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Escaping to never neverland!

Those of you who've been following this column regularly would know that apart from technology, the field of psychology interests me immensely. It may not seem apparent, but the study of the mind, human behaviour, its quirks and technology are quite closely related. Think about it, if technology is the practical adaptation of science, won't human behaviour play a major role because it is, after all, people for whom this adaptation is taking place?

While coming up with the cover story idea for this month, and in turn researching it, each one of us – Robert, Jayesh and I – went off on an individual tangent of sorts. Virtual Reality, that way, is great food for thought. Like the pundits of the '90s, who were probably trying to comprehend the significance of the Internet when it took off or of the smartphone when it hit the scene, we too are at the ground zero of a big paradigm shift. I naturally thought of the psychological ramifications of a world where the lines between the real and virtual are blurred.

Real life is tough; there are challenges, there's pain, there's difficulty, you can't just get what you want when you want it. Some would argue that this is what makes life interesting. That without the bitter, the sweet ain't sweet. But mankind's desire for having it easy has been well known. Every technological innovation that's been fostered till today has been geared towards making life easier. I'm not just talking about physical effort. We're pro-convenience even when it comes to psychological gratification. Need some information? It's a Google search away. Need to be entertained? Put on a cat video. Need companionship? Fire up Tinder, or worse, Chatroulette.

Against such a backdrop, think about what Virtual Reality can, nay, will offer. Your every desire, every fantasy, every need can be fulfilled in that un-real realm. Would you ever want to come out of it? You might have heard of that famous experiment involving rats implanted with electrodes directly stimulating the pleasure center of their brain. The 1950s experiment found that these rats would repeatedly press the lever that activated the electrode, choosing to do so over the lever that dispensed food and water, eventually dying from exhaustion. Could we be these rats in the making?

Thankfully, people are thinking about the psychological effects of this emerging technology. One such endeavour, which seems part stunt and part experiment, sees artist Mark Farid confining himself to 28 days of self-imposed VR life. The experiment aims to discover the effects of long-term exposure to virtual reality on people. If his Kickstarter campaign is successful, Mark will wear a VR headset for the duration of the experiment and only experience life through another person's eyes and ears. This other person is just some ordinary Joe who's required to wear a pair of glasses that covertly capture audio and video. This footage will constantly be streamed to Mark, who will inhabit a space consisting of only a bed, a toilet and a shower area. He'll eat when the other person, whose visual stimulus he's receiving, eats, he'll sleep when that person sleeps and he'll only be able to hear what that other person is hearing. The socio-psychological aspects of the experiment aim to see if Mark will begin to lose his own sense of self, and start to inhabit the reality of the other person. Most likely he'll go nuts, but still, as long as he's a willing lab rat we're not complaining.

A similarly gimmicky experiment known as the 'Gender Swap Experiment' aims to let one gender experience life in the other's shoes, eventually hoping to make humans get along better.

Clearly, as with any technology there will be highs and lows, the good and the bad but eventually, how we shape our interaction with this new paradigm will determine the direction it will take. What are your views on this brave new future? Write in to editor@digit.in to share your thoughts. In the meantime, here's wishing you Season's Greetings and a Happy New Year.



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"Your every desire, every fantasy, every need can be fulfilled in that un-real realm. Would you ever want to come out of it?"

Got feedback about this column? Drop me a line at:
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Towards unreality but for what joy?



Jayesh Shinde
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"To get into a full-blown immersive virtual reality experience deeply linked to the real world is nothing short of a calamitous situation."

Got feedback about this column? Drop me a line at:
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Before I get on with my rant, let me be very clear that it's not for lack of joy or a sense of achievement that I'm cautious of my enthusiasm to a higher reality – and I'm not talking about transcendence here, the movie or the concept. Like many of you, I too want to put on the Oculus Rift and get truly immersed into a game like nothing I've ever felt before, or get into a 4D simulator to walk on Mars without actually going there. I eagerly await the sensory overload that is the inevitable augmented, hyper-real world of the future.

However, there are some major hurdles in the path of our realization of a successful meta reality (virtual or hyper), and the road from idea to actualization and mass acceptance is a long and arduous one, to say the least. It's definitely not something happening overnight. And we have to be patient, and refrain from getting ahead of ourselves.

Take the case of a cutting edge (hyperreal?) project that got all of us excited here in the Digit team, and plenty of others around the world: the driverless Google Car that's in the works. This autonomous robotic vehicle – which could be any current sedan running on the road, equipped with Google's advanced on-road GPS navigation system and 360 degree camera – is fast closing on to its 1 million mile mark. Imagine a car driving itself to the moon three times over, with no driver, and no accidents. Does that mean all of its technological problems are resolved? Far from it.

Several challenges abound Google's driverless car project, according to critics and autonomous driving researchers. Google's cars, for example, can't drive on a non-map based navigation system, and require extensive preparation (studying routes, traffic signal locations, traffic direction, etc) before embarking upon their journey. What happens if a traffic signal malfunctions on its route? The car is left in a tight spot, needless to say. What's more, as of now the car isn't capable of parking itself in a large empty parking complex (forget a tiny one), is still untested in snowy or rainy conditions, and Google has plans to make all its future cars driverless – without even a steering wheel! So even the faintest possibility of a human intervening to take control of one of these things to avert disaster is out of the question. Also, there's no answer to the classic question: if a driverless car crashes into something, who's to be blamed? How is any piece of legislation going to give such a trendsetting technology with no safeguards the opportunity to conduct road tests, let alone market and sell the dream? As much as we'd like to see this happen quickly, we are definitely not going to witness a driverless car on the road for a long time still.

Wherever hyperreality or meta-reality meets the physical world, the stakes are immensely high and we don't seem to have any clear roadmap of seamlessly integrating the two. If a doctor were to wear an advanced HUD to conduct a precision surgery from a remote location, lives will be saved, no doubt, and such niche applications of path-breaking technology are prevalent in numerous fields. But always in controlled environments. Giving intrusive immersive contraptions and gadgets to the public en masse, and expecting them to coexist with others without pandemonium breaking out is a utopian dream which even hyperreality cannot realise. Why? Because we can't seem to negate the possibility of crashing into a pole while talking on a phone while driving. To get into a full-blown immersive virtual reality experience deeply linked to the real world is nothing short of a calamitous situation. Forget the question of systems – I'm sure with enough time, money and talent, we will build full-proof systems. But what about our own mental handicap? We can't see current-generation stereoscopic 3D movies for too long without inducing a headache or developing an eyesore. What if all this advanced virtual reality mumbo jumbo is just too much for our physical body to handle? What if all this simply isn't meant to be?

Think about it and drop me a line. I'd love to hear your views on this topic.



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Life's like that

A funny thought struck me recently while doing a little research for our cover story this month. I hope you don't mind me sharing it, despite its rather random nature.

I was looking back at various technologies, specifically with regard to VR and AR, etc, and it got me thinking about a lot of the other tech that we've experienced in the past decade or two. They have a generic sort of history to them. Exceptions exist, surely, but broadly this template might fit most technologies.

Technologies all usually have some things in common. They all start off as a dream that almost consumes a person or persons. The creators reach a point in their life where the idea of birthing the technology is almost all consuming. Agreed, sometimes the idea and conception of the technology is almost unplanned and spontaneous... but more commonly it takes a fair amount of planning and scheduling.

Once the idea is formed there's a lot of reading up to be done, a little experimentation here and there and then finally the spirit of the technology is conceived. It's nothing spectacular, and looks nothing like a finished technology yet, but it's something.

It's certainly enough of something to make its creators proud. It's all they can talk about. With wildly varying gestation periods, and some mad moments later, a technology is finally born. Pre-alpha versions are what some people call them, and they're usually pretty useless things; they're ugly, create a mess, and aren't even shaped right, but dare you tell their creators that...they can already see their technology taking over the world!

