. I would be working in Linux only. And will use it for work and not for playing games. So which laptop would be better for me?

*Zohaib Hussain*



Acer Aspire V5

**A** To be honest, you should just visit any LFR or electronics store and check out the laptops on display, if you don't have a brand preference. Laptops at that price range are nearly all the same in terms of build quality and performance. But still, of the laptops we've reviewed at the budget range, the ones from Acer and HP Compaq traditionally offer great value for money. Take a look at Acer's V3 or V5 laptop range.

## Lumia 620 verdict

I've read enough reviews in the Internet and heard enough from the Stores. I need a final opinion and a verdict from you on purchasing Nokia Lumia 620.

*Vipin*

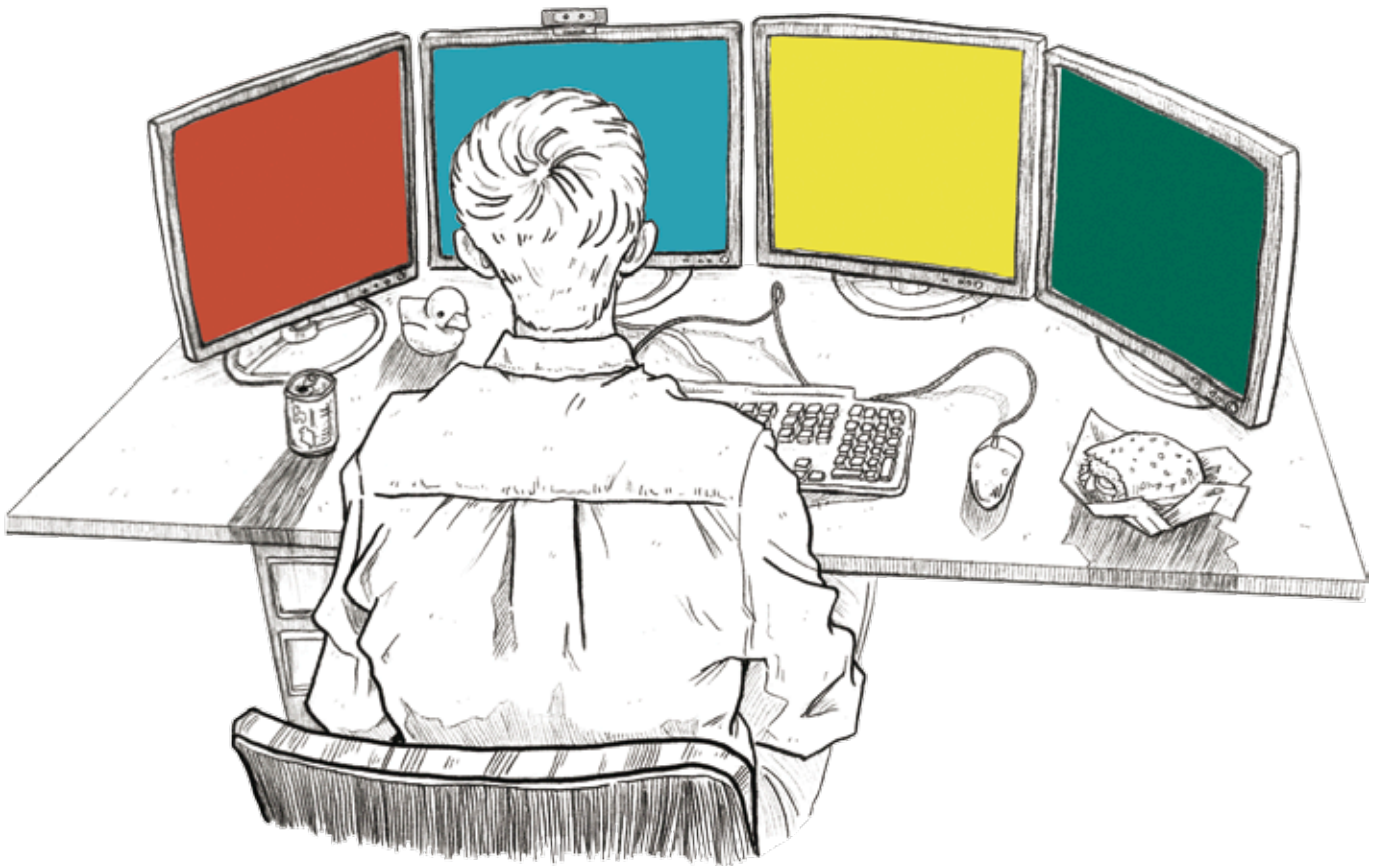
**A** Our final verdict is this: What we like about the affordable Nokia Lumia 620 is the build quality and the premium materials used, smooth performance, surprisingly competent camera and a whole bunch of apps that add value for a certain demographic of users. However, there are the compromises. The display is a tad too small if you prefer bigger sized displays, and the on-screen keyboard is just too cramped. The small battery may be a handicap for anything more than medium usage as a primary phone. All in all, the choice between this and the HTC WP8S will come down to which one you prefer more in terms of looks and brand name. Here is the link to the full review: <http://goo.gl/PdeEI>



Nokia Lumia 620

# PERCEPTUAL COMPUTING AND THE FUTURE OF UI

## DESIGNING FOR INTUITIVE HUMAN-COMPUTER INTERACTION . . . NATURALLY



**T**he availability of touch devices and simple communications protocols are shifting the way we interact with our computing devices. At the same time, the introduction of faster hardware running at lower power levels is improving and easing the interface hurdles of modern computing tasks. Perceptual computing—the next big wave of technology—is about to hit, bringing with it the promise of very engaging computing experiences. The Intel® Perceptual Computing Software Development Kit (SDK) and Intel's work with



Nuance and other companies are helping to turn this promise into a reality.

Reaching beyond the use of a touch-enabled screen, mouse, and keyboard, perceptual computing steps into the sensory world of voice commands, gesture control, and facial recognition where, for example, computers can understand our voices—not only from a set of specific commands—but also through our tone and phraseology. It also means 3D-object recognition, and hand and finger tracking at close range. The technolo-

gies that enable such interpretation will transform the human-computer interaction.

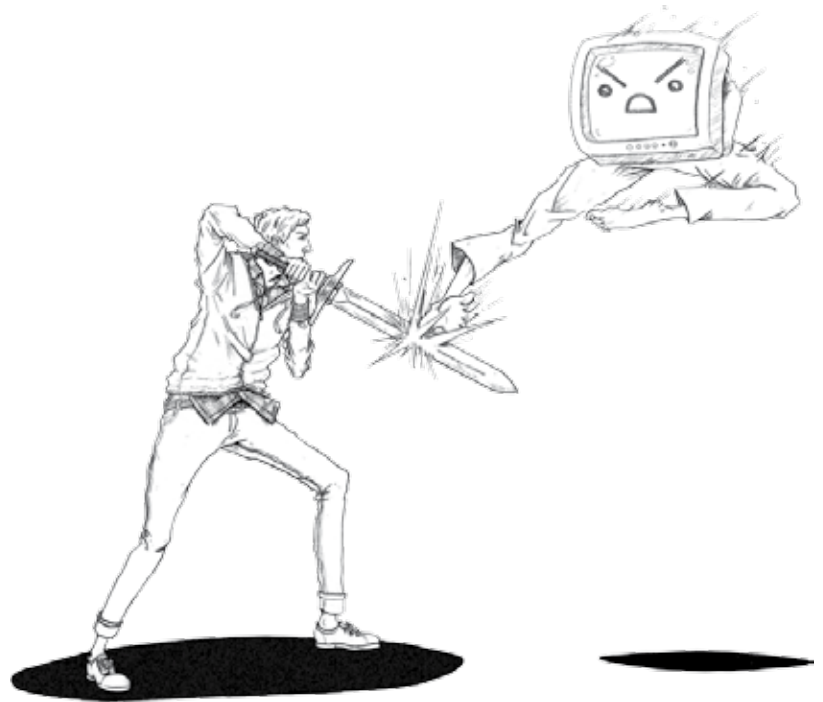
## ENGINEERING CHALLENGES FOR A NEW WORLD

Today, most users communicate with their computers using the familiar keyboard and mouse, which offer a direct and recognizable collection of input for computers and present simple data points for the software environment to evaluate. When a user presses a key or clicks a mouse button, little about those actions can be misconstrued or misinterpreted. However, these actions limit users to a single interface.

Developers are now working to make computers as cognitive about their surroundings as we are (or at least as aware as we should be) so they can process much of the information around them and arrive at a logical conclusion based on a user's intent. Extracting information from the environment will include data points such as the directionality of the voice (for example, is the user talking to the computer or to a friend nearby?), the ambient background noise, facial recognition for automatic user selection (and security), 3D maps of the environment for object and gesture recognition, and more.

To reach that goal, many important engineering tasks must be addressed, starting with the integration of new and improved sensors on PCs, Ultrabook™ devices, tablets, and smartphones. Cameras that can evaluate depth, microphones that understand directional audio, and touchpads with pressure sensitivity need to be standardized, miniaturized, and implemented across the ecosystem. For perceptual computing to take a firm hold, devices must be equipped with the next level of intelligence and capabilities.

Advances in environment awareness are becoming enabled by higher performance computing platforms, including the 3rd generation Intel® Core™ processor



family found in Ultrabook devices. Intel engineers have developed improved process technology and CPUs that can maintain a real-time connection with different communication interfaces and can provide a high level of user experience. Although many hardware challenges remain—including how to address enormous data sets and further miniaturize sensors—Moore's Law and Intel will continue to unlock the power of perceptual computing.

Perceptual computing is not about changing and remapping current interfaces, so don't expect the keyboard and mouse to vanish from the world of PCs any time soon. Perceptual computing aims instead to create new modalities that redefine computing interactions.

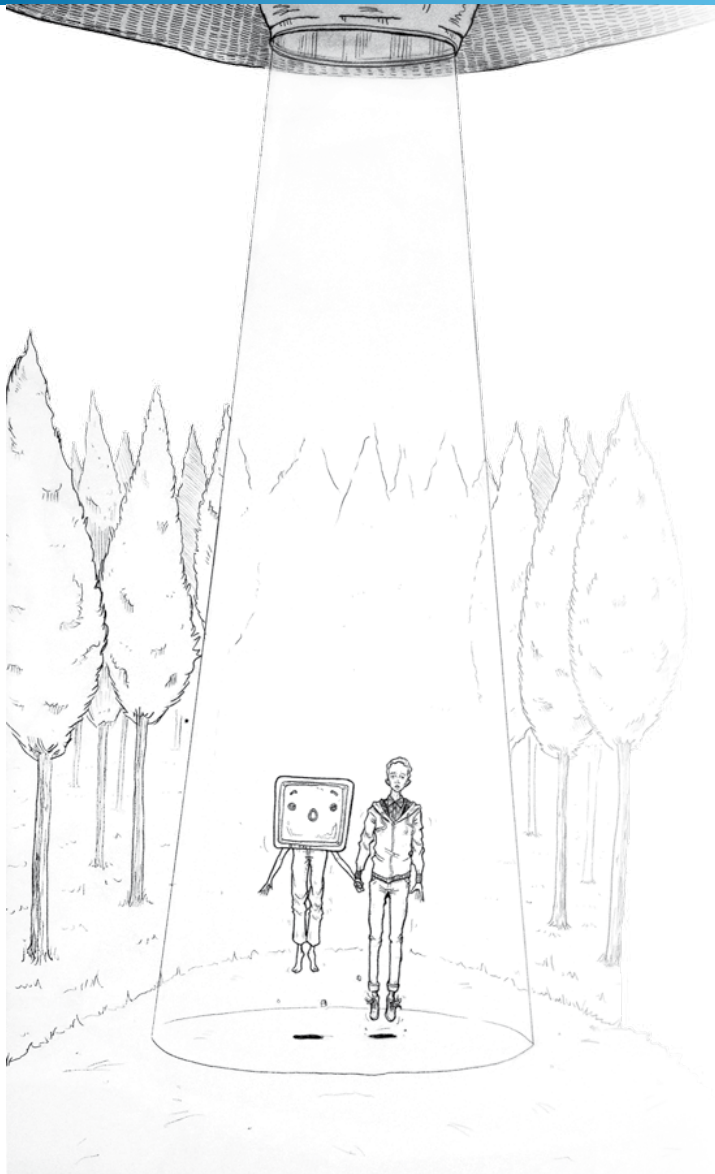
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PERCEPTUALCHALLENGE.INTEL.COM**





## THE INTEL® PERCEPTUAL COMPUTING SDK

In October 2012 Intel introduced a comprehensive SDK that focuses on several aspects of perceptual computing, including facial recognition, voice commands, and gestures. The SDK, which includes manuals, code samples, algorithms, example applications, and tutorials, helps developers integrate perceptual computing interfaces in as simple a way as possible. Intel has always been a proponent of improved software development; in this case, they found that a combination of sensor technology and hardware computing capability created the perfect opportunity to promote perceptual computing.

The Intel Perceptual Computing SDK supports several of the most popular human-to-computer communication modalities and focuses on those that interact with a user in the 6-inch to 3-foot range of the device. While the SDK will work with many platforms, it targets Ultrabook devices, clamshell notebooks, and tablets with the use of

## Perceptual Gaming

Games have pushed the technology envelope and driven innovation with user interaction. Select this category to turn a game into an experience or create an entirely new game mechanic. Enhance a game you built and love or develop something never seen before with the Intel Perceptual Computing SDK.

embedded microphones and add-on gesture recognizing cameras. (Systems with high-quality microphones and webcams with depth perception will soon be universally adopted; however, they're not yet at the miniaturized level required for small device implementation.)

Combining the efforts of Intel's internal software teams and the work of industry leaders, the Intel Perceptual Computing SDK supports a wide range of interaction types and will facilitate other software developers' many integration methods. Close-range tracking of fingers will allow developers to define usages based on a person's hand for augmented reality (grasping an object in 3D space) or for recognizing static and dynamic hand signals. Object tracking will allow developers to combine images from the camera in real-time with depth data so that "markerless" real-world objects can be used in virtual experiences. (See the "Now See This" article on augmented reality in this magazine.)

To handle face recognition and analysis, the SDK includes seven-point landmark detection and "attribution" detection including smiles, blinks, and even a user's age. Finally, the SDK's speech-recognition capabilities permit voice command and controls, as well as dictation and text-to-speech analysis.

Anil Nanduri, director of products and solutions in the Perceptual Computing Group at Intel, sees the company's development and support of the Intel Perceptual Computing SDK pushing the industry forward. "We are about driving the natural user-interaction computing capabilities and working with the ecosystem for continued advancement. We believe the SDK will drive the ecosystem in helping bring up new human-computer interface experiences."

The SDK is unique and is the first to address and combine several perceptual computing technologies, the result of Intel's collaboration with other industry leaders. Total Immersion built the computer-vision tools, Nuance provided the speech and voice components, and SoftKinetic developed the depth-tracking component. Intel combined these tools into the SDK and linked them in such a way that developers can use them easily and use them simultaneously when their applications require it. The SDK additionally includes a program for putting Creative Interactive Gesture\* cameras into the hands of developers.



The gaming industry was an early adopter of motion tracking and gesture control. Today, the SDK helps PC developers learn how to use and integrate these new interface technologies in a simple and straightforward way. Developers will be able to develop applications in the world of education, business, 3D modeling, 3D printing, and more.

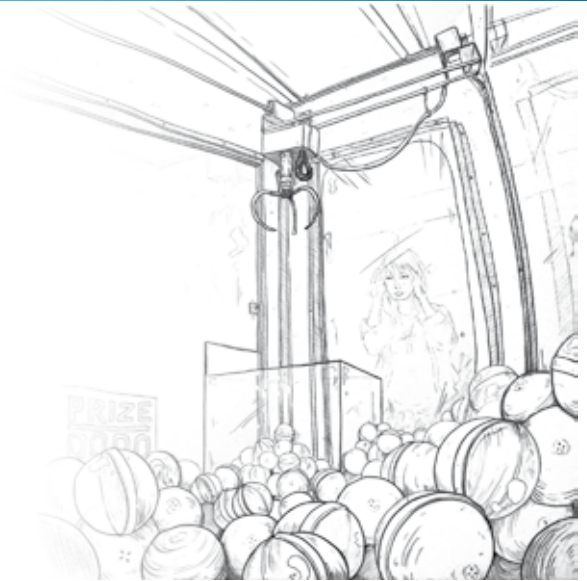
For more information on the SDK, please visit: [intel.com/software/perceptual](http://intel.com/software/perceptual)

## NUANCE DRAGON ASSISTANT\*: A CASE STUDY IN PERCEPTUAL COMPUTING

Voice-control technology is one aspect of perceptual computing that is already experiencing significant progress. Nuance, famous for its Dragon Naturally Speaking voice-recognition software, helped guide and facilitate implementation of the SDK in the speech and voice capacities for Dragon Assistant. Nuance Dragon Assistant software will integrate with Ultrabook devices to enable voice commands spanning several applications, including Media Player\*, Facebook\*, Twitter\*, and Web browsers. This early implementation allows users to speak a command to the computer. For example, after a user says, "Search Amazon for lawn chairs," the Web browser opens, locates the Amazon.com site, and searches on the phrase "lawn chairs." Sharing that result or a specific URL with Facebook friends or Twitter followers is also a simple phrase away: "Share this page on Facebook."

Peter Mahoney, chief marketing officer at Nuance, explained to Intel® Software Adrenaline that, "Voice recognition is an extremely complex task—you must handle many different things, from audio, to voice models, to integrating with apps. We tried to make the tasks available at fairly high-level chunks to help make the developer's job of integration easier." With more power available, Nuance has greatly improved both the speed and accuracy of voice recognition by using multiple cores for better efficiency. That efficiency is becoming more important for Nuance and the Intel Perceptual Computing SDK as users increasingly expect longer battery life from their mobile devices.

As part of the SDK, Nuance's technology will be made available to developers. They can use it to add and expand



on the number of voice-controlled applications on Microsoft Windows\* and Intel® platforms. Software developers can pass nearly all of the audio processing and handling to the development platform, providing Nuance an audio file and getting a basic text file result of the recognized terms. The application can then parse the result, using it in several ways. The goal is to make the use of voice-control technology simple and intuitive for developers to use.

As both Nuance's technology and the Intel Perceptual Computing SDK evolve, expect voice recognition to expand and become more refined, too. The next big push will come in the form of natural-language processing and its requirement for more processing horsepower and much larger, cloud-based databases. Natural-language analysis will allow computers to not only understand commands but also to understand a speaker's intent, an intensely more complex problem. Instead of being restricted to specific commands, natural language will allow users to, for example, say, "I need to find a new lawn chair," and then see a search result in their favorite shopping application.

## MULTI-MODAL INTERACTION AND THE FUTURE OF PERCEPTUAL COMPUTING

The modalities of voice, facial recognition, and gesture are important. But the true power and potential for perceptual computing reside in the ability to combine these interfaces and sensors, and to increase the amount of data accessible to the computer (from the user); and to increase the amount of information the computer can receive at one time. Imagine a computer that can "see" if you are looking away from the screen while talking to determine whether it should interpret your voice as a command or as ambient noise.

A natural interface will allow an understanding of true intent, which can be acted upon in a fluid manner. Many visionaries believe that extensive perceptual computing is an attainable goal in the near future, and the Intel Percep-



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## Open Innovation

Think outside the box. Think beyond the wires! Select this category for your idea that takes the features from the SDK and turns them into exciting, innovative experiences that free the user from traditional computing models. Establish your own rules and create the experience you once only imagined.



tual Computing SDK will help developers push forward toward that goal. Much like the way touch technology on mobile devices quickly gained momentum, wide-scale multi-modal perceptual computing is likely to be available soon. The ecosystem has evolved rapidly over the last 10 years, thanks to a surge of tools and computing power, dubbed by Nanduri as, "an innovation hockey stick."

Intel's support and creation of the Intel Perceptual Computing SDK shows a dedication to the expansion of computing technology. Because Intel, and companies such as Nuance, Total Immersion, and SoftKinect, created the SDK to be powerful and easy to use, application developers in all areas of expertise will be able to integrate and experiment with voice and gesture technology.

## Productivity

Create a way to do things faster, better, and easier. Select this category if you've utilized the perceptual computing usage modes (i.e. finger/hand tracking, speech recognition, facial analysis or 2D/3D object tracking) to enhance a user's ability to accomplish tasks with a non-gaming application. Keep in mind that it's not necessary to REPLACE mouse and keyboard, but you want to use perceptual computing usages to ENHANCE a user's ability to accomplish a task.

## Creative User Experience

Select this category if you've developed an innovative means for users to interact with applications using any combination of the perceptual computing usage modes (i.e. finger/hand tracking, speech recognition, facial analysis or 2D/3D object tracking) or even a single usage mode. Create an interaction that is memorable and innovative for the user.

The combination of voice, facial recognition, and gesture will truly revolutionize the human-computer interface and help remove many of the computing boundaries today. Users of all skill types and knowledge levels will be able to effectively and efficiently interact with their devices to extract information and transparently get the results they want. The power and potential of perceptual computing are now beginning to take hold. In the coming years, watch for exciting developments that will transform the way we interact and use our computers and mobile devices.

## INNOVATION AND PERCEPTUAL COMPUTING CONTEST

Intel created a USD 1 million innovation contest to feature the best examples of what's possible with the Intel® Perceptual Computing Software Development Kit. This contest invites developers to be wildly creative with human-computer interaction designs. The ecosystem has many creative ideas for new interface technologies, and Intel is hoping to channel them into a public forum of collaboration. As with any new computing technology, Intel is looking for the handful of applications that will pop out of the screen, impress new consumers, and draw them into the scaling benefits of perceptual computing. To learn more about the contest, see: [www.intel.com/software/perceptual](http://www.intel.com/software/perceptual)

### ABOUT THE AUTHOR

*A contributing writer, roving reporter, podcast host, and blogger for the popular technology site PC Perspective, Ryan Shrout researches and writes product reviews for today's leading-edge hardware and software products. When he's not tracking down the pending changes to the various CPU and compute architectures, Ryan is on tap to assist the RH+M3 group when the need for a hardcore computer-geek writer arises.*





# INTEL® PERCEPTUAL COMPUTING SDK

## GETTING STARTED

### HARDWARE AND SOFTWARE REQUIREMENTS

The SDK requires the following hardware and software requirements:

- Hardware requirements:
  - o IA-32 or 2nd Gen Intel® Core™ processor with Intel® 64 architecture
  - o 500 MB free hard disk space
  - o Creative\* Interactive Gesture camera
- Software requirements:
  - o Microsoft\* Windows\* 7 or Windows\* 8 operating system with SP1 or later
  - o Microsoft\* Visual Studio\* C++ 2008 with service pack 1 or newer

### CAMERA SETUP

It is recommended to install the camera on top of the computer or laptop lid, and plug the USB connection into one of the USB ports, as illustrated in Figure 1.

When performing gestures, it is expected that the user leans back on the chair in a relaxed position. The user's hands moves around a virtual plane roughly 12 inches away from the camera. This virtual plane serves multiple purposes: (a) it activates hand tracking when the user's hand is within 12 inches from the camera; (b) the swipe gestures use the plane to distinguish between a left swipe and a right swipe.

It is also recommended that the user's head is always 8 inches away from the user's hands. The hand tracking software cannot reliably distinguish a hand from a head if they are too close to each other.

To avoid fertigue, it is critical that the user finds a relaxed position to satisfy the above two requirements.

### SOFTWARE INSTALLATION

Run the SDK installer intel\_pc\_sdk\_ia32\_5057.msi (32-bit), or intel\_pc\_sdk\_intel64\_5057.msi (64-bit). The last build number may vary depending on the releases.

You will see a welcome screen as illustrated in Figure 2. Follow the instructions to complete the installation process. By default, the SDK installs to the C:/Program Files/Intel/PCSDK directory. Note that if the SDK installer detects any existing SDK versions, the SDK installer will prompt you for an upgrade. It is however recommended

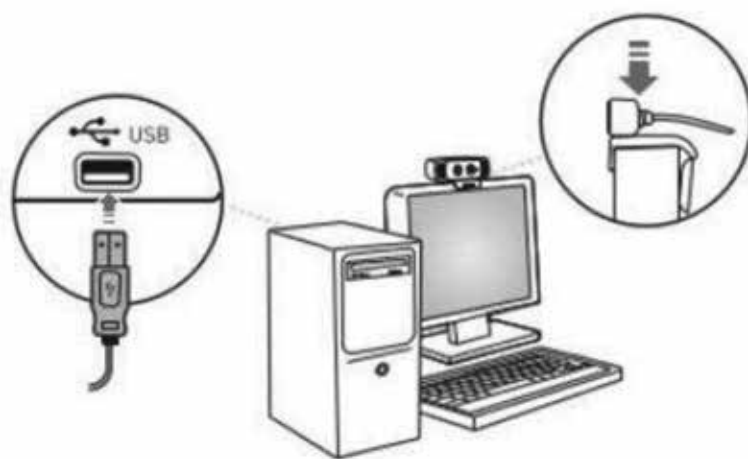


Figure 1: Camera Setup Position

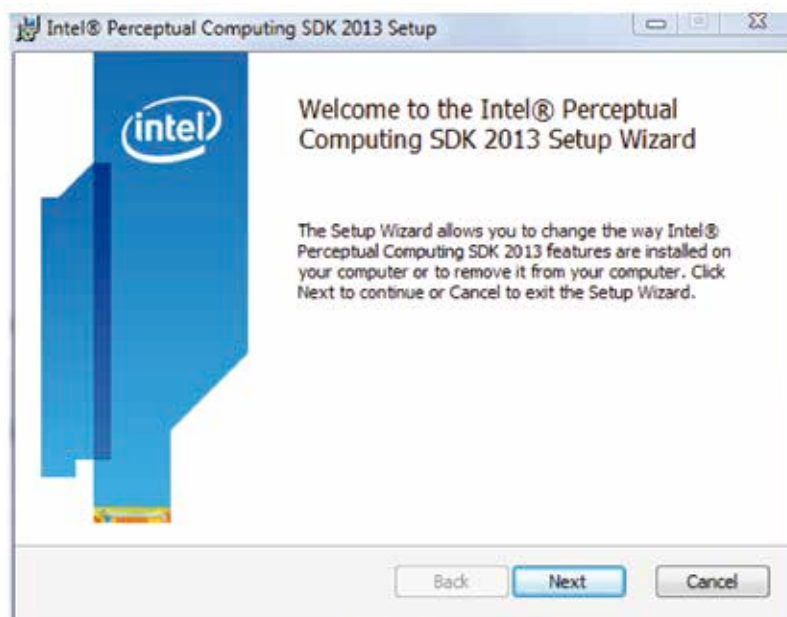


Figure 2: Installer Welcome Screen

to always do a clean uninstall and then install any new SDK versions.

After installation, the SDK installer will prompt you for a system reboot. This step is critical to propagate all environmental variables.

## CAMERA TESTING

Run the capture\_viewer application from the startup menu: Startup→Intel® Perceptual Computing SDK 2013→Tools→Capture Viewer as follows:

- Launch the capture\_viewer application
  - Select a color stream, a depth stream and an audio stream from the DepthSense 325 Audio/Video Capture module.
  - Select Control→Display to render the streams
- You should see three windows showing the color pictures, the depth map, and a visualization of audio channel(s) as illustrated in Figure 3.

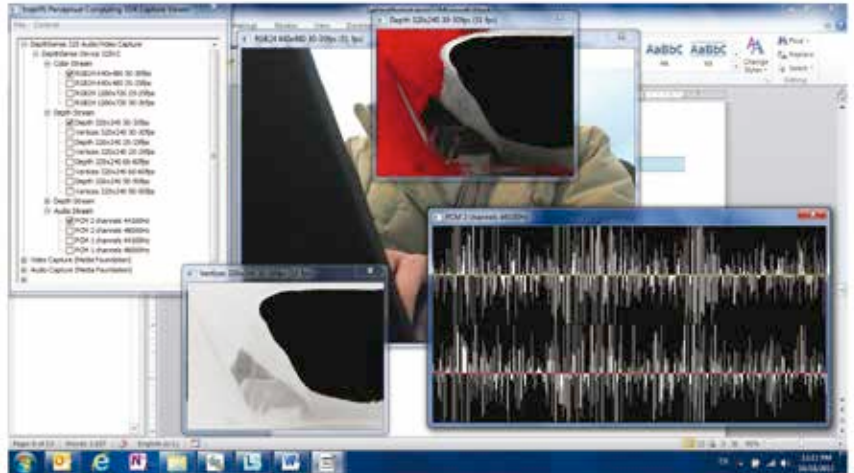


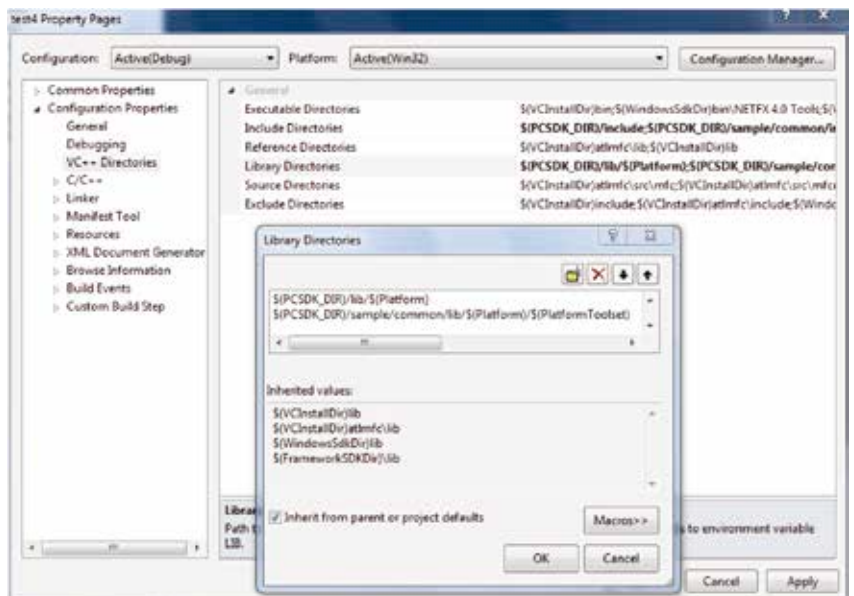
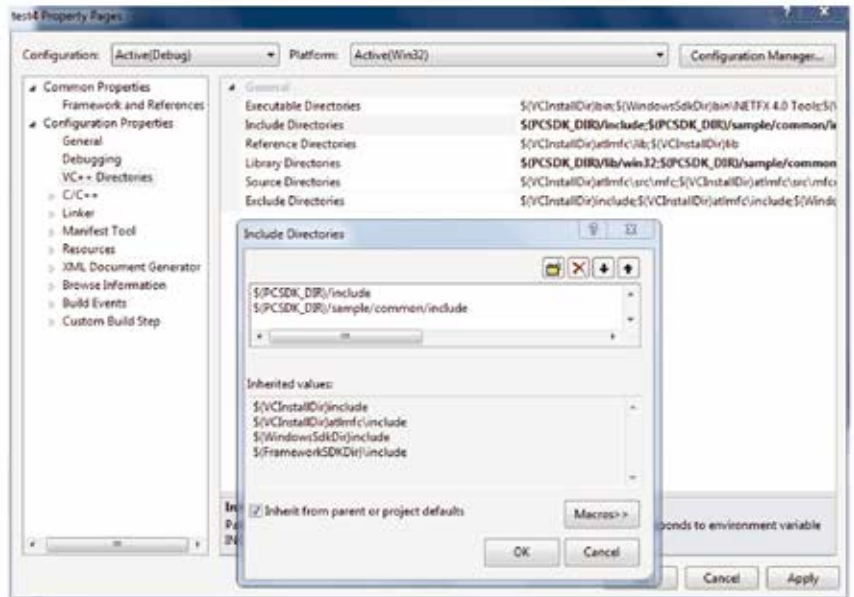
Figure 3: Camera Testing for Color, Depth and Audio

## MICROSOFT\* VISUAL STUDIO\* 2008/2010 SETUP

The SDK installer sets an environment variable PCSDK\_DIR to point to the SDK installation directory. The developer can use this environment variable to set the include and library paths in the Microsoft Visual Studio environmental settings.

The steps for setting up Microsoft Visual Studio 2008/2010 are similar except that for Microsoft Visual Studio 2008, the settings are global in Tools→Options→Project and Solutions → VC++ Directories, while in Microsoft Visual Studio 2010, the settings are part of an existing or newly created project properties:

- For Microsoft Visual Studio 2008,
  - Open the project settings: Tools→Options→Project and Solutions → VC++ Directories.
- For Microsoft Visual Studio 2010,
  - Load an existing C++ application by using File→Open→Project/Solution or create a new C++ application using File→New→Project.
  - Open the project settings: Project→Properties→VC++ Directories.
- Added \$(PCSDK\_DIR)/include to the include path. Add \$(PCSDK\_DIR)/sample/common/include if you need to use the sample utility classes.
- Add \$(PCSDK\_DIR)/lib/\$Platform) the library path. Add \$(PCSDK\_DIR)/sample/common/lib/\$PlatformName)/\$(PlatformToolset) if you need to use any sample utility classes.
- Add the SDK stub library libpxc.lib (for the Release build) or libpxc\_d.lib (for the Debug build) to Additional Dependencies in Linker→Input. If you need to use any sample utility libraries, additionally add libpxcutils.lib (for the Release build) or libpxcutils\_d.lib (for the Debug build).
- Go to the C/C++→Code Optimization tab and change the Runtime Library setting to be Multi-Threaded Debug (/MTd), or Multi-threaded (/MT), according to your project Debug or Release mode. Note that if any of the compiler settings do not



```

#include "stdafx.h"
#include "pxcsession.h"
#include "pxcsmartptr.h"
int _tmain(int argc, _TCHAR* argv[]) {
    PXCSmartPtr<PXCSession> session;
    PXCSession_Create(&session);
    for (int i=0;;i++) {
        PXCSession::ImplDesc desc;
        pxcStatus sts=session->QueryImpl(0,i,&desc);
        if (sts<PXC_STATUS_NO_ERROR) break;
        wprintf(L"Module: %s, iuid=0x%x\n",desc.friendlyName,desc.iuid);
    }
    return 0;
}

```

The SDK Hello-World Application

meet your application needs, you can recompile the libpxc or the libpxcutils libraries, whose build script is under \$(PCSDK\_DIR)/src/libpxc and \$(PCSDK\_DIR)/sample/common respectively.

## A SIMPLE SDK APPLICATION

Example 1 is a simple hello-world type of application that prints out all preinstalled SDK modules. The application will print out the following information:

- Module: DepthSense 325 Audio/Video Capture, iuid=0x32444b53
- Module: Face Analysis (Intel), iuid=0x434c4946
- Module: Hand/Finger Tracking & Gesture Recognition, iuid=0x49434b53
- Module: Video Capture (Media Foundation), iuid=0x464d5f43
- Module: Audio Capture (Media Foundation), iuid=0x41464d43 ■

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# The people behind the scenes

Month after month, a lot goes into taking the magazine from an concept and idea to the actual finished product that you now hold in your hands. It's not just about the writers or the design team, this well oiled machine runs thanks to each and every member of the Digit Family. Here they are in alphabetical order:

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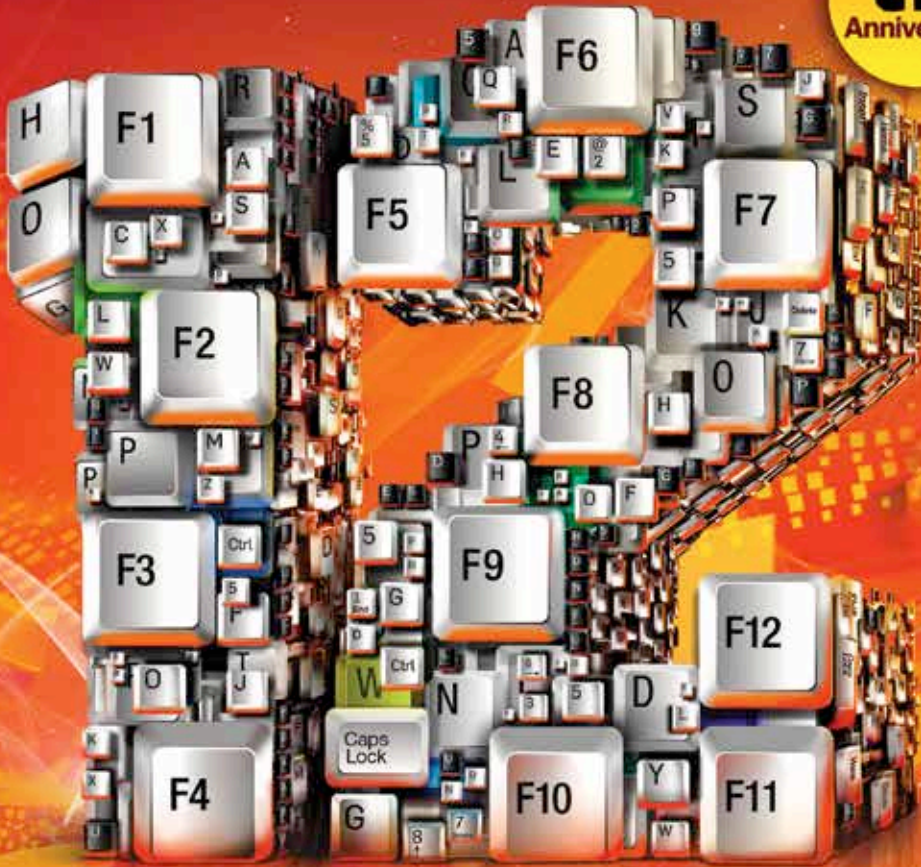
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# ANNIVERSARY



As touch keyboards are infiltrating the world, the function keys on your good old physical keyboard are going from being super important shortcuts to something we almost never use anymore. On this 12th anniversary we showcase our interpretation of the all-important functions in the context of technology today

## INSIDE





## Help

Such is the relevance of the humble F1 key that it's the only function key of the 12 which has moved to the realm of being used as a verb. Now we have the Internet to solve all our issues. Well most of them. But back in the day F1 was the go-to key for quick solutions. Moving into the technology sphere we are constantly seeing innovation, but yet there are some areas that could do with a bit of help. Follow us as we try and find some solutions.

# Battery Refresh Needed ASAP

Nimish Sawant

[nimish.sawant@thinkdigit.com](mailto:nimish.sawant@thinkdigit.com)



We had written about this in our last anniversary issue as well. So we thought it would be an appropriate time to get things in perspective about battery tech, as we have hardly seen any improvement since last year. As far as smartphones and tablets go, we are still using the same old Lithium-ion batteries.