As version numbers pass, the technology starts to take a better form, and actually starts looking somewhat like a finished product. Features get added on and the creators find it hard to keep pace. Changelogs struggle to keep up, version numbers keep incrementing, and new features are almost expected. It's still nothing close to a mature technology, but it's finished enough to hand out to beta testers for part time use and study.

At some stage in the developmental process the technology seems poised to become The Greatest Ever™, at least in the eyes of the creators, and then bugs start showing. As the technology is exposed to more systems, the bugs can sometimes take a turn for the ugly, and cause the creators endless nights of worry and fear. At one point it almost seems like their very existence is to find and fix bugs, and any further development is almost forgotten about.

After a number of version numbers pass, the creators realise that it's time to unleash the technology on the world, and make a release candidate – some go as far as open sourcing it. This is the stage where advertising is needed, and the creators have to shell out money to get the world to accept their creation.

Usually acceptance follows, and depending on how good the technology is, either a small or very large group adopts it and accepts it into their lives. This is the mature stage for the technology and is also the stage where it seems to add on features and gathers the most amount of data, very quickly.

Often the technology finds a niche for itself that even the creators never imagined possible. Though, sometimes the creators are very overbearing and don't allow any experimentation with the technology, insisting that it stay on the planned path, and this can work well too, for some technologies.

Sometimes two technologies are converged and start a new line of thought that can yield even newer technologies with some traits of both the parent technologies. This happens more often than you'd imagine, as almost all technology today carries some traits that can be traced back to a myriad older techs.

Eventually, however, all technologies age, and newer ones challenge them for their positions. The newer technologies are often better developed and more efficiently coded to either accomplish the same tasks faster, or accomplish more diverse tasks. Either way the days of the older technology are numbered. Some make a comeback for a short time, but usually they're finally retired or left catering to a niche set that requires nothing more.

Slowly but surely, the usefulness dwindles, and then the technology finally dies, with some references left scattered about it on the web. Now and then it's name may surface in the memories of a few, but eventually it's forgotten. Completely. In just a few generations or less.

Oh well, such is life... for technologies, and also... well, us. It's almost like technologies are alive, living and dying just as we do.



Robert Sovereign-Smith
Executive Editor
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"At some stage in the developmental process the technology seems poised to become The Greatest Ever™, at least in the eyes of the creators, and then bugs start showing."

Liked or hated this column? Write in to *robert@digit.in* and let me know your thoughts.

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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, Rable, Navi Mumbai 400701. Editor: Anuradha Das Mathur

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Android 5.0 Lollipop Preview ROMs: What you need for Google's sweet new OS upgrade.

Android 5.0 (Lollipop)
Android SDK
Android Studio (Beta)
Eclipse
UX Design Video Series

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Simulator for Arduino
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Intel Inde
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Omega

PDF Archives
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Ashampoo Snap 7
Max Secure Internet Security
Stellar Phoenix Windows Data Recovery





Underwater City
A Japanese construction firm plans to build an underwater city, generating power from the seabed and supporting 5000 people

Feedback for the November 2014 issue of Digit



✉ I've been a subscriber of Digit for many years now and I really appreciate the way you provide us with information. It's always useful. Congratulations to you and your team. However, I feel that some change is required now, for betterment. You provide us with two DVDs along with the magazine, which contain a lot of data. I have a suggestion. Please spare a couple of GBs in the DVDs for a variety of topics other than software. They may include health and human body, medicine, engineering, electronics, arts, languages, commerce, history, geography, music, cultures, politics, travel, current affairs, etc. Please mention useful links for further information. It can be similar to the hard copy of Fast Track that we get on different subjects each month. This will increase Digit's popularity. Everybody at home, irrespective of age, will start liking Digit. It will also increase the preservation value of the DVDs. Please implement this suggestion for a year. Then, based on the feedback, you can take a call whether to continue with it or not. I'm eagerly waiting for a reply.

-Shashikant Lagwankar

Thanks for your kind words, Shashikant. As for your suggestion about the DVDs, we occasionally do add content other than technology related in the DVDs. But, we'll definitely take your idea into consideration and try to add more of it in the future. And if readers like it, then who knows, we might even make it regular.

- Abhijit

✉ Hi Team Digit.
Firstly, a big salute to all the members of Team Digit, because you really are revolutionising technology. My journey with Digit began in 2009, when I came across your magazine for the first time in my school library and from that point on, I became a fan. The November issue was amazing in terms of knowledge and I have a few suggestions:

Let's start with the magazine. It was damn informative. Some articles that I liked were CIA's Personal Stash, MOM, Can You Be Hacked to Death?, and your article on the first page, which just blew me away.

It's great to see you start SKOAR! again. It was a really good gaming magazine and it's good to see it back especially because I'm an avid gamer.

Just a small piece of advice for SKOAR!: Whenever you provide game posters with it, mention the name of the game at the bottom so that it's much more informative. But please don't write it in big letters, because I don't want my poster spoilt.

If you're looking for interns, then do consider me. I know that I'm just in Class 10, but I'm a huge geek, all thanks to your magazine. Also, about your writer Anirudh Regidi, I thought that he'd be tall and healthy as his name suggests, but he's really thin. Guys, don't let him indulge in gaming so much that he even forgets to eat his food. Also, Big Daddy is indeed really Big indeed.

Digit has made me confident in tech-related matters, and because of this magazine, I could do well in the TCS IT WIZ quiz competition.

Keep doing what you're doing while spreading the diyas of knowledge around.

-Utkarsh Sharma

We appreciate your kind words and it's good to know that you liked the November issue. Thanks. All of us here at Digit are gamers and we too love it that SKOAR's back.

The good news is that your prayers have been answered, and you must now be enjoying a poster with this issue. Regarding Anirudh and Big Daddy, we're planning on switching their diets.

-Siddhant

✉ I've been an avid reader of Digit since the past 8 years and I love the website. Kudos to the work that you all are doing.

I usually access the Digit website from my phone via Opera Mini. The website isn't properly viewable on the browser, especially the slides. I'm surprised to see images and the arrow keys for the next slide never load even when I'm using high speed Internet over Wi-Fi.

If you access the website www.businessinsider.com, you'll find that they have this awesome option where you can choose to read all the slides from a slideshow on the same page.

Implementing this will be great help to me and my buddies and many others readers.

-Karan Ladia

Thanks for your interesting suggestion, Karan. We'll take the idea into consideration and pass it on to our IT team.

-Mithun

✉ I'm a Game Developer and thank you

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LETTER OF THE MONTH

✉ Dear Digit,
First of all, I'd like to appreciate all of you for making the November issue such a success. It has been an immense pleasure for me to read thoroughly and use the DVDs. All the software and information provided came in handy. It literally made me feel like James Bond. Except the fact that no Bond girls were present.

I'd like to throw light on a few issues and suggest some points:

1.) After receiving my magazine, I opened it and to my utter disbelief, what I found was truly shocking and discomforting. My alpha DVD wasn't sealed. Though it's working properly, I expect you to look into this matter and ensure it won't happen again. Don't rush while packing DVDs.
2.) I'd like to have all the Fast Track editions till date in PDF format. Please tell me what step I should take to get them. What will it cost?
3.) When I tried to search for some articles by typing in their URLs (links provided on the top space of the magazine pages), all I got was 'Page does not exist' or an error on the page.
4.) Can I distribute disk image files of the Alpha and Omega DVDs to my friends and others who can't afford it. Information is real power and I'd like to share it. May I?
5.) This is just out of curiosity. Doesn't your team have a female member working in the office. All I've seen till date are just male mammals.

Thanks for this great magazine. Keep Digitising.

-Sandeep Tidke



It's good to hear that you liked the November issue and the content was helpful to you. As for your issues and suggestions, let's address them one by one:

1.) We're sorry to hear that your DVD wasn't sealed. We've dispatched an owl to our packaging department letting them know about it.
2.) Well, you're in luck as we've included all the Fast Track issues in PDF till date on the Omega DVD this month including all the issues of Encyclopaedia Technica. And they're all for free. (No conditions apply).
3.) Can you please write to us pointing out which URLs were broken? Also, many people mistake the parent URL to be digit.in when in fact it's 'dgit.in' followed by the rest of the link. So do check if you've entered them correctly too.
4.) Most of the content from the DVD, particularly the software, is free to distribute. However, the tutorials, most of the videos (unless otherwise stated) and the sponsored software have been distributed with permission from the owners of said content and for you to distribute them without permission will be illegal.
5.) As it may be apparent from my name below, I'm one of the "non-male-mammals" who's as much a part of Team Digit as any of these bearded/bald boys. There have also been several interns in the past – Priyanka, Chandni, Arpita – to name a few. And, of course, Shweta was our Product Co-ordinator up until very recently. Of course, Thanks for writing in and enjoy the gift!

- Infancia

for presenting such nice topics, Fast Tracks and DVD content. I especially loved SKOAR! in the magazine. There's only one suggestion: Can you please give us some information on NASSCOM's Game Developer Conference which will be held between 13th-15th in November next year in Pune, in your upcoming editions. I'll be very thankful to you and your wonderful team.

Finally, thanks for keeping us up-to-date with the latest technology and gadgets.

-Nikhil Patil

Hi Nikhil, great to hear from a game developer, and thanks for the kind words on SKOAR! The team loves working on it as much as you like reading it, let me assure you. Unfortunately, due to an insurmountable workload we couldn't make the time to attend this year's NASSCOM GDC. Believe me, we're as bummed about it as you are. However, don't forget to read this month's SKOAR and participate in the Game of the Year contest.

-Jayesh

✉ Sir,
Although I've never been a paid subscriber of Digit, I haven't missed paying for and reading a single edition of the magazine since the second year of its publication until April 2012, when I retired from service. Since I confess to being a little bitten by this technology bug, I couldn't resist buying and reading the magazine again after that. That way, I got to witness gradual changes being brought about in Digit and, to be sure, that truly tested my adaptive capability in no insignificant measure, reading and taste-wise. But the November 2014 issue has proved to be the proverbial last straw on my adaptiveness; Digit is now found to have transformed too much in its content and format for my reading comfort any more. You've admittedly and inevitably grown, and I've possibly and unfortunately got stuck. Unfortunately for me, I have had to put an end to any more reading of your magazine. Keep advancing technology.

-Pulin C Barthakur, Assam

Hi Pulin, it's never great for us to lose a reader, and definitely not such a longtime subscriber as yourself who's stuck on with us for so long. Change is the only constant, as you know, but we'd like that change to be better for both of us. We welcome you to reach out to us and let us know exactly what caused you to take this decision. We remain hopeful to have you as a reader for many years to come!

-Robert

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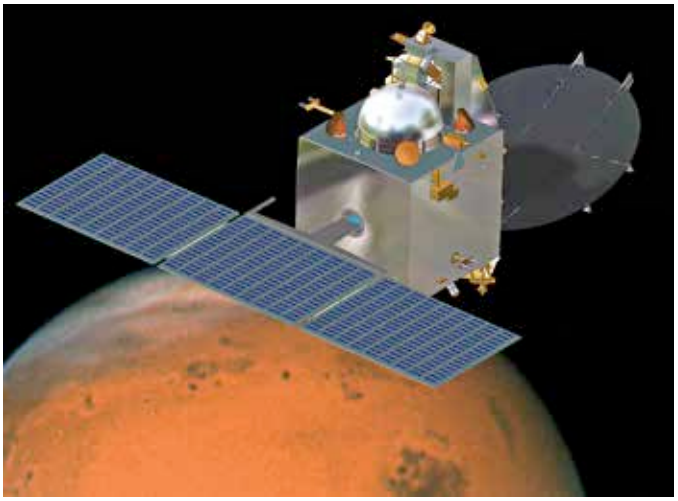
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Snake on keyboard
Jeroen Domburg has successfully hacked a backlit mechanical keyboard and now the classic game of Snake can be played right on it **http://dgit.in/SnakeKeyb**

Noteworthy news moments from India and around the globe – even Mars!

With murmurs of Tesla launching in India, and Google's bonanza-filled online shopping festival in the offing, check out what else happened this month



Mangalyaan in TIME's top inventions of 2014

Selfie stick along with Apple Watch, Mangalyaan, Blackphone and Coolest Cooler have made it in Time Magazine list of top 25 inventions of 2014. Selfies have become a phenomenon across the globe in 2014. The selfie stick enables you to capture a selfie from any angle of your choice by positioning your smartphone beyond the arms reach.

Time said, "If 2013 was the year in which selfie became a buzzword, then 2014 was the year selfies became a cultural phenomenon."

"Look no further than a recent Pew report, which found that at least a quarter of Americans have shared a selfie on a social-networking site (including Ellen Degeneres, Kim Kardashian and President Obama)," it added.

The technology "adds genuine value," says Van Baker, a mobile tech analyst at the research firm Gartner. "I've seen a lot of people using it." Apple's much awaited Apple Watch is also on the list. Time Magazine stated that Apple Watch "wholly reimagines the computer for the wrist, using a novel interface that combines a touchscreen and physical buttons". It noted that that the Apple Watch can send messages, give directions, make payments, track fitness and much more. The smartwatch is expected to be launched in Spring of 2015 with prices starting at $349.

India's Mangalyaan is on the number two spot in the list. Describing India's first Mars mission, Time Magazine said, "Nobody gets Mars right on the first try. The U.S. didn't, Russia didn't, the Europeans didn't. But on Sept.24, India did."

Apart from this Blackphone that puts privacy at the forefront and the Coolest Cooler which was the top-funded campaign on Kickstarter are also on the list.

Tesla coming to India?

Electric car maker Tesla Motors is now eyeing the Indian market as it plans to launch a sedan especially designed for emerging markets. According to reports, Tesla is making a third generation car – a compact and affordable four door sedan, dubbed as Tesla Model 3.

"Our target price for Model 3 is in the range of $30,000 to $40,000 (approx Rs 18-24 lakh) that makes it an ideal product in the luxury car segment," Jay Vijayan, chief information officer at Tesla Motors is quoted as saying.

Vijayan also acknowledged that Tesla cars are expensive for the Indian market. It's current vehicle Tesla Model S is priced above $100,000. He adds: "India is a huge potential market, but we need to have more affordable and economical cars."

He also expressed hope to receive subsidy on electric cars from the Indian government, similar to the US government, which bundles electric car with at least $7500 direct subsidy. He believes the government backing will be a key factor in helping launch cars in the Indian market.

"India has one of the highest import duty in the world — in excess of 100% — that goes against our principal of importing car directly from our plants at Freemont in the US or the assembly unit in Netherlands," Vijayan added.

"We have identified India is one of the potential markets in Asia to have a local assembly plant, but we need a definite policy from the government to support electric vehicles in the future," he further said.



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Another challenge Tesla faces is hefty import duty. The company plans to hold talks with the Indian government to develop a new category for such vehicles.

"Tesla is not just a conventional electric car, but a full-scale motoring experience, that zooms 0-100 km per hour in mere 3.4 seconds and delivers the highest 500-km range on a single electric charge," Vijayan said.

Electric cars aren't very popular in India. Mahindra & Mahindra currently sells Reva and E20 electric cars in India. According to an August 2014 report, the company has sold only 1000 units of the electric cars in about one and half years. Mahindra & Mahindra has been planning to launch its cars in more cities.

Tesla's interest in the Indian market comes close on the heels of reports saying the government is readying a Rs 14,000-crore scheme to push green vehicles.