One may argue that battery capacities are on the rise. But that's only logical isn't it? What else is going to drive those high-res, PPI heavy displays, the quad-core processors and those lovely graphics without you having to run to charge your mobile device every other hour? So, higher milli-ampere hour rating on the battery should never be taken to mean that the tech as such is improving. Innovation is happening on the system-on-chip front, with changes in micro-architectures which put less load on the battery life.

But with our hunger for high resolution, high pixel-density screens, more graphics-heavy games, there is only so much you can innovate. At some point, optimisation will reach a limit and the only option left will be to improve on existing battery tech. Sure, we have found a way around this issue, partly. If you have noticed, the market these days is flooded with one accessory which everyone is claiming to be a life-saver – portable power banks. We agree that these Li-ion portable power chargers are impressive when you really need that extra bit of battery juice in emergency situations. Despite phone and tablets having greater battery capacities and optimised SoCs, there is barely a device which can go two days without needing a supplemental charge. Unless you are one of those rare people who have a smartphone but no Internet access, you can stretch the phone to two full days without a charge. In such cases, it helps if

you have a portable charger around. But all said and done, that is still a roundabout way of addressing the issue at hand. With smartphones, it's a no-brainer, portable power banks can be easily carried around. When it comes to charging tablets, which have a higher battery capacity, the power banks get relatively heavier. Moreover, these are just solutions for mobile devices – a fraction of the possible devices using batteries. What about cameras? What about electric vehicles? Battery technology innovation needs to happen from the ground up. We came across three solutions that may just help.

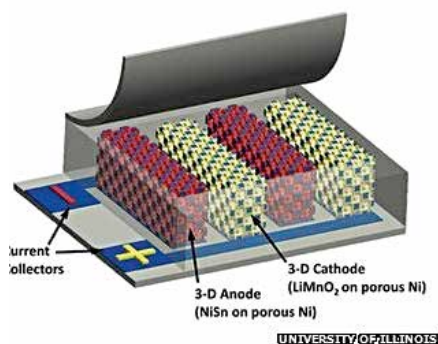
### 3D microbatteries

Researchers at the University of Illinois have developed a microbattery array which employs 3D electrodes. The claim is that these batteries are much powerful than even the best supercapacitor and are capable of charging 1000 times faster



## ANNIVERSARY

than current batteries. The 3D electrodes have small intertwined fingers that reach into each other thereby increasing the surface area and bringing the anode and cathode closer, so that the ions and electrons do not have to travel far. The principle is the same; electrons moving from the anode to the cathode when the battery is under use and charged ions moving via the electrolyte. The researchers have found a way to integrate the anode and cathode at a microscale. The transfer of electrons in the 3D microbattery array is happening at a micro-scale level, and the distance between cathode



## 3D microbatteries

and anode is less, the energy generated is quite high. As the electrodes are closer, even recharging is speedy. The best part is that the researchers claim that their technology is scalable. So you can have microbatteries powering your cellphones as well as your electric car. Also the size of the batteries will be much smaller. The only concern at the moment is with the issue of robustness – any short circuit within the microbattery can be hazardous. This sentiment is echoed by the head of the research group Professor King, who states that the current microbatteries use a combustible electrolyte. The aim is to move to non-combustible polymer electrolytes. According to Prof. King, the trials of his microbattery as a power source in electronic devices should begin by the end of year.

## Supergirl's supercapacitor

While our phone and tablets are increasing their battery capacities, the



Eesha Khare with her supercapacitor prototype

amount of time taken to charge these devices is also increasing progressively. How about reducing that time to under a minute?

Well, an 18-year old Indian-American Eesha Khare has developed a supercapacitor that she claims can charge a cellphone in 20 seconds. She has developed a supercapacitor that can hold a large amount of energy in a small volume. It is quite small and can easily fit inside cellphone batteries and other electronic devices, thereby allowing them to fully charge between 20-30 seconds. Another impressive feat of this supercapacitor is its ability to undergo upto 10,000 charge-recharge cycles which is 10 times the number of cycles current cellphone batteries are capable of. Also Eesha's supercapacitor is flexible which immediately makes it eligible for use in the future in rollable displays and even electric car batteries. Although she has only demoed this tech using an LED bulb so far, this invention is so impressive that it won Eesha the Intel Foundation Young Scientist Award this year from among 1,700 participants from 70 countries.

The implications of this invention are pertinent to each and everyone of us, as we are tired of long charging times. We just hope this technology sees the light of the day pretty soon. Fingers crossed.

## Graphene supercapacitors

Many scientific inventions and discoveries can be attributed to accidents – the scientist tending to stumble upon one thing while looking for something else. Something similar happened with researcher Richard Kaner and his student Maher El-Kady of the California

NanoSystems Institute at UCLA. After devising a way to make super-thin (one-atom thick) graphene wafer sheets using a DVD burner of all devices, El-Kady decided to try lighting a bulb with one of the small square of those graphene sheets – and it worked!

That was the Eureka moment! When the researchers realised that they had stumbled upon an energy storage medium which also has the ability to charge/discharge quickly and we are talking in seconds here. Generally, the batteries that we use are high energy storage devices but have painfully slow charge/discharge cycles whereas a capacitor has a low energy, high power and very quick charge/discharge times. The graphene micro-supercapacitor which is what the researchers are working on is both high energy and high power device with quick charge/recharge cycles.

Traditionally fabricating graphene micro-supercapacitor involved a labour-intensive process, but Kaner and El-Mady's method of using a DVD burner to make thin graphene sheets if scaled can work out to be a much cheaper way to produce the micro-supercapacitors.

You have over 100 micro-supercapacitors on a single disc in under 30 minutes. For any supercapacitor to be effective, the two separate electrodes have to be positioned in a way that the surface area between them is maximised so as to hold more charge.

The researchers from UCLA placed the electrodes side-by-side using an interdigitated pattern thereby increasing surface area available for each of the electrodes at the same time reducing the distance for the ions to travel (something similar to what we saw in microbatteries above). Since these graphene supercapacitors are flexible, bendable, twistable in nature they can be used as energy-storage devices in flexible electronics such as roll-up display or TVs, epaper as well as wearable electronics. Currently the team is looking for industry partners to help them mass produce the graphene micro supercapacitors. Video: <http://dgit.in/16fG8ii>.

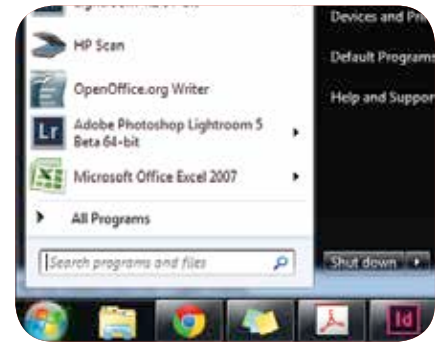


# Call the PC doctor for Windows 8

**F**rom a user interface perspective, Windows 8 is less than ideal. And no, these aren't just rants from one unhappy customer, this is a sentiment expressed and underlined by thousands of people, reviewers, independent analysts who've tried out Microsoft's latest operating system. Microsoft made wholesale user interface changes to Vista's look and feel by introducing a whole new Start screen that would really give even the most loyal of Windows fan a serious amount of headache. Sure, live tiles are good to look at and they aren't completely useless, but then why is a Windows 8 forced to live with it? Microsoft never really explained their stance on enforcing the new Start screen on millions of Windows users used to working with it in a certain way, and completely doing away with the Start button in the process as well. That was an unpardonable sin, why Microsoft, why?! A lot of software

hacks were available after Windows 8's release to correct the wrong, and give people some semblance of familiarity with Windows 8's bold new landscape. After a lot of angst and public outcry against the termination of the much-beloved and convenient Start button in Windows 8, there's increasing evidence that Microsoft's going to bring it back in the next avatar of Windows scheduled to launch sooner than you expect.

While we are no user interface or design critics, but a noticeable flaw in Windows 8's user interface is that everything looks flat and visual cues noticeable in past flavours of Windows operating systems have either been toned down or slashed out completely. Allow us to explain: For years on Windows / Mac and Linux, buttons are designed to look like buttons. There's a drop shadow, or a bevelled look, something. Windows 8 has plain text. You can't tell what's meant to be clicked, and what's not. And we're also hoping that Windows Blue



No more Start button. Boo hoo!

or Windows 8.1 as it's officially called will bring back the intuition, instead of just expecting people to get used to Windows 8's warped UI. Just doing something new and fancy for the sake of freshening things up doesn't necessarily work, as Windows 8 has demonstrated with its Modern UI, unfortunately.

Also there's this perception about Windows 8 that it's actually an amalgamation of two separate OSes – a desktop and mobile OS mashup, if you will. Microsoft, some believe, is trying to please everyone by mixing and matching the touch and mouse interfaces for mobile / tablet users and us poor PC chaps, and failing miserably at doing both. Although you may be cribbing about it now, you will soon get used to it... ask yourself how averse will you be to a tablet or phone that throws up the same UI in, say, two years?

While Microsoft knows better, we still feel it's a mistake to take PC users for granted, even if the PC's being redefined in our age. Why? Because we still need to work, and that's still a bit of a stretch on a smartphone or tablet alone. In its attempt to get you used to the UIs of their consumption devices, Microsoft is messing with your productivity.



The whole new Start screen with Modern UI brings in a steep learning curve



ANNIVERSARY

# Data Limitations and future routers



Limited bandwidth is one thing that is holding us back and at the rate at which mobile internet devices are being lapped up by consumers, the cap on bandwidth needs to be lifted. It is estimated that by 2016, the number of internet devices will outnumber the world's population. Blame it on smart phones and tablets, as the world lives half its life out online. We've been using the same routers for the past so many years to connect to the internet, which really doesn't do justice to the amount of data flowing through the future-proof fiber optics cables we have flowing underwater. And even though Wi-Fi removes this hurdle, with data flowing in its purest form, it still must respond to a transmitter or tower that is hard-wired to the vast global network of cables. Giving everyone their own personal fiber optics cable isn't practical or economical to overcome this bottleneck.

Telecom Regulatory Authority of India has proposed the National Broadband Plan (NBP) under which the Bharat Broadband Network Limited (BBNL) is supposed to manage and operate the National Optic fiber Network (NOFN). The main objective of the NOFN is to provide 2,50,000 villages with internet connectivity via fiber optic technology, to help out in many areas such as education, entertainment, environment, e-governance and other services. A total of 5,00,000 km of optic fiber cable is likely to be laid under the NOFN. While the idea seems tempting, at the end of the day it is a Government of India initiative, so naturally, the actual timeline should be taken with a pinch of salt.

While we still grapple with high-speed internet connectivity, Japanese telecom giant NTT is working on what could possibly be an important component in future routers. Researchers at NTT have build an optical



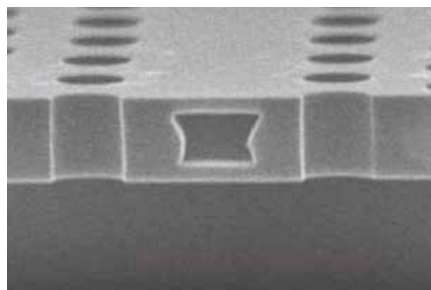
## Holographic Data Storage

Hard drives have remained similar in design over the years. Of course capacities have been increasing and areal density is going up. But the principal mechanism of the hard drive still involves spinning discs. Off late, we have been seeing a lot of hybrid hard drives which employ some gigabytes of SLC or MLC NAND chips which speed up the access times and improves the overall performance of the drive. But how long will we rely on spinning hard drives? Fine, for personal use we have ways to backup data and there's always the cloud storage option. But deep archival storage requires storage over longer period of time such as decades. Magnetic media maxes out at five to ten years. Holographic storage stores data in three-dimensional volume as opposed to two dimensional data storage. It also employs write-once-read-many (WORM) archival storage technique. Holographic storage can in theory store about four gigabits per cubic millimeter – a huge number and it has a lifespan of over 50 years. Ten years down the line when digital media will explode, expect to see holographic storage for consumer use, but the first use-case will be for archiving purpose.

random access memory (o-RAM) chip to make efficient storage buffers for internet routers. They have built a 4-bit prototype which operates on 40 Gbps whereas NTT is targeting 10-kilobit to 1-megabit memory chips for future optical routers. The cell in the o-RAM is actually a nanoscale photonic crystal - which is a material that channels light in small spaces. It operates between light-transmitting (I) and light-blocking states (O) to create digital signals. The technology is very light on energy consumption, using just 30 nanowatts of power and retaining data for one microsecond. This leads to more efficiency than normal electrical routers, and helps maintain the high

data rate transmitted via fiber optics cables. Note that even though optic fiber cables have great bandwidth, the data is routed to us via routers which have electrical innards – thereby creating a bottleneck. So even though the data enters and leaves a router via beams of light, within the router the optical to electrical signal conversion causes the speeds to reduce.

Researchers at the University of Southampton in England have produced optical fibers which can transfer data at 99.7 per cent the speed of light. These optical fibers transfer data at the rate of 73.7 terabits per second which is much faster than the 40 gigabits per second that is done by fiber optic links today. The researchers employ a hollow optical fiber mostly made of air, as light travels around 31 per cent slower through silica glass (which makes the normal optical fiber). While such high data transfer may not make much sense to us anytime soon, as normal optic fiber cables are good enough, but for short stretches such as in data centres and supercomputer interconnects these high-speed fibers can be very significant. **[1]**



NTT's optical RAM



## Rename

It is not easy to succeed the first time of asking. But true victory belongs to those who do not give up in the face of failure. Bearers of success have always known to dust-off and get back on track after things don't work out some place. Here, we trace that spirit across a plethora of success stories that transformed the world, but not before they transformed themselves.

# “There’s a lot in a name”

Abhishek Choudhary  
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When you think about it, renaming is a simple enough thing to do, and even easier to comprehend. But calling something a completely new name from what it was before, affects human psychology exactly the way something entirely new would do in the condition. Citation: the world around us.

It is said that the human body constantly regenerates itself, in that you have a completely new one every seven years. So the question is, are you the same person, every time this happens? Well, of course you are – we’ve not met anybody who claims to be a different person every seven years. But that is because maybe physically changing something is not quite enough – you have to go the whole nine yards. Changing name, altering your personality, changing your face, things like that. But most importantly, changing your name. As much

as we want to side with Shakespeare in thinking “what’s in a name”, we have with an alarming regularity, seen the answer to that - “quite a bit”, it would seem.

Apparently, people are more willing to give a second (or, you know, third and beyond) shot to any name that they have not yet associated with an idea. This is why most startups change their names and start working on something significantly different from their original vision, and much like the effects of the legendary paint jobs in Grand Theft Auto, the people give a look, and they go “meh”. But we were intrigued with the idea of the flag-bearers in this practice, and sure enough, we came across winners, and a lot of them.

### Pinterest

Let us start with one of the hottest supposed success stories in recent time – Pinterest. How does the idea of carrying a mini clothing retail outlet in your pocket sound? We think it could work, but

doesn’t make us sit up and take notice. But the fact of the matter remains, that Pinterest started out as Tote – a company that did exactly that. But it was not particularly good at what it did – selling things. Allegedly, the payment system was a mess, and thus the whole buying idea was difficult to push through. Which for an e-commerce setup was, well a bad day



in the office – everyday until its existence. But there was something that the app managed to do pretty well – storing and sharing the buyers’ wishlists. And this was where Ben Silbermann saw the light – that people only just want to have a favourite bunch of things, and share it with one another. ‘People’ here meaning mostly teenaged girls, but hey, whatever



floats the boat. And float the boat it did, and then some. Pinterest, a year after it started, had moved from selling clothes to giving people a beautiful collection display space, had grown 2000 per cent, and had amassed a valuation of \$1.5 billion.

## Groupon

Then there is tale of one of the most interesting companies of recent times – Groupon. There was a time when coupons were uncool. But Andrew Mason did not like this, and built an empire on the idea. For the uninitiated, Groupon provide steep discount listings as coupons from small business owners. And amazingly, people love it. What is less amazing is that people did not like the previous iteration of the idea – ThePoint. It was like Kickstarter, except it didn't work, and had no real plans to do so either. The site, launched in 2007, let you start campaigns, and ask people to pledge money to the idea as a group – it only worked after a “tipping point” number of people agreed to participate. By delaying action until enough people were behind the idea, ThePoint tapped into one of the earliest emotions known to man –



laziness. Put simply, not enough people really got things done. The feelings of the founders would have been legendary when they came to know about the darned Kickstarter.com – which is practically funding everything other than multibillion dollar companies. Exactly why Andrew and his group did not follow a similar no-frills approach is beyond the level of intelligence that we can muster to think about it. But we're sure there couldn't have been too many regrets, because they later went on to create an entire industry sub-segment cool again, and inspire thousands to try to copy them and follow their dreams (and eventually fail).

## Flickr

If you were anywhere near the internet five years ago, you've heard of Flickr. It is an online photo sharing repository. But did you know that it started out as an MMPORPG? Wait, it gets weirder. Newlywed couple Caterina Fake and Stewart Butterfield were developing a game called 'Game Neverending'. Described by the founders as part-whimsy and part-meta-reality, the game had a hard time collecting any sort of industry funding. The couple mortgaged their house and borrowed from friends and family to keep



the idea afloat, but they couldn't get this model to any reasonable scale. So, while slowly watching their dream drown in the sad realms of reality, they figured out something extraordinary – one of the best-liked parts of an online game, they thought, was, wait for it, the chat-room. So they thought they would build a cool chat service, full of pictures and everything. But this is the classic chicken-and-egg problem – for people to get into a messenger service, their friends should already be there. So they thought they would start it off as a social network that was based around pictures – essentially an organization structure for photographers, where they could tag and organize pictures, as well as share them. The idea exploded enough to turn an in-debt game into a \$40 million company that was bought by Yahoo! in 2005. Little did the



founders know that the idea wasn't done exploding yet, and that it would go on to become a multi-billion dollar business in its own right, and that suffocating this service would be the downfall of Yahoo!.

## Twitter

No discussion of startup pivots is complete if we do not get around to talking about Twitter. It was supposed to be a podcasting service, called Odeo, and eventually rule the world. But when Apple unleashed podcasting on to the world via iTunes, they did what any non-BS-peddling bunch of entrepreneurs would do in the situation – they thought it was the end, and decided to throw it all away. Well, that, and they began work on an instant messaging service that would actually limit the number of words that you can put into a message – thereby also confirming the hypothesis that deep down, the world just loves being



told what to do. And then they started gathering spotlight as more and more people flocked to check out this 'next great thing'. And they're still flapping and flocking all around, if you pardon the pun, in twitter-land. A happily-ever-after story if there ever was one.

## Instagram

Instagram is a success story that continues to amaze and baffle people all over the world, all in their retro-filter glory. But the amazing thing is, it was not meant to be a gimmicky photo sharing app at all. It was supposed to be an all-serious location based social network called Burbn, and that was what it was. Which also let users upload pictures of the places that they had been to. So essentially Foursquare with better photos. But they realized



→ that this won't get them anywhere when the growth numbers did not follow the big expectations. They decided to strip the product down to its best features – the photos. And so, Instagram was born. They got the lenses up and running, which would add some much needed gloss (and maybe a little too much) to an otherwise one-trick-pony. And then they exploded – nine million users in the first 10 months meant that it was only a matter of (a relatively short amount of) time that they became a headline. An eye-watering \$1 billion dollars exchanged hands as Facebook decided to take the plunge to acquire it.

## PayPal

PayPal is one of those names who probably do not mean much to the average passive internet user. But because we have taken it upon ourselves to rid the world of average passive users, we tell you that PayPal is one of the largest payment handlers of online transactions. You would know if you've ever given as much as a passive glance to eBay. And that is not by some coincidence, eBay paid \$1.5 billion for the service in 2002, but that was not before the company changed the name from Confinity, and stopped providing cryptographic solutions for money transfer over Palm 'Pilots'. They switched

over to adding a layer of mail based abstraction for exchange of money, a move that brought with itself widespread acclaim, acceptance, and eventually \$windfall\$

## BlackBerry

A determined fight for survival has always been respected since the advent of time. True warriors have always valued and appreciated the grit of the adversary that puts up a brave front, puts up a tough fight. About half a decade ago, Research in Motion was a true behemoth, enjoying the attention of governments, enterprise and consumers alike. No one would've ever

## \* Surprising pivots of history

- Yelp was an email recommendation service. But people started filling it up on reviews of the items on the site, which is when they shifted to crowd-sourced reviewing.
- Nokia was a paper manufacturing company
- Microsoft was essentially based on Gates' interpreter writing skills, and it grew into, well, this behemoth that we know today
- Apple went from making DIY computer parts, to making the most non-DIY tech products of all time
- Sony famously was a rice-cooker maker, whose initial cooker prototypes were terrible
- YouTube was an online video-based dating service
- Coca-Cola was a patented medicinal entity
- Nintendo started out by making card-based games, before crossing over to the tech side
- Fab.com was a social network for gay men
- Wipro was initially set up as a vegetable oil manufacturer in 1945. Incidentally, Wipro stood for Western India Palm Refined Oil Ltd. The company logo still contains a sunflower to reflect their original business.

imagined, in their wildest dreams that one day it would be fighting for its very existence. But fast forward to today and you'd realise how things have changed. Their cofounders moved out, it got rid of excess headcount, and quarter after quarter of the media and analysts writing them off, BlackBerry, as the company is now renamed, has turned a new page in its long, illustrious history.

All is not well yet, since it also now seems to be the most lucrative acquisition target. Nevertheless, the brave fight for existence as well as example of innovation and creation it has set for the industry that is so busy accusing each other of patent violations is impressive. Yes, a company, whose signature product was based on Java, has been reengineered and redesigned with the future of mobile computing in mind.

Research in Motion acquired QNX to gain access to a powerful and stable RTOS that enjoys dominance across automobile dashboards including Mercedes Benz

and Porsche in addition to over 200 million car dashboards across the globe.

What this gives access to is innovation in the way we consume technology, according to the senior leadership at BlackBerry, the renewed Research in Motion.

Going by the announcements at this year's BlackBerry Live in Orlando, Florida, the confidence the team and developers have entrusted the new platform with is evident by the number of applications available at launch and their subsequent growth. All of this is encouraging to say the least. In less than six months, the platform has witnessed two major software updates as well (something unheard of before)! A competitive industry is always good for consumers.

## To sum up...

All this is not to say that name changes accompanied the most high profile pivots in the world. In fact, most aren't as dramatic as we've discussed here. But a true pivot in today's Silicon Valley style of tech, it is just plain cool to just spin a different name, and do something cool, and then keep on doing cool things until one thing is too cool to be ignored. Cheers to that. 🍻



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## Search

Whenever we had to find that file which is apparently lost in your crowded downloads folder or is moved accidentally into some other folder, F3 was always there to rescue. Wherever Data was present, Searching information played an important role and as the hard disk size of Personal Computers bloated from 20GB to 1TB; this function became more

# Search your way: Everything, Everywhere!

Arpita Kapoor & Mohit Rangaraju  
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Can you imagine your life without a search box? Probably not. Search has become so much a part of our daily life that it is inconceivable to survive a single day without using some kind of search technology. Remember the days when your library's computer had the ability to just search a book by name or worse, it would only search based on the Dewey Decimal Classification number? Today, you can search each and every page of a book available on Google Books in no time. The search revolution began and took off so fast that we didn't even realise the power it gave to us. Today you name something and it is searchable. You can search everything ranging from jobs to spouses to houses.

The only limit to your search is the availability of content online. As and when new content keeps getting added on, you will witness a new kind of search.



Google Books

Before twitter became popular, who could've thought hashtags would be like little windows into people's thoughts? Before YouTube became popular, we never imagined that practically any conceivable video would be available. Before digital restaurant menus were introduced, it was unimaginable to search restaurant menus. The complex algorithms used by search engines ensure that results are more and more relevant. Companies such as Google,

Microsoft and Facebook are trying harder to get to that next big breakthrough in search technology. One thing we can be certain of is that whatever that next big thing is, it needs to be contextually aware, personalised and omnipresent.

### Content-driven search

Think about what you searched for yesterday. It could have been code, images, text, a restaurant, a book, a place on a map or cat videos. Search has gotten pretty specific over the years. Crawlers aim to contextually identify images and now you can search for "similar" images too.

A lot of content was already there on web but the way websites structured the search, it made the whole process much faster and convenient. Take the case of books; Google Books has digitized such an enormous amount of content and thus made each and every page of those books searchable word by word.



With google maps, it is possible to search any place, distances between places etc with just a click on mouse. Then there are websites such as Quora and Yahoo Answers where content is structured in the form of questions. Add to it intelligent tagging and these websites make it super easy for answers to your questions.

So if there's anything you can't search, it is most likely something that is still not digitized, still not available on web.

### Semantic search: solving big data problems

With tons of information on web, it is becoming tedious for companies to deal with this overwhelming volumes of data. Though big data solutions such as Hadoop are working their way around this problem of plenty, searching this huge volumes of data for relevant results is what major search engines are struggling with. This is where Semantic Search comes in. It's about associating meaning to the search terms and queries. With semantic search, the search engine aims to be aware of context of your search query and thus understand what you actually want to search. It improves the accuracy and significance of the search results by understanding the contextual meaning of you query.

Semantic search is not about simply matching strings. The idea is to consider synonyms, common spell errors, variation in languages, same words with multiple meanings, locational information and domain. The search engine attempts to

understand what you truly intend to search. For example is you're planning your vacation, you just enter your family's preferences and you are given matching travel destinations automatically. In May 2012, Google came up with Knowledge Graph that links context to your searches using the idea of "things and not strings". Knowledge graph relies on information from credible sources such as Wikipedia and gives you a set of card results for your search query. These cards are connected with each others based on relationships. Based on this technology Google Play showcased face recognition to digup you an information card about the actors in the movie you are watching it. When it comes to search terms, language can be ambiguous. If you search for Lincoln, you may be searching for the movie, the president or even an old beat up car. Google's knowledge graph (if it works in the intended way) tries to show you a card with disambiguated information. Knowledge graph connects the huge volume of data on web based on relationships and relevance. Recently in March 2013, Facebook announced Graph Search feature which is a step ahead in semantic search. It takes into consideration the personal relationships, likes, dislikes and preferences and searches the results within the information available to your Facebook network. Also, it lets you search using natural language queries rather than keywords. The search is powered by the data that Facebook has accumulated since its launch including pages, public

posts, check-ins, places, events etc. and is personalised for you. With Graph search "My friends who work at Zynga" and "My friends who used to work at Zynga" will lead to different set of results as it is based on context and understands your query well. The time may not be far when you can just ask a search engine for which tablet you should buy and it will give you results based on tablets that your friends own, their reviews, tablets popular in your area etc.

### Social Search: Digitizing people

With social search, the results to your search queries will depend upon the content accessible to the search engine about your circle on social networks such as Google+, Facebook etc. Your search about "Which is the best restaurant in Mumbai" will result into options keeping in mind the restaurants your friends have been to on Facebook and Four-square check-ins, restaurants you have been to in the past, restaurants that are geographically near you, restaurants that are rated high on social networks and other such contextual attributes.

Search Engines such as Bing and Google have already started to show you popular search results based on the fact that your friends or friends of friends like those results. Thus, social graphs and social search can lead to subjective queries with more personal results. This also has tremendous power of marketing and advertising as adver-



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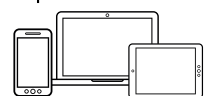


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In January 2012, Google announced “Search, plus Your World”, a development of Social Search where Google integrated Google+ follower results in the search. It included ability to personalise search results and also included G+ profiles in the search. Facebook Graph search also builds on the idea of social graph.

For marketers too Social Search keeps track of brand mentions you do on social networks and accordingly alters your results. At present Bing successfully does this by pulling results from Gmail, Twitter, Facebook etc in a dedicated social column. “People and Pages on Google+” is a dedicated column on Google search that shows only results from G+.

In the past, whenever we had doubts about lets say where to get a haircut in Mumbai, we use to ask our friends or colleagues around us by emailing or calling them, but with social graph you can actually do the same thing with a single search query and get the most appropriate options. Bing now allows you to search your friends photos on the search engine and shows them in a pinterest style layout. And you can even search the captions of the photos. So now go and search something cool on Facebook and see what your friends to say about it. But wait, if you just want to shout out, without wanting to type, Voice Search is the answer.

### Conversational Search: Talk it out

Voice search lets you speak out your search queries and you get text results. Conversational search on the other hand gets you the result in the form of voice output. Yes, so now your computer talks to you. Google Conversational Search and Apple’s Siri are two encouraging first steps in this space.

Apple’s Siri voice search was introduced in Apple iPhone 4 and is like those Sci-Fi movie personal assistants that help you to find places and remember meetings. Siri is like your girlfriend who slowly gets to know your individual preferences over time, learns about you and tells you



Google Graph Search

what you want to hear. Google’s conversational search is also an attempt to compete with Siri.

Google’s conversational search is available to any Chrome user who has an updated version. You can just speak to the search giant and it speaks back to you. Though it is still in development and is not very accurate, it is still the start of good things to come. When we asked Google about “Priyanka Chopra”, it could understand the term and threw up information about her. But when we said “Shahrukh Khan”, the results were about

the movie *My name is Khan*. Wonder why Google loves Priyanka more than SRK. The search also recognises the importance of past queries in a conversation and takes your past queries in consideration. For example, you ask “Who is Barack Obama” and then you follow it up with “Who is his wife”, Google automatically realises the “his” in the second query. Very cool indeed. At the time of writing this story Google rolled out a feature that allows people to search by saying “OK Google” as with Google Glass voice command “OK Glass”! Google Now for mobile also has voice search. While comparing Google Now and Siri, experts believe that Google Now is smarter. It could answer when a local Starbucks shop opens, which Siri could not.

If you haven’t tried Google Now voice assistant, go try it now. Use it to set alarms, schedule meetings, check real time weather and traffic conditions and a lot more. With Apple’s Siri and Google Now, not only did voice search became the next cool thing to do, but these and other awesome apps bring the power of search to your mobiles in new and extraordinary ways.

### Mobile Search: Search Everywhere

With everything around you going mobile, why would search stay back? Studies suggest that desktop/laptop searches are



Google Knowledge Graph



th

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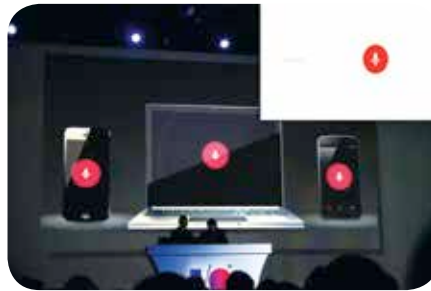
declining heavily and people use their mobiles to search for whatever they need. Your smart phones and tablets let you search a lot of specific content through apps in addition to web based results. All of us are starting to prefer apps when it comes to searching something specific such as restaurant or movie theater timings than a generic search engine.

Search engines are customising their results if you are on a mobile device. For example, Yahoo mobile search gives you suggestions while typing; if you type burger it does not show you videos about burger making but rather the nearest place you can grab a burger. It knows your location, your time-zone all by itself.

Google Now shows you cards that are relevant to you without even asking. You can search for current sport scores, local information and places near you. Google Maps allow you to get real-time directions for driving or walking to a particular location. Apps such as Google Shopper let you search for products available in markets near you on the fly, while serving up reviews and letting you scan the barcodes on the packages to know their prices etc making our shopping experience more amazing than ever. With the advantages that mobile devices bring to the table such as location awareness, mobility and other sensor technologies, search will surely witness more stuff happening in the mobile space.

### Trend-Based Search

The primary step in search is to have a search query. But, many of us just want to go online and read something interesting and trendy. Well, Google, Twitter etc understand the need and serve us by showing us the trending searches and having "What's Hot" sections. Google-Trends shows you the relative popularity of a particular search term. Google Hot trends shows you the top 20 hot and popular searches in the past hour. This includes things that gain sudden popularity such as layoffs in companies, hot tech announcements etc. So when you're bored of scrolling through your Facebook timeline up and down failing to find



Chrome Conversational Search

anything interesting, go to Google Hot Trends (<http://www.google.com/trends/hottrends>) and you can make your life meaningful again.

Twitter started a revolution in trend based search by introducing hashtags and trending hashtags (#). Tags are a way to contextually group tweets about a certain topic. You can search for relevant topics using hashtags. For example, if you want to know what people are talking about the latest reveal of XboxOne, you can simply search for #XboxOne on Twitter and get the latest thoughts on the topic. Twitter hashtags have shown great power in the community and you can find a hashtag for almost anything that's happening today. Similar to Google trends, Twitter has an option called #Discover that shows the latest happenings around you. As we see, Twitter is like a seismograph for human conversations.

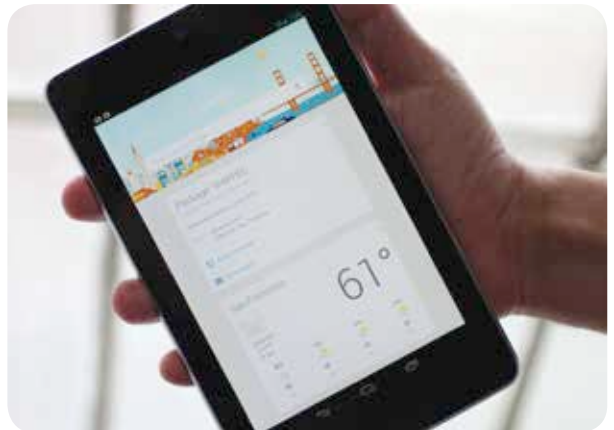
### The Search Impact

The Search revolution started in 1990s and is till today a technology that has seen no limits. The way we search is changing, the search results are changing and revolutionary developments such as contextual and social search is having a great impact on how we search for things and perform other activities in real and virtual worlds.

Facebook graph search is a lot more than you think. You can find people exactly under an age with a set of specific

interests. Doesn't this sound like a typical dating website? You can find people who work or worked at a competitors company and poach them. You can find places your friends have been too and what they loved about them. These reviews will always matter more than the reviews you read on MakeMyTrip or any other similar website. With voice search, people with physical disabilities can quickly search whatever they wish to by simply talking to Google.


With social search, marketing and advertising business will change the way they target customers. The entire math of search engine optimisation is changing. Businesses need to realise this change and adapt accordingly. In the recent reveal of XboxOne, a lot of social media users tweeted and posted about their disap-



Google Now with cards

pointment with the reveal. A quick search on Xbox One now shows results of what your friends think about Xbox One. This has tremendous significance for marketers. Imagine the snowballing effect of opinion in the future!

### Future of Search

Speaking of the future, if you ask Google about the future of search, it visions something similar to the star-trek computer that had the ability to understand and respond to requests as a conversation anywhere, anytime. The future of Search may not be Search at all. It may simply be something that can give us information without asking. 



## Close

All good things have a tendency to come to an end. The effervescent and ever-changing nature of technology ensures that the proverbial [ALT] + [F4] plug is pulled from time to time. Is it always a step towards evolution? Read on to find out.

# Ashes to ashes, dust to dust

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As habits change so do the technologies that enabled those very habits. Here we look at some of the technologies or cultures that are coming to a close.

### The old Web

The web has come a long way since Sir Tim Berners-Lee sent a proposal in 1989 for the creation of a common database to be shared among physicists around the world. But the web was not the same as we see it currently. It has been as simplistic and relied on small hypertext pages.

It consisted of 45 million global users and was all about read-only content with static HTML being used by default. Seems a far cry from today's Web, eh?

### Music hoarding

The MP3 player has long since been dead – we wrote its obituary within these pages a couple of years ago – and apart from a few dedicated iPod fans, it isn't resurrecting as a persistent Zombie any time soon. And with this passing of an age in music consumption, our age-old habit of hoarding music has gone forever, too. Why would anyone hoard music anymore when you can play it off the cloud conveniently? Websites like Spotify and Grooveshark are evolving our music listening habits on the go, and sparing our hard drives from storing and saving our priceless music collection.

### SMS

Everyone remembers the time when they could quickly send 140 letters at once from their mobile phones in the form of SMS.

The technology was simple, SMS services were extremely profitable and phone carriers kept cashing in on it until the advent of Smartphones. The arrival of IM apps didn't help the cause of SMS as people were able to communicate by using cheap data schemes. Apps like Whatsapp piled more



misery on SMS by being available on all major mobile platforms like Android, iOS, Symbian and Windows Phone OS. With that said, SMS has seen its peak and there is not much time left now for it to become completely obsolete in the mobile world.

# Tech that didn't get the memo

## Typewriter

The word "Typewriter" doesn't elicit the same response as it used to before the digital age of computers took off. Despite being the butt of jokes – the longest English word typed off a single row of the keyboard is? – the venerable typewriter refuses to die down. Sure, there's no on-the-fly word editing and every mistake costs a fresh copy of paper, there are still quite a few ben-



Look at the smile on this typist's face. (Wo) man and machine, in perfect harmony.

efits of using the good old typewriter. Nostalgia is one of them – for people who've only ever typed on a typewriter, nothing else will cut it. Compare it to the possessiveness TVS' mechanical keyboard owners have towards their input device, and you will only come close to what ardent typewriter aficionados have always felt for their beloved typewriters. With such strong sentiments at stake, how can anyone even think of sweeping these tried and tested machines under the carpet? We can only hope that with the dawn of the digital age, and companies kicking into their eco drive, the humble typewriter (which doesn't run on electricity) may still have quite a few takers than you'd care to imagine.

## Optical Drive

Apple has a long history of starting a trend and then unceremoniously dumping it by the roadside. While we don't exactly remember which company's credited with inducting the optical drive into our PC cabinets (if you know the answer, please let us know), we know that Apple caused a big hue and cry last year when it decided to pull the slot-loading optical drive off its iMac desktop computer -- the Cupertino giant had already pulled the drive off its Mac mini offerings since 2011. But whatever Apple does, the computer industry follows suit -- that has been the general trend over the past decade. However, the optical drive remains an exception. While it's seeing a decline among computers, Blu-ray discs are pretty much the name of the game in entertainment. And despite the advent of internet and online entertainment, the good old optical media will still go strong for a few more years.

## Fax

You might think of them to be relics of the past, only good for the dustbins but you will have a hard time selling that idea to the Japanese. Last year Japanese households – yes, households not companies, bought roughly 1.7 million fax machines. They use it for everything ranging from ordering food, conducting business to having a conversation with friends or sending quick notes to acquaintances. Even the Yakuza uses it to send instructions to it's members. Though not as extensively as Japan, fax machines are still in use in most parts of the world.

Short for facsimile, a fax machine transfers a scanned document through the telephone line to a telephone number connected to another such device. They're still extensively used to transfer sensitive



Time for some serious work

documents which when transferred over the Internet unencrypted may be intercepted by a third-party, but it's impossible to intercept faxes without tapping the telephone line, and that can only happen if the law enforcement agencies have started taking interested in you. Faxes also come in handy when exchanging legal papers or signing contracts, some countries do not accept electronic signatures on such documents which leaves the humble Fax as the only option.

## Landlines

Even in these interesting times when you see most of the people furiously swiping and tapping away on their smartphones and wearable communication systems just exploding into the scene – the original telephones are still going strong. Apart from according the users the satisfaction of having talked (or a shouting match depending on which part of the world you're talking from and to) with someone situated on the other side of the line, they offer the obvious benefits of better call fidelity and cheaper calls.

The most important benefit of owning a landline is the it's immunity to the bane of mobile phones – bad coverage and battery life. You can





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→ babble on these literal, chatterboxes all day long without worrying about the charge or connection dropping off in the juiciest part of the conversation. Landlines are particularly cumbersome to install, with regards to the amount of infrastructure that needs to be in place before a single premises in a vicinity can boast of having a telephone lying around. But they do bring the benefit of making available reasonably fast internet connections with ADSL to areas where the mobile carriers are not able to setup high speed wireless connectivity.

### CRTs

You will usually find these big, hulking beasts quietly humming away their time in dingy back offices, government department and at homes they're relegated to



Glory days!

the bedroom with the shiny new LED TV adorning the living room. The display technologies available in the market today have just been able to catch up with the excellent

color reproduction and a large color gamut that CRTs have boasted for long. Even now very few screens offer the black levels as deep as the ones offered by CRT display. Other benefits that CRTs have up for grabs include lack of any native (max) resolution that most modern screens come with, it's the only display technology that is capable of true multisyncing - displaying multiple resolutions and refresh rates without scaling. There is nearly non-existent input lag and the response time is much better compared to LCDs. CRTs also have excellent viewing angles, so you can enjoy the game from any part of the couch. What is working against this technology is - the weight of such displays, inability to scale in size and the supposed dangers of radiation (electrons) emanated by the eponymous cathode ray tube..

# Tech that got lost along the way



In the normal course of things, one of two things can happen to a particular technology: either it becomes obsolete and dies out or it gives rise to another technology that ends up cannibalising the parent technology. But sometimes, tech gets lost to the sands of time for no explicable reason. Inventions, processes and technologies of antiquity have disappeared with the passage of time instead of being passed down from generation to generation. They are so anomalous that till date scientists haven't been able to replicate or explain exactly how these things worked.

### The Antikythera Mechanism

In the early 1900s divers off the coast of the Greek island of Antikythera dis-

covered remnants of a startling bronze machine. Dated back to the first century BC, it consisted of over 30 gears, cranks, and dials that seemed way more advanced than the technology of that era was thought to support. The device



Does this look two thousand years old?

came to be known as the Antikythera Mechanism and it's true purpose still remains shrouded in mystery.

But it is believed that the device was used to calculate lunar phases and the astronomical positions of celestial bodies. The mechanism is complex enough for it to be called the first true analog computer ever made.

The components are so precise and well made, the Antikythera machine enthusiasts believe there were other machines (replicas if you will) of it's kind prevalent during that time. So what happened to this tech?

Why do the first official records of such complex machines date back only to the 1400s? The answer is that this tech was lost for over a thousand years.





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## The Telharmonium

If you thought the Moog Synthesizer or Hammond Organ were the first musical instruments that could synthesize music, you couldn't be more wrong. That honour is often given to the Telharmonium, a device created by Thaddeus Cahill way back in 1897. It used tone-wheels to generate musical sounds as electrical signals by additive synthesis. It created music through electrical signals which were transmitted by wire to a loudspeaker for playback. In fact Cahill was convinced he could transmit music over telephone to remote locations. Early public exhibitions of the grand instrument gathered people in hordes. And yet there was almost a 50 year gap between the Telharmonium and the first mass produced electronic musical instrument. Why didn't this technology carry on? For one thing the Telharmonium was way ahead of its time. To impede its way to mainstream adoption were further hurdles: the Telharmonium was huge; literally one of the biggest instruments ever built. It weighed 200 tons, was the size of a room and here's what rang it's death knell quicker than anything else – it cost a whopping \$200,000 to build way back then!

Cahill did manage to transmit music over the telephone, however the signal would leak into other calls and the experiment proved futile. Only three of these machines were ever made, and today not a sprocket remains of the original three.

## Valyrian Steel err Damascus Steel

Despite the Game of Thrones reference, real world legends really do speak of blades from Persia forged from a type of metal that could cut swords cleanly in half. These razor sharp swords were made from Damascus Steel, and were known for their strength and cutting prowess. These blades had a peculiar swirling pattern (like flowing water) on their surface and were feared on the battlefield. Stories of particular swords were shared over campfires by weary soldiers and their their legend grew. What was Damascus



Behold the 200 ton sound producing behemoth

Steel? It was an alloy created using wootz steel imported from India. Modern-day analysis of these swords has found some startling facts. A study in Germany found carbon nanotubes in a blade forged from Damascus steel! So we're talking of sharpness that measures an atom thin way back in the 1700s. And as meteoric as this rise to eminence was, the exact process of forging Damascus Steel is lost. Experts believe the sword's strength came from a process which moulded cementite and soft iron to create a metal that was both strong and flexible. Theories suggest that the technique was not an exact science to begin with and that only a small part of the swords made by sword makers fit into the "Damascus Steel" standard. Other theories suggest that raw materials were running low and the original sword-smiths just abandoned the process. Whatever the reason, modern-day attempts at making Damascus Steel have proved futile and this technology will forever remain lost.


## NASA's space race technology

The Gemini and Apollo space programs are what eventually put man on the moon. The Gemini program provided

the groundwork needed for manned space flight (1965-66) and the Apollo missions took it ahead beyond the stratosphere. If you'll notice, these are events that took place relatively recently so the times that we refer to here are not strictly lodged in antiquity. Despite that, the space race was so frantic that much of the technology developed during that time didn't have any records; they were in that much of a hurry to reach the moon. In many cases private contractors were called in to assist with different modules and not every detail/process was recorded for posterity. The technology is not strictly lost – NASA does have a bunch of Saturn V rockets on their campus (or in museums) but very few of the exact schematics and plans for the original parts are available today. If NASA wants to renew the space program and launch a mission to the moon,



Remnants of the space race

a lot of the tech will have to be reverse engineered, and reportedly NASA is doing exactly that. What we described here is of course a near impossibility now thanks to digital workflows, infinite storage capacity and the internet. But it's startling how something so recent can be lost, which makes the older accounts of lost tech all the more believable... 



F5

## Refresh

The world of technology is in a constant state of evolution, with revolutions hopping along once in a blue moon. It's important, these minor disruptions, to propel the industry forward and give craving consumers the next best fix of their technology addiction. In the following few pages, we focus on the most noteworthy technologies or tech-related industries that are hitting the refresh button to ink a new chapter in tech history.

# Thumbs up: PlayStation vs Xbox vs New Horizons

Jayesh Shinde

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It's been seven years since Sony unveiled the third generation of its PlayStation console, and it's been even longer since Microsoft unleashed the original Xbox 360 on the world way back in 2005. A lot of water has flown under the bridge since then. On one hand, where the bigger technology landscape has changed forever – the PC era is over, tablets and smartphones rule the world, Facebook games have taken the world by storm, and we don't know how to live without the Internet anymore – the world of gaming consoles has long stagnated, which is

quite astonishing to be honest. Handheld tablets sport better graphics these days than the two venerable gaming consoles, it's been that long. Sounds ridiculous, doesn't it? But it's true, unfortunately.

There are new rules of engagement on the gaming front, and it is in such turbulent times that Microsoft and Sony are hitting the refresh button on the Xbox and Playstation, respectively. Sony in fact bit the bullet and gave the world a first glimpse of PlayStation 4 hardware back in February this year, where it also announced the console's release date and other important features. At the time of writing this, Microsoft had sent out invita-

tions for media representatives to come and witness “a new generation revealed” on May 21st – no doubt, the first official sneak peek of the next-gen Xbox console.

### The big two

Sony's event in February spoke about the future of gaming as they see it and the upcoming PlayStation 4's role in that broader vision. Unfortunately, the company didn't reveal the console itself – some reports claimed the final design wasn't yet locked down back then – but did reveal hardware specs and the new DualShock controller. Where the original PS3 was supercomputer-ish with its Cell-based



processor, faster than most consumer PCs at the time, the upcoming PS4's innards are more reminiscent of a PC than ever before. Based on the x86-64 architecture, the new PS4 will sport a custom AMD processor and graphics chip with a whopping 8 cores and 1.84 TFLOPS AMD next-generation Radeon graphics engine. It will also have 8GB of DDR5 RAM and built-in hard drive of unknown capacity. Optical media is still on Blu-ray, while USB ports will now support USB 3.0. Ethernet, Wi-Fi and Bluetooth support will also feature on the upcoming PS4, according to Sony's statement. Reminds you of a high-powered laptop, doesn't it?

The new DUALSHOCK controller largely remains the same but with a fresh new twist – it sports a touchpad strip at the top. A new highly sensitive six-axis sensor enables motion control on the DUALSHOCK 4 controller, with allegedly fine tuned analog sticks. The L2 and R2 triggers have received a minor facelift, while the Start and Select buttons have been booted out. There's also a new 3D depth-sensing camera (with PS4) to complement the Move motion controller better than ever. Hardware upgrades are part and parcel, and to be honest we were expecting some of these changes on the PlayStation 4 – anything less and it would be dud on arrival. However, what made us sit up and take notice were the following two revelations. First, the upcoming PS4 will showcase a new dimension of cloud gaming with Gaikai integration (Google it). Gamers will be able to jump into a game directly from the PlayStation Store, try it out, and purchase it instantly. Online friends won't just spectate and comment on their friend's game but can also jump in to aid if the situation calls for it – tackling a difficult boss, for example. Also, games will be backward compatible only through online streaming on PS4 – wonder how that will work out. What's more, all these features seem only a fraction of what Sony can enable on PS4 through Gaikai.

Second of these disruptions is the ability to play any PS4 title on a secondary screen. Any number of supported screens, making PS4 gaming an intimately mobile

affair. This can be through any device such as the PlayStation Vita (PS Vita), smartphones or tablets, Sony says. A key feature enabled by second screens is "Remote Play". So anyone who has a PS Vita will be able to seamlessly pull PS4 titles away from their TVs and play them on the Sony handheld's 5-inch display over Wi-Fi networks. This is a great move by Sony to ensure longevity for PS Vita, and absorbing it into a future ecosystem. Similarly, a "Playstation App" will be made available on Apple and Google's app stores to enable iPhones, iPads and Android devices into secondary screens to display additional game-related content for the PS4. This sounds very interesting indeed and an important step towards connected devices striving to deliver a comprehensive entertainment experience.

Hopping on to the Xbox bandwagon, things are still a bit sketchy. Don't get us wrong, news about the likely successor to Microsoft's Xbox 360 game console has been leaking for a few years now, but not until a few months ago (when Microsoft seemingly was busy checking off the few remaining things on the next big Xbox)



Ouya-controller-and-platform

has the magnitude of Xbox-related news shot up, signalling an impending launch of the console. All eyes are on Microsoft's Xbox team at Redmond, the company's headquarters, and what they'll unveil on May 21. But whatever little we do know, from speculation, here it is. It all starts with the name: what's it going to be called? Hacks wasted no time in referring to the successor of the Xbox 360 as Xbox 720 in all their rumor mongering. Later it was leaked that the Xbox project is codenamed Durango, and the name may stick. However, consensus has grown surrounding a



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leaked Microsoft flyer proclaiming its next game console as "Xbox Infinity", which definitely has a nice ring to it. While its name may not be of great concern to many eager customers, what the new Xbox packages inside it will most certainly be a topic of intense scrutiny. According to The Verge, the console is said to include an 8-core 64-bit APU running at 1.6GHz, alongside 8GB of DDR3 memory and a large HDD for storage. Apart from this, the next-gen Xbox is also speculated to have the exact same AMD graphics as the Sony PS4. This is significant, because it means that the future of console gaming won't be decided by specs alone. On the software front, the next Xbox console could run a flavour of Windows 8 to justify Microsoft's broader vision to maintain uniformity of interface across devices. Skype, Microsoft's multi-billion dollar acquisition, is also slated to be embedded deep within the next Xbox's USP. As far as the look and feel of the console goes, unlike Sony's PS4 event in February which didn't reveal the PS4 itself, Microsoft's ensuring that it gives everyone a good look at the next-gen Xbox console on its May 21 event. May be that will help reassure eager fans and steal a lead on the mysterious-looking PS4. A great example of Microsoft's innovation, its Kinect controller, will no doubt be unveiled in a refreshed avatar as well. While industry experts expect Kinect 2 to be smaller and thinner than the original Kinect, it's slated to feature a whole host of feature enhancements. Kinect 2's expected to improve depth and movement tracking, allowing up



→ to four-player multiplayer gaming through the same device. Enhanced speech recognition has been touted as one of the most important features of the next Kinect controller, including natural speech controls and speech-to-text. All indications are that this upcoming refresh will only up Kinect's ante, and who knows we may well glimpse upon the best motion controller among gaming consoles very soon.

### The pretenders

Proof of the fact that the world of gaming has changed a lot, and why Sony and Microsoft's console refreshes have dragged on for too long, can be witnessed by two trends. Casual, mobile gaming is on the rise and people have grown past the idea of restrictive gaming tethered to a wired box and a television. While waiting for the next-generation of consoles we were all so used to, a few enterprising brains decided to cash in on the opportunity by offering gamers an alternative device with a unique experience. That's essentially how projects like OUYA, Valve's Steam Box, and Oculus Rift came into being – opportunistic and timely. And they're offering gamers the glimpse of a new, unexplored horizon. The current poster-child of the band of console rebels is the OUYA – a fully crowd-sourced, open-source, Android-powered game console – which is as small as a Rubik's cube and costs only \$99. It comes bundled with a controller and its own online store to purchase and download games from. It's still early days for the OUYA, and without a lineup of AAA titles the experience



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isn't stellar, it's what you'd get out of most Android games on a big screen. However, with time and iterative refinements, the device and its platform could offer indie developers and content providers a new avenue to explore – and for gamers, a new relatively inexpensive device to show off. Oculus Rift isn't as much a gaming console as it is an add-on accessory which would likely be bundled with consoles in the near future. Invented last year and demonstrated earlier this year at CES, the Oculus Rift – a virtual-reality head-mounted display unlike any other

– is on a mission to tap into your peripheral vision and take game immersiveness to a whole new level. It has been endorsed by several gaming industry veterans, and early reports of the device are

extremely encouraging. Perhaps the most hotly anticipated new gaming console, among PC fans, has to be the Valve Steam Box. Based on Linux and sporting PC-like hardware, Gabe Newell, CEO of Valve – the good folk who manage Steam, a cross-platform cloud-gaming solution for PC gamers – wants to offer the Steam Box as an extension of Steam. The plan is to manufacture a blueprint device, known internally as Bigfoot, and allow third-party manufacturers to design and sell their own Steam Boxes. These dedicated gaming devices will come with controllers and screencasting solutions for an effortless transition between screens while gaming. An interesting feature of the Steam Box, which is still under production, is to embed biometric sensors within its controller to measure and detect a gamer's heartbeat, for example, and finetune a game's performance based on a gamer's immersion levels. Newell describes this aspect of the Steam Box absolutely crucial to provide gamers different experiences while playing the same game. ■



Ouya-controller-and-platform



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### VS 650

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- 80 Plus: Not Applicable
- Power: 650 Watts

*VS Series Power Supply is also available in 550, 450 and 350 watts*



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# Evolving components: Haswell and GPUs



In recent memory, the term “post PC era” has been thrown around a lot (even within the pages of this magazine) to signal the demise of personal computing as we grew up to know. Not for lack of thought or ability to weave words, mind you, but for the simple fact that the term’s true. And no one’s more worried with the impending doom of desktops, laptops, and ultra-mobile PCs more than the company that’s built an empire manufacturing chips that power and run these devices. Intel. Intel deserves a lot of credit for accelerating the transition of desktop PCs into portable laptops, the microarchitecture they designed – increasing core performance while maintaining power efficiency – allowed laptops to shrink in size, be cool and become the primary computer for millions of users for close to a decade. But the world changed forever as Apple, Google and Samsung

embarked on the smartphone and tablet road. Intel was caught napping with netbooks, while little-known ARM (and its RISC-based architecture rivaling Intel) ushered in a revolution of epic proportions. And it’s an unstoppable juggernaut. Experts believe that smartphone processors will be faster than current Ivy Bridge chips in less than a decade, and Intel has its work cut out to get a strong foothold in the mobile chipsets market, as ARM-based SoCs are pretty much the name of the game right now. AMD is no longer the only enemy, Atom isn’t good enough and frankly has lost the plot, Intel needs to bring out the big guns if it has any shot at redeeming itself.

We may be in the post PC era, but in the tectonic shift between x86 and ARM, and the battle for hardware platform dominance, the legacy of Intel can’t be written off that easily -- just because people are buying smartphones and tablets doesn’t

mean they’ve stopped using their desktop or laptop PCs. As announced by Intel, 2013 is going to be the year of a whole new microarchitecture from the famous chip-maker, its next big tock (read more about Intel’s Tick-Tock here: [http://en.wikipedia.org/wiki/Intel\\_Tick-Tock](http://en.wikipedia.org/wiki/Intel_Tick-Tock)). It’s time for the 4th generation of Intel Core processors to rise and shine. Haswell, the successor to last year’s Ivy Bridge and a much-improved hardware platform with a 22nm fabrication process which optimizes everything, is Intel’s immediate answer to the assault from ARM-based hardware. Haswell claims to improve the performance and battery life of laptops, ultrabooks and hybrid devices to a whole new level, and truly utilize all the goodness of its 3D tri-gate transistors. The power saving on Haswell has improved by leaps and bounds compared to Sandy Bridge and Ivy Bridge chips, and so has the onboard GPU performance, with Intel claiming to offer up to 200% better graphics performance compared to Intel HD 4000 – now that’s quite a feat. According to Intel, this year we will finally see an ultraportable laptop or hybrid device that can last for more than 10 hours on a single charge, thanks to Haswell chips, where Intel not only controls the power states of chips that it manufactures but also enlarges and optimizes the power saving envelope to third-party hardware (ICs, capacitors, etc) present on the rest of the board, stuff that otherwise isn’t regulated and cracked down upon by Intel in the past. Intel’s also ensuring that all Haswell-powered PCs to launch this year will have a minimum performance threshold that upholds its various claims, and to achieve this it’s working closer than ever before with OEMs who ultimately mass-produce and distribute Intel-based products for the end user. While the jury’s still out on

Haswell 2013 - Graphics naming (Levels and SKUs)

GT3e*	Intel Iris Pro graphics 5200	---
GT3* (28W)	Intel Iris graphics 5100	---
GT3* (15W)	Intel HD graphics 5000	---
GT2*	Intel HD graphics 4200 / 4400 / 4600	Intel HD graphics P4600 / P4700
GT1*	Intel HD graphics	---

Note: \*GT is how Intel referred to graphics levels in NDA roadmaps so far

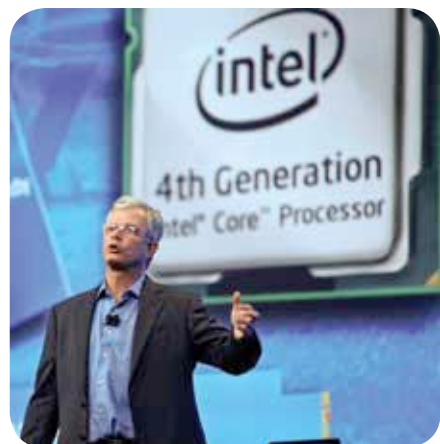
There are a bunch of changes Intel’s ringing in with Haswell, apart from just a brand new socket for motherboards – LGA 1150 for desktop boards, others for mobile chipsets. With its additional on-die graphics memory (in gigabytes, yes!), Intel has found reason to classify its various graphics offerings (rolling out soon for the desktop and laptop PC market) be classified in five different levels. As is clear from the chart above, you can pretty much benefit from the graphics power depending on your requirements (and budget). The number of devices (ultrabooks / laptops / hybrids / all-in-one PCs / other form factors) sporting Haswell parts is going to increase exponentially, as now we do not just have the various CPU configurations to work with, but more varied GPU offerings as well. It will be really interesting to see how the Iris and Iris Pro GPUs perform in real life against the entry and mid-range discrete GPUs. Some of these graphics benefits will eventually percolate down to handheld devices, and that’s an encouraging thought.



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how great Haswell's claims are until Intel officially unveils the platform and new devices at this year's Computex event in Taipei, Taiwan, one cannot dispute the fact that Intel's hardware performance is definitely better compared to AMD and ARM, but where it lacks is power efficiency. What good are powerful products if they consume battery as quickly and won't last long enough? And the consumer so far has voted for better battery life more than better processing power, as long as mobile computing goes. That's why we are buying tablet and smartphones left, right and centre. While these ARM-based devices are now working towards increasing their performance headroom without compromising on their silver bullet - the battery life - Intel's in an opposite race to maximise its platform's power savings with Haswell's micro-architecture. And it's sparing no one, targeting everything from PCs, laptops, tablets, smartphones and hybrid devices.

Later this year, expect ultrabooks to become thinner and run cooler than the lot released last year. Also, you'll have a whole host of permutations and combinations to consider before buying a laptop or ultrabook, as Haswell not only has newer CPUs to consider but also five-levels of on-chip graphics (refer to the box alongside). Of course, it means greater and finer choice for consumers before buying an Intel product. We expect some Windows 8 ultrabooks or hybrids to reach near-tablet like battery efficiency (the iPad will still



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## 802.11ac: The fifth generation of Wi-Fi

The switch from wired to wireless networks was a big step as far as the advent of mobile computing goes, and we can safely say that wireless networks have truly revolutionized the way we work in the 21st century. To make life even more enjoyable, the fifth generation of Wi-Fi products have started rolling out this year, networking products that support the 802.11ac Wi-Fi protocol - the successor to current favourite, Wi-Fi 802.11n wireless protocol. So why should you be excited about "5G Wi-Fi" or 802.11ac networking standard? We explain with the following table

Enhancement comparison: 802.11n / 802.11ac		
	IEEE 802.11n	IEEE 802.11ac
Frequency Band	2.4 GHz and 5 GHz	5 GHz only
Channel Widths	20, 40 MHz	20, 40, 80 MHz (160 MHz optional)
Spatial Streams	1 to 4	1 to 8 total up to 4 per client
Multi-user MIMO	No	Yes
Single Stream [1x1] Max data rate	150 Mbps	450 Mbps
Three Stream [3x3] Max data rate	450 Mbps	1.3 Gbps

The latest fifth generation of Wi-Fi standard not only boosts bandwidth by more than twice the capacity of the older 802.11n, it also allows more people to connect to a node simultaneously and get uninterrupted data. While 802.11ac routers will be backward compatible with 802.11n devices, interacting most of them on the 2.4 GHz frequency, all the 802.11ac compatible devices will only exchange data over the less-cluttered 5 GHz frequency band. Also, while it's great to be happy about higher speeds on Wi-Fi, it's important not to get carried away with 802.11ac just yet. Routers boasting 802.11ac compatibility have just started rolling out and most of them are extremely expensive; what's more devices (smartphone, tablets, laptops, etc) sporting 802.11ac adapters haven't launched in the market yet. But all that will change later this year. Here's to greater wireless data speeds!

remain untouched, we think), and if that happens Windows 8 tablets could start flooding the market sooner than expected.

Moving on from Intel, we'll also see the next-generation of graphics from AMD and NVIDIA released for eager consumers - the AMD Radeon HD 8000 series, AMD Radeon HD 8000M, NVIDIA GeForce GTX 700 and NVIDIA GeForce GTX 700M graphics chips. From what we know, AMD's plan of launching the Radeon HD 8000 series of graphics cards for desktops and mobile platforms has run into unexpected delays - AMD's true Radeon HD 8000 cards won't be available until towards the end of this year, until then the company will only sell rebranded HD 7000 chips for desktop and mobile manufacturers until their true successor is revealed closer to Christmas later this year. This could be because of the custom GPU that AMD's providing on the Sony PS4 and Microsoft Xbox 720 slated for release later this year, as well. This unexpected hiccup in AMD's

plans has allowed NVIDIA to steal a lead on the troubled graphics chipmaker, where it could dominate the PC market with first mover advantage. NVIDIA was supposed to have its official GeForce 700 series cards unveiling for desktop and laptop PCs last month, but probably it may happen at Computex in June. A few months ago, three GeForce GTX 700 series cards' names (and their specs) were leaked: the NVIDIA GeForce GTX 780, GTX 770 and GTX 760 Ti. It's also the chance for NVIDIA's next-gen CUDA compute architecture to shine, the Kepler GK110 - the largest GPU in terms of transistor count. According to the leak, the GTX 780 may actually be the successor to the extremely impressive Titan GPU we reviewed couple of months ago. The GTX 760 Ti is largely speculated to be almost similar to the existing GTX 670, with perhaps slightly different clock speeds to spice things up a bit. We, obviously, can't wait to test these graphics cards when they release later this year.



## Highlight

The technology space has grown tremendously in the last decade, to include devices, technologies and products that didn't and couldn't exist until a few years ago. Here we've tried to shine the spotlight on some technologies, products and trends that have been (or will be) influential in the years to come.

# Front and Center

Paanini Navilekar  
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The technology space has grown tremendously in the last decade, to include devices, technologies and products that didn't exist until a few years ago. Here we've tried to shine the spotlight on some of the technologies, products and trends that have been (or will be) influential in the years to come.

### Front and Center

Mobile has been a space that has seen massive growth in the last few years, influencing nearly every sphere of technology, society, media and even the government. It has changed the way we communicate through internet-enabled phones, led to development of energy efficient microprocessors and has led to the creation of an entire field - big data and data mining. Another space that is seeing massive growth is 3D printing, or the ability to manufacture a 3D product inexpensively using a 2D design specification.

We examine these trends in some detail, for these are technologies that deserve a second glance.

### Messaging Apps to replace SMS (SMS 2.0?)

One of the hottest spaces in mobile right now is messaging, an area that has companies both big and small trying to make their presence felt. While the venerable SMS certainly isn't going anywhere, mobile messaging apps that use a device's data connection to send text and multimedia are fast becoming the norm, with users welcoming these SMS replacements with open arms. Cheaper data plans, a rapidly rising number of internet-connected devices coupled with mobile carriers charging exorbitant rates for SMS, has aided the adoption of services like Whatsapp, Kik, Line and Viber. Not to be left behind, tech giants have stepped up their offerings - Apple has iMessage, Microsoft has Skype, Facebook revamped its Mes-

senger app and Google unified all its chat services under the name "Hangouts".

With several apps vying for a slice of the messaging pie, the fragmentation of the messaging ecosystem is becoming a cause of worry. While SMS was an open, ubiquitous standard - anyone with a mobile phone was guaranteed to be able to send and receive messages, the same is not true with messaging apps. Both the sender and the receiver need to be signed in to the same app in order to communicate, and keeping track of which of your friends are on which service can quickly turn frustrating.

In practice, very interesting trends have emerged. Different services have managed to capture users in different regions of the world, with the lack of any one service dominating globally. Whatsapp, possibly the largest messaging apps in terms of number of users (Whatsapp recently reported they have more users than Twitter) as well as revenue (What-



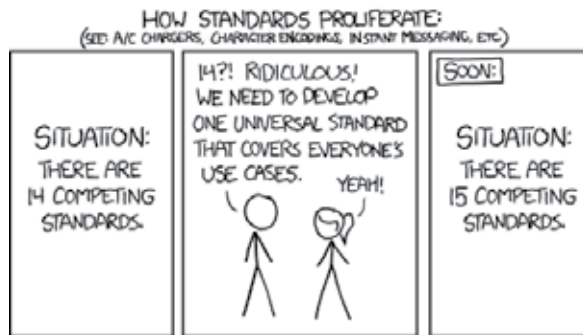


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sapp is the top paid app on the Apple App Store in most countries) is seen as being nearly ubiquitous, but failed to gain significant traction in North America. Kik messenger, another free, cross platform app is popular in the US, while Line and Kakao Talk have established themselves in Japan and South Korea respectively.

In order to truly become universal, apps will have to either develop and implement an open standard (something like XMPP), or find a way to integrate with SMS in the way Apple's iMessage has. iMessage is unique in its simplicity and ingenuity – if the recipient is an iMessage user, the message is sent over the internet using iCloud, if not, it's sent as regular SMS / MMS. In addition, the service integrates with the Notification Center on Mac OS X, so users can receive and reply to messages from any Apple device. Many other services have followed suit.

Communication apps are subject to strong network effects, and any newcomers will be faced with an uphill battle of convincing existing users to switch. (Google+ anyone?). Ideally, we'd like all the different providers agree on an open standard (like IMAP is for Email, or even SMS itself), that will create a level playing field. The reality, however, is that any attempts at creating such a standard would be futile, with each company wanting to protect its own business interests. Furthermore,



Developing an open standard for mobile messaging is an uphill task.

attempts at creating a standard might result in a protocol that while being open, doesn't receive much support from existing apps due to the lack of any incentive to switch. The silver lining though, is that going forward, messaging is only going to become cheaper, with greater sharing features and will span a broad spectrum of devices.



Vic Gundotra unveiling Google's new Hangouts app at Google I/O 2013.

RISC chips

If the past few years have seen tremendous growth in the mobile sector, it is chiefly due to the development of low-power and high-performance microprocessors relying on the RISC (Reduced Instruction Set Computing) architecture. An Instruction Set is the complete set of commands or 'instructions' that a microprocessor can follow, and RISC is a form of CPU design which believes that using fewer

total instructions will lead to better, more efficient processors. Leading the path, was a British Semiconductor giant, ARM (Advanced RISC Machines), which came to design a number of CPU designs such as the ARM v11, and the ARM Cortex series. While ARM doesn't manufacture the chips themselves, they license out their designs to companies like Samsung and Qualcomm. The success of the ARM architecture, and of the mobile sector in general is evident from a report that puts Qualcomm and Samsung ahead of AMD in processor sales (which has traditionally held the second position behind Intel)

Traditionally, Intel had held the lead in microprocessor sales, owing to their superior design and state-of-the-art, highly optimized manufacturing process, and had led to Intel capturing the lion's share of the PC segment. However, with PC sales plummeting, Intel has been forced to rethink its strategy, opting to refresh its Atom line of processors (which faced a lot of flak for being



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crash-prone) under the name of Silvermont. These fresh crop of low-powered chips (the company claims power consumption is only a fifth of the competition) coupled with Intel's 22nm manufacturing process promises to be a compelling combination. By producing these as SoCs (System on Chips) rather than discrete CPUs, Intel has made its intentions very clear.

ARMs business model is unique in that it generates almost all of its revenue by licensing its chip designs to companies like Samsung, Qualcomm, Fairchild and Texas Instruments. Intel, however, has the distinct competitive advantage of owning possibly the most sophisticated chip fabrication process in the world, so the next few years might see a fresh resurgence of mobile devices using Intel's processors. Not to be left behind, ARM is rumoured to be moving to a 16nm process architecture in the next 2-3 years. (A lower transistor width leads to lower power consumption, and a processor typically consists of millions of such transistors). This race to the bottom in transistor widths can only be a good thing for end users - since it translates into faster, more power efficient chips that can be mass-produced at a cheaper price.

What Intel has going for it is its vast experience and the end-to-end chip design-manufacture-sell technology. If the Silvermont SoCs live up to their promise of extreme power-efficiency, Intel will gain a technological advantage as well. ARM (along with its partners like Samsung, Qualcomm, NVidia and TI) have chips that currently rule the roost. Most mobile OSes have been written atop the ARM architecture, as Android's x86 port is yet to gain significant traction while iOS is written to run exclusively on Apple's custom ARM chips. Whether Intel can manage to break into this segment, and whether other competitors can continue to hold their own - makes for a very interesting battle.

### 3D Printing

3D printing, is exactly what it sounds like. It is a manufacturing process of creating a 3-dimensional object using a 2-dimensional reference design, using an additive



ARM's dominance is chiefly due to their low-power chip designs.

process where a material like metal, polymer, ceramic or plastic is deposited in the form of thin, successive layers. This is in contrast to the traditional manufacturing processes like drilling or filing, which are subtractive processes that remove excess material from a block of material to manufacture the final product. The result is a product that can be quickly produced, at a reasonably low cost with a high degree of accuracy. These qualities make it an ideal tool for rapid prototyping in almost every industry. Costs of 3D printers have come down significantly in the last few years, and department stores like Staples have started stocking them as a result, making them accessible to the masses.

While some of the more interesting use cases for a 3D printer have included prosthetic devices such as a prosthetic limb, ear or even a set of dentures, a working gun, musical instruments or even 3D photographs, the one application that has impressed us most is 3D food. Imagine being able to design your own pizza on a computer screen and have it 'manufactured' to your specifications! These 'food printers' would use cartridges that contained powdered forms of carbohydrates,



Intel's Silvermont series holds a lot of promise.

proteins and vitamins that would supply the requisite nutrients in the food. This application is being actively explored by a company called Systems & Materials Research Corporation, a company that has received funding from NASA who seem to be very interested in the implications of this. If successful, these 3D printers could provide an innovative solution to the problem of transporting, storing and preserving food in outer space. The food cartridges that the proposed printer will use, are durable and the ingredients can stay fresh for almost 30 years, as all the moisture is drained from the cartridges prior to being loaded. Anjan Contractor, the engineer pioneering the work in this field, says that pizza is one of the simplest foods to "print" this way, as it has an inherently layered structure, and the printer would only have to extrude one layer of material at a time.

Closer to earth, one reason scientists are excited by this application is that it provides an elegant and practical solution to the problem of food shortage and malnutrition in developing countries. While traditional methods of food cultivation such as farming, fishing or rearing poultry are bound to fall short of the demand, 3D printers can be deployed in bulk to produce food that contains carefully measured levels of nutrients in a hygienic environment.

By using innovative (if slightly audacious) sources of protein such as insects, grass and algae to supplement traditional sources, scientists can ensure a steady supply of raw materials. Furthermore, the food's nutritional content can be tailored to suit the dietary requirements of different individuals.

3D printing may not be a new technology, but recent advances in computing power have given it enormous potential. Prosthetic devices such as bionic arms, ears, legs have aided in saving the lives of many people in recent years. Doctors also successfully replaced a man's entire face using a 3D printed prosthetic after the face was badly damaged by a tumour. On the personal electronics front, it could



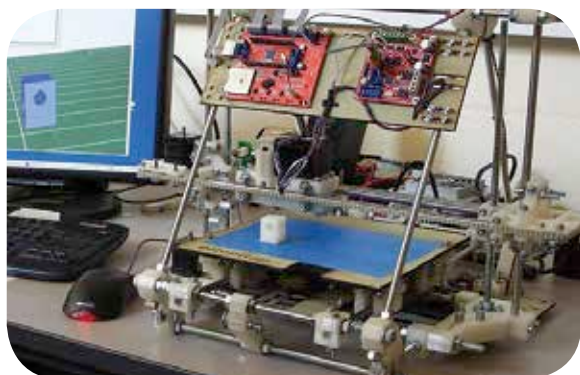
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give rise to a whole generation of open-source hardware devices, where hobbyists or small companies could open source their hardware designs for mobile phones, tablets or laptops that can be further customized by end users and 'printed out'.

A cause of worry, however, is that such openly accessible manufacturing could pose security threats. Defense Distributed, an American company is in the business of developing and selling handheld gun designs that can be printed by users to manufacture their own working guns. Existing laws will need to be modified to ensure that new technologies like 3D printing don't end up causing more harm than good. In spite of some security concerns however, 3D printing, which is currently in its nascent stage, promises to provide the next breakthrough in the way the technology influences our lives.

## Big Data

Big Data, as the name suggests quite tersely, is a collection of data sets so vast in size that it cannot be processed by traditional data processing and database management systems. This happens usually when the processing of this data, either for the purposes of spotting identifiable patterns (a process called data mining) or for searching, sharing or analysis is unable to keep up with the rate at which the raw data is being generated. Gartner defined Big Data as being governed by the "3V" framework - Volume, Velocity and Variety. This poses a unique problem with regards to the storage of such data, finding optimal techniques to parallelize the operations on



SMRC's prototype of a food-printer



## Putting things in perspective

1. Eric Schmidt claims that the volume of data generated every two days is equal to the data generated from the dawn of civilization to 2003. (source - <http://dgit.in/16UUEfh>)
2. If you piled a stack of CD-ROMs containing the world's current storage capacity, the stack would stretch about 80,000km beyond the moon. (source - <http://dgit.in/135bxy6>)
3. There are nearly as many bits of data in the world as there are stars in the entire universe (source - <http://dgit.in/11gF7gW>)
4. Each hour, the amount of information consumed online is enough to fill 7 million DVDs. (source - <http://dgit.in/10SJ8In>)
5. Of the nearly 250 billion emails that are sent everyday, almost 80% are spam. (source - <http://dgit.in/11gFc4b>)


this data and making useful interpretations based on such an analysis.

While Big Data is a term that is thrown around in a lot of fields including meteorology and geology, genomics and biological research, finance and business informatics, the one that interests us the most is the presence of such data in the internet space. Thanks to the ubiquity of internet connected, 'always-on' devices, internet companies like Google and Facebook are able to record and capture massive amounts of anonymous data regarding usage patterns. By analysing the behavioural patterns of internet users, Internet companies are able to create a more personalized experience for users, whether it be through targeted advertising, recommendations for new content, friend suggestions etc.

This form of 'learning' where a software makes recommendations based on your behaviour and choices is called 'Machine Learning', and the accuracy of these suggestions will only increase as this dataset is increased. The field of study is part of a larger field called 'Artificial Neural Networks', where an algorithm is designed to improve prediction accuracy with time as it identifies patterns in the user's behaviour. These are the algorithms that are at play when Google Now recommends a new restaurant or photospot, Last.fm recom-

mends a new friend or Grooveshark helps you discover new music based on your current playlists.