Samsung launches an eye-tracking mouse

A team of engineers at Samsung have developed a new eye care technology that allows the disabled to browse the web as well as compose and edit documents through simple eye movement.

The technology builds on Samsung's previous technology called EYECAN which required the user to wear glasses in order to interact with a computer. Now the tech giant has rolled out a new update, called EYECAN+, which allows the user to simply point with a look and then click with a deliberate blink. Users were able to type as well as perform drag and drop commands.

EyeCan+ allows the user to be seated or lay down between 60 and 70 centimeters away from the monitor. The device has to be calibrated once according to the user's eyes, after which the system remembers each user's eye characteristics and can be attuned for sensitivity.

Samsung has initially tested a Google Glass-like concept, which had a camera mounted on a pair of spectacles to track users' eye movements, however the company has now opted for something more like the Microsoft Kinect. Samsung has been testing the technology with the help of Seoul's Yonsei University graduate student, Hyung-Jin Shin, who was born quadriplegic and helped pilot the initial eye mouse concept.

According to reports Samsung is not planning to commercialize the technology, instead the electronics giant plans to make a small quantity to donate to charity organizations as well as make the tech freely available for other companies to use it in an open source agreement.



Control your mouse with just your eye

"EYECAN+ is the result of a voluntary project initiated by our engineers, and reflects their passion and commitment to engage more people in our community," said SiJeong Cho, Vice President of Community Relations at Samsung Electronics.

GOSF 2014

Google's annual online shopping festival, also known as Great Online Shopping Festival (GOSF), is scheduled to be held from December 10-12. This year's GOSF features over 450 partners with brands ranging from Motorola Nexus 6, HP, Lenovo, Tata Housing, Karbonn to Van Heusen, Asian Paints and more.

For first time buyers, Google has featured a special section that features every product at `299. The section has brands such as Uber, JBL, Benetton, Alia Bhatt collection, Ever-Pure water purifier. Google is currently running several contests and games on the official websites to promote the festival. Customers stand a chance to win 14 minutes of free shopping hosted by leading brands.

Users will be able to participate in this contest across leading social media platforms from 25th November till 8th of December 2014. #WinGOSF2014. The contest is hosted by 14 brands like Asian Paints, Jet Airways, Kindle, Micromax, HP, Ask Me, Crafts-Villa, Cox & Kings, Goibibo, Big Bazaar, KOOVs, Trendin, Lakme and Lenovo.

Google had launched the initiative in 2012. "... (GOSF) has seen tremendous response with most players seeing over 350 percent growth in daily sales. Last year, 2 million users visited gosf.in and over 16 million users visited across all partner sites including smaller players registering 2x growth on an average in their daily sales," says Google in a release.

Speaking about the momentum of online shopping in India, Rajan Anandan, VP & Managing Director, Google India said, "Great Online shopping festival is India's version of cyber Monday and is an exciting platform to move the industry forward. The consumer confidence to shop online has grown considerably in the last 12 months, boosting the growth of both large multinational and home-grown companies. Our recent report projects that the Industry will continue to see robust growth in next few years making it a USD 15 billion industry by 2016."

Online shopping has tremendously grown in India. Over the last few months, brands have taken online-exclusive route to sell their products. Google's recent study on e-commerce in India reveals the online shopping market in the country will grow to $15 billion by 2016.

Google's online shopping festival is said to be inspired by Cyber Monday.

Of late, we've seen Indian e-commerce giants such as Flipkart and Snapdeal trying to mimic the model in India.

Are you excited about Google's great online shopping festival? Write to us and tell us why.

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24 **Security watch**
Government requests for user data has been on the rise and a study details how many victims lose data to phishing

28 **Mobile watch**
Say good-bye to cracked screens because Gorilla Glass 4 is here and get ready as Oneplus One ties up with Amazon India

Office for iOS and Android is now free and Google launches Messenger

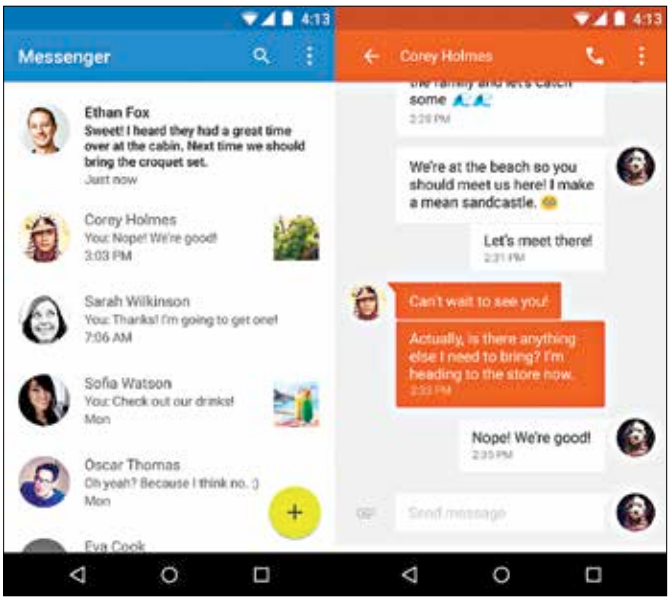
WhatsApp's new blue-ticks feature made optional post massive negative user feedback

Messenger: Google's new standalone messaging app for Android

Google has released a standalone messaging app for Android on Google Play store. Called Messenger, the application features Google's new Material Design, though supports devices running Android 4.1, Jelly Bean, and above.

Google Messenger, like the traditional SMS app, lets you send and receive SMS and MMS messages to any phone. You can also send group texts and images, videos and audio messages to texts. The Messenger app lets you search through contacts and conversation threads. It also gives you the option to block SMS senders. Other features include coloured text threads, message archiving and emoji support.

With the new Messenger, Google aims to reach out to users who haven't been using Hangouts for SMS. Contrary to rumours, Google's new Messenger doesn't seem to be a threat to the likes of WhatsApp, Facebook Messenger, Viber and other popular messaging apps.



Messenger for Android, yet another messaging app

Google is often criticised for forcing users to use its applications. Its Hangouts application was criticized for having a tight integration with Google+, which many believe could lead unwilling users to share personal information to others.

It will be really interesting to see how Google manages its Hangouts and Messenger applications. Will these two apps be interlinked?

You can download Messenger for Android here:
http://dgit.in/1vkFWec

Microsoft Office suite is now free for iPhone, iPad and Android

Microsoft has announced that it's making Office apps free for iPad, iPhone and Android – a move considered to be a major shift in strategy for the company. This allows users, even those who haven't subscribed to Office 365 to create and edit documents in Word, Excel and Powerpoint for free.

Microsoft has rolled out the free version of Office for iPhone and iPad, while a preview version has been launched for Android. Full release of the Android version is expected in 2015. Microsoft, however, is keeping some premium features for Office 365 subscribers such as unlimited OneDrive storage and Dropbox integration.

"Anytime someone has an idea or an inspiration, we want to empower them to take action," says John Case, Corporate Vice President, Office, Microsoft. "With over a billion Office customers worldwide, and over 40 million downloads on the iPad, it's clear that Office applications are what people want to use to get things done."

As said above, Microsoft's latest move is a major shift in strategy, though not a very surprising one. The company had already hinted at extending its services on other platforms after launching Office for iPad. It had also allowed users with Office 365 subscription to edit and create new documents.

Microsoft is already bearing the brunt of depleting laptops and desktop computers across the world. Meanwhile, rival Google has been working consistently to improve its productivity suite for mobile phones.

That said, Microsoft is taking a huge risk by making Office free for use. A New York Times report says Office has contributed nearly a third of Microsoft's revenue during its

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Samsung EyeCan+
Samsung has a new version of it's eye mouse called EyeCan+
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Twitter Offers
Twitter is introducing Offers where users can claim discounts from advertiser's tweets and redeem them in the store **http://dgit.in/TwitOffers**



Microsoft's Office to be free on all app stores

last fiscal year — approximately $26 billion of $87 billion in total. Microsoft will have to come up with more new and exclusive features on the apps only accessible to premium customers.
Download links: *Word* (http://dgit.in/1yOkXgX), *Excel* (http://dgit.in/1qQVTkW), *PowerPoint* (http://dgit.in/11fmwcM)

The WhatsApp Blue Ticks Saga

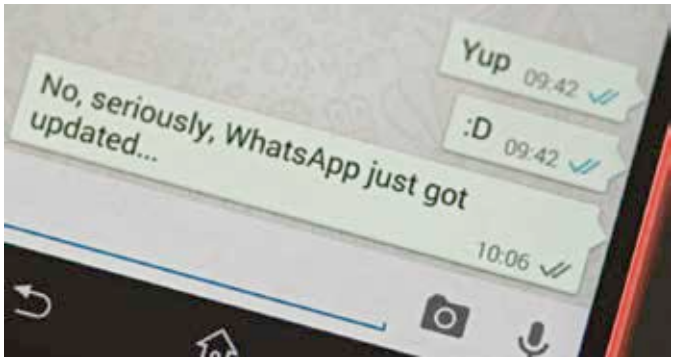
WhatsApp, that showed double check marks if a sent message had been received, now turns those check marks blue if the message has been read.

WhatsApp's FAQ section explains that the feature will be implemented in group chat and broadcast messages as well. The two checkmarks will turn blue after every participant within the group has read the message. This feature has been pushed over-the-air to both iOS and Android versions of the app and is not part of any update.

Just about ten days after the update, WhatsApp released an update version 2.11.444, which brings the ability to switch off the read-receipts to users. The new version has been rolled out only for Android as of writing this but BlackBerry, iOS, and Windows Phone users are expected to get it soon. The new update was rolled out because a lot of users were unhappy with the 'blue ticks' feature and felt that their privacy was violated as their contacts were able to see when their messages were read.

Users of WhatsApp for Android will now be able to disable read receipts. Users can go to the privacy options inside the app's settings menu, and see a check box that enables and disables the feature in an instant. The new WhatsApp update adds support to hide read-receipts for individual chats, however the feature doesn't apply to group chats. Users in group chats will still see blue check marks once every participant has seen a specific message. The new update also brings support for heads-up notifications, which have been introduced in Android 5.0.

"If you turn off read receipts, you won't be able to see read receipts from other people," a notice inside the app reads. "Read receipts are always sent for group chats."



Not exactly a welcome change

FestivalCards, an iOS app from Antarjaal, a Bangalore based developer, tries to offer you a solution by providing a library of templates of greeting cards readymade for seven popular Indian festivals and events including the New Year, Eid, Pongal and Diwali, among others. Once you're in the app, you can choose which festival you'd like to make a card for. Then, you can choose from about twenty elements (balloons, mascots, confetti etc.) that you want to add to the card, about seven templates to put them in and three different background colours that you can opt for. Alternately, you can also shoot a photo and use that as the primary template. You can also add a few words of your own up to a maximum of 30 characters which are placed at the bottom right of the card.



FestivalCards - A custom greetings card creation app

FestivalCards (iOS): an app to send personalised greetings to friends & family

Every time a new festival rolls around, you can either ignore the outside world and lock yourself in your room, or bravely decide to make social contact with your friends and family. If you pick the latter, it means that you'll also want to send out greetings by the dozens and nowadays the choice picked by many to do that is via WhatsApp. However, WhatsApp does have its drawbacks and if you want to create a decent looking greeting similar to what you get in card stores, then it falls short.

Even though the FestivalCards app clearly has limited functionality, it's also a handy app to have installed on your iPhone or iPad especially if you want to put in a little effort in the greetings you send out during festivals. The app is light, has a smooth, minimalistic interface and is exceedingly simple to use. Hopefully the developers will add more templates and customization options in the future.
iTunes App Store Link: (http://dgit.in/1Ab1ZoR)

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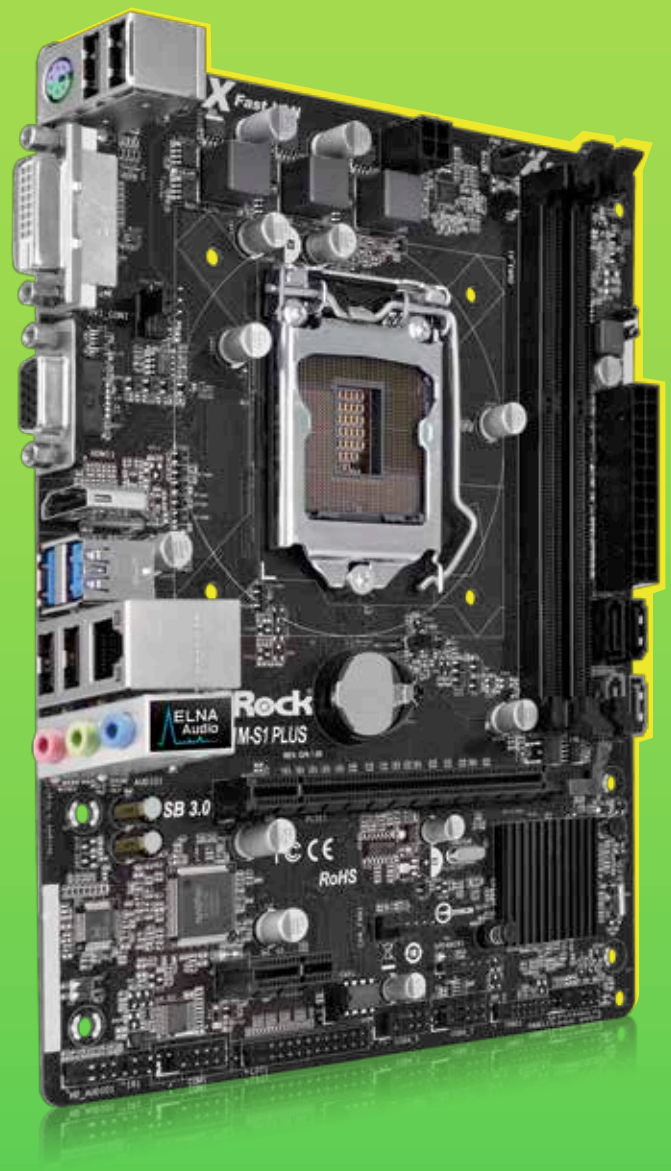
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TDKR Fan Theory
This fan theory on The Dark Knight Rises has a couple of convincing theories that could make you rethink about the movie **http://dgit.in/TDKRFan**



Fuffr Phone Case
The Fuffr phone case extends the control outside of your phone with outward pointing sensors to read finger gestures **http://dgit.in/FuffrCase**

User data requests rise

Despite a lot of hue and cry over privacy concerns, governments across the world have continued to seek users' personal information. Thanks to transparency reports, we can now monitor such data requests from the governments across the world.

Government user data requests up by 24 percent: Facebook

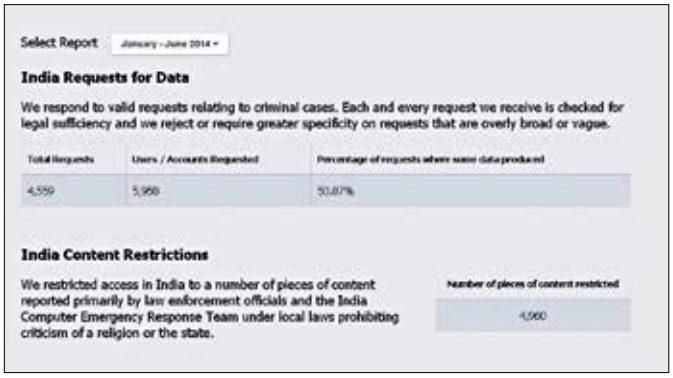
Facebook has released its latest Government Requests Report. According to the social networking giant, requests by governments across the world had risen in the first half of this year as compared with the previous six months.