To deal with the technical difficulties of processing such large datasets, specialized systems have been invented, that attempt to reduce the time taken for these computations by parallelizing the computation tasks, and offloading the processing to hundreds or even thousands of servers. Apache Hadoop is one such open-source framework that aids in distributed computing by implementing Google's famous 'Map Reduce' algorithm, an algorithm that divides the work at hand into smaller fragments of work, each of which can be carried out by one node in the computing cluster, thereby reducing the total time required for computation.

As sensors and recording devices get more accurate, the volume of data being recorded is only going to keep increasing. Tackling this large influx of raw data is one of the primary problems for computer engineers, and scaling existing systems to cope with higher volumes of data is an area of intensive research. On the web, where a user's every move can, and is tracked, ideas and notions of privacy and anonymity are fast changing. Users will find they need to take extra care of their online actions, as internet accountability is gaining in importance. The applications of Big Data in health-care, genomics, geology and advertising holds a great deal of promise, and this is a field of computer science we'd all like to watch out for. 



## Spell Check

The degeneration of our language was a slow, insidious process that just happened as a natural consequence of technology. Tools like spell check are what run our lives as we go about our daily chores, oblivious to our excessive dependence on such tech. Gaming is also seeing a degeneration of sorts. It's time for a wake-up call; a reality check.

# Reality CHECK

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Games are works of art and it takes a true artist to create a truly great game. Art is meant to inspire emotion, provide a unique experience, engender an opinion and entertain. Games do manage to accomplish all of the above, but somewhere along the line something goes wrong and we're left with a train-wreck of a game that is not worth playing, or worse still, a game that is of no significance, something that is just lost in the crowd and no one remembers.

A game can be technically sound but it can still fail, much like how a badly composed, but crystal clear photograph is still nothing more than a bad photograph. Why are the games of today unable to live up to their peers? Is the art of intelligent game design dying out? We believe it is.

### Who is the real gamer?

It takes a real gourmet to appreciate something such as a well-made *Pizza ai Quattro*

*Formaggi*. Someone who's not into food will just accept it as another pizza, while the wannabe connoisseur will go into raptures and wax lyrical over the merits of aged cheddar vs. Roquefort cheese. The true connoisseur will just eat, appreciate and enjoy the exquisite concoction placed before him and revel in the flavour.

That is the real gamer. A person who can appreciate the finer aspects of a game, understand what went into the creation of that unforgettable experience and really



Just another cheese pizza or a masterpiece of the culinary arts?

play the game the way it was meant to be played. Arcade games like Pong and Pac Man are timeless classics but they're a different breed of games. If they were food they would be chocolate; something that everyone likes for its simplicity and flavour. It's a no-brainer. People will eat chocolate and it's very difficult to get it wrong. Such arcade games will always exist; they will always be a part of our "diet" and will evolve to support almost every gaming platform that can exist because of their simplicity, accessibility and as a consequence of this, sheer portability. But, these games can never be the main course. They can be the desert, the aperitifs, but there isn't enough meat on them to satisfy that real hunger that plagues real gamers.

A real gamer is one who will not just dismiss the Call of Duty franchise as a bad game but appreciate it for its well-implemented multiplayer; one who won't just dismiss Assassin's Creed as



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childishly simple but feel sorrow for the wasted potential of the game; one who will accept Crysis 3 as a visual masterpiece but also as a study in flawed game design. A real gamer is one who will feel a cold chill traveling up his spine when game designers talk about making a game more “accessible” and shudder at the thought of Free2Play becoming the norm. The true gamer will derive as much pleasure from Mario and Minesweeper as he will from Half-Life and Quake.

### Selling out

When gaming just started picking up almost 20 years ago, it was still in its infancy. Big name developers were just starting out and companies such as Sierra, Valve, Novalogic, etc. were coming up big time. As with any major corporation, their primary focus was to make money, but, thankfully, at the time, gamers were a niche audience and these companies were trying to sell their games to this audience. What would those gamers want? Good games, and that’s what they got.

This was a time when excellent game design was directly tied to the amount of money that was to be made and companies could encourage artists to create the games of their dreams. Those years saw the birth of some of the most epic titles we’ve ever seen, including such classics as Age of Empires, Half-Life, the original Delta Force, etc. Excellent game design is still tied to money these days as well, but it is an increasingly rare occurrence and game designers seem to just be hunting for the perfect “formula” that will help



Few have the willpower to ignore such visions

them churn out games that make them piles and piles of money. The focus is the money, not the game. The audience has also expanded to include literally

everyone and as a result the average skill level of a gamer fell drastically. This drastic drop in skill level has also resulted in game franchises like Assassin’s Creed and Call of Duty. We’re not saying that these are bad games; it’s just that they’re targeting a different level of gamer and not the type this story is aimed at.



Big companies require big bucks to survive

### Developers of the first kind

There are essentially three primary types of game developers. The first is the large corporation (such as EA and Activision) that try to make a lot of money by making a game that is popular and accessible. This type of developer has a lot of money, conducts a lot of research, knows its audience and produces a technically



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→ and functionally sound game that will be pretty good. The game will have all the bells and whistles that you would expect from a game coming from a big-name developer, but will almost always compromise the gameplay to suit a novice audience.

Big companies developing big games is not a bad thing, such masterpieces as *Dead Space* and *Modern Warfare* wouldn't have existed if it weren't for such developers and publishers, but these big companies also tend to lose sight of their roots. They would have been innovative at one time— their claim to fame— but the games they produce further down the road might (and usually are) just rehashes of the same formula.

Take this magazine for instance, suppose we decide that mobile phones and tablets are what the majority want and just flood all subsequent issues with content that is built entirely around exactly that content. We will probably acquire quite a new following, but will also alienate the hard-core geek who's here for the Tips n Tricks, PC hardware reviews and maybe even a cover story such as this.

Big corporations spend big money and need to make big money to survive and perhaps they feel that they can't afford to take risks for the sake of a minority (the real gamer). As one hard-core gamer once said, "When financial gain becomes the primary objective, artistic integrity is repressed." You can't blame someone for trying to make a living, but you can blame them for creating a sub-par game.

Again, EA would be the best example here. The direction that they have taken with games like *Dead Space 3*, *NFS Most Wanted* and even *Real Racing 3* echoes these sentiments exactly. The aforementioned games are good games in themselves, but everywhere you can see the hand of a suit interfering with the artist's vision for the game. The company has some of the most brilliant and innovative game designers, who

seem to be plagued by some of the most persistent and pestiferous accountants in the industry. The sad thing is that there must be many gaming companies out there who'd give anything to be just like them. Unfortunately, these large corporations also have a lot of influence and indirectly ruin the gaming industry as a whole— not deliberately and not with any malicious intent, but as a consequence of their motives. This is where the second type of developer comes in.

### Developers of the second kind

These developers are the copy-cats. They'll happily clone a seemingly successful game and try to "ride the wave", so to speak. These developers may not intentionally do this, but they might be indirectly influenced by those titles. Anyone who's tried to hunt out an app on the App store or Play store would have encountered this issue; that endless list of *Temple Run* or *Angry Birds* clones.

All this does is dilute the real value of a game and also flood the market with a stream of useless titles. The developers may have made some money on this but the real gamer is hit by the lack of, or inability to find, great games. This is a trend that is very prevalent in mobile games simply because mobile games are easier to create or clone and mobile developers are literally a dime a dozen. These developers might not have a vision of their own, but they may not be all bad either. They might simply be a developer who needs to make



Cat Mario, one of the most wickedly intelligent games ever made

a quick buck so as to pursue a project of their dreams. The only problem is that this process of cloning works. It makes money and there is every chance that the developer in question, despite his best interests, might end up making clone after clone because it's easier.

### Developers of the third kind

These developers are the real artists. The people who have a vision that they want to bring to life, people who don't just want to make a game, people who want to create an entirely new experience, maybe just for the sake of their own satisfaction. They aren't trying to make money, they're trying to make a real game for real gamers and any money that they earn is just a consequence of that passion. Any hardships these developers face are just part of the process; they wouldn't consider their troubles a hardship if their goals were to be achieved.

We're not saying that everyone with a vision will make a great game, or even an acceptable game. There are too many factors that are involved and while everyone might want to be one, everyone is not an artist. What really matters is that these people tried, they tried to do something different and even if they fail, they will have left a mark somewhere with, if nothing else, their desire to fulfil their dreams. These are the people that take risks, create tiny companies, desperately try to get funding on kickstarter or, if they're lucky, get hired by a like-minded company. It's from here, these few



Clones do have their uses. As cannon fodder



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people that the real art is born; games that are memorable, masterpieces of design or just downright quirky and innovative. It is also from here that true legends such as Dark Souls are born.

### Implicit game design

This is an element that is sorely lacking in today's games. Implicit game design simply refers to game design where the gamer learns through gameplay rather than tutorials. Too many games these days are just extended tutorials where the game will literally hold your hand to the very end. Objectives and even puzzles in-game are clearly highlighted and one can just blindly follow that marker on the map without putting an ounce of thought into the game. It's frustrating and insulting to a real gamer to have its hand held so much and takes the definition of mindless button-mashing to another level altogether. What happened to good ol' intelligence? Games like Half-Life got along magnificently without tutorials (we're not talking about the introductory tutorial). The game taught you to explore, look for vents, observe the environment, look for crates to climb or smash, doors to open and puzzles to solve. There was never any map nor was there any sort of massive hint plastered across the screen. The game made you use your head and put your brain through its paces. Usable items were not big, glimmering objects on your screen and the game really taught you to observe your environment while playing.

Mind you, the game wasn't very hard, even a kid could finish that game with a minimum of effort because the game was so well-designed. We're fairly certain that any game that tries something like that today will be considered too difficult. Games like Metro or Hitman today, provide the same level of difficulty as the games of Half-Life's time by giving you a supposedly super-hard difficulty level without hints and markers where you have to use your head rather than blindly follow on-screen indicators. This isn't super-hard, this was normal gameplay 15 years ago. Games that involve you mentally are the games that you will remember long after you finish



Half-Life: A true classic and a study in intelligent design

playing them. Portal and Limbo are perfect examples of such games. These are cerebral games that teach you while you play and somehow manage to entertain you at the same time. Some of the levels can be very hard, but by the time you reach that stage, you'll consider those levels a challenge rather than "extreme difficulty". By the time you reach that stage the game would have taught you enough, and accepted that you've learnt enough to handle that level on your own. Games need to grow up, they've been dumbed down far too long and they need to credit the average gamer with more intelligence than they do now. This isn't that hard.

### Silver lining

One hope that the real gamers do have is the fact that everyone is playing games and the fact that developers want everyone to play games. Yes, we've ranted about how the average gamer is the target audience and how big-name developers are diluting their franchises to cater to this average



There is always hope

gamer, but please bear with us.


When everyone starts playing games, the average skill level of a gamer will slowly rise up to a level that is acceptable to the real gamer. Right now, the average gamer is clamouring for more and more games and is getting them. But also getting inundated with them. As the average gamer's skill improves, it's inevitable that the average game will also improve. This is a slow process that does leave many real gamers in the lurch at the moment, but at least,

there is hope for a better future. A future that we, as real gamers, can shape.

The real gamers should not remain content to sit behind and watch the rise and fall of the industry they love so much with resentment and resignation, they should do their best to help further this industry. They should support the really good games, organisations such as kick-starter are the perfect hunting ground for up and coming games and developers that need help.

Experienced gamers can slowly seep into the core of the industry itself, use their influence to improve the games that they so love. Intelligent game design never died out completely.

Game development just became more approachable and the average person is just learning how to play games. This should be an exciting time for the real gamers as the potential is there. There are hundreds, if not thousands of up and coming developers in the world now, many of them the real gamers of yesteryear who've gotten an opportunity to realise their dreams and we, as real gamers need to be there to show our support for them.

We must not let the art of gaming and game design just die out. All those years of gaming experience shouldn't just be allowed to rot away while we wait for the industry to grow up again. We can do something about it and we should. Standing idly by is not the way of the true gamer. Wake up. 



## Safe mode

The F8 key is one that we only hit in the time of need, a situation where your whole system is completely messed up and you have nothing else to do but resort to the F8 key to clean up the mess. Our online lives are something like this and always connected, with Facebook and Twitter as much a part of our lives as our morning coffee. Do we really have such a fall-back in the real world? Isn't it better to be safe than sorry?

# Web Of Deceit: Everything is not as it seems

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ur online lives operate on a far greater degree of trust and ignorance than we would like to have or acknowledge. We don't "go online" anymore, we're always online and we just trust that everything is in order; our passwords safe, our transactions secure and our social networks and e-mails private. We tend to draw comfort from the sight of a green HTTPS text and the lock icon. We shouldn't.

Unfortunately, the web may be a "free" platform, but its inner workings are obscured from most users. Let's put it this way, if computers were people, they communicate with each other in a universal language, say, English. Secure connections simply talk to each other

in Chinese. All it takes is someone else who understands Chinese to figure out the conversation. This is simplifying the process a little too much, but as a basic explanation, it's enough.

### Know thine enemy

HTTPS (and the internet in general) primarily secures itself using SSL (Secure Socket Layer) / TLS (Transport Layer Security) protocols. Basically, an SSL certificate is granted to an entity once that entity's credentials have been verified by a Certificate Authority (CA). This certificate is very similar to a PAN card, driving license or any other such identifying document. When you visit a secure website, the browser verifies that the certificate issued to that website is

valid, that it was issued by an authority such as VeriSign and that this is indeed the website you were looking for.

Herein lays the problem. There are over 600 CAs distributed in over 50 countries and not one of them has a governing body. You just have to "trust" that they do the right thing and are issuing the certificate after the requisite verifications. Would you trust a driver who says he got a driving license in Timbuktoo? Yet to use the internet, you have to do just that. Some firms do maintain a very strict policy with regards to verification and these are the only firms that are really respected.

CAs can be classified into three types. Root CAs are ones that are trusted by the browser itself, CAs trusted by root





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CAs are intermediate CAs and the untrusted ones are just that, untrusted CAs. However, root CAs don't have to verify that those intermediate CAs are doing their job, they could very well have just been randomly approved. Using the driving license analogy again, how many of you actually check if a bus driver has a license? You just assume that you're travelling in a state-run bus and that the driver's credentials have been verified by some responsible body.

Obviously, there is every chance that the state was just lazy or that the driver paid some money to get the job, despite lacking a license. Given the sheer volume of people that need to be transported (and in effect, Internet traffic) this system works most of the time with only a few bumps and niggles along the way. There will be catastrophic consequences now and then, but overall, the system remains functional enough to not warrant much change. At the most, you create a hulloaloo and kick the driver.

## Online doppelgangers

When it comes to HTTPS connections and online transactions, popular websites and banking sites are usually secure and can be trusted, it's the intermediaries that can pose the problems. Lazy Root CAs are effectively handing over all your private online information to something that may not be responsible enough to handle it. This is where almost all identity-theft happens. Hack an irresponsible intermediary and you have all the data you need.

Phishing attacks can and do take place via a similar mechanism. All one really needs to do is find a shady CA, spend a bit of money and voila, you have an SSL certificate that will give your site, no matter what site it is, a nice green HTTPS marker along with a lock icon. If that site just happens to look like your banking site and you just happened to get there, how will you know what's wrong?

The biggest flaw in this system is just that you only see a secure website without knowing who issued the certificate to whom. The SSL route is like a VIP



Not as secure as you would believe

highway, if you have a pass, you can get on. If you know someone who can get you a pass, you're on, whether you're a VIP or not. Browsers such as Firefox take the trouble to maintain their own list of trusted CAs, but what about Chrome, Internet Explorer and the rest? They rely on the OS. Microsoft for example, maintains a list of trusted CAs in a Trusted Root Store in Windows. It's an interesting idea that helps provide the average user with a seemingly secure, seamless system for performing his online interactions. However, this system has one fatal flaw, they're too trusting.

The only way that you can protect yourself from such issues is if you have some way to keep track of the certificates and where they're issued from.

As a simple rule of thumb, if you're banking in India, its certificate would definitely not have been issued in Nigeria.

One of the best tools that helps you do this is Calomel (<http://dgit.in/Z5M9sh>). Of course, even such tools are of no use if you're absolutely careless.

## Carelessness

Loopholes in SSL certificates are only one way that hackers can get to know you better. The other is simply because of your laziness. How many times have you used just one password on a dozen different sites? Sure, Google is very secure and there is very little chance of its database getting hacked. But what about on mpgh.net or some other such site?

Two-factor authentication is turning out to be the only way to almost completely guarantee your online safety. It might seem to be cumbersome at first, but it'll be well worth the mental satisfaction. Also, remember that most of the attacks that you read about in the news are not as scary as they seem. You're not so important that a world of hackers will take an interest in you or want to read about what you ate for breakfast or look at your lame pictures. All they really want most of the time is a pool of PCs or information that can be taken advantage off. If you ever get caught in the net, you're just one unfortunate phish among tens of thousands.



# War of the worlds: The battle of good vs. evil



ature is the best teacher and a geeky nut the best pupil. Computer viruses are no more the childish projects of teenage kids who fancy themselves to be geeks. At the time the first viruses were invented, they were exactly that, but now they are the weapons of war and as potent in the

Antivirus suites are the white knights in this invisible war and their goal is simple, to protect their master and repel that creature. Not all knights are created equal and not all are noble. Some are only here for the money, others for power. Sometimes it's these knights that propagate tales of war and woe and unmatched heroism; tales that will keep the knaves

Play Store, Ubuntu's software centre and even the Windows Marketplace. These stores are doing their best to eliminate malware at the roots. The face of the PC has changed; the needs of the masses identified and the desire of the masses fulfilled. Apps are now getting more and more centralised; all the apps on these stores have to pass through a rigorous checklist before they're approved.

What this does, other than presenting a user with a centralized app store, is eliminate most malware, drastically reduce the chance of infecting a PC because of some obscure "Oh no! Your PC is infected! CLICK HERE TO CLEAN" type of pop-up. Right now these stores are too restricted and a real PC user shuns them like the plague, but they have shown their potential.

Such stores will not only eliminate traditional malware, but they'll also eliminate traditional antivirus suites. Even now these suites are desperately struggling to evolve and adapt to a market that may not need them anymore. Stores that are a bit lax when it comes to screening, such as the Play Store, have developed a reputation for harbouring malware and it won't be long before something is done about that reputation and fast.

The OS is also evolving to eliminate such threats. While Windows 8 may have received a lot of flak for its design, the core of that OS, the venerable NT kernel, is the one that requires the most attention. Windows wasn't the target of viruses just because it was popular, that's only part of the story. The OS was attacked because it could be attacked. Other Operating Systems such as Android, iOS and Mac OS are far more secure and even creating a



An underground war is being waged online

virtual world as any biological weapon created by man. These weapons are more subtle, they surreptitiously sneak into the system, enslave your system and its resources to the vast network of some hacker, who's sitting in some corner of the world keeping this writhing, pulsating creature alive, just waiting to unleash its potential on some unsuspecting victim. This is the battlefield of today. A world where no lives are lost but where everything is just a game and the PCs involved, just pawns.

in check and gain the favour of the masses. There is a very grave threat looming over this war, the threat of efficiency and absolute monarchies that control the world's most coveted resources with an iron fist. These monarchies are involved in a struggle of their own, which is slowing down their progress, but their dominance is inevitable. The dark ages (or the age of light, depending on your perspective) are coming.

This threat is the advent of the application store. Apple's App store, Google's



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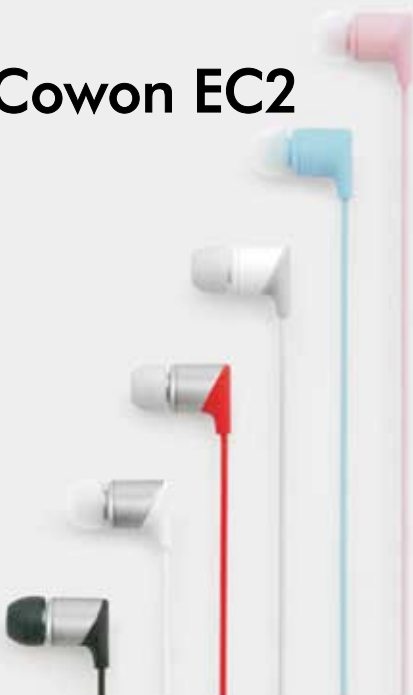
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➔ virus for such platforms is more challenging. Windows was a haven for malware but Windows 8 will change that, slowly. Not now, but maybe 5-10 years down the line viruses of today will be as irrelevant as the DOS prompt. An experimental OS like Firefox OS and Chrome OS will not allow malware to ever enter a system. Based on web-apps, such operating systems will simply block apps (websites in this case) that are malicious.

What will anti-virus companies do? Who knows? Malware has evolved and will probably continue to evolve forever. There will always be servers and workstations, consumer hardware will evolve to nothing more than a “browser”; a window, a thin-client of sorts that connects to the powerful backend that will support such a network. There will always be a requirement for a security suite, but maybe the average consumer can be saved the hassle of ever needing one as these suites just settle in the background, silently keeping the world chugging along from the sidelines.

## The dark side

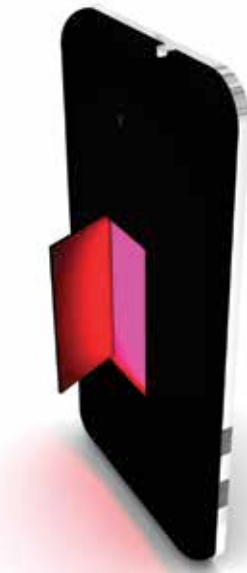
Malware will have to evolve to something more than what it is at the moment. Mobile phones and tablets maybe the future of PCs, but they're also really underpowered and such tightly controlled environments that getting a foothold and creating a botnet of a million PCs will die out because their probably won't be several million PCs to begin with.

Malware will have to be more surreptitious, hitting servers, network connections, extract information, id theft, etc. As you read in the previous section on SSL/TSL, malware will slowly move up the line, moving from consumers to the real hardware that runs the internet and the world. Stakes will be higher, so will the rewards.

Who knows, we might have veritable virtual mafias running around holding the world's data at ransom. Anonymous will seem like a couple of hopped up teenagers in comparison.

## Wireless security

Wi-Fi will be the backbone of the future and wireless routers will be what hold this future in place. If malware does move away from traditional PCs, it'll be the vast quantities of precious data that these devices carry that will be the targets. Wireless security as it stands today is sufficient for our needs. Currently, the most popular wireless security protocols are WPA and WPA 2. These are cryptography



A secure OS can do nothing for a compromised network

techniques that are quite secure at the moment and don't look like they need an overhaul anytime soon. The weak link in this chain is, as always, the user.

## My precious

Our gadgets are our most prized possessions. In an increasingly mobile world, these portable devices are our lives, our work and our entertainment. Living without that sleek ultrabook / tablet / phablet / phone is something that we can't even imagine. A lost device will have us howling as pitifully as Gollum when he discovers the loss of his coveted ring. We turn into feral beasts who'll do anything to find our device and rip apart the house in an effort to find it, all the while cursing the orcish boor who had the nerve to steal or misplace your precious device.

What do you do in such a situation? Run around squawking like a flustered chicken or unleash a guttural roar of vengeance? Once your device is stolen or “misplaced” there really is nothing much that you can do about it. Certain device such as iPhones and certain Windows phones do come with recovery services and they do work, but with so many devices on the market, not everything is secure.

Laptops were a real sore point when it came to security as there is still almost no way that you can recover a laptop once it's lost or stolen. More importantly, your data might be lost forever and worse still, might end up in the wrong hands.

Intel had come up with a very novel solution to this problem, its integrated anti-theft mechanism. Unlike other anti-theft solutions that just run at a software level, Intel's solution is designed to work at the hardware-level. To simplify the workings a bit, the system uses a key generated at a hardware-level that communicates with a server on an encrypted channel, a channel that the OS itself has no access to. The user pays a service provider to access that server, the service provider could be any one of Intel's trusted partners including McAfee, Norton, etc. What this does is that it gives the user direct, backdoor access into his PC. Unfortunately, for whatever reason, this did not gain much traction among the users at large and Intel is slowly phasing out anti-theft in its current form. While the system did fail, it shows that an innovative system for anti-theft is possible and easy to implement. The line between tablets and laptops is blurring and we're seeing more and more hybrid devices and this is good news for those worrying about securing their device as GPS and internet access which means that these devices can at least be secured more easily now. Data security couldn't be easier in this day and age of “cloud” computing. Be sensible, use services such as Google drive, or Skydrive. Services like Flickr will give you 1TB of storage space and are ideal for backing up your gigabytes of images. Don't forget to configure its privacy settings before-hand though. **!**

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## Compile

The F9 key is all too familiar to coders. Some of the most phenomenal inventions in the modern age including social networking, e-commerce and web services have been the handiwork of talented devs. Under the compile section we cater to these obscure, reclusive and often times eccentric professionals we've come to love and celebrate.

# The Cloud Conundrum

Jait Dixit

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As cliched as it may sound, there is no denying the fact that cloud computing services have been and are continuously revolutionizing the ways in which we develop and deploy our applications and websites. The problem that developers and system designers are facing right now is the problem of plenty, it's like a kid in a candy shop. There are many companies out there providing similar services and thus the users are completely stumped when it comes to choosing between the services.

There are a lot of famous providers out there Amazon AWS, Rackspace, Google Cloud Computing, IBM SmartCloud, Windows Azure, Joyent, Heroku, Linode, OpenShift and countless more. There is no definitive answer to which provider is the best, the answer may vary depending on whom you ask. Each

application or website is unique in its requirements and problems, only you as its system architect or a developer will be able to make the correct decision on which provider will suit you the best. This article will discuss some of the important points that need to be taken into consideration before locking in on a particular provider, and though not making the decision for you, it will set you down the correct path.

### Operations

Cloud service providers offer their services in either (or both) of these two paradigms: Infrastructure as a Service and Platform as a Service. Under IaaS, the provider is responsible for providing instance(s) of machines as per the user specifications. The resources available for each instance can be scaled on demand, i.e. you can increase or decrease the number of CPUs, RAM or storage

through a web control panel or an API. The catch here is that the managing this virtualized hardware is onus on the developer, the provider is not responsible for managing these systems for you. So applying security updates and patches, upgrading the system, trouble shooting and other maintenance tasks all have to be carried out by the user.

On the other hand we have PaaS, this model sits above IaaS in the cloud computing model and provides the user with an execution runtime, frameworks, operating systems, database and web servers. Developers can run their software on the cloud platform without worrying about the complexity of the underlying hardware and software. Most of providers out there also automatically scale the resources on the underlying hardware to match the demand.

Which software model to go for is dependent entirely dependent on how

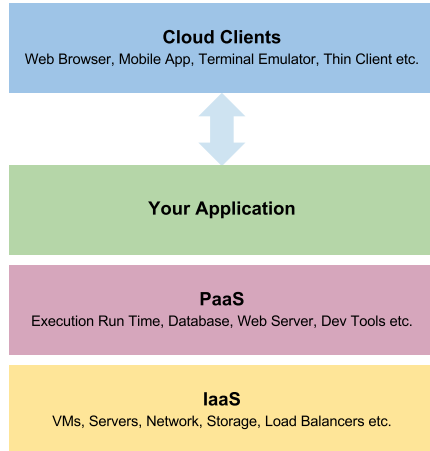


much comfortable are you handling infrastructure, if you're just starting out and working on a standard software stack made available by PaaS providers then PaaS would be the right thing for you. If you want to wield full-control - right from the hardware to the execution environment then IaaS is ideal for you.

### Geographical Location

Most of the bigger providers have their data centers spread across the globe. Ideally you would want your servers to be running out of a datacenter that is in a geographically closer to your target customers. For example, it's not feasible for Flipkart to host their servers on Amazon data centers in the US, with their entire customer base here in India. Doing so will unnecessarily increase the round trip time between the client and server and also increase the latency in communication which will lead to sluggish performance of the website affecting the customer experience. This is also crucial if your application has strict QoS requirement, i.e. some tasks need to be performed in real-time, if so then latency in communication due to large distances may be a problem.

A work around here is to use a hybrid of setting up your own physical server or opting for a co-location for your front-facing servers and real time tasks closer to your customers. You can burst to cloud instances in case there is a spike in traffic and your servers are not able to handle the load. At the same time



Cloud Computing Layers

background, monitoring, maintenance and other scheduled tasks which do not have hard real time requirements on the cloud instances.

### Bandwidth

Being an emerging economy, India still faces crucial challenges when it comes to last mile bandwidth. It's very difficult to get hold of the exact bandwidth that you can expect on your instance as this will vary from provider to provider. As far as IaaS is concerned, in most cases the bandwidth available is directly proportional to the instance size i.e., larger instance equals to more bandwidth. Hence if your application requires an insanely high speed connection to the internet then you may have to opt for a larger instance size. Usually the internal communication

interfaces between instances have a larger bandwidth.

### Transfer Caps

All providers have some transfer caps, usually the inbound traffic is free but they charge per GB on outbound traffic. You're automatically charged per GB based on your usage, there are usage tiers too where the charges on outbound traffic change based on the amount of data actually transferred. Some of the larger providers allow you to directly patch a line into their data centers, this is charged differently and in addition to the internet usage of an instance. This is extremely beneficial for real time systems which need high-bandwidth no-cap connections to their virtualized instances. Some providers which offer free instances have hard caps on data and need you to move to billing if you exceed the cap.

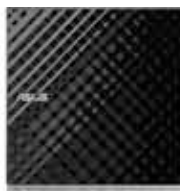
### Platform and Languages

By platform we mean the server operating systems made available by the providers. The server ecosystems are dichotomized into Windows and Linux based systems. Most of the software stacks made available by PaaS providers run on Linux except for Windows Azure. You have more if you're using a IaaS solution as you get to select which operating system you want to run on your machine and most providers offer both Windows and Linux instances. Windows instances are



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→ usually costlier than the Linux ones so if you're not working on .NET or any other Windows-based technology then you should go for a Linux based system. Another thing to point out is that if you're going for PaaS then the provider may not have execution environments for all programming languages eg. Rackspace Cloud Sites cannot run Java as of now. You'll have to verify whether your provider supports your programming language and which versions and libraries are made available as your entire application will be dependent on a specific version will be available. This won't be much of an issue if you're running your own instances as you'll be in the drivers seat and will be in full control of the entire software stack.

### Budget

All these services are made available to you as utilities and like all other utilities you are charged based on what you consume, but with autoscaling and

other features you may land up with a large bill due to spikes in usage. For IaaS services you're usually charged per hour, i.e. how long your instance runs and for PaaS you're charged per month with limits on the underlying hardware and auto scaling so you'll be charged if your software exceeds the selected packages constraints. You'll have to carefully select the plan and instance sizes so that you meet your requirements and stay within the budget. A good place to start is cloudorado.com which is an IaaS comparison engine which lists prices from all different providers for a given configuration.

### Migration

As such there is no vendor lock in as far as the providers are concerned. They provide you with an instance that you can control in case of an IaaS and a standard runtime in case of PaaS, so moving the applications is as good as shifting the executable to a different machine and reconfiguring it. The

only problem that one can face in moving from one provider to another is the hardware capabilities for IaaS and software/library versions in case of PaaS. Each provider calculates their computing units differently so you may see an increase or decrease in price moving from one provider to another. For PaaS the problem may arise with library or version incompatibility, you'll have to make sure that the libraries and execution environment can be replicated on the provider to which you're migrating.

### Summing it up

We hope you find this article helpful in selecting the right cloud provider. We would like to reiterate that this article was just to point you in the correct direction, you'll still have to carefully scrutinize the details of the services offered by these providers but this article will help you to look for the right things. As is the case with most buying decisions, every problem has a unique solution.

# The Silver Lining

**A** ccording to an IDC survey on cloud computing and its effect on IT organizations and services, the demand for professional with a hands-on experience with cloud technologies will increase by 26 percent annually until 2014 and will lead to creation of more than seven million jobs related to cloud computing across the world with Asia-Pacific regions growing the fastest 32 percent annually resulting in more than 2.3 million cloud-related jobs by the end of 2015 in this region alone. In fact the job that require cloud-savvy IT pros is already on the rise, the problems that organizations are facing



Reach for the sky

right now is of skilled manpower, there are very few candidates that fit the bill.

Similarly, according to a KPMG survey, nearly two-thirds of firms around the are planning to or are currently using cloud technologies. On the other hand, according to a study by RightScale, 77 percent of respondents from various verticals across the industry plan to include a private cloud option as a part of their private cloud portfolios. All in all these reports signal a lot of interesting and exciting new job opportunities lie ahead.

### Industry requirements

The industry is currently looking for people with requisite into categories:



positions for candidates with specific cloud skills and positions for candidates who are experienced in handling and designing cloud architecture.

Specific cloud computing skills are associated with companies working with a single cloud service provider i.e. either one from AWS, Google Cloud Computing, Rackspace and so on. You are expected to be comfortable working with the tools and services made available by these providers. The market is currently flooded with jobs in these category – companies which have or in the process of shifting their software or infrastructure to the cloud look for people with such skill sets. The requirement for IT pros with advanced skills in deploying and managing resources on AWS exceeds by a large margin, the requirement for Google, Microsoft and Rackspace skill.

Similarly, for cloud architects, companies seek candidates who can control and manage every aspect of cloud from defining the business requirements to its actual deployment.

Usually companies who do not have a clear roadmap on how they plan to implement their cloud policies and need assistance in doing so require such candidates. They're expected to work with either public, existing private cloud or may be asked to setup a cloud solution from scratch. These candidates are required to have more of a long-term strategic skill set while the jobs discussed earlier need people with tactical skills which will help solve operational problems.

The IDC report that we discussed earlier also states that a lot of these jobs are going unfilled primarily due to lack of training, certification and experience. These are vendor specific certifications so they tend to focus and lay importance on their own offerings but they do offer a general background on various cloud computing basics and architecture. These certification tend to limit your knowledge to a specific provider only on top of that these courses

## \* Cloud Certifications




The number of cloud certification programs are also increasing with the increase in job positions. Large technology providers such as Microsoft, IBM, and Google and some other independent training organizations are currently offering such programs. Some of the better cloud certification programs are:

- AWS Certification Program <http://goo.gl/FiYDy>
- Cloud U Professional - Rackspace <http://goo.gl/r05wv>
- Google Apps Certified Deployment Specialist <http://goo.gl/xHV9E>
- Microsoft Learning <http://goo.gl/9KaJ1>
- IBM Certified Solution Advisor – Cloud Computing Architecture <http://goo.gl/RXh1J>
- IBM Certified Solution Architect – Cloud Computing Infrastructure <http://goo.gl/koQEQ>
- VMware Certified Professional (VCP) <http://goo.gl/H7Boi>
- Certified Cloud Professional (CCP) <http://goo.gl/1puMJ>

tend to skim over the surface with just basics of IaaS, PaaS and SaaS and so on; they don't delve down into the gory details of the many problems and challenges that companies face when shifting to a cloud based service. Currently a majority of the professionals working at specific cloud positions and architect-level positions are self taught or have a large experience to draw skills from. With the number of positions for such skills increasing companies will start looking for people with certifications and training. This surely make sure that in the future, the curriculums of these courses become more comprehensive and more and more colleges start teaching the basics of such systems in the classrooms itself.

### Conclusion

There is fear among IT personnel across the industry that shifting core infrastructure to the cloud will make their jobs obsolete. Although that is not entirely true, it is just the question of moving up in the model, from IaaS to PaaS and SaaS, as cloud deployment opens its own can of worms like the challenges in virtualization automation, multi-tenant architecture, identity-based security and API design to name a few. Their jobs will not become obsolete only the focus in their jobs will change. Responsibilities will move from designing to deploying. All in all investing your time and resources as an IT professional in cloud computing with the current pace of growth seems to be safe bet and a wise career decision. 



## Menu

Menus have been an inherent part of our computing experience since 1970's when command line interfaces were first introduced. Gradually, as mankind invented numerous different ways of interacting with computing devices, Menus evolved in their design and application, leading to extremely natural and intuitive user experiences. In the following pages, we give you a glimpse of developments and trends in User Interfaces space that will indisputably revolutionize everything we know about UI today

# Revolutionizing User Interfaces

Arpita Kapoor & Mohit Rangaraju  
readersletters@thinkdigit.com



Take a look at your body, your arms, your limbs, your fingers, you'll realise that your body is an amazing device with over

hundreds of degrees of freedom and thus has tons of ways of interacting with objects and devices around it. With computer scientists and user experience designers across the world working on developing all new ways of interaction, you can just wave your hand, blink your eyes, blow air from your mouth, or just think about something to interact with devices. Awesome interfaces shown in movies such as Avatar, Star Trek and Iron Man are slowly becoming a reality. Jinha Lee, a researcher in MIT Media Lab is working on Space Top, a 3D interface very similar to Iron Man's interactive holograms using which you can grab files like real world objects and move them around. Swiss scientists are working on a mind-control system similar to the one shown in the movie

avatar where a human mind can control a robot by just thinking. However, we're jumping ahead. Touch is the UI of choice right now, but is it good enough?

### Going beyond touch

Almost every modern-day technology can be traced back to a Research project in some world class University or Research lab. Following that pattern, we can predict the future technologies by understanding



IronMan Lab: The Iron Man Lab

and analyzing the current Research projects. It is also important to note that many of these Research projects do not turn viable for commercial use, but they act as a base for some other technology – Holographic technology, for example. Sure, multi-touch was an innovative way of Interaction – but people are in need of something new due to two reasons:

1. It does have some disadvantages. Touch doesn't provide the freedom that a mouse provides. For example, one cannot hover over a hyperlink on a touch device. It is also difficult to select text by touching, as the text might be smaller in size than the user's finger. So, there is a need for a more flexible Interaction system.
2. People are in need of more natural ways of Interaction. May be more than just using one's finger or a stylus. May be more like how we interact with each other with gestures or signs or voice. This need of new Interaction methods led to:



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Multi Touch Technology

## Gesture-based Interfaces

To overcome the disadvantages that touch devices have, Google is working on a Gesture Technology called “Continuous Gestures”. Presently, it’s difficult for a user to select some part of text and search about it or copy and paste it. So, Google’s “continuous gestures” recognises touch gesture patterns that are made by the user and acts accordingly. For example, if a user wants to search a line of Text; then he/she can just draw ‘g + o’ and the search starts. The technology also presents options for the user to choose which search engine to use and maybe also customise gestures for particular actions. This is to be implemented in the future Android phones. While Google is trying to use gesture recognition to improve the already existing touch-based interfaces, companies such as Nintendo, Microsoft and Sony have gone way ahead and made gesture recognition like natural arm movements the way to interact with machines; without any need of touching anything. Through Wii, Nintendo introduced the Wii controller which wirelessly connects itself to the Wii

console and when held in your hand takes in natural human movements as inputs to replicate them on screen. So basically, when you are playing a game which teaches you how to practice Yoga, you actually will have to follow the steps of arm movements with the Wii controller in your palm to complete the game. Nintendo Wii till date is one of the most successful family gaming consoles which is praised for its innovation in controls and User Interaction. Sony also came up with PS Move which is almost the same in terms of functionality, but obviously needs the PlayStation3 console.

Microsoft went a step ahead and removed the burden of holding a controller. With high-end image processing techniques, Microsoft’s Kinect can be operated without any controller. In fact you are the controller; so basically, your bone movements are tracked down and replicated on the screen. With Kinect’s preciseness, playing a game which teaches Yoga or Dance is not a walk in the park anymore.

Kinect gave rise to a wide range of applications in various fields which includes health and fitness, retail, video games and many more. After Microsoft released the SDK for developing apps on Kinect, people have put it to pretty good use. A non-profit medical research organisation called “West Institute” developed an app named “Reflexion” that helps people through post-surgical physical therapy. A programmer developed a Kinect hack with the help of which his Mom could call an ambulance or other emergency using gestures when no one is

around. Another hack called UbiDisplays which needs a projector also, with the help of which web pages and other digital content such as your Facebook profile are projected onto the walls and users can organise content by a drag-drop interface. Reminds you of the Iron Man movie?

Apps are also being developed for Equipment Training. The Institute for Energy Technology has created virtual environment with equipment that can be interacted with the help of Kinect. So, the employees get to work on this virtual equipment and train themselves, before they actually start working on real equipment.

Retail Companies are also finding a use with Kinect technology; they call it the “Future of Shopping”. Cisco is currently working on this technology where the whole store is actually digital, as in all the apparels and accessories are presented to the user through a digital interface. The user can switch between clothes and accessories real fast to check which one’s suiting the most. This app helps users in identifying what fits them the best and saves a lot of time, and also increases the chance of buying something. A European Software maker – Extreme Reality is very much inspired by the Kinect Technology, but is aiming to avoid the hardware involved with it – Kinect itself. They’re trying to develop a software technology that uses the front facing cameras that almost every modern day laptop and Desktop are equipped with to take gesture inputs from users and translate it onto screen. So, you



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→ can just sit back and relax on your sofa, while you organise some virtual paintings on your wall, do some shopping online or play game. and if you think sitting back and moving your hands is going to make you lazy, think again. It gets lazier! The next step is interaction through facial movements. Software Developer Eye Tribe is about to release an eye-tracking software for Android mobiles where users can navigate their mobile, play games such as Fruit Ninja with just eye-movements!

Interaction with facial recognition has a major application in the video games industry, and some developers have already implemented this technology to improve their game's mechanics. The most widely played MMORPG – World of Warcraft (WOW), which already immerses players in their beautiful fantasy worlds are taking the experience a step forward. With the help of a facial recognition and animation tool called “FaceShift”, Blizzard (creator of WOW) will capture your facial expression and animate your character accordingly.

## Voice-based interfaces

Voice Recognition has always been in the pipeline since ages, but always faced problems due to varied accents and a lot of environmental issues. But due to the advanced parsing algorithms and computational power, voice-based interfaces are a reality now. One of the best recent examples is “Siri” for iPhone. It accepts Voice commands, suggests you places to visit, books your calendars, handles your phone on your command and also can converse with you. Before Siri, Google also released an app for the iPhone accepted voice commands and could be used to do Google searches. In May 2013, Google released a conversational voice search function along with the new version of Chrome browser. So, now you can talk to the search engine directly; ask questions like “Who’s the 25th president of USA?” It also introduced semantic search, because of which needless information can be avoided. Google’s answer to the question – “When was he born?” would be the birthdate of William McKinley, who was the 25th president of the US. Google Glass, the head-mounted wearable computer

also uses Voice commands as input. Users can now basically talk to their glasses to take pictures, upload to Facebook or send an email on the fly.

## Airborne displays

Remember how Tony Stark catches a digital file, crushes it and throws it in the garbage bin in the movie “Iron Man”. Remember how he holds the Stark Expo model map and zooms and turns the model with his bare hands? That’s an example of airborne displays, and we should have them soon enough. A Finnish company FogScreen presented its mind-blowing technology in CES – a display system that projects images onto a curtain of fog. So apps and games run on a layer of vapour and you can use your hands to interact with the digital content.

Displair, a Russia-based technology firm has added 3D multi-touch capabilities making images and models manipulatable in three dimensions in open space. As the digital content is in the air, it is penetrable.



A user operating a 3D model in Displair

## Brain-to-machine

As if gesture-based, voice-based and airborne Interfaces are not enough, scientists are developing what might be called the ultimate computer interface – interaction of your brain directly with a machine. It doesn’t get simpler than this; imagine turning your lights off just by thinking about it, or instructing your personal robot to bring a lemonade just by thinking! This is in line with the concept of the movie Avatar – where a human handles a humanoid with his/her mind. This has numerous applications. If this technology is combined to robotic arms or



Virtual Fitting Room : Women trying dress using Virtual Fitting Room

humanoids, it can be used to help people with paralysis and other disabilities in their daily activities. Researchers at Brown University developed a robotic arm which could respond to the brain activity of a paralyzed woman. The robotic arm when commanded, could pour her coffee for her, and then return to rest on the table.

Organisations such as Samsung are working on technologies that can help users operate their phone with their minds. The idea is that in the near future, you will not need to take out your phone from your pocket to answer a call, dial a contact, read a message or even to tell your phone what song you want to hear. The US government is investing heavily in the BRAIN initiative which focuses on research projects through innovative neuro technologies. One of the current projects is to create a brain-machine interface with the help of which soldiers can control a jet or other weapon systems like in the 1982 film “Firefox”.

Every new technology has a major application in video games, particularly this one. Imagine playing a game where you dodge bullets or play temple run just with your mind. NeuroSky, a California-based startup is onto this and has made decent progress.

This technology can also be used to train the brains of mentally-challenged people. But, the brain-to machine interface brings in a lot of privacy concerns. If the machine can understand people’s thought process, then it might be too risky as that information can also be hacked. Another concern is regarding how contextually aware the interface is. For example, if you were just thinking about *biryani* but are not really hungry, how would your personal robot



ANNIVERSARY



## Best Interface is no Interface

*"The real problem with the interface is that it is an interface. Interfaces get in the way. I don't want to focus my energies on an interface. I want to focus on the job...I don't want to think of myself as using a computer, I want to think of myself as doing my job."*

— Donald Norman , 1990

Way back in 1999, BMW introduced a technology where a car's door unlocked when it sensed the key near it. There were sensors inside the key. This is just one simple application of invisible design. The concept of no UI is becoming increasingly popular. Recently, Roberts Mills released a book called "A guide to designing the invisible" that talks about methods that can be used to design devices with no visible interface. Golden Krishna, designer at Samsung America recently gave a talk on the topic of no UI after which the #NoUI hashtag became popular. Today, when designers are trying to answer every design problem by adding more intuitive interfaces and natural ways of interaction, all our devices are getting highly interface-driven. Almost every useful object – from washing machines and refrigerators to automobiles and even shoes and clothes come with interfaces on them. Most are operated by touch or gestures. Many user experience designers argue against this trend, though.

Consider this: you can choose between your current smartphone, which has an interface to put your phone on vibrate when you enter a meeting room, if you remember, or you can have a smartphone that automatically activates vibrate mode in meeting rooms, and actually goes to silent when the big boss is around. Which would you want?

However, this smartness has to be coupled with legible systems to understand needs better, or else you'll just have devices doing inexplicable things, like leaving you wondering, "When did I put my phone on silent?" The idea of no UI has

to be supported by emergency, alternate interfaces if needed in the event of panic . Consider an event from the movie "The Fifth Element". The character Korben gets up from his bed, his bed slides away automatically pulling off used linens to wash them and then pack them in plastic bags. However, now consider a situation where Korben goes to the restroom in the middle of the night, and then lands on his backside when trying to get back into bed. Thus a no UI-based systems need to be extremely context aware to perform well. Besides, you wouldn't want your bed to malfunction and try and wash and pack you along with your bed linen, would you? Thus we will need to have alternate emergency interfaces to signal a panic situation, where all such automatic actions are stopped immediately. Devices such as Nest, an intelligent thermostat that learns your patterns of temperature control, understand this need of alternate interfaces and provides you with an alternate interface to alter the temperature if needed manually. Designers believe that a device like Nest would be frustrating to use without this alternate emergency interface. What if your house is trying to cool itself on a hot day, but doesn't realise that you have a fever, and don't need the AC to work, because you want to sweat it out? The debate between UI and no UI settles on the point that having no UI leading to confusion and operational issues or an unusable beautiful looking UI are both bad choices. In the end, it depends on the type of application and the degree of control that can be taken away from the user. It is awesome to see such evolutionary developments in the space of UI design.

There's a lot we're looking forward to in the future, and only time will tell what the next big thing is. Until you get truly smart devices that just know what you want, even before you do, the best you can expect is to wave your hand and blink your eyes while expecting some device or another to interpret that as a command.



TELESAR V is a Robot that can be controlled with the human brain directly.

decides whether you want some or are just thinking randomly?

### Brain-to-brain

Won't it be awesome if we could communicate brain-to-brain without any interface in the middle. It would make things easy and crazy at the same time. Brain-to-brain communication was only a concept until recently, when a surprising research was published in Journal Scientific Reports. The neuroscientists could make two rats communicate using brain-to-brain communication devices, even when they were miles apart physically in 2 different cages. The rats could communicate and solve simple puzzles together. The encoded rat pushes a lever and earns a reward following which a brain implant records the cortex activity and delivers it to the decoder rat using neural links. The decoder then processes this information and performs a similar task. Now if you are still with us, this is just one proven way of how brain-to-brain interfaces have a credible future. The US BRAIN project is also working on thought helmets that soldiers can use to communicate amongst one another securely during war situations. Though brain-to-brain interfaces raise issues of super intelligence and other ethical concerns, scientists working in this field are sure that communicating over a neural link to replicate a task is very different from two brains planning a task together like a dual-core CPU. Just because we have super-computers doesn't mean we'll get super-brains by networking them, right? Err...hmm...



## Full Screen

The F11 key pertains to the full-screen function. This is one function that the majority of us use quite a lot for its distraction-free attribute and optimising the screen real-estate. There is hardly a consumer lifestyle gadget that doesn't come with a screen or a display, and of late we have even started to see non-screen gadgets sport touchscreen displays – think multi-function printers, routers, refrigerators and so on. The importance of display in the current tech scenario is second to none. In the following pages we take a look at three prime product categories and how the display tech will evolve around them over the coming years

# Just 4K-ing around?

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As far as TV display technologies go, we are beginning to see a lot of action in terms of resolutions, smart features on offer and the panel technologies. A quick flashback to last couple of years' Consumer Electronics Show (CES) and IFA drive home the point that the future is about ultra HD 4K technology. But if you go back a few years, 3D TV technology had received the same kind of adulation – we know quite well how that ended. So will the 4K jargon meet the same fate as the infamous 3DTV or is there something more? Let's find out.

TV technology (and in effect monitor technology) has evolved quite a bit over the last decade. We still remember the days when cathode-ray tube (CRT) displays ruled the market and flatscreen LCD technology was just too expensive. That was 10 years ago. Go to any electronics showroom today and all you will see are

flat-screen HDTVs. CRT monitors are still seen around in offices and some homes, but it's not going to be long before their owners upgrade to flatscreen technology. And why not? Cost is not a limiting factor anymore.

In terms of resolutions, we have gone from the standard 480i display on our CRT TVs to HD-ready (720p) flatscreen TVs to full HD TVs. But this evolution cannot be seen in isolation, that would be missing the point.

With the advent of Direct-to-home (DTH) services and Blu-ray technology, the move to full HD resolutions on TV was inevitable. Thanks to digital cable, over the years, we have seen a steady rise in the number of full HD TV channels. Blu-ray drives and players have seen a couple of generations since their inception and although the numbers are not huge, this is the go-to technology for hardcore film buffs who want only the best in image and audio

quality while watching their favourite movies at home.

Alongside higher resolutions, the TV screen sizes have always kept getting bigger. You get LED backlit LCD TVs going all the way from 22-inches to 72-inches and this size surge is sure to forge ahead to even bigger TV sets adorning living rooms.

In case of our humble computer monitors, the move to flatscreen LCD monitors has been more a matter of practicality. The immediate advantage with LCD monitors was saving on space – CRT monitors just took too much desk space away. Graphics cards have supported full HD (1080p) and even higher resolutions for years now, and thus full HD monitors are commonplace for home usage these days. Hardcore gamers, however, don't just stop at 1920x1080p – the maximum monitor resolutions at the moment scale the 2560x1440 pixel mountain. There are enough high-end graphics cards in the

market to drive those kind of resolutions with enough video RAM buffer to handle the graphics.

As you may have realised by now, the evolution of the TV and monitor landscape has a lot to do with the enabling eco-systems around them. We would still be on CRT TVs had TV broadcasters stuck to the analogue medium and Sony hadn't come out with the Blu-ray drive. So the main challenge for UltraHD or 4K technology is the lack of enabling eco-system, at the moment.

4K resolution equates to 3840x2160 pixels which is four times that of the current full HD resolution. The concern at this resolution is the availability of content. The main reason behind the failure of 3D TVs was the lack of native 3D content. While we are seeing a lot of TV companies such as Sony, Toshiba, LG and Samsung announcing their 84-inch 4K UHDTVs, only Sony so far has laid out a roadmap talking about 4K content delivery. We are not even getting into the content creation aspect of it, which comes with its own set of challenges. Sure there are digital cameras capable of shooting raw 4K content, but processing it and compressing it for consumption on a 4K TV is an altogether different beast.

On the content delivery side, Sony plans to launch a 4K media player and a 4K video distribution service - FMP-X1 - in the next few months. The \$699 FMP-X1 will connect with Sony's on-demand 4K movie download service to deliver 4K content. As of now Sony has announced

10 movie titles which are "mastered in 4K" (Blu-ray HD titles upscaled to 4K resolution) which will be available in July when its 4K TVs launch. Towards the end of the year, Sony also plans to launch its much-awaited PlayStation 4 which will be 4K compatible. The lack of a physical medium such as Blu-ray discs for carrying 4K content is another challenge because going by the current internet bandwidths, streaming 4K content over the internet or even 4K broadcasts is downright improbable. Advanced video compression technology such as High efficiency video coding (HEVC) will still require a bandwidth of 25-35 Mbps which is still a dream in most parts of the world for regular home broadband users.

The viewing experience on a 4K TV should throw up interesting results. As of now, the 4K TVs announced and showcased at various events abroad have been 65-inches plus, with 84-inches finding a common ground among most brands. At that screen size, native 4K content should look great and should give you a pixel-free viewing experience vis a vis 1080p content. But that is a prohibitively huge size of TV for the average Indian home. Sony recently announced its first 4K TV which starts from 55-inches which is still a manageable size. Assuming most households will have a sub-50-inch flatscreen TV in their house, it will be difficult to tell apart a 1080p and a 4K display if both are viewed from the same distance. If the content is full HD



Sony XBR-55X900A 4K Ultra HDTV

upscaled to 4K, as will be the case for the initial months, the image quality jump will not be that impressive. 4K computer monitors will still make a lot more sense as the viewing distance for a computer monitor is far less than that for a home TV.

The one area where 4K resolution will really work is in passive 3D displays. Current generation passive 3D displays tend to break up the vertical resolution into half such that the resolution for each eye is 1920x540 pixels. With a 3840x2160 pixel resolution, the breakup will be 3840x1080 for both the eyes thereby enabling you to view full HD resolution for both eyes.

So yes, be prepared for a lot of marketing blitz around the 4K technology in the coming months. Sony has already started taking orders for its 4K UHDTV abroad. Other brands should follow soon. Apart from hardcore videophiles and early adopters, we doubt the 4K segment will really see that many sales in India at least for the next couple of years.



## FAST AND POWERFUL

NVIDIA Kepler™-based GPU with 2,304 cores  
3 GB of high-speed GDDR5 memory  
NVIDIA GPU Boost 2.0 technology





# OLEDing the way for TV panels...



When it comes to flat-screen TVs our options so far were limited to plasma, CCFL backlit LCD and LED backlit LCD panels.

This year should see an addition to that in the form of OLED panels. But the only catch is that OLED TVs are going to be prohibitively expensive when they launch - LG has already started with pre-orders for its curved screen 55-inch OLED TV which will retail at USD 13,500. And no 'curved' wasn't a typo. We'll get to that in a bit.

Organic Light Emitting Diodes or OLED has already made its entry on the smart-phone screens in the form of AMOLED displays - think Samsung Galaxy S2/S4 or Nokia Lumia 820 or even Microsoft Zune. OLEDs are capable of generating their own light when activated with an electrical current and do not require any sort of fluorescent or LED backlight. We have already seen the difference in terms of thickness between an LED backlit LCD TV and a CCFL backlit LCD TV - both kinds require backlighting. So when you replace these with an OLED screen which

does not require any kind of backlight you get TVs which are slimmer than the slimmest LED backlit LCD TV. LG gave a glimpse of that in CES 2012 where it showcased its 55-inch OLED TV which was just 4mm thick! The next immediate advantage is the bump in contrast levels - thanks to the lack of backlighting, OLED panels produce much deeper blacks and are they are also capable of bright whites. Another obvious advantage is reduced power consumption. Coming back to the curved aspect - an OLED is made out of an organic or polymer based substrate which



LG's curved OLED TV which is retailing for \$13,500

can be flexed or bent without affecting the flow of current or changing its light-emitting properties. At CES 2013 Samsung announced its flexible OLED prototype products calling these displays YOUM displays. More recently at the Society for Information Display (SID) week, LG showcased its 5-inch unbreakable and flexible plastic OLED panel which could be used in future mobile displays. Another prototype was showcased by Sony in 2010 which shows a flexible OLED display being rolled around a tube the size of a pencil while it was playing back a low res video. The possibilities are endless.

Sure the cost will be restrictive, but then HDTVs were also prohibitively expensive when they first came onto the scene. LG, Samsung, Sharp have already shown their OLED prowess at electronics fairs over the years. Sony and Panasonic have decided to team up for OLED TV production to give competition to the Korean giants LG and Samsung. Competitive pricing will get OLED TV prices to sensible levels. When that will happen? Well, as of now that is anyone's guess.

## Pixel density, where does it end?



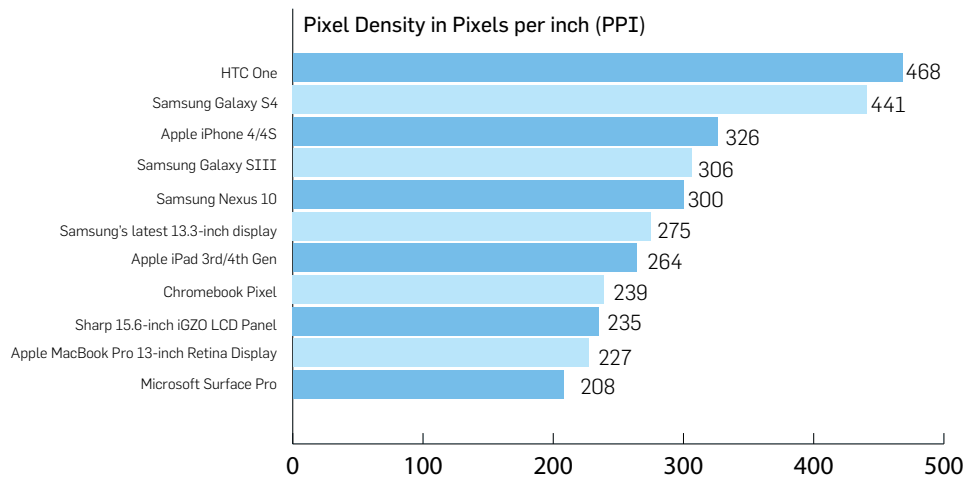
Ever since Apple introduced the Retina display with the iPhone 4, pixel density as a specification has acquired a pride of place in marketing jargons. What started on phones only, is now also used to differentiate tablets as well as laptops. But is it just a gimmick or should it be a prime consideration before you get your mobile phone or tablet or laptops? If you don't already know how pixel density is calculated, or if you're too lazy to do the math head to [pixeldensitycalculator.com](http://pixeldensitycalculator.com) - just fill up the details and get the PPI for any screen. Increasing the number of pixels on your device will improve the quality no doubt,

but beyond a point the human eye cannot really resolve individual pixels. For instance taking Apple products the pixel density for iPhone 4/4S is 326ppi, third generation iPad is 264ppi and that of the 13-inch MacBook Pro is 227ppi. The numbers are different for these devices as they are used at different distances. The phone is used at a closer distance from the eye, hence a higher pixel density. Tablets are used at a comparatively farther distance hence a lower pixel density. If you thought Apple's numbers were high - the 5-inch HTC One has a whopping 469ppi and Samsung has announced a 13.3-inch display with a 267ppi which equates to a resolution of 3200x1800 pixels! Better

display is a given and you will no longer see pixellation around the edges of sharp lines or text or images. Things will appear much more smoother. But where does the buck stop? Higher pixel density means that the processors which power these devices have to pump in that many pixels which means more work, which in turn means more battery consumption. But that is just one part of the problem. If you have a high pixel density device, but the programs or applications you are running are not built keeping that in mind the investment can be pointless. It's kind of like running stretched iPhone apps on the iPad. This creates a challenge for the developers as they need to ensure that



their products run seamlessly on multiple high ppi screens. Same goes for the web designers – making different versions of the same webpage for screens of different resolutions. And god forbid if you are using these high pixel density displays on slower internet speeds – a recipe for pixillated disaster. Companies will always market higher pixel density numbers and it is upto you, the consumer, to decide where to draw the line. Remember, doubling of the resolution equals quadrupling the number of pixels on the device which means a four-fold increase in the video memory required to process and manage the display. Also, hoping to get the absolute best resolution with every application or program you use will be silly as not all programs will be upgraded to the pixel density you are using, at least



not it becomes more mainstream. So be prepared for some pixellated programs (if you use the full screen real-estate) or very

compressed version of regular programs (and when using the programs native resolution) once in a while.

## What about eBook readers?

**A**lthough the ebook reader market is yet to pick up steam in the Indian landscape, thanks to Amazon's late arrival in India, it is still an interesting product category. With major Indian e-tailers offering ebooks now, it's safe to assume that we are indeed reading more digital books. Of course, a lot of these ereaders are basically tablets and smartphones with a fraction of the people reading ebooks on devices such as the Kindle. Standalone e-ink devices will always be a hard sell in India where people want more out of their gadgets. Only the hardcore book-nerd will go for ereaders. The global trend for standalone ebook readers is going southwards. By 2016, the ebook reader space will amount to just 7.1 million units – equivalent to a loss of more than two-thirds of its peak volume in 2011. (Source: IHS iSuppli Research). Sure Amazon's Kindle Paperwhite is quite an improvement in terms of its response, resolution and the illuminated display as compared to its previous

generation devices. Our experience with local ebook readers has not been that great as these devices have been marred with slow page refresh rates and poor touchscreen response. We have been seeing prototype colour e-ink displays from Mirasol since 2010, but have yet to see a colour ereader. And going by its recent showcase at the SID Display Week 2013, Qualcomm has decided to use Mirasol technology on smart-watches, as a second screen on your smartphone and so on. Plastic Logic, an off-shoot of Cambridge University's Cavendish laboratory, is renowned for its flexible black as well as colour e-ink displays. PocketBook so far is the only player

to have announced an 8-inch front-lit colour e-ink reader, but that will only be available in Russia from next month. Another company called Jetbook have colour ereaders which employs e-ink's second generation colour e-ink screen, but thanks to its appearance being on the grayer side, we haven't yet seen this screen on popular ebook readers. Apart from the numbers, the future definitely is looking grim for standalone ereaders. The need of the hour for this product category some innovation.

The standalone ereaders cannot compete with tablets, but give the consumer a colour e-ink device – most likely one with a flexible screen, good refresh rate, excellent battery life and great visibility in daylight – and who knows – people might just be interested in the category again. Going at the current rate of market adoption of e-ink technology, the only future where it can flourish seems to be in the internet of things space as we are seeing with Qualcomm's Mirasol technology being used on devices other than e-readers. **■**



Pocket Book



# F12

## Save

Ever since we have started working online, we have taken the auto-saving function for granted. But the importance of the Save function key cannot be undermined. We have lost count of the number of times, when we have hit F12 just in time, before our systems shut down for reasons best known to them. As our lives get increasingly mobile, we have to apply the Save function to many other aspects. Here we discuss a few.

# Getting more juice out of your devices

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We are always on-the-move and our gadgets reflect that personality. No longer do you need to be near a power port to get your work done. Work can be done while you are commuting, while you are out in the park or even when you are lounging around in your house far away from a charging point. With every succeeding year, we are also seeing tremendous upgrades to the resolution on our screens, the quality of apps, media consumption increasing by the day with high quality content and so on.

While the software is keeping up with the hardware to ensure a seamless experience, our battery technologies haven't really changed much in the last five years. Refer to section F1 where we have looked at some possible solutions.

Sure, you are getting higher capacity batteries these days. Most mobile phone and tablet manufacturers are employing system-on-chips which are more power efficient. Ultrabooks sport power-efficient Intel processors. But all said and done, we know that there is always scope to save up on the battery life.

While you are near a charging point, the following tips may not make much sense. But if you are the kind who is travelling most of the time and your work needs to be done at odd hours, these tips to extract that extra-bit of juice out of your phone, tablet or laptop/ultrabook can go a long way in ensuring a smooth ride.

### For laptops

#### Defrag regularly

We have a lot of content stored on our laptops these days. Defragging the hard drive

regularly will ensure that the hard drive data is arranged in a more efficient manner. This ensures it can fetch data faster, thereby doing less work and ultimately using less battery power. You can do this by going to Start > Run > Disk Defragmenter and can schedule a Disk defragmentation schedule when your laptop is on power and you aren't actively using it.

#### Reduce the number of programs running in the background

Programs running in the background such as iTunes, Desktop Search, Skype, messengers and others which may not really be required when on battery, need to be shut down. You can go to Task Manager and stop the unnecessary services. Choose to see processes from all users, as often some unnecessary stuff doesn't show in your own list.



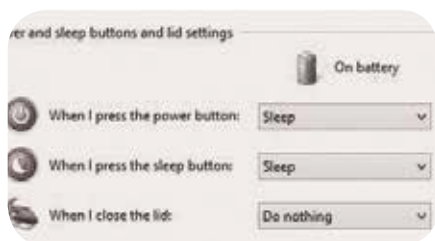
## ANNIVERSARY

### Optimising power options

Go to Control Panel > Power Options > Power Saver. Here you can decide the duration of time to dim the display, turn off the display, put the computer to sleep, adjust brightness plan when the laptop is running on battery power. Digging deeper you can go to Advanced Power settings where you can tweak even further to optimise your laptop's battery power by tweaking desktop background settings, USB settings, wireless adapter settings and much more.

### Monitoring scheduled tasks

A lot of us have the habit of scheduling tasks on our desktops or laptops such as a security scanning, software updates, backups, defragmenting disks and so on. These tasks use system resources. On a desktop it wouldn't really matter as it



Tweak the Power Saver options to save on battery.

is connected to a power outlet. But on laptops, when you do not have a power outlet nearby, it can really suck up a lot of battery juice. So try and disable scheduled tasks on your laptop, when

you have no access to a power outlet anytime soon.

### Avoid using external devices

When operating on battery power, avoid using USB devices, charging your mobile devices from the USB ports, external portable drives – when they are not being actively used. USB devices tend to drain your battery life and of course using the laptop battery to charge other devices is a strict no-no if you are running low yourself.

### Adding more RAM

When you run out of RAM, the laptop switches to virtual memory – which is basically reading the hard drive. Using the hard drive increases the load on your laptop battery. Instead of using virtual memory to get your tasks done, it is better to add more RAM to your system as it will not only get the work done faster, but will leave the HDD free.

### Use the optical drive less

The optical drive in your laptop consumes power even when you aren't playing any DVD off it. It is best to copy content from a CD/DVD onto your laptop's drive rather than playing content off a CD/DVD directly. Also ensure that there are no unwanted CDs/DVDs in your optical drive when your laptop is running off the battery as the disk spins every time Windows accesses it and drains your battery quickly. In fact disable the drive from Device Manager if you don't use it often.



Use optical drives as frugally as possible to save some battery bars

### Battery maintenance


Every couple of months remove your battery from the laptop and clean its metal contacts using a clean cloth moistened with rubbing alcohol. Ensure there are no dust particles covering the contacts. Make sure that you are using a fully-charged laptop, once every two to three weeks. When you know you are not going to use your laptop for a long time, charge it to around 40-50 per cent and remove the battery from the laptop.

### Precautions with laptop's air vents

Never, EVER, block the air vents of your laptop as it will heat up the components and reduce their life. Avoid using your laptop on cushioned material such as pillows or bedsheets which will block the air vents. Every once in a while, if you think you have the expertise to do so, open up your laptop and clean the air vents of any dust which may have accumulated. Use a vacuum cleaner to do this if you're afraid to open the laptop yourself, because dust



**GAME-READY**  
GeForce® Experience™  
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TXAA™





around the air vents chokes the air flow and reduces the life of your laptop drastically. Also, fans have to spin faster to keep things cool, and this drains the battery even more.

### Avoid multi-tasking when running on battery power

Multi-tasking may be an efficient way of working if you have the hang of it, but it drains battery a lot faster. It's a lot better to prioritise your tasks, and open the software you need to accomplish them one at a time. Most often, you will focus on one task, and all the other programs in the background sit there eating up CPU time, and as a result, battery power. If you're not using the internet, disable Wi-Fi and the LAN connection. Bluetooth, Wi-Fi and IR radios drain a lot of power, which is why there are shortcut keys to turn them off; use those keys often.

### Battery saving tips for mobiles and tablets

#### Know when to turn off stuff

With cellphones and tablets, it is quite common to keep Wi-Fi, 3G, bluetooth, GPS and other things constantly on and forget about it. But each of these features employ particular components / radios which are doing work in the background and in effect keep sipping the battery. If you are using all of these functions (highly likely) then there's nothing to be done, but be ready to see your battery drain very quickly. You need to use these features judiciously to ensure you are getting what you want and at the same time not causing drastic drop in the battery levels. For instance, if you have a Wi-Fi only tablet, keep the Wi-Fi adapter off when you are commuting. Leaving it on will mean the Wi-Fi adapter keeps searching for open Wi-Fi networks, and drain battery.

GPS is another enemy to your battery. Most apps which request your location such as Zomato, Instagram, Fourquare, etc., to provide you location-specific information should be used only when you need them rather than keeping the GPS in an always-on mode

## Detach from physical drives, save in the cloud

Utility / Application Name	Dropbox	Google Drive	iCloud	SkyDrive	
Free Storage offered	2 GB	5 GB	5 GB	7 GB	
Referral bonus storage	Y	N	N	N	
Windows Client	Y	Y	Y	Y	
Mac Client	Y	Y	Y	Y	
Linux Client	Y	N	N	N	
Android Client	Y	Y	N	Y	
iOS Client	Y	Y	Y	Y	
BB Client	Y	N	N	N	
Windows Phone/RT Client	N	N	N	Y	
File / Folder Collaboration	Y	Y	N	Y	
Limit on no of downloads	N	N	N	N	
Public File Sharing	Y	Y	N	Y	
File Encryption	Y	Y	Y	Y	
Password Protection	N	N	N	N	
Download to mobile	Y	Y	Y	Y	
Version History	Y	Y	N	Y	

especially if you have a battery life of under 15 per cent remaining. You can go to Settings > Location Services and turn all location services off. Whenever you open an app that needs your location, you will get a prompt requesting location access. Depending on your battery life, you can choose to take the call instead of letting the dumb device decide for you.

#### Check what's using battery life

For Android tablets and phones: Go to Settings > Battery. This will give you an indication of the battery life consumed by applications and services. You can force stop any unwanted application or service if you don't like what it does to your battery levels.

Also whether on iOS, Windows or Android, uninstall any apps that you hardly ever use.

#### Lower timeout/auto-lock limit

In Android phones and tablets, the screen time-out starts from 15 seconds and in Apple devices the screen time-out starts from 1 minute. Keeping this at the

lowest setting ensures that your screen turns off soon after you've stopped using the device. The display is one of the major drains on batteries, so it's best to allow it to power down quicker. Besides, you might forget to click the standby button, which will cause the device to remain fully powered on for a full minute or so, and eating battery.

Also remember to keep your display at a low brightness setting when you need the battery to last longer. If you're going outside, and are nowhere close to a charging spot, allowing the device to automatically adjust brightness might cause it to set the brightness level too high, which will eat battery away faster. It's additional work for you, but you should take the call when to increase screen brightness.

#### Upload and sync only on Wi-fi

Ensure that you keep the syncing and app update settings to Wi-Fi only, unless you are in an extreme hurry to get your Dropbox synced with your office system. Uploading or downloading heavy files using a data connection while com-

With so many cloud storage and syncing apps at your disposal, you can easily store over 50GB for free with multiple accounts. Pick one or all 14 from the list below...

Norton Zone	Box	SugarSync	Mozy	Syncplcity	Cubby	Cloudme	Wuala	SpiderOak	Copy
5 GB	5 GB	5 GB	2 GB	2 GB	5GB	3GB	5 GB	2 GB	15 GB
N	N	Y	N	N	Y	Y	Y	Y	Y
Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	N	N	N	N	N	Y	Y	Y	Y
Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	Y	Y	N	N	N	N	N	N	N
Y	Y	N	N	Y	N	N	N	N	N
Y	Y	Y	N	Y	Y	Y	Y	Y	Y
Y	N	N	N	N	N	N	N	N	N
Y	Y	Y	N	Y	Y	Y	Y	N	Y
Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	Y	Y	N	N	N	N	N	Y	N
Y	Y	Y	Y	N	Y	Y	Y	Y	Y
Y	Y	Y	Y	Y	Y	N	Y	Y	N

muting tends to use up more battery life as the phone/tablet radios are working harder to maintain a connection. Whereas with Wi-Fi the process is much faster and utilises comparatively lesser battery power. Turn off auto-update on all apps. You should be in control of when apps are updated.

**Avoid ad-supported apps**

Although ads allow you to try apps without buying them, which is a great deal, it's not always a good idea for your battery. These apps are designed to keep updating the ads, usually over your net connection. Make sure you don't use ad supported apps when your battery level is low.

**Live wallpapers, haptic feedback and widgets**

Live wallpapers and widgets are Android features which make it stand out, but these features also drain the battery. Widgets are polling the apps servers to stay updated. If you are not using an app regularly, then there is no point in having it. Haptic feedback

found on mobile phones and tablets is another feature which we can live without as it tends to eat up battery life everytime you feel the feedback.

**Apps running in the background**

Keep a check on the number of apps running in the background. In Android you can hold the home button down and swipe off unwanted apps, whereas in Apple's iOS you can double tap the home button which pulls up the apps running in the background. Background apps hog your phone/tablet's processor cycles and by killing background apps you save quite a bit of battery juice.



Kill those apps running in the background when you know your battery is low

**Turn off non-essential notifications**

Every app that you download has its own set of notifications. You need to make sure to use the notifications wisely. Every time your app polls for notifications, it pulls them to your device over the net, gives you a sound alert or a visual alert which uses up CPU cycles, and thus also the battery. Now you don't want to turn off important things such as incoming mails or WhatsApp messages, but surely you can live without knowing the instant a friend breaks your high score. When you start up those apps you get all that information anyway, so why leave your device hunting for them when you're not interested in them at the moment anyway?

**Some apps to help you optimise your mobile device's battery**

- Juice Defender
- Battery Defender
- Go Power Master Battery saver
- Tasker
- Autorun Manager
- Battery life Pro all-in-one (iOS)
- Battery Boost magic (iOS)



# Wiping The Slate Clean

We test 30 Android tablets and tell you which is worth your attention and which ones you must avoid!

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Tablets have come a long way since they first started sprouting way back in 2011. At the time it was hard to justify purchasing a tablet and it was considered as a product for the elite class – a luxury device. Everyone aspired to own an iPad and its monopoly frustrated the competition. In the years that followed, we have seen the rise of

Android as a stable smartphone as well as tablet OS. Tablets running Android seemed to launch all everywhere. Over the past three years we have seen some impressive as well as disturbingly horrible tablets launch that run on Android.

Today, the market is flooded with so many homogenous Android tablets that it is hard to distinguish the good from the bad. Sure you have the tried and tested brands like Acer, ASUS, Samsung, Sony and more

bringing some great products to the table, but they haven't necessarily tapped all the price points at which the masses are looking to pick one up. With the growth in demand of "budget tablets" we have seen companies such as HCL, Mercury, iberry, Zync, iBall, Karbonn and more enter the market with products that offered the most basic Android experience to users at an entry-level price. Today however we have seen some impressive budget tablets that can multi-

task, have dual-core processors and can play games with ease.

The iPad has reached its fourth generation and tablets running Android have finally caught up with the ability to offer better value than they did a year ago. We finally have an understanding of what people like to do with their tablets on the go apart from Facebook and Angry Birds. A tablet acts as your portable entertainment device giving you access to movies, music and games.

## Get 10 free movies

CinemaNow offers you 10 free movies after linking your account with UltraViolet. Unfortunately, this isn't available outside U.S & Canada. <http://dgit.in/109v8uQ>



## Google Now Vs. Siri

Watch out this CNET's test and find out which one of two is more superior to use: <http://dgit.in/11MztKZ>

## Android Tablets Test

## HOW WE TESTED

Android tablets have been around for quite some time now and only in the past year have we started seeing devices that are worth purchasing especially in the budget segment. A tablet today is essentially used for a few primary functions including web browsing, watching movies and videos, playing games, running utility apps and the occasional spreadsheet and document typing/editing, with some social networking thrown into the mix. To ensure that a tablet can perform these tasks well, we used a series of subjective and objective tests to measure their performance.

**Benchmarks:** The objective tests are a series of benchmarks that measure the performance of the hardware powering the tablets. These benchmarks are Quadrant, Antutu, and SmartBench. These benchmarks give an objective score that judges the performance of the hardware of the tablets. They give us an objective idea of how the tablets will perform when used for productivity and multitasking. There is also a test that measures the efficiency of the preloaded browser on the device called Rightware Browsermark. This test essentially tells us how the browser will perform especially if you are one who likes to browse heavy-duty websites.