Facebook says government requests rose by 24% to almost 35,000 in the first six months. It also pointed out that the amount of content restricted due to local laws increased by 19% in the said period.

From India, Facebook received 4,559 total requests, 5,958 users/accounts requested and 50.87 percent of requests were processed wholly or partly. For the period of July-December 2013, figures were 3,598 total requests, 4,711 users/accounts requested and 53.56 percent of requests were processed.

"We restricted access in India to a number of pieces of content reported primarily by law enforcement officials and the India Computer Emergency Response Team under local laws prohibiting criticism of a religion or the state," says Facebook on its transparency report website.

Shedding light on increased number of data requests, Facbeook said: "Indeed, over the past year, we've challenged bulk search warrants issued by a court in New York that demanded we turn over nearly all data from the accounts of nearly 400 people. This unprecedented request was by far the largest we've ever received. We've argued that these overly broad warrants violate the privacy rights of the people on Facebook and ignore constitutional safeguards against unreasonable searches and seizures."



The Indian Government has been hard at work

Majority of DDoS traffic in 2014 originated from India: Symantec

A new global research from Symantec says that the highest volume of 'originating DDoS traffic' came from India. About 26 percent of all DDoS traffic originated from India followed by the USA with 17 percent.

"The sources for DoS attacks are often countries that have a high number of bot infected machines and a low adoption rate of filtering of spoofed packets. While this does not mean that the people behind the attack are located in India, as the attacks are often orchestrated remotely; it is a reflection of India emerging as a hotbed to launch these attacks, potentially because of the low cyber security awareness, lack of adequate security practices and infrastructure" says Tarun Kaura, Director, Technology Sales at Symantec India.

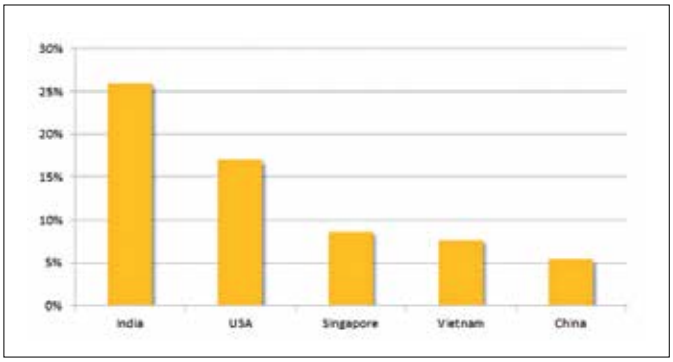
The research titled, "The Continued Rise of DDoS Attacks," was conducted by Symantec's Security Response team of engineers and analysts who evaluated the global data between the period of January to August 2014.

Symantec's research further highlighted the motivations behind the popularity of DDoS. Attacks include financial blackmail with the threat of taking the business offline on a personal grudge; and as a diversionary technique to distract IT security response teams while a targeted attack is conducted.

The report says there's been an increase of Linux server hijacking for DDoS botnets. This year, we saw an increase in the compromise of Linux servers, including those from cloud providers. These high bandwidth servers are then used as part of a botnet to perform DDoS attacks, says the report.

As the most attacked sector globally, the gaming industry experiences nearly 46 percent of attacks, followed by the software and media sectors. While it's not happening on a broad scale now, it's likely that we'll see an increase in DDoS attacks originating from mobile and IoT devices in the future," points out the Symantec report.

DDoS attacks, whilst not a new attack vector, have proven



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More lightning strikes
Global warming could lead to the increase of lightning frequency by 12 percent for every degree Celcius **http://dgit.in/MoreLightning**



SeaBED dives in
SeaBED, a robotic submarine has found that the size and thickness of the Antartic ice is much more than we previously thought **http://dgit.in/AntarticSub**

to be effective and sometimes devastating for organizations. The attacks attempt to make an online service unavailable by overwhelming it with traffic from multiple sources. A Domain Name Server (DNS) amplification attack is a popular form of DDoS, which floods a publically available target system with DNS response traffic. Symantec's research indicates that DNS amplification attacks have increased by 183 percent between January to August 2014.

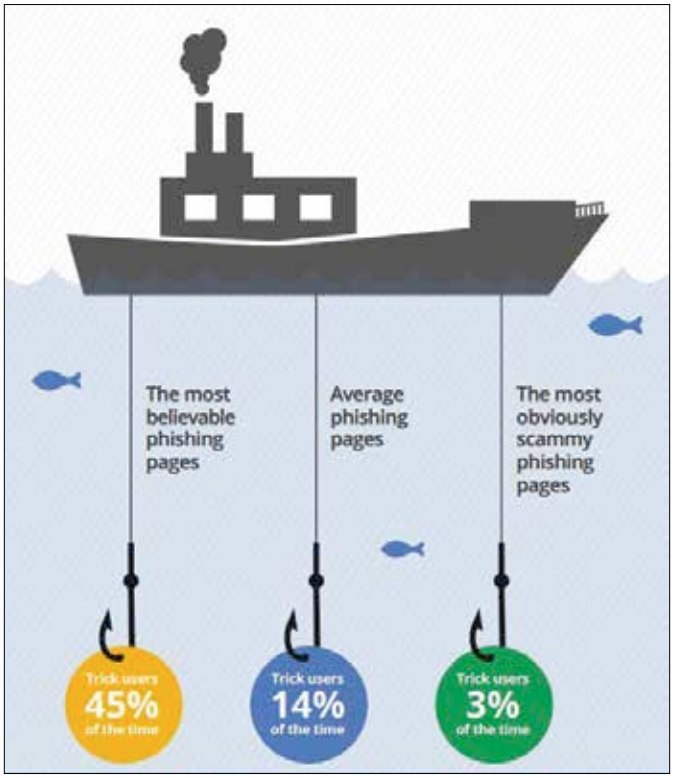
Phishing emails are effective 45 percent of the time: Google

A new study by Google has revealed that phishing attacks were successful 45 percent of the time. The report stated that 20 percent of the hackers accessed the compromised accounts within 30 minutes of getting information and often blocked the owner.

Researchers at Google and the University of California, San Diego have found that phishing emails that try to trick users into handing over their information work way better than believed. Researchers looked at 100 phishing emails picked out of a random sample self-reported by Gmail users. Researchers reviewed a random sample of 100 phishing websites caught by Google's Safe Browsing system to further understand how the scams work.

The study found that 14 percent of people unwittingly submit their information to hackers, once they reach bogus pages that imitate legitimate sites. 3 percent of users submitted their data even on the worst-performing phishing websites, while the most effective phishing sites were able to get information 45 percent of the time.

Google has urged users to stay vigilant of emails asking for login information or other personal data. The internet giant says users should never reply to these messages, but mark or report them as spam. Google says that it's important for users to confirm ownership of their account by providing a backup phone number or a secondary email address. Users should follow the free 2-step verification service for an extra layer of security against getting your account hijacked.



How gullible are you to getting phished?

Recently, Google and Yahoo made phone numbers mandatory for creating new email id's in an effort to check spam. Google says that providing your phone number is optional but repeated attempts to create a new email address on Gmail by skipping the telephone number requirement failed. The number of accounts on one phone number has also been limited.

Researchers develop new self healing software that fights against malware

Scientists have created a new software that not only detects and eradicates never-before-seen viruses and other malware, also but also has a self healing feature that automatically repairs any damage they've caused and even prevents malware from infecting the same machine ever again.