The above-mentioned benchmarks give out a score (higher is better) and objectively measure the performance of the hardware.

**Gaming:** One of the biggest uses of a tablet today is to play games on the go. Some of the games that are available for tablets are graphically heavy and need some power to run smoothly. As a standard, we played quite a bit of Dead Trigger, Angry Birds Star Wars and Temple Run 2. These are some of the most popular games on the Google Play store and represent elements from the graphically heavy (Dead Trigger) to the average everyday games (Temple Run 2). While playing these games, we look out for issues such as screen lag, input lag, judder etc. There are also benchmarks, 3D Mark and GFX Bench (Egypt HD) that measures the gaming capabilities of the tablet. In all these cases, a higher score means better performance.

The above-mentioned benchmarks are available on the Android platform through the Google Play Store for free.

**Start up:** Beyond benchmarks (going subjective now), we also tested the start-up time of these devices to see how long it takes for the tablets to reach the lock screen from the power off mode. This was done after factory resetting the tablets, doing the logins at the first start-up, and restarting the device again. No apps were installed prior to this test, except for the ones that came preloaded.

**Multimedia:** Since today's tablets offer multimedia capabilities, we ran a bunch of videos on

the tablet. We tested the devices with all the popular formats (MP4, MKV and AVI). The videos included SD as well as HD content. We judged the ability of the device to play the video formats smoothly – jumping forwards and backward on the play-timeline to check for stutters, freeze, crashes etc. The quality and experience offered by the display was taken into account as well - viewing angles, colour reproduction, crispness, brightness etc. We also played a bunch of MP3 songs to see how the speakers performed.

**Build:** Since a tablet is considered as a "life-style" device, we have also taken into consideration the build quality, plastics used, slimness of the device and its overall feel in our hands. There are multiple parameters on which each tablet is rated, before we reach one final build quality score.

**Battery life:** What good is a tablet if its battery drains in a couple of minutes, right? Well, to test the longevity of the battery on the tablet, we ran a video in loop to see how long it lasts. The battery was charged to 100%. We ran an MP4 1080p movie on loop with the brightness and audio at maximum. The amount of time taken by the device to reach 0% battery level is determined as the battery life. Please note that if you use the device more conservatively (switch off location services, reduce the brightness and volume, etc.), it will last longer.

You can also do some productivity work such as documents, spreadsheets and more. You also have access to utility apps, some of which are customized based on your profession such as photo editing, architecture, medical apps and more. Finally, the most important utility factor of a tablet is that it should have a crisp display for consuming all the content as well as a good touch interface so that you can interact with the device with absolute ease. Not to mention a battery life that has the ability to last for more than a few minutes.

Based on these consumer parameters, we at Digit tested 30 tablets available to the consumers today ranging from the

cheapest to the most expensive. All these devices run on Android. Here is an in-depth look at how these tablets perform for consumers in everyday use.

## DESIGN AND BUILD

You get what you pay for. That is the general correlation between the price of a tablet and the quality of its build. The plastics used, flex in the display, looks, flashy design and more get better with a higher price tag. This is the general norm and not a rule written in stone. In our comparison test we have seen the Nexus 7 (which is a brilliant performing device), show off a back panel, which is very plasticky in its nature, and we wish

it were better. The same can be said about the Samsung Galaxy Note 800 – good-looking device with a cheap plastic back finish.

We also have the ASUS FonePad, a ₹16k tablet built very well. The rear has a plastic panel with a gunmetal finish giving it the feel of a premium tablet. The enclosure, which houses the SIM card and the microSD card, too is very well built.

We have seen some budget devices too surprise us with its build quality. These include the Lava E-Tab Xtron, Acer Icona B1, Zync Quad 8 and the iBall Slide Edu. Despite being budget devices, these tablets have impressed us with their build quality and have tried to stand

out from other competing tablets in the same price range. We also have the WickedLeak Wammy Desire II (yes, that really is the name) that looks like a Samsung Galaxy SIII on steroids.

Seven inches seems to be the sweet spot for the tablets as majority of the tablets present in our shootout boast of this form factor. We have the occasional 8- and 10-inch tablets too but everyone seems to be gunning for the most portable form factor. The advantage of the compact form is that the tablet is easier to carry and 7-inches though large is still a lot more convenient to hold up against one's ear when compared to a 10-inch device for making calls.



**Just beer keyboard**

We're not sure whether this keyboard does exist or not, but this picture is worth checking out.



**Nexus 4 hits India**

We know you were waiting for that. A much awaited Nexus 4 finally reached India, with a price tag of Rs. 25,999. <http://dgit.in/16yrXEY>

The advantage of a 10-inch form factor comes into play if you are one who consumes a lot of multimedia content and needs to type on a tablet. Playing games and watching movies is a lot more entertaining on the larger display and typing in landscape mode too becomes easier.

The choice between a 7-inch or larger form factor is a very subjective decision. If you are looking for a tablet to carry on the go with the ability to fit in the breast pocket of your jacket, then a 7-inch device is the one for you. But if a large display or rather iPad equivalent tablet is what you are looking for, then a larger tablet is the device for you. Apart from the above-mentioned tablets, the rest of the devices bring a very generic build.

**TABLETS UP TO ₹10,000**

The sub 10K price point can be considered as “testing the tablet waters” for consumers. Here you get an absolute entry-level device – single-core (maybe the odd dual-core) processor, 7-inch display with a 480x800 resolution, standard array of ports (microUSB, HDMI Out, DC IN, memory card slot) and more. Some of the tablets even show off the ability to make calls by housing a SIM card.

The UI of these tablets is similar to each other; almost stock Android with a minimalist skin. The UI or preloaded apps in this category isn't the distinguishing factor. In some cases even the hardware powering the tablets are the same. It is with the hardware optimisation and performance of the touchscreen and display that influences the people who buy these tablets.



Lava E-Tab Xtron

**Display performance Visual**

With the exception of the Karbonn Smart Tab 10, all the tablets in this price bracket have a 7-inch display. The display is a TFT LCD display in most cases with the WickedLeak Wammy Desire II and the Lava E-Tab Xtron boasting of IPS panels. Most of the budget tablets do not have a protective coating on the display, which means that it can get scratched very easily.

Another problem plaguing the display is that most of them suffer from really bad viewing angles. You need to hold it at a specific position to get the right colour reproduction. A slight shift and it is difficult to see what is happening on the display.

From the sub 10k price point, there are only a few tablets that really stood out. To start with, the Lava E-Tab Xtron is one, which has a dimmer display when compared to the competition, but it is very clear. It has better viewing angles that what we have seen from a 7k device.

Another tablet that has a really bright display is the Penta T-Pad EDGE. Of all the tablets the one that really stood out in terms of the display has to be the WickedLeak Wammy Desire II – its resolution is the highest in price point and the viewing angles are great too. The display is really vibrant and stands out when you switch on all the devices and place them next to each other.

**Interface**

Intex iBuddy 3 has quite an unresponsive display when it comes to the touchscreen. You really have to make an effort to navigate it and it is quite a frustrating experience. The Mercury Mtab 7 is no better. It lags less than the iBuddy but is still laggy itself. Even though the keyboard responds to your touch, the experience isn't the smoothest, again thanks to the lag. Despite the dual-core processor, the interface of the Zync Dual 7 is plagued with lag as well. You really have to make an effort to type on these devices. The Videocon VT 75C has a slightly better touch response than the above, but it isn't grand by any standards.

The Lava E-Tab Xtron is one tablet that has a really smooth interface. It is one of the tablets that justifies its dual-core processor and 1GB RAM. The interface is smooth, navigating the tablet is nice, and lag is only a problem when you multitask heavily on it. The keyboard is one of the smoother and better ones in its segment. You won't be typing pages of documents on this device but it has a good keyboards and touch interface.

AOC's Breeze MG97DR-16 and Micromax's Funbook 3G have a similar interface with the touchscreen – responsive and

working like your run of the mill average Android device.

The best display on a device in this category is the WickedLeak Wammy Desire II. The interface is butter smooth and very crisp. The keyboard in portrait mode is laid out very well, just like a smartphone and is comfortable to hold, and continues to be easy to type on in landscape mode. The curved smartphone-like design makes it easier to hold and type on. The device isn't plagued with lag and has quite a smooth interface.

The Acer Iconia B1 too is a tablet that has a very smooth touch interface. There is considerably less lag here when compared to the cheapest tablets in this list, and the interface feels heavenly. The downside to the B1 is that it doesn't seem to support 720p HD MKV video properly, regardless of what video player we used.

If a 10-inch tablet is what you desire then the Karbonn Smart Tab 10 is the device for you. The resolution is low which is a hindrance if you consume multimedia content, but the keyboard is well laid out and good to type on.

**Unique features and UI**

Since all the tablets run on Android, their core interface is the same. Still some of these devices try to bring something new to the table such as their own app store, different colours and styles for the icons, preloaded apps and more. Most of the things are quite generic. Here we will talk about what caught our eye and what distinguished some devices from the others.

To start with, the Karbonn Smart Tab 10 has a stock Android experience. A great thing about the interface on the tablet is that it is the same as the



## Red Pen

Red Pen is a simple Web application that lets you upload your designs and share them with your clients and team members. <http://redpen.io/>



## Mercedes S-Class

The new Mercedes S-Class has been unveiled with road scanning technology. On sale in September 2013. <http://dgit.in/18bo9qy>

**Android Tablets Test**

Nexus 10. This means it has the same drop down notifications menu, wallpaper, and dock at the bottom of the screen, and much more. It is safe to say that the Karbonn Smart Tab 10 is the poor man's Nexus 10.

The Acer Iconia B1 also has a stock Android experience, similar to the one on the Karbonn Smart Tab 10. It has the drop down notification from the top of the display and a dock at the bottom that houses six apps/folders.

A special Mention goes out to HCL here. The U2 is your run of the mill Android smartphone but it finally supports the Google Play store.

Apart from giving users access to the Google Play store, the Micromax Funbook 3G also gives users access to the Micromax app store and M! Live giving you access to a bunch of local content such as news, wallpapers, apps, and more. Its nice to see that micromax is providing local content in addition to what is available on the Google Play store.

The Karbonn TA-Fone has more of an Android Jelly Bean smartphone interface, rather than the tablet interface found on the other tablets in this list. It has the drop down notification on the top and the call, contacts, message and browser shortcuts in the dock (which can be customised) at the bottom of the display.

Some of these tablets such as the Videocon VT 75C, Micromax Funbook 3G, Penta T-Pad EDGE and the Karbonn TA-Fone boast of the ability to house a SIM card. So if you are one who wants access to the Internet on the go or want a tablet with the ability to make calls, then these are the ones for you. For the tablets that don't support a SIM card slot,

apart from Wi-Fi you can use a 3G dongles to connect to the Internet as well.

## TABLETS FROM ₹10,001 TO ₹15,000

The 10k to 15k-price point is still considered a budget tablet category, but the tablets available here are a lot better in their performance when compared to tablets in the sub 10k segment. They offer consumers a good form factor, good power under the hood, the ability to multitask, and a decent battery life. This is the category where devices try to distinguish themselves from the competition. Some offer calling capabilities, others a better processor and some give you a better battery life.

## Display performance Visual

For a 10K tablet, the display of the iberry Auxus coreX2 3G is quite good. The 7-inch IPS display has a resolution that matches the Nexus 7 and also shows off some impressive viewing angles. Most of the video formats ran smoothly on the tablet but we did face a slight



iberry Auxus CoreX2 3G



Zync Quad 8

hiccup while navigating on the timeline of the HD MKV movie. We do wish that the audio output from tablet were better.

The AOC MG 97DR-16 and the HCL ME Tab G1 are your run of the mill everyday 9.7-inch Android tablet and the Spice Stellar Pad along with the iBall Slide Edu has a 10-inch tablet. The Spice Stellar Pad has a better display when compared to the AOC and the in terms of the viewing angles and the colour representation. The viewing angles on the HCL Me Tab G1 are good too. The iBall take the cake with brightness and viewing angles while watching videos. The four the tablets ran all the video formats well, and the viewing angles we better on the Spice.

The HCL Me Y3 is a 7-inch tablet and the display is better than the average tablet but not as good as the iberry. It has good viewing angles and the colour representation is ok.

Visually, the Zync Quad 8 looks amazing. Sure, there are tablets with better pixel density out there but the overall package is brilliant. The viewing angles are nice and consuming multimedia content on this tablet was a treat. All the video formats ran smoothly and colours looked rich.

## Interface

The interface of the iberry Auxus CoreX2 3G is stock Android and very smooth to use. The games too ran fluidly and the smoothness of the interface made it a treat to game on the device.

The touch response of the AOC MG 97DR-16 is good. Considering the 9.7-inch display it is easier and more comfortable to type on. The Spice Stellar Pad too falls in the same category along with the iBall Slide Edu along with the HCL Me Tab G1. The touch response was nice especially during gaming and thanks to the large display; the typing experience was good too especially on the iBall slide, which as the best laid out keyboard of the three.

The HCL MeTab Y3 has a good touchscreen response. It does see some lag and stutter but the response of the keyboard is good for typing especially in portrait mode.

One of the smoothest interfaces we have seen in the budget category is with the Zync Quad 8. Navigating the device felt butter smooth even with some of the heaviest apps open in the background. Because the device has an 8-inch display, typing on it too was a pleasurable experience because the keyboard fell well laid out.

	CATEGORY 1 (UP TO RS 10000)							
Brand	Intex	Mercury	Zync	HCL	Videocon	Lava	Ira	
Tablet name/number	ibuddy 3	M-Tab 7	Dual 7	Me Tab U2	VT75C	E-Tab Xtron	Thing 2	
MRP (version we tested)	6,490	5,200	5,990	5,999	6,499	6,499	6,500	
Street Price (Approx)	4,690	5,200	5,990	5,999	6,499	6,499	6,500	
<b>Ratings</b>								
Performance (so 40)	12.5	11.9	16.1	12.2	12.6	20.7	11.1	
Features (so 30)	13.6	12.2	14.6	12.3	12.4	15.7	13.1	
Design (so 30)	16.3	11.7	15.1	15.9	13.8	19.3	11	
Final Score (so 100)	42.44	35.92	45.87	40.37	38.88	55.65	35.18	
<b>Specs</b>								
Processor max clock speed	1GHz	1.2GHz	1.6GHz	1GHz	1GHz	1.5GHz	1.5GHz	
Processor cores	1	1	2	1	1	2	1	
RAM	512MB	512MB	1GB	1GB	512MB	1GB	1GB	
Display size (in Inches)/Display type/Display resolution	7/TFT/480x800	7/TFT/480x800	7/TFT/480x800	7/TFT/480x800	7/TFT/480x800	7/IPS LCD/1024x600	7/TFT/480x800	
Built-in Storage	2GB	4GB	8GB	4GB	4GB	8GB	4GB	
Expandable Storage (Y/N)	Y	Y	Y	Y	Y	Y	Y	
Wi-Fi (Y/N)/3G (Y/N)	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	
Battery rating (mAh)	2800	2300	3000	3000	3000	3500	3000	
Dimensions (in mm)/Weight (in gms)	191x117x11.20mm/325gms	192x117x12mm/300gms	NA/313gms	191x118x13mm/350gms	194.5x122.3x11.7mm/650gms	184x131x11.5mm/350gms	192x121x11mm/330gms	
Operating System (tested with)	Android 4.0 ICS	Android 4.0 ICS	Android 4.1 Jelly Bean	Android 4.0 ICS	Android 4.1	Android 4.1 Jelly Bean	Android 4.0 ICS	
HDMI out (Y/N)	N	N	Y	Y	Y	N	Y	
Front Camera resolution (MP)/Rear Camera resolution (MP)	0.3/NA	0.3/NA	0.3/2	0.3/NA	0.3/2	NA/2	0.3/NA	
Customized application store	N	N	N	Y	N	N	N	
<b>Build Type</b>								
Panel material used type (plastic, metal etc.)	Plastic	Plastic	Plastic	Plastic	Plastic	Plastic	Plastic	
Majority colour used	White	Black and White	Black	White	White	Grey	Dark Grey	
Finish type (glossy/matte)	Glossy	Glossy	Matte	Glossy	Glossy	Matte	Matte	
<b>Performance (out of 10)</b>								
HD video playback test	5.5	3	5	5	4.5	7	5	
Touchscreen response	6	5	5.5	6.5	6.5	7.5	5.5	
Battery Life (hours)	3.1	3	3	3	1.8	3	2	
Speaker clarity (at 100%)	5	5	5	5	5.5	7	5.5	
Ease of Typing	6	3	5	5	4	7	3	
Viewing Angles	6.5	4	5	5	5	8	3	
<b>Benchmarks/Real world tests</b>								
Startup time (switch on till lock screen - in Seconds) (Lower is better)	53.6	34.3	30.2	55.8	41.6	27	38.8	
Quadrant Benchmark (Higher is better)	2042	1877	4289	1600	2244	3710	NA	
AnTuTu Benchmark (Higher is better)	3164	2961	12875	4161	4529	11102	4199	
GLBenchmark Egypt Standard (Frames) Onscreen (Higher is better)	NA	3321	1661	1030	1208	6429	1145	
GLBenchmark Egypt Standard (Frames) offscreen (Higher is better)	NA	1201	1507	534	NA	6473	617	
Rightware Browsermark score (Higher is better)	1645	NA	2041	1482	1276	1755	1649	
SmartBench 2012 productivity (Higher is better)	NA	334	NA	NA	995	2722	NA	
SmartBench 2012 Gaming Index (Higher is better)	NA	1188	NA	NA	1705	2270	NA	
NenaMark2 (FPS) (Higher is better)	31.9	24	77.8	29	42.7	54.9	31.7	
Battery Life (hours) (Higher is better)	3.1	3	3	3	1.8	3	2	

AOC	Intex	BSNL	Micromax	Mercury	Karbons	WickedLeak	Karbons	Acer
<b>MG70DR-8 7"</b>	<b>ibuddy</b>	<b>Penta T-Pad EDGE</b>	<b>Funbook 3G</b>	<b>mTAB StreaQ</b>	<b>A37 TA-Fone/Communicate 3G</b>	<b>Wammy Desire II</b>	<b>Smart Tab 10</b>	<b>Iconia B1</b>
<b>7,990</b>	<b>8,490</b>	<b>7,999</b>	<b>8,000</b>	<b>9,200</b>	<b>9,990</b>	<b>9,999</b>	<b>10,790</b>	<b>9,999</b>
7,000	7,990	7,999	8,000	9,200	9,490	9,500	9,990	9,999
18.3	12.2	13.6	11.6	12	12.4	19.2	16.2	14.2
14.9	14.3	14.4	14.4	15.4	15.1	17.1	13.6	13.9
15.8	16	15.8	14.6	11.7	12.5	18.1	15.7	20.7
49.04	42.54	43.74	40.64	39.19	40.05	54.42	45.44	48.77
1.5GHz	1GHz	1.2GHz	1GHz	1.2GHz	1GHz	1.4GHz	1.5GHz	1.2GHz
2	1	1	1	1	2	4	2	2
1GB	512MB	1GB	512MB	512MB	512MB	1GB	1GB	512MB
7/TFT/1024x600	7/TFT/480x800	7/TFT LCD/1024x600	7/TFT/480x800	7/TFT/1024x600	7/TFT/480x800	7/IPS LCD/1280x800	9.7/TFT LCD/1024x768	7/TFT LCD/1024x600
8GB	2.5GB	8GB	2.56GB	8GB	4GB	8GB	1.5GB	8GB
Y	Y	Y	Y	Y	Y	Y	Y	Y
Y/N	Y/Y	Y/N	Y/Y	Y/Y	Y/Y	Y/N	Y/N	Y/N
3000	3000	3000	3000	3100	3000	3300	6000	2710
NA	194x125x11mm/340gms	193.5x115x10.5mm/340gms	194x123.5x10.6mm/323gms	NA	NA	196x118x10.9mm/298gms	NA	197.4x128.5x11.3mm/320gms
Android 4.1 Jelly Bean	Android 4.0 ICS	Android 4.1 Jelly Bean	Android 4.0 ICS	Android 4.0 ICS	Android 4.1 Jelly Bean	Android 4.0 ICS	Android 4.1 Jelly Bean	Android 4.1 Jelly Bean
Y	Y	Y	N	Y	Y	Y	Y	N
0.3/2	0.3/2	0.3/2	0.3/2	0.3/2	0.3/2	0.3/2	2/NA	VGA/NA
N	N	N	Y	N	N	N	N	N
Plastic	Plastic	Plastic	Plastic	Plastic	Plastic	Plastic	Plastic	Plastic with a little metal
White	Brown	Grey	Black	Black	White	White	Black	Black
Glossy	Glosst	Glosst	Matte	Matte	Glossy	Glossy	Matte	Glossy
7	6	5.5	4.5	2	4.5	7.5	5.5	4
6.7	5	4	6	6	4	7	6.5	7
3	3	5	2	4	2	2.5	3.3	4
6.5	6	5.5	5.5	5.5	5.5	7	6.5	6
7	5	6	4	3	3	7	6	7
5	6.5	5	5	4	4	8	6	7.5
24.4	54.5	48.6	32.4	33.8	23.4	22.6	34.3	24.9
4007	1748	2107	1909	2000	2900	3945	3417	3066
11763	3117	4403	3839	3550	6809	14338	7878	6039
1575	NA	1040	NA	348	NA	1688	1291	372
1506	NA	702	NA	267	NA	1706	1082	NA
2051	1419	1517	1655	1693	2114	2356	2102	2049
2808	492	NA	932	1047	2237	3474	2512	2409
2294	1558	NA	1557	1112	1803	1597	1633	1285
54.8	27.5	32.2	20.3	16.3	27.7	57.2	41.4	20.4
3	3	5	2	4	2	2.5	3.3	4

CATEGORY 2 (FROM RS 10,000 TO RS 15000)							
Brand	iberry	Aoc	HCL	Zync	Spice	Ira	
Tablet name/number	Auxus CoreX2 3G	MG 97DR-16 -9.7"	Me Y3	Quad 8	Stellar Pad Mi-1010	Icon	
MRP (version we tested)	13,000	12,990	11,999	12,990	12,990	12,999	
Street Price (Approx)	10,990	11,000	11,999	12,990	12,999	12,999	
<b>Ratings</b>							
Performance (so 40)	17.2	22.3	12.6	20.1	20.2	11.9	
Features (so 30)	17.6	16.8	16.1	20.1	18.1	17.7	
Design (so 30)	17.2	15.8	15.5	18.1	17.4	17.7	
Final Score (so 100)	51.95	54.87	44.29	58.34	55.63	47.36	
<b>Specs</b>							
Processor max clock speed	1.6GHz	1.5GHz	1GHz	1.5GHz	1.5GHz	1.2GHz	
Processor cores	2	2	1	8	2	1	
RAM	1GB	1GB	1GB	2GB	1GB	1GB	
Display size (in Inches)/Display type/Display resolution	7/IPS LCD/1280x800	9.7/TFT LCD/1024x768	7/IPS LCD/1024x600	8/IPS LCD/1024x768	10/IPS LCD/1280x800	8/TFT LCD/480x800	
Built-in Storage	8GB	16GB	4GB	8GB	16GB	8GB	
Expandable Storage (Y/N)	Y	Y	Y	Y	Y	Y	
Wi-Fi (Y/N)/3G (Y/N)	Y/Y	Y/N	Y/Y	Y/N	Y/N	Y/Y	
Battery rating (mAh)	4100	7000	3100	5400	7600	5500	
Dimensions (in mm)/Weight (in gms)	197.5x123x9.6mm/312g	NA	NA	NA/471gms	259x172x10mm/667gms	210x160x8/600gms	
Operating System (tested with)	Android 4.1 Jelly Bean	Android 4.1 Jelly Bean	Android 4.0 ICS	Android 4.1 Jelly Bean	Android 4.1 Jelly Bean	Android 2.3 Gingerbread	
HDMI out (Y/N)	Y	Y	Y	Y	Y	Y	
Front Camera resolution (MP)/Rear Camera resolution (MP)	0.3/2	0.3/2	0.3/3.2	Y/5	0.3/3	0.3/2	
Customized application store	N	N	N	N	N	N	
<b>Build Type</b>							
Panel material used type (plastic, metal etc.)	Plastic	Plastic	Plastic	Plastic	Plastic	Plastic	
Majority colour used	Grey	White	Grey	Gun Metal	Gun Metal	Gun Metal	
Finish type (glossy/matte)	Matte	Glossy	Matte	Matte	Matte	Matte	
<b>Performance (out of 10)</b>							
HD video playback test	6	6	4	7.5	6	4.5	
Touchscreen response	7	6.5	6	8	7	6	
Battery Life (hours)	4	10	4	8	6.5	4	
Speaker clarity (at 100%)	6.5	6.5	6	6.5	6	5	
Ease of Typing	7	7	6	8	7	5	
Viewing Angles	7	5	4	7	7	8	
<b>Benchmarks/Real world tests</b>							
Startup time (switch on till lock screen - in Seconds) (Lower is better)	25.3	22	36.3	24.5	31.5	43.4	
Quadrant Benchmark (Higher is better)	3143	3888	1668	3258	4240	NA	
AnTuTu Benchmark (Higher is better)	10388	11528	3691	12861	11739	2532	
GLBenchmark Egypt Standard (Frames) Onscreen (Higher is better)	1293	1780	352	NA	1512	NA	
GLBenchmark Egypt Standard (Frames) offscreen (Higher is better)	NA	1575	269	NA	1470	NA	
Rightware Browsermark score (Higher is better)	1985	1896	1839	1910	1961	1651	
SmartBench 2012 productivity (Higher is better)	2685	2727	1124	NA	2817	NA	
SmartBench 2012 Gaming Index (Higher is better)	1654	2184	1128	NA	1841	NA	
NenaMark2 (FPS) (Higher is better)	44.9	56.6	16.2	59.1	51.4	16	
Battery Life (hours) (Higher is better)	4	10	4	8	6.5	4	

**Unique features and UI**

The iberry Auxus Core X2 3G, AOC MG 97DR-16, Zync Quad 8, Spice Stellar Pad, Ira Icon, iBall Slide Edu and the HCL G1, all have a stock Android UI and bring nothing new to the table.

All the tablets have a light skin to it but there is no distinguishable launcher on any tablet. This is a good thing since a launcher generally causes a tablet to lag.

If you are looking for a tablet with the ability to make calls in

the 10k to 15k-price range, you can take a look at the iberry, HCL Me Tab Y3 and the Ira Icon. All these tablets give you the ability to make calls as well as browse the Internet with your SIM card's data plan. The HCL Me Tab Y3

stands out here as it gives you the ability to house two SIM cards. Not all the tablets that offer the ability to make calls offer an ear-piece and we recommend you use a headset rather than making your conversations public.

CATEGORY 3 (RS 15001 AND ABOVE)							
iball	HCL	iberry	Asus	Samsung	Asus	Samsung	Asus
Edu Slide	Me Tab G1	Auxus CoreX4 3G	FonePad	Galaxy Tab 2	Nexus 7	Galaxy Note 800	Transformer Pad TF300 TG
14,999	14,999	18,000	15,999	15,999	18,999	34,500	43,999
12,999	14,999	15,990	15,999	15,999	18,999	34,500	43,999
19.4	12.8	20.1	20.2	18	22.4	20.1	20.8
16.2	15.9	20.8	17.7	18.7	20.7	20.3	28.4
18	14.6	16.4	22.3	21.8	20.6	21.8	20.6
53.64	43.27	57.36	60.2	58.44	63.72	62.14	69.77
1.5GHz	1.2GHz	1.6GHz	1.2GHz	1GHz	1.2GHz	1.4GHz	1.2GHz
2	2	4	1	2	4	4	4
1GB	1GB	2GB	1GB	1GB	1GB	2GB	1GB
10.1/IPS LCD/ 1280x800	9.7/IPS LCD/ 1024 x 768	9.7/IPS LCD/ 1024 x 768	7/IPS LED/ 1280x800	7/TFT PLS/ 1024x600	7/IPS LED/ 1280x800	10.1/TFT LCD/ 1280x800	10.1/IPS LED/ 1280x800
8GB	8GB	16GB	8GB	16GB	32GB	16GB	32GB
Y	Y	Y	Y	Y	N	Y	Y
Y/N	Y/N	Y/Y	Y/Y	Y/Y	Y/N	Y/Y	Y/Y
8000	7000	7200	4270	4000	4325	7000	3000
172x264x 12mm/622grams	NA/570gms	246x197x 11mm/612gms	196.4x120.1x 10.4mm/340gms	122.4x193.7x 10.5mm/344gms	198.5x120x 10.5mm/340gms	180x262x 8.9mm/600gms	263x180.8x 9.9mm/635gms
Android 4.1 Jelly Bean	Android 4.1 Jelly Bean	Android 4.0 ICS	Android 4.1 Jelly Bean	Android 4.1 Jelly Bean	Android 4.2 Jelly Bean	Android 4.1 Jelly Bean	Android 4.2 Jelly Bean
Y	Y	Y	N	N	N	Y	Y
0.3/2	0.3/2	0.3/2	1.2/3	0.3/3	1.2/NA	1.9/5	1.2/8
N	Y	N	N	Y	N	Y	N
Plastic	Plastic	Plastic	Plastic	Plastic	Plastic	Plastic	Plastic
White	White	Black	Gun Metal	White	Black	White	White
Glossy	Glossy	Matte	Matte	Glossy	Glossy	Glossy	Matte
6	6	5.5	4.5	5.5	8.5	7.5	8.5
7.5	7	7.5	8	7.5	9	8.5	9
6	3.1	6.6	10	7	6.5	6	4.5
6	5	4	7	8	8	8	8
8	6.5	7	7	7	9	8	9
7	6	7	8	7.5	8	9	8
25.7	20.3	17.5	30.1	38.8	35.4	22.5	43.2
3858	4223	4496	2388	2652	3737	5325	3408
9694	NA	15626	9346	5311	11524	12453	11538
1616	NA	1828	1324	3057	1635	6588	1660
1574	NA	1720	944	NA	1104	NA	1207
2034	1907	2339	2314	NA	2313	NA	2135
2715	NA	3931	1229	2006	3671	NA	3226
2039	NA	1735	2214	NA	2433	NA	1895
47.1	NA	49.8	38.8	26.2	55.4	NA	55.5
6	3.1	6.6	10	7	6.5	6	4.5

Final HCL has answered our prayers and added the Google Play store to the Y3 in addition to the HCL Me App store. The G1 however still lacks access to the Play store and only offers the HCL Me App store.

## TABLETS ₹15,001 AND ABOVE

If you are looking for a tablet that costs more than ₹15,000 then you are entering a category where devices offer you a bunch of nifty features, customised UI,

some serious power under the hood and more.

If you are one who has a defined utility for a tablet and knows the potential of the device in your life, then this is the category for you. In this category

you will find the flagship devices of each manufacturer.

It goes without saying that our expectations are sky high for the devices in this category, because of the prices you pay to buy into this category.



**A dancing iPhone**

Take a look at Tim-e, the dancing robotic iPhone dock?  
<http://dgit.in/10F8hKM>



**Luxury icases**

If you are an iPad or iPhone user, you should check this out.  
<http://dgit.in/116RVGD>

**Display performance Visual**

The iberry Auxus Core X4 3G has the ability to play all the vide formats but the on-board speaker is very disappointing. The colour reproduction is good but at the 15k price point we have seen better tablets. The Auxus CoreX4 stuttered when we played MKV files natively from the on-board video player. The playback improves if you download a third party player but you will see the occasional stutter and frame rate drop. The rest of the tablets in this category out-perform the Auxus coreX4. The other 10-inch devices – Samsung Galaxy Note 800 and the ASUS Transformer Pad TF300 TG though priced much higher show off better displays and it is evident from the word go.

The Note 800 and the Transformer Pad ran the videos well. The overall output and entertainment value was greater on the Transformer Pad. The viewing angles were better and the audio output was almost at par on both the tablets. The advantage of the Note 800 is that the speakers rest on either side of the display rather than the base or the back as it is on the other devices.

Between the ASUS FonePad the Samsung Gaalxy Tab 2 and the Nexus 7, the FonePad and the Nexus 7 performed better than the Tab 2. The two have a higher pixel density and the black levels in the videos looked a lot better than they did on the Tab 2. The disappointing thing about the Samsung Galaxy Tab 2 is the lack of video format support. MP4 files ran smoothly but there was no support for mov files. Nonetheless, the files that ran worked well on all the three tablets.

Playing games, navigating through apps and multitasking

was a treat on all the tablets. Visually, the display of the Auxus CoreX4 was a bit disappointing especially when you place it next to the tablets it is competing with.

**Interface**

The touch interface of all the tablets in this category was very good and nothing short of impressive. The iberry has some impressive specifications under the hood and multitasking showed no lag while navigating the screen. The keyboard on the other 10-inch devices was far better, smoother and responded to a feature touch. Then again compared to the iberry, the Note 800 and the Transformer Pad are exorbitantly priced.

The Note 800 and the Transformer Pad along with the Nexus 7 is the epitome of touch response. They are by far the smoothest tablets I have used. Be it typing, swiping, playing games and more, the form factor

and responsive nature of the touchscreens only added to the pleasurable experience.

**Unique features and UI**

All the tablets here bring with them custom UI launchers that distinguishes them from the other. The only one that has a stock Android experience is the iberry Auxus CoreX4 3G tablet. The tablet has the ability to house a SIM card for making calls, but this feature feels very gimmicky as there is no earpiece on the tablet, the on-board speaker is soft enough to make you feel deaf even in an isolated room and you have to hold the tablet really close to your mouth to be audible to the person at the other end.

Another device which brings the raw Android experience in its purest form here is the Nexus 7. There is no skin, no shenanigan, and since this is a Google device, the experience of Android is the smoothest here.

The Nexus 7 comes in

device is that you will be the first ones to receive every OS update that Google rolls out.

The ASUS FonePad has a very interesting UI. To start with, if you have used any other ASUS Android powered device such as the Transformer Prime or the PadFone, you will feel right t home here. You have the five customisable home screens and ASUS has some of its own widgets you can add the home screens apart from the regular Android widgets. A cool feature of the FonePad tablet is that it has what ASUS calls Floating Apps. These are apps that appear as small windows on the display. We have seen this ability to “pop up” apps on the display on the Samsung Galaxy S III, Samsung Galaxy Note II, LG Optimus G and the Samsung Galaxy Note 800.

The only downside here is that if you want to access content in the background, you will have to close the floating app. Unlike the Optimus G, where you can control the opacity of the app to access background content, here you will have to close the floating app. The floating apps can be accessed at any point in time from a capacitive button at the bottom of the display. You can have as many floating apps on the display as you'd like such as the browser, calculator, calendar, countdown, email, sticky memos, video player, and more giving you true multitasking capabilities. The ASUS FonePad also has the ability to house a SIM card and can make calls along with using the data to browse the Internet.

The Samsung Galaxy Tab 2 is overlaid with Samsung's TouchWiz UI and brings with it the Samsung App store in addition to the Google Play store. The Samsung All share app comes preloaded on the device along



Asus Nexus 7

combined with the fantastic interface makes these devices a dream machine.

Gaming on all the tablets was a treat. The games ran smoothly and the soft

a 3G+Wi-Fi and Wi-Fi only variants. The only problem we have with the tablet is that it doesn't offer user expandable storage. One of the biggest advantages of owning a Nexus



## Cloud architects?

Here are five ways you can start thinking like a cloud architect. <http://dgit.in/10hM5mV>



## Magic Mirror

Intel showcased smarter car headlights with magic mirror technology. <http://dgit.in/161wf7U>

## Android Tablets Test

with a bunch of other apps. The app enables users to share multimedia content with other Samsung Galaxy devices and a DLNA enabled Samsung TV. The Tab 2 also brings with it a bunch of Samsung specific widgets in addition to the Android widgets. The Samsung Galaxy Tab 2 also doubles up as a phone as it has the ability to house a SIM card and make calls along with browsing the Internet via your data connection.

The Samsung Galaxy Note 800 also brings with it the TouchWiz UI as well as the S-Pen introduced by the Samsung Galaxy Note. Pull out the S-Pen from its holder and a menu pops up on the right hand corner of the screen. This menu is a shortcut access to S-Notes, S-Planner, Crayon physics, Photoshop Touch and the Pen settings. The good thing is that this menu gives you quick access to apps that take advantage of the S Pen. The downside is that this menu cannot be customised to list apps of your preference.

The S-Notes app lets you take notes with the S-Pen. You can jot down minutes of a meeting, add images and make a magazine (this looks a lot like Apples Pages for iOS) and the app even recognises your handwriting.

One app that really makes use of the S-Pen is the PhotoShop app. You can do a multitude of things such as layering, paint, effects, adding people and effects to an image and much more. If you are someone in the creative or design business you will find some value in the S-Pen features. For the rest of us, it is an add-on app to geek around with. The possibility of things you can do with the S-Pen is limitless and if you are into a creative profession or make presentations then this is a device for you. The tablet also offers the

ability to run apps simultaneously in multi-window giving you great multitasking abilities.

The Samsung Galaxy Note 800 also has the ability to house a SIM card and can make calls.

Last but not least we have the ASUS Transformer Pad TF300TG. To start with the tablet comes with a keyboard dock giving it the utility of a netbook. It also has a track pad that works surprisingly well. The keyboard dock may take a bit of getting used to but the best part about it is that it has its own battery. The battery in the tablet combined with the battery in the dock means that you have the best battery life on a tablet hybrid we have seen thus far. Apart from access to the Google Play store, there are a bunch of Asus specific apps that come preloaded on the device such as cloud storage support, note taking app and more. The rear camera is one of the better ones available on a tablet in today's market.

## WINNERS

From a list of 30 tablets some of which truly impressed us and some that drove us crazy, we finally have the winners that stand out from this tablet crowd.

### Best performer

Nexus 7: The raw Android experience is the best Android experience. The device is smoother than silk with its interface and the fact that it will receive all the Google updates first is a big plus point. It performed very well in our tests too emerging with flying colours. The device has a compact form factor, excellent display and is a package deal with style and performance under the hood. Multimedia, apps games, multitasking all work very well on this device.

### Best Value Category 1 (Up to ₹10,000)

Here the Lava E Tab Xtron emerges victorious. To start with the tablet has a very smooth interface and a keyboard that at its price point is very good. It played all the apps and games well and the only lag we saw with the device came with heavy multitasking. The only downside to the tablet is that it took forever to charge up to 100 per cent. The build too is impressive.

audio output from the speakers is great too. The battery has a tremendous life if you use the dock along with the device. The dock is a nifty addition if you want to use the device as a netbook on the go to type. The skin overlaying the OS is light enough to give you a raw Android experience along with a few additional apps.

### Editors Pick

For the price you pay, the iberry Auxus CoreX2 3G is a brilliant



Asus Transformer Pad TF300 TG

### Best Value Category 2 (₹10,001 to ₹15,000)

For this category we have the Zync Quad 8. The device has a really good build; the 8-inch form factor makes typing and using the interface a lot more comfortable than a 7-inch form factor. Add to that the fact that the tablet is really smooth and watching movies on it is a treat, and you have a device that is a bang for your buck.

device. The best thing about the iberry Auxus CoreX2 3G is its display. The resolution is the same as the Nexus 7 and its performance is good too. The power under the hood is impressive as well, and it will run all the apps from the Google Play store with ease. Multitasking too is a breeze and the device also boasts of the ability to make calls. If you are on a tight budget and want a performing tablet then the iberry Auxus CoreX2 3G is your weapon of choice.

### Best value Category 3 (₹15,001 and above)

The ASUS Transformer Pad TF300 TG your weapon of choice if the best Android tablet is what you are looking for. It runs on Android 4.2 jelly Bean, has a brilliant display and the

Just because of its price point the iberry won over the ASUS FonePad. If you want a premium smooth 7-inch tablet with the ability to make calls, you can check out the FonePad.

# Bazaar

THE LATEST PRODUCTS  
REVIEWED FOR YOU

The Digit Test Centre receives hundreds of products every month. Each of these products is put through a series of tests and is finally given a score. The final score is arrived at after considering a number of factors and evaluating them in terms of features, performance, value for money, build quality, and, in the case of software, even ease of use.

For better understanding of our ratings, here's a quick guide to our overall score



**Extremely poor product.**  
Keep away!



**Strictly OK.**  
Not recommended



**Decent product.**  
Go for it, but there may be better products out there.



**Very good product.**  
Highly recommended.



**Ground-breaking product.**  
We've never seen anything like it before.  
A definite must buy!



▶ Page **137**  
Nokia Lumia 720



◀ Page **138**  
ZOTAC ZBOX  
ID89 PLUS



▲ Page **138**  
ASUS GTX 670  
DirectCU II Mini



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Corsair Obsidian 350D



▲ Page **141**  
Fujifilm  
FinePix X20



▲ Page **143**  
NVIDIA GeForce  
GTX 780

## PLUS

- 136** | Sony Xperia SP
- 136** | HP Officejet Pro 3620
- 136** | Converge Rest and Recharge Hub
- 137** | ASUS Vivobook S550
- 138** | Sapphire Radeon HD 7790 Dual X
- 139** | BenQ L32-7000
- 140** | Circle Aura
- 140** | SanDisk Ready Cache 32GB
- 141** | Corsair M95
- 142** | BullGuard Internet Security 2013
- 143** | Corsair M65

& MORE...





## Google Earth for Android update

Google Earth for Android received several updates including Street View support, updated search, 3D directions, and an improved interface. <http://dgit.in/172WnOS>



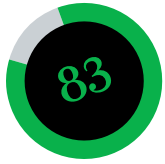
## Windows 8.1, officially!

Microsoft confirmed that Windows Blue will be known officially as Windows 8.1, only. No more guesses please! <http://dgit.in/12awbfj>

Bazaar

# Samsung Galaxy S4

### The plastic chairs the octa-core congregation



**Features** ..... 90  
**Performance**..... 90  
**Build Quality** ..... 70  
**Value for money**..... 80

**Sensor:** 16 megapixels  
**Processor:** Exynos 5 Octa 5410 (Quad-core 1.6 GHz & quad-core 1.2 GHz);  
**Graphics:** PowerVR SGX 544MP3; **RAM:** 2GB; **Display:** 5-inch Super AMOLED; 1920 x 1080 pixel; **Storage:** 16GB internal + memory card slot;  
**Battery:** 2600mAh

### Contact

**Samsung India**  
**Phone:** 180030008282  
**Email:** <http://www.samsung.com/in/info/contactus.html>

**T**he S4 retains pretty much the same looks as the phone it succeeds, the Galaxy SIII. However, the thin bezel on the front means the S4 can pack in a larger display without the phone becoming any wider. In fact, the S4 is thinner and lighter than the SIII. However, the plastic chassis is retained, which has seen a lot of criticism shovelled Samsung's way.

It isn't a slouch in terms of performance. In the benchmark tests, the S4 took the lead over the HTC One, but in real world usage, it's too close to call. When you are in quad-core territory, performance gains from an octa-core aren't very visible in a typical usage scenario. It lasts a day



Price  
₹41,500

and a half on a single charge, as a primary phone.

Very neat features such as Smart Stay, Smart Video Pause and the Sound Shot mode along with apps such as S Health, S Voice Drive are present.

The S4 has a camera that does fairly well in good lighting conditions, but disappoints as soon as the light goes down. Also, while the display impresses in terms of crispness and colour richness, the quality of the whites is disappointing, perceptibly so when compared side by side with the HTC One.

All in all, the S4 is a very powerful phone, but with rather underwhelming build quality.

Visbal Matbur

# HP 2000 – 2202TU notebook

### Older gen hardware, but with an excellent keyboard

**F**or an affordable laptop, the 2202TU is quite well built, with good quality materials used and no perceptible flex at – underside and the middle of the keyboard.

That good work is spoiled to a certain extent by the glossy finish that adorns this laptop. If you aren't entirely pedantic about keeping it in pristine condition, the scratches, nicks and fingerprints will be visible.

Its older generation hardware cannot be held against the 2202TU, simply because it sells at an affordable price. Performance is acceptable, but with 2GB of RAM, you will have hit some a ceiling in terms of how many applications can be opened in parallel before the system load becomes clearly visible.

Upgrading RAM is simple

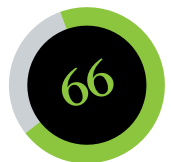
– the slot is easily accessible, but then again, anyone buying this machine on a budget accepts the limitations and isn't looking for blazing performance anyway. Battery life is a bit disappointing, and will last around 1.5 hours when

used in a typical usage scenario at work or in college. Sandy Bridge's battery consumption can be blamed for this. HD videos play back stutter free. The keyboard is very good, something that is rare on affordable laptops. Basic speakers, that just get the job done. You literally get what you pay for.



Price  
₹30,467

Visbal Matbur



**Features** ..... 60  
**Performance**..... 60  
**Build Quality** ..... 65  
**Value for money**..... 80

### Specifications

**Processor:** Intel Core i3-2328M @ 2.2GHz; **RAM:** 2GB;  
**Graphics:** Intel HD 3000;  
**Display:** 15.6-inch (1366 x 768 pixels); **Storage:** 500GB;  
**Connectivity:** 3 USB 2.0, Memory card reader, HDMI out; **OS:** Windows 8 (64-bit)

### Contact

**HP India**  
**Phone:** 0124 234 6992  
**Email:** <http://www8.hp.com/in/en/contact-hp/contact.html>



### Microsoft's new CFO

Microsoft recently announced Amy Hood as the company's new Chief Financial Officer, as former CFO Peter Klein left his position



### Limelight

Similar to Facebook interests, it lets users creating a list of the movies they've watched and want to watch. Get this app on your iPhone: <http://dgit.in/100flyj>

# Sony Xperia SP

Good phone, wrong price

The Xperia SP's starts off on a good note. Take the phone out of the box, and what greets you is a rather impressive persona. It looks very good, but feels rather heavy, tipping the scales at 155 grams. Good quality plastic is used, and it's put together well.

The Xperia SP's real world performance is something that does justice to a phone that could be sporting a ₹20,000 price tag. In terms of the benchmark tests, we ran into some rather surprising results. In quite a few benchmarks, the Xperia SP was ahead of the likes of the Google Nexus 4 and the LG Optimus G! The camera is disappointing in anything



Price ₹27,490

below ideal conditions. Call quality is acceptable, and the Xperia SP holds signal better than the Xperia Z in certain areas, surprisingly.

As a primary phone, the SP's battery lasted a day and a couple of hours. Among all the phones we have compared it with, the Xperia SP has the biggest battery pack, but that still doesn't translate into a significant advantage.

Sony also retains a simple LCD display. What impresses us is the text readability and crispness. It does fall behind a bit in terms of colour richness, and undoubtedly, the smoothness of the UI and the touch-screen response is slightly better on the Nexus 4 and the HTC One X+. The Xperia SP has been priced wrong, and would have hit the sweet spot around ₹22,000.

Vishal Mathur



Features .....	70
Performance.....	75
Build Quality .....	68
Value for money.....	55

### Specifications

**Platform:** Android 4.1 with TouchWiz UI; **Processor:** Qualcomm MSM8960Pro Snapdragon @ 1.7GHz dual core; **RAM:** 1GB; **Display:** 4.6-inch with Bravia 2 Engine, 1280 x 720 pixel resolution; **Storage:** 8GB with expandable memory; **Camera:** 8MP; **Battery:** 2370mAh

### Contact

**Sony Mobile India**  
**Phone:** 1800-3000-2800  
**Email:** <https://www.sony.co.in/section/contactus>

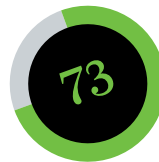
# HP Officejet Pro 3620

Keeps the total cost of ownership under check



Price ₹11,999

The HP Officejet Pro is an ideal all-in-one for the small home and office setup, where you need to print large volumes. With features such as auto-duplexing, copying, scanning, automatic document feeder, network connectivity including ePrint, the HP 3620 packs in a lot. Best quality text print took a mere 9.49 secs whereas best quality mixed document print took 20 secs. The ink is smudge proof and water resistant. Cost per page is pegged at 62 paise per page. At ₹11,999 it may seem priced on the higher side, but you can opt for the HP 3610 (₹7,999) if you have no use for fax and ADF functions.



Features .....	70
Performance.....	70
Build Quality .....	80
Value for money.....	70

### Specifications

**Type:** Black and White AIO; **Print memory:** 128MB; **Resolution:** 600x1200; **Functions:** Print, Copy, Scan, Fax; **Auto-duplex:** Yes

### Contact

**Hewlett Packard India Sales Pvt. Ltd.**  
**Phone:** 1800 425 4999  
**Email:** NA  
**Website:** [www8.hp.com](http://www8.hp.com)

# Converge – Rest and Recharge hub

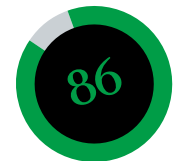
Ideal solution for charging multiple devices simultaneously



Price ₹3,850

This is the perfect device to own for those with multiple devices. Converge is a rather unique product, with a rather minimalistic and yet very functional design. You can tell that it's built well because it can hold four phones without creaking. The S-shape means there is a lot of space to hide the trailing wires. On the back is a four USB port hub. The hub itself gets its power from a wall socket.

The device is capable of charging even demanding phones like the BB Q10, which was charged in about two hours ease.



Features .....	90
Performance.....	90
Build Quality .....	85
Value for money.....	80

### Specifications

**Device Type:** Charging station; **Capacity:** 4 devices simultaneously; **Compatibility:** Universal

### Contact

**J.S. Equipments**  
**Phone:** 022-23810713  
**Email:** [jse@vsnl.com](mailto:jse@vsnl.com)



## Firefox 21

Firefox 21 arrived with social media API, and open-source fonts. Download the latest version: <http://dgit.in/NIABoJ>



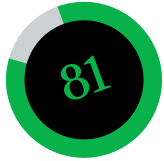
## "Disney Story"

Disney unveiled Story, a photo and video sharing platform which allows users creating and sharing their own stories, instantly. <http://story.us/>

Bazaar

# ASUS VivoBook S550

### A classily built touchscreen ultrabook



Features.....	75
Performance.....	80
Build.....	85
Value.....	85

### Specifications

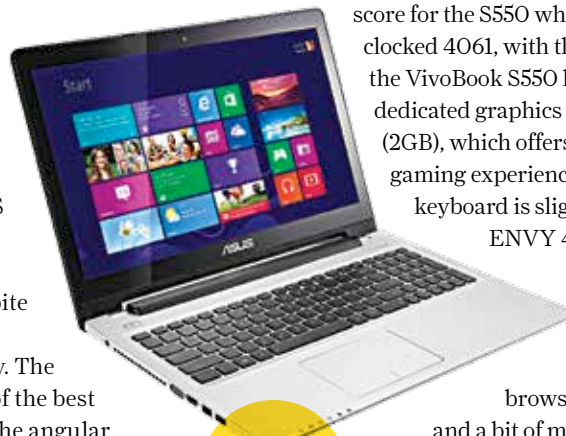
**Processor:** Intel Core i5-3317U @ 1.7GHz; **RAM:** 4GB; **Graphics:** Nvidia GeForce GT635M / Intel HD4000; **Display:** 15.5-inch (1366 x 768 pixels); **Storage:** 500GB; **Connectivity:** 2 USB 2.0, 1 USB 3.0, memory card reader, HDMI; **OS:** Windows 8 (64-bit)

### Contact

**Asus India**  
**Phone:** 1800-2090365  
**Email:** <http://vip.asus.com/VIP2/Services/TechQuery>

At a time when ultrabooks are smeared with bulk and unnecessary weight increases with the switch to touchscreens, the ASUS VivoBook retains the old charm – what ultrabooks were supposed to be. Despite sporting a touchscreen, it doesn't feel heavy or bulky. The aluminum chassis is one of the best in this price bracket, and the angular design gives it a very classy look. The dual colour theme of black and silver is a good contrast.

System performance in the real work is pretty much at par with the HP ENVY 4 touchscreen ultrabook, even though the PC Mark 7 benchmark scores show a different picture – 2296



Price ₹57,999

score for the S550 while the HP ENVY 4 clocked 4061, with the same processor. But the VivoBook S550 has the advantage of a dedicated graphics card – Nvidia GT635M (2GB), which offers fairly acceptable gaming experience. The VivoBook's keyboard is slightly behind the HP

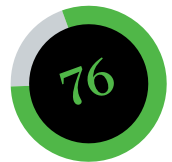
ENVY 4 – in terms of key travel, precision of force and key placement. Battery backup times are around 5 hours for web browsing, document editing and a bit of music playback. Speaker quality is acceptable up to 50% volume, but begin to jarr post that.

The touchscreen quality is quite good, but we still don't see you using it on a regular basis on an ultrabook. But an ultrabook worth considering, for the good specs and performance figures.

*Vishal Matbur*

# Nokia Lumia 720

### The smartphone that Windows Phone deserves and needs



Features.....	60
Performance.....	70
Build Quality.....	90
Value for money.....	79

The Nokia Lumia 720 is the latest Windows Phone handset from Nokia. It has a 1GHz dual-core processor clocked at 1GHz and only 512MB of RAM. Because of that low amount, there are some apps on the Windows Phone Store that the Lumia 720 can't run. The Lumia 720 sports a 4.3-inch IPS display with a relatively low resolution of 800x480 pixels. However, in spite of those issues, the Lumia 720 is a good phone to buy because of its many advantages.

The Lumia 720 has a polycarbonate unibody that makes



Price ₹18,999

it feel and look more expensive than it actually is. The phone is also quite slim and light and feels solid. The 6.7 MP camera on the Lumia 720 is of good quality. It impresses when shooting images in good light and when recording 720p videos. Low light images are slightly disappointing but also have very low noise.

Windows Phone 8 has one of the best operating systems for touchscreen devices and the UI is fluid despite of the relatively average hardware powering it.

Overall, thanks to its many plus points and sweet price-tag of ₹18,000, we think the Nokia Lumia 720 is a very good buy.

*Nikhil Pradhan*

### Specifications

**Operating System:** Windows Phone 8; **Screen Size:** 4.3-in at 800x480 pixels; **Built-In Storage:** 8GB; **MicroSD Card Support:** Upto 64GB; **RAM:** 512MB; **Camera:** 6.7MP; **Wi-Fi:** 802.11 b/g/n; **Bluetooth:** 3.0; **Battery:** 2000mAh; **Processor:** 1GHz dual-core Qualcomm Snapdragon S4

### Contact

**Nokia India**  
**E-mail:** <http://www.nokia.com/in-en/support/contact/email-us/>  
**Phone:** +91 (STD Code) 30303838



### Google Translate update

Google Translate has added support for five more languages including Marathi. Time for Mumbaiers to rejoice!



### Pinterest app update

Pinterest updated its Android and iOS app with push notifications, predictive search results, and friend mentions. <http://digit.in/10xYwtzx>

# ZOTAC ZBOX ID89 PLUS

ZBOX finally comes of age

**W**e have reviewed a lot of ZBOXes in the past, but majority of the them came with a very low-power processor and basic specifications. Think Intel Atom or AMD Brazos processors. While these configurations are great for very basic work such as surfing the net, checking mails, watching HD content, you couldn't really use ZBOX as a PC replacement. But that is about to change with the ZBOX ID89 PLUS.

Powered by a comparatively higher end Ivy Bridge Intel Core i5-3470T and 4GB of RAM, the ZBOX ID89 PLUS packs in a punch inside this compact body. The dual-core hyper-threaded processor ensures that basic tasks run without a hitch and at the same time, you can also run



Price ₹36,500

some heavy applications such as Photoshop on the ZBOX. Cinebench R10 for instance gave a multi-core rendering score of 12,459 points which is around 10,000 points higher than that obtained on the ZBOX ADO6 PLUS as well as ZBOX ID80 PLUS. Of course, it is unfair to compare the three as they are powered by completely different processors, but it just gives you a rough idea. Using the Intel HD 2500 graphics chip, you can play games at moderate settings: Resident Evil 5 gave 26 FPS at 1280x1024, medium settings. PC Mark Vantage gave a score of 7189.

Apart from the good performance, the ZBOX ID89 PLUS also comes with additional features: on-board 802.11n Wi-fi adapter, dual gigabit LAN ports with two antennas, a Windows Media Centre remote control, USB charging ports among other things.

The ZBOX ID89 PLUS comes at a premium pricing of ₹36,500 but you can go for the barebones version coming at ₹29,999 (without RAM and HDD). Ideal for someone looking at an home-theatre PC which can also do heavy work.

Nimish Sawant



Features .....	80
Performance .....	75
Build Quality .....	75
Value for money .....	65

### Specifications

**Processor:** Intel Core i5-3470T @ 2.9 GHz; **Chipset:** Intel H61 Express; **RAM:** 4GB DDR3; **GPU:** Intel HD 2500; **HDD:** 500GB @ 5400RPM; **Ports:** 2x USB 2.0, 2x USB 3.0; **SD Card reader:** Yes; **Display Ports:** 1xHDMI, 1xDVI

### Contact

**Aditya Infotech Ltd**  
**Email:** response\_it@adityagroup.com  
**Phone:** +91 22 2674 1595  
**Website:** www.zotac.com

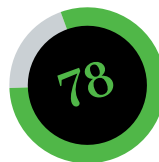
# ASUS GTX 670 DirectCU II Mini

High-end compact systems can now boast of powerful graphics card



Price ₹34,350

**T**his is a compact version of the longer ASUS GTX 670, with the length being 17cm – just right to be used with a mini-ITX board. It is mildly overclocked to 928 MHz. It performs at par with other GTX 670 cards such as the ZOTAC GTX 670, ASUS Direct CUII GTX 670 and so on. Dirt 3 @1080p max settings: 82 fps; Lost Planet 2 @1080p max settings: 72 fps. It's priced at ₹34,350 which is on the higher side when compared with regular GTX 670s – expected since this has a unique form factor.



Features .....	80
Performance .....	75
Build Quality .....	85
Value for money .....	70

### Specifications

**Core Clock:** 928 MHz; **Boost Clock:** 1006MHz; **CUDA Cores:** 1344; **Memory Clock:** 6008MHz; **Memory Interface:** 256-bit; **Display ports:** 2xDVI, 1xHDMI, 1xDisplayPort; **Dimensions (LxWxH mm):** 170 x 122 x 40.6

### Contact

**ASUS Technology Pvt. Ltd.**  
**Email:** reachus@asus.com  
**Phone:** 18002090365

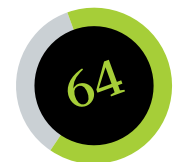
# Sapphire HD 7790 Dual X

Mid-range card which has a lot of competition



Price ₹12,000

**S**apphire HD 7790 comes with a dual-fan design housed in a sturdy plastic sheath. The fans are placed atop a passive heat-sink with two copper pipes to assist cooling. The dual-fan design helps keep the load in check. In terms of real-life performance, it is slower than the NVIDIA GTX 650Ti BOOST cards by around 8-10 per cent. Barring Sinper Elite V2, the HD 7790 gave a playable 30 FPS plus rates in most of the games. In terms of AMD cards, it performs midway between the HD 7770 and the HD 7850. At ₹12,000 it's priced decently, but the ZOTAC GTX 650Ti BOOST gave better real-life performance.



Features .....	70
Performance .....	55
Build Quality .....	70
Value for money .....	60

### Specifications

**Core Clock:** 1075MHz; **Memory Clock:** 1600MHz; **Shader Units:** 896; **ROPs:** 16; **VRAM:** 1GB GDDR5; **Memory Bus Width:** 128-bit; **Display ports:** 2xDVI, 1xHDMI, 1xDisplayPort

### Contact

**ADITYA INFOTECH LTD.**  
**Email:** response\_it@adityagroup.com ; **Phone:** 120-4555666



## Google Talk on Outlook.com

Microsoft have come up with another reason to make the switch. Now gives users an access to Google Talk directly from Outlook.com. <http://dgit.in/YVeWIA>



## iPlayer for Windows Phone 8

BBC has finally launched its iPlayer on Windows Phone 8 platform. It is now available to download from Windows Phone Store: <http://dgit.in/16eufsB>

Bazaar

# BenQ L32-7000

Reasonable pricing but leaves a lot to be desired.



Features .....	60
Performance.....	45
Build Quality .....	50
Value for money .....	65

### Specifications

**Resolution:** 1366x768;  
**Panel:** IPS; **HDMI ports:** 3;  
**USB ports:** 2; **Component:** Yes; **Composite ports:** Yes

### Contact

**BenQ India Pvt Ltd**  
**Phone:** 1800 419 9979  
**Email:** [service-in@benq.com](mailto:service-in@benq.com)  
**Website:** [www.benq.co.in](http://www.benq.co.in)

In terms of looks, the BenQ L32-7000 is quite ordinary with a thick black-coloured brush-metal finish sporting oval base stand. There are buttons on bottom right hand side on the rear side of the TV. Overall build quality is not that great: it wobbles on mild tapping; mild pressure on the display around the edges tends to reveal minor gaps between the display and bezel which may affect backlight bleeding.

The L32-7000 sports an IPS panel with a native resolution of 1366x768 pixels but when connected to our test rig we could apply 1920x1080 pixel resolution. However, we kept getting the message to keep the resolution at 1280x720 pixels. The OSD looks very



Price  
₹25,000

tacky for a TV, specially when compare with Samsung or LG TVs. In fact, we found the OSD menus on the BenQ XL series monitor to be much better in terms of appearance. Using the Spyder 3 Elite colorimeter we got a contrast ratio of just 515:1 at 50 percent contrast and brightness levels. While watching HD movies, there was a definite warm tinge to the overall image quality even in standard mode. The overall visual experience wasn't bad unless we came across very dark scenes. This is when the backlight bleeding becomes prominent. Even though the BenQ L32-7000 comes at a reasonable market price of ₹25,000, the TVs build quality and performance leave a lot to be desired.

Nimish Sawant

# Corsair Obsidian 350D

A premium Micro-ATX case

Corsair recently unveiled this, the younger brother of the Obsidian 900 – Obsidian 350D. But don't let the word "small"

fool you. The case looks very professional with all that brushed aluminium and the camouflaged power switch.

The front panel can be popped open to reveal a dust filter and a 140mm fan that can be swapped for 2x120mm fans if you wish it. At the side it has a big acrylic side-panel window. This case is very roomy for an m-ATX case as it supports five expansion slots which will enable its user to build an SLI or Crossfire-X capable rig. Nothing deters the 350D from accommodating a



Price  
₹6,000

liquid cooling setup as it has space for a 240mm or 280mm radiator at the top. We liked its modular drive bays for 2.5-inch drives. This case is a when it comes to cable management and the extra space at the back of the motherboard tray is quite helpful.

Performance of the 350D is better than satisfactory, as at 28 degrees C room temperature, our AMD Phenom II x4 955 BE CPU was at 41 degrees C when idle and at 56 degrees C at full load. With a hefty price tag or ₹6,000, the Corsair Obsidian 350D is a premium case for people building a no holds barred, liquid cooled, m-ATX rig.

Siddhant Sharma



Features .....	78
Performance.....	62
Build Quality .....	89
Value for money.....	57

### Specifications

**Type:** Mid-Tower; **Material:** Brushed Aluminium and Steel; **Dimensions:** 440(H) x 210(W) x 450(D); **Weight:** 6.1kg; **Fans:** 2 (Optional:3); **PSU Location:** Bottom; **3.5" bays:** 2; **2.5" bays:** 3; **USB 3.0 Ports:** 2; **Expansion Slots:** 5; **Warranty:** 2 Years

### Contact

**Corsair Memory**  
**Phone:** 9845651608  
**Email:** [indiaservice@corsair.com](mailto:indiaservice@corsair.com)  
**Website:** [www.corsair.com](http://www.corsair.com)



### A Viking Voyage!

A puzzle physics game by Nitrome and Rovio Stars coming soon to iOS. <http://youtu.be/HCVLhe8ReGA>



### Sony Xperia A

Sony announced its Xpera A in Japan for NTT DoCoMo. Another smartphone from Sony's Xpera series, powered by Android 4.1. <http://dgit.in/10y69Ad>

# Circle Aura

Easy on the eyes, harsh on the ears



Price ₹5,999

From the packaging to the speaker set itself, you'll notice attention has been lavished on the looks aspect. The down-firing woofer is shaped like a pyramid and looks pretty attractive in its piano black finish. Even the tweeters follow the pyramidal design philosophy – they have a square base but the drivers point at you through an upward-angled meshed grille shaped like, you guessed it, a pyramid. This 2.1 speaker set is fairly easy on the eyes. We

wish it were easy on the ears as well; it's not. The sound is noticeably coloured with the mids suppressed and the highs unnaturally enhanced. The speakers make vocals sound flat (without body) and sampled drums sound like synthesized drums. There is hardly any bass to speak of, giving the audio an overall tinny signature. The build quality is decent but not superlative.

As for features the speaker set does come with a wired volume control pod, which has its uses. The pod also has an auxiliary 3.5mm input and controls for adjusting bass and treble. A button on the side can reset the bass/treble EQ settings since there's no indicator. The speaker set comes with it's own DSP effect for "3D" sound. The effect can be toggled on/off from the control pod, but does little to help the audio quality.

Unless you prefer form over function, we'd recommend you give this one a miss. Even if they're available at a slightly lower street price, there are better sounding (though perhaps not better looking) speakers out there.

Siddharth Parwatay



Features .....	60
Performance.....	50
Build Quality .....	60
Value for money.....	40

### Specifications

Power output: 48 W (12x2 Satellite + 24 Woofer), **Satellite Driver:** 2-inches, **Woofer Driver:** 4-inches, SNR ratio: >80 dB

### Contact

Circle Infotech Pvt. Ltd.  
Ph. No.: 02266711234  
e-mail: [completetecare@entercircle.com](mailto:completetecare@entercircle.com)  
Website: [www.circlect.com](http://www.circlect.com)

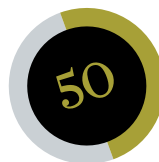
# Intex Aqua Style

An oversized budget phablet



Price ₹9,699

The display is disappointing. A large screen with low-res looks shoddy at best. It refused to play MP4 HD videos. It did play MKV and AVI files. The "skin" is nothing more than fresh icons and they even replaced the browser. The phablets comes with a bunch of preloaded apps, nothing that you can't download from the play store. Using the device as a phone especially with one hand can be inconvenient, but two hand typing felt comfortable thanks to the large display. Call quality is good and it boasts of dual-SIM capabilities.



Features .....	50
Performance.....	50
Build Quality .....	60
Value for money.....	40

### Specifications

Display: 5.9-inch, Display Resolution: 480x800, Processor: 1Ghz dual-core processor, RAM: 512MB RAM, **Built-in storage:** 4GB + 32GB mSD expansion slot, **Camera:** 8MP front camera, **OS:** Android 4.0 ICS, **Battery:** 2500mAh

### Contact

Intex  
Email: [intexcare@intextechnologies.com](mailto:intexcare@intextechnologies.com)  
Phone: +91 11 41610224/25/26

# San Disk Ready Cache 32GB

Speed up your older hard drive sporting system



Price ₹3,289

San Disk Ready Cache drive is meant for the purpose of SSD caching, where the SSD acts as a cache drive, so your system does not have to wait for the HDD to respond. You will need to download the Express Cache utility to monitor the drive. You cannot decide which programs to cache. We tested it on an AMD Phenom rig which was using an old Seagate 80GB Barracuda drive. Windows 7 start up time before / after using the San Disk drive: 107 secs / 50 secs. Adobe Photoshop CS6 load time before / after: 27 / 6 secs. The price tag of ₹3,289 is a bit high but the speed improvement is impressive.



Features .....	75
Performance.....	75
Build Quality .....	70
Value for money.....	65

### Specifications

**Capacity:** 32GB; **Memory:** Dimensions (LxWxH in mm): 100.5x69.85x7; **Interface:** 6 Gbps; **OS requirement:** Windows 7 system

### Contact

SanDisk Corporation  
Phone: 1800 102 2055  
Email: NA  
Website: [www.sandisk.in](http://www.sandisk.in)



## Lenovo ThinkPad X230s

A 12-inch thinner and lighter Lenevo Thinkpad X230s unveiled in China, with a currency covered price tag of \$1,200 USD. <http://digit.in/14mSCzM>



## BlackBerry Q5

Blackberry introduced BlackBerry Q5 which features a physical full keyboard and 3.1 -inch touchscreen display. <http://digit.in/14n86nj>

Bazaar

# Corsair M95

## A worthy successor



- Features ..... 80
- Accessories ..... 50
- Build Quality ..... 85
- Value for money ..... 70

### Specifications

**Buttons:** 15 button mouse with 9 programmable macro keys; **Sensor:** 8200 dpi sensor; **Polling rate:** 125Hz to 1000Hz; **Warranty:** 2 years

### Contact

**Corsair Memory**  
e-mail: [indiaservice@corsair.com](mailto:indiaservice@corsair.com)  
**Website:** [www.corsair.com](http://www.corsair.com)

**T**he Corsair M95 is an incremental, but necessary upgrade to the M90. The sensor has been upgraded to an 8200

dpi one and the buttons are supposed to be easier to click, addressing one of our main issues with the M90.

Ergonomically, this mouse is excellent with a design that is very suitable for right-handed players. The mouse is supposedly designed for MMO players and includes 15 programmable buttons, but as a mouse, it is suitable for any type of gaming. One of the major issues we had with the M90 was its stiff thumb buttons and scroll wheel. We're very happy to report that this issue has been addressed. The buttons are far easier to click now and especially the scroll-wheel feels so much more comfortable. The left and right



Price ₹5,200

mouse buttons do feel a tad soft for our taste but, as we've always said, when it comes to gaming accessories, to each his own.

The mouse is also a bit too heavy comfort and we would have loved to see it come with the

adjustable weights that are seen on its counterpart, the M65.

Regardless, if you like heavy mice, you'll like the M95.

The mouse is very well-built and is one of the sturdiest mice we've seen. The aluminium chassis adds a touch of class here that is lacking in most other mice.

This mouse is well-worth the price and is a mouse which, in the right hands, can hold its own in any circumstances.

Anirudh Regidi

# Fujifilm FinePix X20

## The Point and Shoot your momma warned you about

**T**he Fujifilm X20 is the much awaited update to Fujifilm's long reigning point and shoot, the X10. If you look at the two cameras side by side, you would have an

incredibly hard time distinguishing them (save for the big fat "X20" that's emblazoned on one of them). While the outside of the two cameras is identical, it's really

the insides that matter. The Fujifilm X20 has a 12 megapixel sensor, the same pixel count as the X10, but the sensor is completely redesigned and is a BSI sensor with integrated phase detection. A new EXR II Image processing chip accompanies the new sensor, the combination of which effectively delivers

incredibly improved image quality.

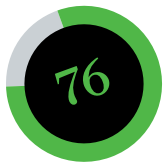
The Fujifilm X20 boasts of the fastest AF acquisition at the moment, and while we can't say whether it's the fastest in all cameras in the market, we can definitely vouch for the fact that it is much faster than the X10. The X20 isn't just fast, but accurate and flexible too.

The X20 is a point and shoot that delivers great images and doesn't really succumb to the terrors of poor light. It makes the optical viewfinder useful by putting a digital information overlay in there. If you're in the market for a great camera and don't mind spending a little extra, go for the X20.

Price ₹39,999



Swapnil Mathur



- Features ..... 70
- Performance ..... 85
- Build Quality ..... 75
- Value for money ..... 75

### Specifications

**Sensor:** 12 megapixel BSI CMOS; **Lens:** 28-112mm f/2.0-2.8; **Image Processor:** EXR II; **ISO Range:** 100 - 12800

### Contact

**Fujifilm India**  
**Phone:** 124-4325500  
**E-mail:** [contact@fujifilmindia.com](mailto:contact@fujifilmindia.com)

### How we tested (Anti-Virus suites)

Detection rates are only valid for one month and are not factored into the final score. Usability is a subjective score. Write to us to find out more.



### Home projectors

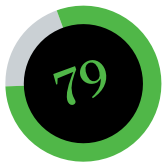
Looking for home theater projectors which are low cost? <http://dgit.in/YQpvnP>

## Kaspersky Pure 3.0

A decent suite



The Pure 2013 suite from Kaspersky is a comprehensive suite that bundles a nice assortment of tools to go with the core anti-virus engine. The parental controls on the suite are as effective as the average suite and is nothing exceptional, but it is functional. One feature that we really liked in this suite was the option to setup and encrypted drive. A very useful feature as it allows you to create an encrypted folder upto almost 2TB in size. The folder itself can't be accessed without permission and is an excellent tool. The one drawback of this suite was the inordinately long scan time. Detection rate was 60%.



Features .....	95
Internet Security .....	75
Usability .....	75
Value for money .....	70

### Specifications

Anti-Virus; Anti-Spam; Backup manager; Encryption vaults; Parental controls; PC Clean-up tools; Safe Money; Secure Keyboard; Password Manager; etc

### Contact

Kaspersky India  
Email: NA  
Support: support.kaspersky.com  
Website: www.kaspersky.co.in

## Avast! free edition

Extra performance at no extra cost



Avast! anti-virus has been a mainstay in the Digit offices for years now and the recent updates to the suite warranted a review. The suite offers excellent anti-virus protection with detection rates standing at about 67%, and it also offers a few extra tools to help you tune-up your PC, the most useful of which is the software update tool that monitors your system for programs that need to be updated. Another thing that stands out is the extremely fast scan time and response. The suite is light on add-ons and extra tools and the ads can get frustrating. But that is a small price to pay.



Features .....	80
Internet Security .....	40
Usability .....	85
Value for money .....	95

### Specifications

Anti-Virus; Anti-Malware; Anti-phishing; Cloud connect; P2P shield and more.

### Contact

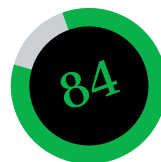
AVAST!  
Support: <https://support.avast.com/>  
Website: www.avast.com

## BullGuard Internet Security 2013

An excellent option



This suite is among the more elegant ones that we've tested. The interface is very clean and simple and we quite like the colours, but that's not what an AV suite is for is it? The detection rate of this suite was the highest we've tested for this month, standing at 73% and a comprehensive and well-explained set of features take this suite to the head of the pack. The suite performed well above average in all aspects of our testing. It's a little shy on features compared to Kaspersky Pure, but it's also half the price. The suite was also quick to detect malware but took forever to clean them up.



Features .....	90
Internet Security .....	75
Usability .....	80
Value for money .....	90

### Specifications

Anti-Virus; Firewall; Vulnerability scanner; Parental controls; Spam Filter; PC Tune-Up; Online backup; and more.

### Contact

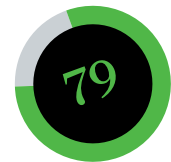
Bullguard  
Email: info@poodell.com  
Phone: +91 8981641428  
Website: www.bullguardindia.com

## Norton Mobile Security

Secure your device



Norton mobile security is a very nice suite for your mobile phone. Especially if you're worried about anti-theft. The interface is nice and clean and you can rest assured that the system impact is negligible to none. We noticed no drops in performance in our Xperia Sola and our benchmarks prove that. There were only two minor issues that we could find with the suite. The first was that it didn't automatically ask us about blocking every call or SMS and that even though it has web security, it's only restricted to the default browser. Kaspersky's mobile security offering is a better deal.



Features .....	70
System Impact .....	100
Usability .....	85
Value for money .....	60

### Specifications

Anti-theft; Anti-malware; Web-protection; call blocking; Remote wipe; etc.

### Contact

Symantec Corporation  
Support: support.norton.com  
Website: in.norton.com/





### Pure Sound BT

Portronics Pure Sound BT is a new wireless stereo Bluetooth speaker that lets you enjoy music on-the-go. <http://dgit.in/Psound>



### Transcend CF 1000x

Available in sizes up to 128 GB, Transcend's new 1000x Compact Flash Card is for pro photographers. <http://dgit.in/CF1000x>

Bazaar

# NVIDIA GeForce GTX 780

## TITAN-mini?



Price ₹48,990

**N**VIDIA announced its latest single GPU card from its newest GTX 700 series – the GeForce GTX 780. Based on the GK110 GPU, the GTX 780 looks like a twin of the flagship single-GPU card – the GTX TITAN. It has the same silver-coloured sheath, similar fan design and if it wasn't for the GTX 780 embossed on the card, one can't really tell the difference.

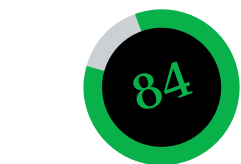
We tested the GTX 780 on our high end rig comprising an Intel Core i7-3960X with 8 GB of DDR3 RAM. A quick glimpse of its readings on full HD very high settings – 3D Mark 11 Extreme: 4457 marks;

Dirt 3: 123 FPS; Sniper Elite V2: 43 FPS; Metro Last Light: 34 FPS. Readings are 10-15 fps slower than the GTX TITAN and around 20 FPS higher than the ZOTAC GTX 680 and the ASUS HD 7970. We also setup a three-monitor rig to check out the game frame rates at 5760x1080 with the other settings at medium. In Metro Last Light we got 25 FPS and in Dirt 3 we got 139 FPS. In Metro Last Light we noted that the scores on both GTX 780 and TITAN were within the margin of error, which was impressive!