The new software called A3, or Advanced Adaptive Applications, has 'stackable debuggers' that run multiple de-bugging applications on top of each other. The software looks inside the virtual machine while it is running and constantly monitors for any out-of-the-ordinary behavior in the pc. The application is designed to protect servers or similar business-grade computers that run on the Linux operating system and has been demonstrated to protect military applications as well.

A3 software was co-developed by Massachusetts-based defense contractor, Raytheon BBN, and funded by DARPA's Clean-Slate Design of Resilient, Adaptive, Secure Hosts program. The A3 software suite was demonstrated to DARPA in September by testing it against the notorious Shellshock exploit known as the Bash Bug. The A3 software was able to detected and repair the Shellshock attack on a web server within four minutes of the infection.

Eric Eide, the research associate professor of computer science who led the A3 project team along with computer science associate professor John Regehr, said: "It's pretty cool when you can pick the Bug of the Week and it works." He added, "A3 technologies could find their way into consumer products someday, which would help consumer devices protect themselves against fast-spreading malware or internal corruption of software components. But we haven't tried those experiments yet."

BlackBerry ties up with Samsung, others for mobile security

BlackBerry has teamed up with electronics giant Samsung as well as other high-profile players to enhance the capabilities of the new mobile-device management and security platform.

BlackBerry and Samsung, the world's largest mobile phone maker, will offer a "highly secure mobility solution" for Samsung's Android phones starting in early 2015. BlackBerry is now focusing on new services for enterprise clients that are increasingly struggling with data security concerns.

THE STRONGEST GLASS IN THE WORLD

A LOOK AT DRAGONTRAIL™ X, TOUGHENED GLASS FROM AGC A WORLD-LEADER IN GLASS AND CERAMICS

What do you look for in a gadget? The CPU processing power or number of cores, the RAM, internal storage, screen size, pixels per inch? Most likely you look at screen quality and size. However, none of that matters when you drop your precious gadget accidentally. All you're dreading when you pick it up is that tell-tale line that signifies a crack, and almost certainly a trip to a service centre and a dent in your wallet.

Of the three materials used to build your device – plastic, metal and glass – it's safe to assume that the glass worries you most. Not just when you drop it, you're also worried about scratches, which happen because you accidently put your keys into the same pocket as your phone, or if your tablet was lying in the same bag as a lot of pointy stuff. You buy scratch-guards and cases that offer to protect your screen. However, for a couple of years, the horror stories of scratched screens are diminishing.

Glass has come a long way in the technology era, and it's no longer the flimsiest part of your electronic gadgets. Huge research and development spends by companies such as Asahi Glass Co. (AGC), who have a 100-year history of making glass for various uses, has resulted in glass that's tough, scratch resistant, and getting tougher every year.

AGC launched the Dragontrail™ brand of glass in early 2011. Today, AGC provides Dragontrail™ glass to 400 product models, across 60 major brands – not just phones and tablets, AGC almost exclusively also provides protective glass to much larger LCD screens (as large as 3 meters across). It's also used by Indian brands such as Lava, Xolo and Karbonn for various product lines of theirs. You've probably seen it in popular phones such as the Sony Xperia Z series and the Xiaomi Redmi, to name just a few.

Although the usage of Dragontrail™ glass in electronics is what would interest most people, that's not where you were likely to see it. Over 3 billion people watch the FIFA World Cup™, and the excellent 2014 competition is still fresh in everyone's memory. Remember the glass covered benches that the substitutes and coaches were sitting on in the World Cup Matches in Brazil? You guessed it, it was made up of Dragontrail™ X from AGC. Dragontrail™ X was first showcased at CES 2014. It is characterized by the world's highest compression stress(≧1000Mpa), and is eight times stronger than soda lime glass. It was chosen for the FIFA World Cup™ because it doesn't scratch easily, and with an application of anti-reflective coating, it's virtually see-through at any angle, and allows spectators seated behind it a clear view of every inch of the football ground.

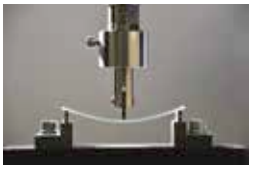
So what makes Dragontrail X so special? Obviously toughness and being scratch-resistant, but how resistant? Since a picture is worth a thousand words, here are 2 and a link to some videos that you must watch about this amazing glass:



IMAGE CREDIT: @ AGC ASAHI GLASS

"We're happy to have the support of a strong and innovative company like AGC, who is constantly looking to develop and improve their product. The quality of AGC's product is extremely high and will fit in very well at the 2014 FIFA World Cup™ stadia"

–Thierry Weil
FIFA Marketing Director



Stress Test (Three-point bending with 1.1 mm-thick glass)



Dragontrail X

See the videos at: http://dragontrail.agc.com/en/#mov



AGC's glass roof for player benches

ABOUT AGC

The AGC Group, with Tokyo-based Asahi Glass Co., Ltd. at its core, is a world-leading supplier of flat, automotive and display glass, chemicals and other high-tech materials and components. Drawing on more than a century of technical innovation, the AGC Group has developed world-class expertise in fields including glass, fluorine chemistry and ceramics technologies. The group employs some 50,000 people worldwide and generates annual sales of approximately 12 billion USD through business in about 30 countries. For more information, please visit www.agc-group.com/en



Smartphone Glove control
The GoGlove is a smartphone glove that can be used to control your smartphone remotely with the tap of a finger **http://dgit.in/GoGlove**



Europa up close
NASA has released a remastered image of Jupiter's moon Europa showing how it would look like to the naked eye **http://dgit.in/EuropaClose**

Year-end roundup

It's a month of highs and lows in the world of mobiles and we've covered 'em all

Spectrum shortage issue to be resolved before February auctions?

Telecom operators have long demanded allocation of more spectrum in order to improve their services. New round of spectrum auctions are just around the corner while the telecom department is under pressure to resolve the issue of spectrum shortage. However, if telecom regulator (TRAI) has its way, the forthcoming auctions may see release of more spectrum.

"... spectrum availability in India for commercial use, as a whole is about the lowest in the world ... It is important to recognise that auctions are not the only way spectrum is allocated. Even in jurisdictions where far larger quantities of spectrum are available for commercial deployment, different approaches are being taken," the TRAI was quoted as saying.

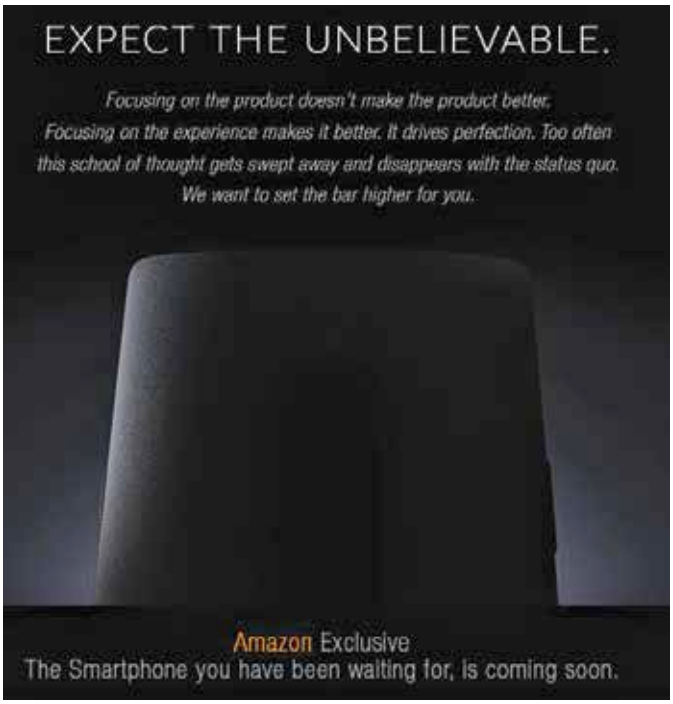
"For the past seven years (or more) a dialogue has taken place between the DoT and ministry of defence to release additional quantities of spectrum. To be perfectly candid, this dialogue has gone nowhere, i.e. it has remained inconclusive."