Shadow Play, a software feature, basically records 20 minutes of your gameplay using the in-built hardware H.264 encoder. This will be available in a couple of months.

The GeForce GTX 780 is priced at ₹48,990 so it is definitely meant for a niche audience. When compared with a GTX TITAN which is priced around ₹65,000, the GTX 780 looks like a better value for money. We can't wait to get our hands on custom GTX 780s from other manufacturers next month to get a clearer picture.

Nimish Sawant



- Features .....85
- Performance.....85
- Build Quality .....90
- Value for money.....75

### Specifications

CUDA Cores: 2304; Texture Units: 192; Raster Operators: 48; Core Clock: 863 MHz; Boost Clock: 900 MHz; Video RAM: 3 GB; Memory bus-width: 384-bit; Transistor Count: 7.1 billion; Display Ports: 2xDVI, 1xDVI, 1xHDMI

### Contact

NVIDIA GRAPHICS PVT LTD  
Email: NA  
Phone: +91 22 4376 4567  
Website: www.nvidia.com

# Rapoo E9080

## A good product



Price ₹4,625

**L**ike the Rapoo E6100, the E9080 is a slim wireless keyboard but with the addition of a multi-function touchpad. 5.6mm at its thinnest, it has a brushed stainless steel back which is firm and looks durable. The keys are bigger than an average keyboard and give a prompt feedback while typing. Being a wireless keyboard, the added touchpad is a bonus and it works well. The touchpad has a "Slide Here" area which allows the user to switch between numpad mode and touchpad mode. The touchpad also supports some hand gestures for right-clicking or vertical scrolling. The Logitech K400 touch is a better deal given it's lower price. The Rapoo can be had for about ₹3,600 though.



- Features .....75
- Build Quality .....81
- Value for money.....65

### Specifications

Requirements: Windows XP/Vista/Win7/Win8, USB port; Connectivity: 2.4GHz wireless; Key Type: Membrane keys; Dimensions: 110mm x 359mm x 5.8mm; Range: Upto 10 metres; Battery type: 2 x AAA alkaline batteries (included); Warranty: 2 years

### Contact

Rapoo Technologies Ltd,  
Phone: +919899994802  
Email: sunil.srivastava@rapoo.com  
Website: www.rapoo.com

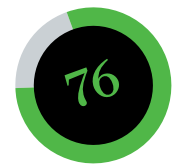
# Corsair M65

## A minor improvement



Price ₹4,500

**T**he Corsair M65 is the successor to the M60 and is meant to be its replacement, especially as it retails for the same price. Corsair has claimed to have reduced the stiffness of the mouse buttons but there isn't much difference even when used side-by-side. The left and right click buttons do feel a tad lighter but it's with the scroll-wheel that the major difference is felt. One thing we didn't like with the mouse was the glossy surface finish, but the rough sides provide a good grip and more than make up for the gloss. The mouse is available in both black and glossy white, so you can pick the one that goes with your case Overall, this is a decent mouse and worth the price, if you're comfortable with the ergonomics.



- Features .....80
- Accessories .....60
- Build Quality .....85
- Value for money.....80

### Specifications

8 programmable buttons; Upto 8200 dpi; 125Hz to 1000Hz polling rate; Adjustable weights; Braided cable; 2 year warranty

### Contact

Corsair Memory  
e-mail: indiaservice@corsair.com  
Website: www.corsair.com



# Of designing games

Huzaifa Arab

[readersletters@thinkdigit.com](mailto:readersletters@thinkdigit.com)

**N**early all of us have played video games as children. But have you ever wondered how such a complex piece of software is made? What kind of knowledge and skills are required to make such a “good” game? Well, if you have ever wanted to do the same, maybe you would want to look at game design as a career. Interested? Read on!

## What it is, what it isn't

Game design is the craft of knowing how hurling disgruntled birds on a stack of pigs can actually be fun to millions of people on the planet while making

The rising popularity of gaming has drawn immense interest in game development as a lucrative career option. But what does it take to be a successful game designer?

a franchise worth billions of dollars. Well... kind of.

Academically speaking, you could say that Game Design is an art and a science.

It is the art of envisioning the storyline, content and rules of a game; while it is the science of examining the psychology of the player and his relationship with the game. In short, game design involves figuring out what will get a player hooked to a game and what won't... and creating games that will work.

So who is the mastermind that uses game design theories to create a successful game? (drumroll please): the Game Designer.

A Game Designer is someone who has a vision of what the game is like as it goes through iterations in its cycles of development. Any game you see in the market is usually the brainchild of a Game Designer. You could say that he is the one who makes sure that a Half life game plays and feels like a Half life game. He doesn't design the artwork or do the programming; he is to a game what a director is to a movie—he can make or break a game concept.

In fact, contrary to popular belief, Game Design doesn't just mean designing video games for PC / Consoles... it could also mean designing board, card or live action games. Game Design is also used by companies to 'gamify' less interesting activities for their employees or customers.

## Myths and expectations

So, first things first: Game Design isn't Programming. Game Design isn't Character Design or Animation. Game Design isn't Story Writing for Games and Game Design surely isn't Game Testing. If you have been a die-hard gamer and you think you would want to make games because you can play games—you would be disappointed to know that it doesn't qualify you to become a Game Designer. Yes, being a gamer does help. However, a Game Designer has to enter the industry with minimal bias towards all kinds of games; Games that are played by players from varied age groups, genders and geographies; on varied platforms and with varied play times.

As a Game Designer it is unlikely that your first project will be God of War 4 or a Huge AAA blockbuster title. It is likely, that at the start you may be working for studio as a Trainee or Associate Game Designer. Most Game Designers have to start off on smaller Design tasks like balancing how much gold a player gets in a certain area of a game or designing levels in projects before they are proven and are given the responsibility of envisioning the entire Game. Let's face it, you are new and a lot of time and money is at stake.



## Hangouts Replacing Voice

Google has confirmed that Hangouts will basically replace Google Voice in the future. <http://dgit.in/1187a7Y>

## Youtube to display Microsoft Ad?

Microsoft and Google on the scuff over updated Youtube windows Phone App which will be displaying Microsoft ad. <http://dgit.in/YWjiqp>

## State of the Gaming Industry

The Gaming Industry in India is about to hit a boom. However, the production houses in India are mostly into smaller scale projects on platforms like Web / Mobile / Flash / HTML5. But no need to be disheartened, there are some bigger studios who work on cutting-edge 3D games for PC / PS3 as well. And the rest of the studios have essentially applied the Indian IT industry model of taking outsourced projects to sustain their businesses.

At the same time, The Global Gaming industry is pretty much awaiting a massive change. Social gaming on Facebook has already jumped the shark. Mobile gaming is gaining a stronghold as smartphones become cheaper and more powerful and more and more people are connected via 3G. Today, India and China are seen as the next targets that need to be specifically cracked. While publishers may argue that localized games and content are needed to pierce such a tough market like India with such a diverse demographics, there are designers who say that there is nothing that can be called "Games for India". Games are games. When my mom played Temple Run, she didn't look at the obvious references to Media like Indiana Jones or Uncharted, although she plays it much better than me and enjoys the game fully. The reason being, the game didn't alienate her. So, such a market barrier can be resolved by making the game more accessible.

## The position of a Game Designer

So, what is it that a Game Designer is supposed to do? Well, the Game Designer is like the MBA of the Gaming industry. An MBA graduate goes through 36 subjects over 2 years ranging from Mathematics to Economics to Taxation laws. The same holds true for a Game Designer. Apart from knowledge in designing games, a Game Designer is expected to have understanding of Art / Aesthetics, Programming, Project Management, Culture, Languages, Sound Design / Music etc. You will be the *only* person who will have the complete vision of the game in the Team and you will have to work with Programmers, Artists, Project Managers

and even other Designers to bring the game to life. Knowing a thing or two about such topics removes unwanted friction in communication. And since you are a creative person, it is desirable for you to also have a reasonable amount of exposure to varied media such as Movies, Music, Comics, Anime / Manga, TV Shows etc. At the end of the day, making games is a business and you are supposed to make a game that people will be willing to pay for. Games are cultural products and you cannot even accidentally offend people of a certain country because you didn't

which could be produced. Yes, there is no lack of ideas in this industry. You work with teams of extremely talented and creative people and everyone has their own ideas of the game they would like to have made and work on. Normally, peer review and business feasibility are benchmarks for selection of such a game. Once a game enters production, Designers work on a Document called as the GDD or the Game Design Document. A GDD, is sort of like a bible of the entire game. It describes everything about the game right from what the story to the UI to the



know something in your game is considered distasteful in their culture—cultural awareness is necessary.

## Your typical work routine

Every Designer has a different style of work and every Game Studio will have a different work-culture and expectations. But, at the end of the day, a major chunk of your work is actually communication. Before the start of any project, Game Designers typically make Documents called as Game Concept or Pitch Documents which are small 1 or 2 page documents describing - say - a new idea for a Shooter game. This is the time when a Game Designer has to be an excellent salesman with remarkable showmanship—enough to convince his peers and the investors alike. Every studio has its due process of selecting Game Concepts

Characters to the Gameplay. The purpose of such a document is to communicate to the team as to how the game will play. So, your Programmer is confused how high the character should jump? The Level Designer is confused how the Boss level will play? The Artist wants to know how big the boss is? All these questions would be normally answered in a GDD. And as teams grow to numbers in hundreds and the production spans for 3-5 years for the bigger AAA games, it becomes crucial to have a one-stop ready reference for such games. Also, it is handy for newcomers in the Team to be able use the GDD to know about the game rather than approach the Game Designer for every little doubt they may have. Point to be noted - apart from tuning the gameplay and brainstorming with your team for ideas, most of your time would be spent in documenting



## Square Cash

Now you can simply Email money to any debit card using Square Cash, an invite only service currently available only in the US. <http://square.com/cash/>



## Corona Plugins

Corona Labs' Plugins helps developers increase functionality and monetization on apps. <http://dgit.in/12Swf4a>

details about the game in relevant document using Microsoft Word.

Also, in this industry you have to keep up with the rest. Strength wise, it is a very small industry and everyone knows everyone. You will almost certainly work with a lot of people you meet in one or the other form. You would essentially need to network with other Developers around the world and go to events like GDC, Casual Connect, PAX etc to get some exposure.

As of today, In India - NASSCOM Gaming Forum on Facebook is a hangout place for the local Game Developers. It's a nice place to talk to professionals and get advice and even share ideas.

videos on this topic. One could easily experiment the whacky new ideas they might have and even prototype them if they know a programmer or can program themselves. And if you find yourself at home, you are more than welcome!

## How do you convince your parents if you are too young?

"And how much does your girl / boy earn?" This is the age-old question parents (especially in India) dread. There is one thing the better part of this Industry expects you to have - an attitude where you don't work for money but for the craft of it. Of course... it is not like they are not

package?" you would be treated that way. It could be your second question... This industry expects passion first!

## Options: Schools, Self-Learning, Mentoring?

Now then, what are your options if you want to train yourself to be a Game Designer? The good news is that there is no pre-determined path to this career.

In India, your options are limited. An unbiased personal recommendation as an author of this article would be DSK Supinfogame, Pune which happens to be my Alma-mater. The reason being their approach towards educating you in this craft is 100% practical. They train you via projects (that become a part of your portfolio) and by the time you graduate - you know how to work in teams and make projects possible and design really good games. All their faculty are professionals from the western gaming Industry and they seem to know what they are doing. I can't recommend any other school (Most Indian schools confuse Game Design and Game Art themselves!). Digipen, VFS and CMU are other schools abroad that will provide the kind of education that you need. Also, try to make sure the program is practical and that it is *at least* 2 years in duration.



## Where to start becoming a Game Designer? Is it too late?

OK, so you are finally starting to get a better picture in your mind about this and you think want to make games. But wait... you are already working somewhere and it is not a Game Studio. What now? Is it too late now? The simple answer is NO! Back in my Game Design school, we had students aged 17 to 32; one student being a lawyer-turned-Game Designer with a PhD. All that matters is passion coupled with practicality. If you are determined, you could always explore by learning things on your own. There are a lot of books, resources and

going to pay you. But you will be hired for your work. No certificate from any school or college is going to get you into this Industry. Sorry to sound scary, but your certificates would be pieces of paper. Your 98.23% in SSC will *not* ensure a job in this Industry. Neither will being an IITian. Nothing but your work can. You develop your skills, your score a nice job, you get paid handsomely, it is that straightforward. You bargain for your value to the studio. Especially in India, unlike Engineering, There is NO standard pay scale for a Game Designer. It may range between 20k a month to more than a lakh depending on your skill. And If the very first question you ask will be "What is the

## What to avoid

1. A school that says that they will teach you Game Engines (Let's describe these as "they are softwares / middleware used to make games") should sound alarms. A Game designer knows to be resourceful enough to learn things on their own. Approach a school that teaches you how to work with the tools rather than just teaches you the tools.
2. Any guarantee of salary packages, getting jobs, internships and placements should sound alarms. There are a lot of 'Diploma-mills' cropping up at every nook-and-corner of the country trying to make a quick buck off kids who are just excited about gaming and parents who are worried about salaries. A lot of such institutes even end up hiring their own alumni for meager pay-scales. A good school will have enough reputation in the market

## Mural.ly for teamwork

This is really a great service for you if you work in a teamy manner. It lets you think, imagine and discuss your ideas. <http://beta.mural.ly>



## 3Dfile.io - Instant 3D views

Are you working with 3D models? Drop your models or DWG drawings here and get instant 3D views. There's no need to sign-up or add any plugin. <http://www.3dfile.io/>

Work@Tech

to not need shouting out too loud and bold. Check their alumni and their achievements. They expect you to be good enough to score Internships and jobs on their own. Remember, there is no scarcity of jobs, only scarcity of right people for the jobs.

3. Avoid schools which rely a lot on theory. You can get that *anywhere* for almost free. It is so free, you could YouTube all of it. The job of a good Game Design school is to *not* teach you... but provide conditions for you to learn under and at times, even pressure you. There is a lot more the Game Design than Design, there is People management, Project management, Ego management and so much more... All of this will make you ready to work on a live project in a Studio.

Alternatively, you could go head-on and join as a trainee or a Game Tester and work your way up the ladder. That

gives a totally different kind of conditioning & working style. And relies heavily on learning on low risk live projects and proving your metal.

And lastly, you could go lone wolf, where you try to do as many things as you can on your own (with some collaboration) and release games on your own too. This involves a lot of Investment & patience and it will keep you hungry for a while before you hard work starts paying you off. In any case... all three approaches rely heavily on self learning and differ only on the basis of how much time and money can you invest and what you expect out of yourself.

### Future Opportunities – Is the sky really the limit?

So it has been a few years since you took a call and you are a Game Designer now. Where do you go from here? Well... 2 things come into play at this stage. The

first is knowing that you will never to stop learning as a Designer. The second is knowing what you want from your career. Did you see yourself making this unique game no one else seems to have made? Go ahead, gather a team, inspire others with your idea and start a studio. Get a prototype running and approach publisher (in the same way a writer would approach one for funding / marketing / development / distribution) to pitch your game to. Even though this stage normally comes in at 3-10 years of work depending on how enterprising you feel, you don't always need to start your own company for your ideas. If the idea is good and you sell it well... your studio could fund and make it. But nothing stops you to do the same either. Good luck! 🍀

The writer is a professional game designer working in the Indian gaming industry

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sales@indiaantivirus.com

**A helping hand**

Microsoft is helping Google come up with touch support for a feature that lets browsers fetch inputs from touch mice and pens

**Cash @ mail**

Now you can simply email money to any debit card using Square Cash, an invite only service currently operational only in the US

# Security in Top Gear

Kaspersky Lab recently announced its partnership with Ferrari to provide endpoint security for the car manufacturer's internal IT network. On the eve of this announcement we caught up with Nikolay Grebennikov, Chief Technology Officer, Kaspersky Lab, for a talk about the future of IT security.

Siddharth Parwatay

[siddharth.parwatay@thinkdigit.com](mailto:siddharth.parwatay@thinkdigit.com)

**What kind of changes have you implemented in Endpoint Security to make life easy for an IT admin manager?**

In the new solution, it's the first time we've introduced system management capabilities, like deployment of operating system images to the machines. In this case we introduced automation of PXE server (Preboot Execution Environment) work too. Next we introduced patch management capabilities with the ability to deploy a patch to a limited number of machines. So you can deploy on a small number for 24 hours and see what happens. If all is okay, we can go ahead and deploy on the others. If something's wrong, the administrator can change the sequence and make an exception.

Also we have introduced for the administrator a very flexible way to manage applications. A list of all applications installed or stored on all of the PCs in the organisation can be seen and it's possible to implement license management. Another example is mobile device management. One of the key challenges was to figure out how to deploy mobile applications on the device since the device is not connected to the corporate network right? For this we've introduced QR codes. We send an email with a QR Code and you can just take your iPad or iPhone or any device, scan the QR code and installation on the device will start automatically.

**What about the whole Bring Your Own Computer (BYOC) way of working that's catching on now?**

We've introduced "network condition control" and ARP spoofing, (it's like ARP based technology but a specific one) and



Nikolay Grebennikov, Chief Technology Officer, Kaspersky Lab

based on this we understand that this is a new device and we have to check the settings so that administrator can define a very flexible policy for it. We've got about twelve or fifteen options and it's not about "Do you have Kaspersky antivirus software installed". It can be many different things including installed patches, including antivirus databases etc. If it's a mobile device we'll check if it's jailbroken or not. If the device is not compliant, it will have access to just the captive portal where it's possible to get updates and have limited privileges and so on.

**At the deployment at the Ferrari plant, there was talk of assembly line computers coming under the purview of Kaspersky protection. Are these x86 machines?**

Right now, we are talking about Windows 7 machines. You know in our databases we definitely have viruses for other platforms and architectures. We have viruses for Linux, we have viruses for mobile. So, in general, the answer is yes. As for

specifics, the next stage of our preparation is to understand what kind or types solutions we need there. Remember, we follow a motto See, Control, Protect. It's very important to see to understand what's happened with non-windows machines. A good example is "Critical Infrastructure Protection" for which we're looking at SCADA systems. Here the problem is not the virus itself but the ability to send commands to build or seize control. For example to stop an elevator on a specific floor or increase the speed of rotor at a nuclear power station. And in this case we need intrusion detection system, traffic monitor or other such type of technology. This is what we are going to investigate with Ferrari also.

**Sometime last year Eugene Kaspersky said that you are working on a specific operating system designed for industrial control systems? Any update on that?**

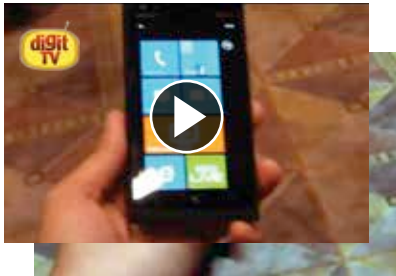
It's true. We're working on our own operating system, to protect industrial infrastructure. It's a long project and currently we are looking for technology partners such as Siemens and others who provide such infrastructure right now. We have two pilot projects right now, mostly in Russia. My estimation is that the solution will be available in four to five years from now. But what we're developing currently is a dedicated solution for Critical Infrastructure Protection based on our Endpoint solution and understanding of the whole system. We are going to protect all three pieces which are PLCs (Programmable logic controllers) themselves, control centers and the connections between PLCs and control center. So five technologies we have in total in this dedicated solution. The first version of this solution will be available till the end of this year or early 2014. **[E]**



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FIND

### FRESH DESIGN

Sony Cyber-shot DSC-HX100V



Price: ₹23000

Digit Rating: Good

★★★★ 3.5/5

Pros

- Video performance
- Performance in low-light
- Great in macro mode
- Optics are excellent

Cons

- Lack of hot shoe
- Noise Reduction algorithms too aggressive

Features: ★★★★★

Performance: ★★★★★

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This flask disguises itself in the form of an iPhone so that you can carry your own ahem booze with you to parties <http://dgit.in/iFlaSk>

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Instagram makes its 'Photos of You' section open to public. This is how you can control the photos of you <http://dgit.in/106XG86>

# Tiles, touch and Microsoft's new design language

Steve Kaneko talks on design philosophy and shares his vision on future UI and design trends

Soham Raninga

[soham.raninga@thinkdigit.com](mailto:soham.raninga@thinkdigit.com)

Over the past 12 months, we have seen some radical design and user experience implementations from Microsoft. Here we speak to Steve Kaneko, Design Director at Microsoft, seeking his insights on the design philosophy and strategy behind Microsoft products.

**Q As a design director, what role do you (and your department) play in terms of consumer products (software and hardware) from Microsoft?**

I lead a team of Designers and Researchers (User and Market) that work with Engineering to develop next generation productivity services from Microsoft. Together, we aspire to create the simple, seamless and delightful experiences that make a difference in people's lives.

**Q Design has clearly taken a front seat in terms of effort and philosophy behind all the latest Microsoft products, what are the prime factors driving this change? It almost seems like Microsoft is attempting to challenge Apple, a company considered to be at the forefront of design and UI aesthetics.**

Design has been a key contributor as part of a development team for some time at Microsoft. I believe what is becoming clearer is a coordinated look and feel to our products and services as part of an effort to signal a cohesive user experience. The driving factor is our customers desire simple experiences that work well together.

**Q Microsoft Surface tablet has been well received globally in terms of design and usability, what were the design aesthetics that the team at MS started out with when working on the Surface project?**



Steve Kaneko, Design Director – Microsoft

We are very proud of the design of the Surface product but I am not at liberty to speak for the Surface team on this matter.

**Q When is the feedback mechanism and test market strategy for Microsoft when it comes to testing and gauging response on design and UI for the upcoming products?**

We employ numerous techniques to continually evaluate our products with end users in all phases of the product development cycle. We begin with in field insights and end with post release feedback to make the necessary refinements to our products and services that customers desire.

**Q As a design director, what future trends and innovations do you foresee in the consumer technology space?**

We will undoubtedly see continuous innovation in devices, interfaces, and content types. This is what makes the world I work in so fascinating to be a part of. I think the one predictable aspect of all this innovation is the need for simplicity. To be able to make sense of the world and have technol-

ogy work for us, not the other way around. It's our obligation to enable a world where things work together in predictable ways.

**Q Microsoft has been working on the Future Vision, showing off how people will get things done at work, home and on-the-move, can you give us more details on the same?**

We continue to invest in efforts like the new Envisioning Center to capture and discuss with partners, what some of the possible futures could look like. This is an important part of the innovation process because these future vision prototypes accelerate agreement, or in some cases disagreement, on what it is we are all heading towards together. We want to openly ask, "Is this a future you believe in?"

**Q Touching your laptop screen isn't the easiest NUI for mainstream laptops. Has Microsoft taken a big risk when it comes to the future of Windows 8 by integrating this? What according to Microsoft is the future of NUI with Windows 8 on mainstream laptops?**

I am not at liberty to discuss any products we have not publically released so unfortunately cannot comment on this matter.

**Q The first generation XBOX was like a VCR in its look. Really big and bulky. The 360 has a more curvy design. Can you shed some light on the design inspiration of the next XBOX? Will it be smaller and more compact than the current 360?**

I am not at liberty to discuss any products we have not publically released so unfortunately cannot comment on this matter.

**Q Speech, Kinect and surface. Do we see any integration of the three technologies in the future?**

We are very proud of the design of the Surface product but I am not at liberty to speak for the Surface team on this matter. **Q**



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### Dolphins find torpedo

Trained dolphins at a US navy facility discover a 130-year-old torpedo off the Californian coast. <http://dgit.in/118u1dS>



### Sailfish on Jolla

The first phone running Sailfish, an open-source OS, is the Jolla <http://dgit.in/1ORDx6b>

# Sennheiser: “We have a high level of respect for the Indian market”

We speak with Mr. Peter Callan, President – Consumer Electronics (Global) and Mr. Gunjan Srivastava, Managing Director, Sennheiser India on how the global market is shaping up, the brand and the future plans

Vishal Mathur

[vishal.mathur@thinkdigit.com](mailto:vishal.mathur@thinkdigit.com)

**S**ennheiser, in the face of some rather noisy rivals, has kept a very calm demeanor and pretty much stuck to their philosophy and plans. We speak with Mr. Peter Callan, Global President of Consumer Electronics and Mr. Gunjan Srivastava, Managing Director at Sennheiser India on a variety of topics – how the market is shaping up globally, in India specifically, the rivals, the brand and design philosophies and the upcoming products.

**Q** How is Sennheiser doing in the Indian market? How important is India for Sennheiser, in terms of brand, volume and numbers?

**Gunjan Srivastava:** We have gone through some very exciting phase in the last 6 years, right from the time when we launched to where we are today. In terms of lines of businesses, we have three units – consumer – which is today the largest business unit for us in India and globally, professional and we are now getting into a third business which is integrated systems which is providing solutions to offices, educational institutes, places of worship and hospitals. In all business, we have been growing high double digits in the last 6 years

**Q** How much of Sennheiser's focus will be on markets like India, China and Brazil, because they have become heavy gadget consumers off late.

**Peter Callan:** India is a strategically important



Peter Callan, President – Consumer Electronics (Global)

market for us, and our approach to the market is long-term, and it's personal. We are not here for a quick win, we are not here to take what we do in other places and impose it on the Indian market. We view our development plan in India on a 5-10-15 year basis, which fits with the heritage of the Sennheiser brand, and the way we have done business and the way we have approached targets.



Gunjan Srivastava, Managing Director, Sennheiser India

**Q** Sennheiser is a specialized company in a fairly specialized market. Most of your rivals have gone for volumes with cheaper audio products. How does that impact Sennheiser? Do you have plans for taking on the rivals with mass market products of your own?

**PC:** It is a very dynamic marketplace, globally, and it is a very competitive landscape. What we focus on is our

brand, our core values and our heritage and positioning which that gives us. We will be pursuing our premium brand strategy and positioning. But we will be doing that in a way that is relevant in the context of the market here. We will not be going into the mass volume driven market segment, however we will be fine-tuning our way of bringing the brand to the end use.

**Q** How does Sennheiser decide which technology goes into which product? For example, the HD448, the HD598 and the Momentum are fairly different headphones, with a similar price gap between each! Is there a price band categorization of where certain features and specs go?

**PC:** We have certain fundamentals that have to be present in any product – it has to feel premium, it has to fit with the brand, it has to bring something special to the user in terms of innovation or design and style. And then we think of technology. What is the most relevant technology at a particular price point? What is the most relevant technology in any particular market because not all markets are open to all technologies or are as ready for all the technologies? So, it's not a straight arithmetic calculation. It is considering all the factors around the portfolio – which products are going into which markets, what the state of technology evolution is, how particular products and technology solutions fit with the brand, how we bring in the design aspect, innovation aspect – so it's a rather complex evaluation of all of those factors I would say. And it becomes, at the end, very specific to specific markets and its dynamic. Taking India as an example, the kind of solution or value proposition we bring in the Indian market today would be different in two years – it will evolve with the market and user requirements. **Q**

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# Shooting through gags

Sometime ago we announced the Digit Photography contest where we asked you to send us your best snaps in an effort to win awesome goodies from us.

The theme was “The Funny Side of Life” and true to our call you went forth, captured and sent in hundreds of photos full of lol-worthy moments.

Here we present you you the top 3 winners and 5 runner ups!

Top 3 winners get 6 months subscription of Digit magazine and the runner ups get 3 months subscription

So onwards to the next page minions and have a few laughs :-)



I've got so many favourite glasses, I can't decide which one to wear. So I wear all of them at once. Like a Bawsss!



Cats are perhaps the second laziest animals on the planet after sloths. But they're also cute, like this specimen here. Relaxing, not bothered by anything – other than her evening meal. Welcome to the good life!



Look here, and what do you see? A certain someone sitting outside a popular fast food chain in India? Probably not. Look closely, and you'll spot a match made in Insaneville. There's a party in town, and every idiot is invited.



What should I tell the publishers of this graphic novel? That the writing's too drab? The visuals too blah? Ah, the conundrum. Meow.



We know that India's a place of too little land filled with too many people. Real estate ain't cheap. But, in all honesty, even this bike-cum-van takes the concept of a mobile home a little too far, don't you think?



Somebody get me out of these horribly smelling slippers right effing now! MEOW!!



Winter's coming... NOT! Suck on that, because as you were sleeping, the White Walkers crept over the wall, carrying a dead, decomposing yak's head as a friendly offering to the good folk of Westeros.



What are you looking at, punk? Flip over the page now. Now, I say! Don't you see how menacingly I'm staring at you? Quake in your boots, for I've recorded a mental picture of yours... and I'm coming for you.



## “F\*\*k yeah”

Tumblr's founder said in his post that company won't be saying goodbye to its staff and office, and ended up with “F\*\*k yeah”.



## Touch your PC

Don't pay for a new touchscreen to enjoy Windows 8. Check this out first: <http://dgit.in/10iv8vW>

Head over to our **online communities** for some of the best discussions, buying advice and user reviews. Of course, you'll meet like-minded (and not-so-like-minded) geeks; be they utter n00bs or experienced digitians. Join the fun !

Today, 01:23 AM #607

**Extreme Gamer** ◊  
Wise Old Owl  
Join Date: Apr 2008  
Posts: 1,804

**Re: Next Gen Console discussion ( PS4 'n Xbox One'n Wii U )**

Originally Posted by **vickybat** ◊  
*Xbox One Reveal Conference Review*

*Yeah people seem to be whining about games and we'll come to know about that precisely after 3 weeks or so, before passing a verdict.*

*Considering the advent of ipads and ultra smartphones, it was necessary to take the console approach in a different direction, not neglecting the gaming aspect of course.*  
*The design of the console and the controller itself is great. I mean there was nothing wrong with the 360 controller ( it was better than DS3 ), and they've done the right thing, improvising on the existing design.*

*The more emphasis on living room is what making hardcore gamers lose temper, but i don't see a problem with this approach. They are not necessarily following the original wii's plans.*  
*I mean apart from the added ( excellent ) gesture controls and living room features, this will still have all the hardcore titles. Atleast all major multplats will definitely show up on the xbox one, and exclusives are already promised.*

*I kind of liked their approach. Under the hood, its still an x86 based console and will have all the benefits the PS4 has from a pure development standpoint.*  
*I don't think its gonna falter in this department. E3 is going to be a 2 hour conference both for sony and microsoft. Games will take the center stage there.*

1. But they did neglect gaming. From this reveal it is not clear whether the new Xbox is a media entertainment device or a gaming console.
2. Fact: I had hand pain for a week after a light 3-hour session on the 360 controller at a friends place. The DS3 gave me no trouble whatsoever. So much for the 360 controller being better...
3. Gesture controls are not revolutionary, and I don't want to look like a living-room loony. Kinect is designed to spy on you. No way does that get my money.
4. Given the fact that certain GPU units are reserved for computation on the Xbox while the PS4 (apparently) has a fully flexible heterogenous pipeline, I think the Xbox will be a little more troublesome to code for than the PS4.

Originally Posted by **cyborg47** ◊  
*People are only making fun of this reveal. There are going to be hardcore(hopefully) titles, and I'm sure everybody will be happy about it 😊*

Today, 05:09 AM #609


**vickybat** ◊  
I am the night...I am...  
  
Join Date: Aug 2009  
Location: Gotham City  
Posts: 4,797

**Re: Next Gen Console discussion ( PS4 'n Xbox One'n Wii U )**

**Kinect for Xbox One Also Coming to PC**

This is real good news. PC gamers can rejoice now. 😊

Today, 06:02 AM #610

**Thunder** ◊  
Broken In  
  
Join Date: May 2012  
Posts: 120

**Re: Next Gen Console discussion ( PS4 'n Xbox One'n Wii U )**

How is Kinect good for PC? No one would like to sit in front of their screen and wave their arms like a turtle.

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**Jolla's first Sailfish phone**

The much awaited first Sailfish OS phone has been unveiled by Jolla. The people living in Europe can now pre-order this phone. <http://dgit.in/YWeXDv>

**Enhanced Facebook**

Facebook to improved native facebook SDK support instead of using Apple API's to enhance sharing on social network. <http://dgit.in/Za7uDp>

Having trouble with offline reading? Want to buy a swanky new MP3 player? Or improve game performance by getting a new GPU? Check out the posts below, and also some of the other discussions taking place at [www.facebook.com/thinkdigit](http://www.facebook.com/thinkdigit)



**Navonil Jana** ▶ Digit  
May 17

There is an option when I open my in built browser of my Micromax canvas 2(android 4.0) "save for offline reading"...Then I can read that page in my browser...but I want to read that page in my computer...what is the default location where this page is saved? From which folder I can get these saved pages? Can I get these or convert these as pdf files?.....any further information may be provided for your convenience..please help anyone



**Ardhya Bhatt** Option 3. Use Pocket (Read it later app). Save pages to pocket and read on any device. <https://play.google.com/store/apps/details?id=com.ideashower.readitlater.pro&hl=en>  
Like · Reply · 1 · May 17 at 9:53pm



**Ardhya Bhatt** Download Dolphin Browser > Download Dolphin Save to PDF plugin  
Like · Reply · 1 · May 17 at 9:50pm



**Navonil Jana** Thanks dude...pop up pages which appears in other than default browser make the hell out of me... I had to uninstall these browser...is there any way in settings of these browsers which will prevent appearing of pop up pages?  
Like · May 17 at 10:58pm



**Ardhya Bhatt** Well no... The best way is to use a different browser such as Dolphin as it helps you closing the unwanted tabs in one click and easier way than swiping and getting confused about the pages..  
Like · 1 · May 18 at 12:47am



**Abhinav Kumar Singh** ▶ Digit  
May 17

Hello SIR , i wan 2 buy a mp3 player with superior sound quality with heavy bass , long battery backup & atleast 16 gb storage capacity, m not going 2 play vdo songs in it , so screen size , touch screen & blutetooth & other features dosen't matter 4 me but i don't want any compromise in sound quality , battery backup & storage capacity , so what about sony A,E,S series walkman , which has best sound quality & better battery backup or is there any better mp3 player available in market , my budget is around 8k's

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**Ameeth Borah** try finding an older Cowon S9 or J3  
May 17 at 6:15am via mobile



**Ardhya Bhatt** MP3 player has got nothing to do with sound quality. They are just devices to decoded the mp3,FLAC,etc encoded files. Concentrate on Earphones,Headphones if you dont want to compromise with the sound.  
May 17 at 3:41am



**Amitojê Sêkhon** ▶ Digit  
May 17

I Want To Buy A New Graphic Card In 10k And A Good PSU. My Specifications Are :-  
i3 2100 Processor  
DH61HO Motherboard  
4 GB RAM  
Please , Suggest A Good Graphics Card And PSU Which Will Run On My PC Fine , And I Can Play All Upcoming Next Generation Games On High-Med Settings

Like · Comment · Share



**Ankit Kumar** corsair vs-450 smps/psu for around Rs2000 and ati radeon hd7770 1GB gddr5 graphics card for Rs8000  
1 · May 18 at 9:41am via mobile · Edited



**Amitojê Sêkhon** @Ankit Kumar Bro Plz Give Links Of Both (Flipkart Links)  
Sunday at 3:36am



**Ankit Kumar** <http://www.flipkart.com/powercolor-amd-ati-hd-7770-1-gb-gddr5-graphics-card/p/itm7z8e6hazhfn>

<http://www.flipkart.com/corsair-vs450-450-watt-psu/p/itmdbfa3kaffmum3>

you can find them at cheaper price on local stores  
Sunday at 4:09am via mobile



**Amitojê Sêkhon** @Ankit Kumar Bro Hows Sapphire One ? Or Gigabyte ?  
Sunday at 4:10am



**Amitojê Sêkhon** [http://www.flipkart.com/gigabyte-amd-ati-gv-r777oc-1gd-1-gb-gddr5-graphics-card/p/itm7vspgnmh7z8e?pid=GRCD7VQN8B8FEGK&otracker=from-search&srno=t\\_1&query=gigabyte+amd%2Fati+gv-r777oc-1gd+1+gb+gddr5+graphics+card&ref=90e6307f-a6d2-4719-bcbf-51dd665ac941](http://www.flipkart.com/gigabyte-amd-ati-gv-r777oc-1gd-1-gb-gddr5-graphics-card/p/itm7vspgnmh7z8e?pid=GRCD7VQN8B8FEGK&otracker=from-search&srno=t_1&query=gigabyte+amd%2Fati+gv-r777oc-1gd+1+gb+gddr5+graphics+card&ref=90e6307f-a6d2-4719-bcbf-51dd665ac941)

How About This One ?

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www.flipkart.com

Sunday at 4:11am



**Ankit Kumar** both are good i too have a sapphire hd6770 which overclocks higher than normal (maybe i got lucky )  
Sunday at 4:12am via mobile



**Amitojê Sêkhon** Hows This ?  
[http://www.flipkart.com/sapphire-amd-ati-hd-7770-1-gb-gddr5-graphics-card/p/itm7th7krc5umdg?pid=GRCD7TGZHN39YR&otracker=from-search&srno=t\\_1&query=sapphire+hd+7770&ref=f1bac8d1-3b54-4384-9a5c-00232c08f499](http://www.flipkart.com/sapphire-amd-ati-hd-7770-1-gb-gddr5-graphics-card/p/itm7th7krc5umdg?pid=GRCD7TGZHN39YR&otracker=from-search&srno=t_1&query=sapphire+hd+7770&ref=f1bac8d1-3b54-4384-9a5c-00232c08f499)

<http://www.flipkart.com/sapphire-amd-ati-hd-7770-1-gb-gddr5-graphics-card/p/itm7th7krc5umdg?pid=GRC>  
www.flipkart.com

Sunday at 4:13am



**Ankit Kumar** gigabyte one is priced correctly

sapphire one is a bit costly and at that price gtx650ti is better

so go with gigabyte  
Sunday at 4:17am via mobile



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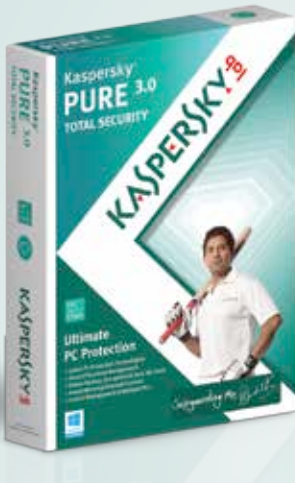
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