The latest statement from the regulator comes shortly after telecom minister Ravi Shankar Prasad held talks with defence ministry over the issue releasing of mobile airwaves. It's notable defense sector has spectrum in 1,700-2,000 MHz band and in the 2,100 MHz (3G) bands.

Another controversy that has been surrounding the forthcoming spectrum auctions is the base price. The regulator says it stands by its recommendations on spectrum pricing, which is 10 percent higher than the previous auction. It also recommended withdrawing airwaves from BSNL and defence. Earlier, the department of telecom had returned TRAI's recommendations on pricing for another review.

"After considering the comments given by DoT, the Authority has furnished its response to the government. The Authority has reiterated its earlier recommendations with detailed reasoning," Trai is quoted as saying.





OnePlus One will be Amazon India exclusive, invite only

As we reported recently, OnePlus is coming to India with its 'flagship killer' device, the One and it will be an Amazon exclusive. As per the announcement, the phone will only be available to people who have an India-specific invite. Exact launch and prices have not been disclosed yet but are supposed to be announced soon.

The OnePlus One is powered by the Qualcomm Snapdragon 801 SoC which we saw recently in the Motorola Moto X (2014). In terms of hardware, the phone is quite similar to the new Moto X except for the screen size and quality. The OnePlus One is expected to be priced less than ₹25,000 for the 64GB version which will make it a bargain over its closest competitor the Moto X (2014) priced at ₹31,999.

The only thing that could make this deal sour is the invite only system that OnePlus is trying to push in India. We have seen Xiaomi getting hefty retaliation from Indian customers over limited stock sales of the Mi3. A OnePlus executive commented in the forum earlier that the phone will be sold though the invite-only system initially, and could later be sold 'regularly'.



Dried Whiskey as art

Dried Whiskey at the bottom of a glass does look like a piece of art, thanks to the chemical composition and fluid dynamics **http://dgit.in/MicroWhiskey**



Magnetic pulses to brain

A team from Ohio State Wexner Medical Center believe they can help stroke victims through magnetic stimulation **http://dgit.in/RehabStroke**



Qualcomm Snapdragon 810 reference hardware kits now available

Reference smartphone and tablet hardware platforms for Qualcomm's Snapdragon 810 chip are now up for grabs. Canadian company Intrinsyc is offering the mobile development platforms for the 810 SoC.

The smartphone platform features a 64-bit Qualcomm Snapdragon 810 SoC with octa-core CPU, Adreno 430 GPU and Qualcomm Hexagon V56 DSP. It has 6.17-inch QHD (2560×1600) 490ppi display with 10-finger multi-touch capacitive touch-screen. In the camera section, it offers 13MP rear snapper with OIS, dual LED flash and support for shooting 4K videos at 30fps and 1080p at 60fps. It has 4MP auto focus camera.

The development platform smartphone has 4 GB LP-DDR4 built-in memory, supports 32GB eMMC 5.0. In terms of connectivity, the phone supports Wi-Fi 802.11 a/b/g/n/ac Wi-Fi 2.5 GHz/5 GHz, Bluetooth 4.1, Qualcomm IZat Gen8C GPS, NFC. It is powered by 3020 mAh Lithium-ion battery.

The tablet reference hardware includes 64-bit Qualcomm Snapdragon 810 SoC with octa-core CPU, Adreno 430 GPU and Qualcomm Hexagon V56 DSP. It has 10.1-inch UHD 4K (3840 × 2160) 16:9 display with 10-finger multi-touch capacitive touch-screen and dual-display capable (tablet + HDMI or wireless). The device has 13 MP rear camera with OIS, Dual LED flash (4K at 60 fps), and 4 MP front facing camera with AF(1080p at 120 fps). The device also has dual 3D IR gesture cameras.

In terms of connectivity, the device supports Wi-Fi 802.11 a/b/g/n/ac Wi-Fi 2.5 GHz/5 GHz, Bluetooth 4.1, Qualcomm IZat Gen8C GPS, NFC. It is powered by 3020 mAh Lithium-ion battery. It is powered by a 7560 mAh Lithium-ion battery.

The smartphone and tablet references are available for $799 and $999 respectively. According to reports, the platforms will begin shipping by mid December. The new reference platforms are not intended for regular customers but they give a good idea about future devices.

Qualcomm had announced its 64-bit Snapdragon 810 SoC in April this year. The latest chipset is said to bring support for better graphics, voice quality, battery life, Wi-Fi speeds and camera. Check out the main features of the new Snapdragon 810 SoC here. The new SoC is most likely to be available on flagships devices launching next year.



NotCompatible: New malware threat for Android devices

Security firms have warned that hackers are targeting Android smartphones with a new malware dubbed Not-Compatible. The malware can be used by hackers to steal information from smartphones, as well as monitor cell phone call logs.

According to security firm Lookout the persistence and sophistication of malware dubbed NotCompatible is another sign that cyber criminals are hitting smartphones and tablets with tactics and tenacity once reserved for desktop computers. Researcher Jeremy Linden says that hackers are mining information from smartphones including where people have





Canyon found under river
Researchers from California Institute of Technology have found a canyon under a river in the Himalayas in Tibet **http://dgit.in/CanyonRiver**



Treating Ebola
Emory University Hospital is stockpiling the blood plasma of Ebola victims for future treatment of the virus **http://dgit.in/EbolaPlasma**

been, their call logs and even where pictures have been taken.

Mobile malware is becoming very advanced and rapidly reaching parity with PC malware. It is the jackpot when it comes to valuable data, so obviously bad guys are doing a lot of work to get at it. While it is true we haven't seen any data stealing, you don't want anything like this on your device," Linden said.

He warned that hackers could use the infected smartphones to get into company networks if a person uses his device for work. Lookout stated that the enslaved mobile devices could be used to snatch up hot concert tickets and sell them later at higher prices or even span hacking goods like diet pills.

"You are adding to the general danger of the Internet by letting an attacker use your network for something unsavory, and you could be responsible for any data plan charges," Linden said.

According to a CISCO report 99 percent of all malware affected Android devices in 2013. The report stated 71% of web-delivered malware was meant for Android only. The report found that only 14 percent of malware was meant for iOS. Wirelurker was one of the few malicious software discovered earlier this month that affected iOS devices.

Corning unveils Gorilla Glass 4, boasts better drop protection

Corning, best known for manufacturing the glass that makes up the screens of touch-screen devices, has unveiled its new Gorilla Glass 4. Corning has been developing this glass so that it can withstand drops in the real world. The company claims that the new Gorilla Glass 4 can withstand drops up to 2X better than aluminium silicate glass displays.

In studies conducted by Corning scientists, they were able to ascertain that majority of smartphone screens get damaged when dropped on a rough surface from an approximate height of 1 metre, therefore they devised equivalent tests and created the Gorilla Glass 4. According to Corning, the newly developed glass material will be able to survive collisions with rough surfaces, like sidewalks.



Corning Gorilla Glass 3 is used by many smartphone and laptops manufacturers and with the upcoming Gorilla Glass 4, the screen of all related forthcoming devices may be much more drop-proof than what it was before.

90 percent of kids over 6 will own mobile phones by 2020: Report

Ericsson has stated that 90 per cent of the world's population aged over six years will have a mobile phone by 2020 and smartphone subscriptions will hit nearly 6.1 billion, according to a recent report.

Ericsson's latest Mobility Report states that there have been 800 million new smartphone subscriptions in 2014 so far, of which 65-70 per cent of all phones sold in the third quarter of 2014 were smartphones, compared to 55 per cent in the third quarter of 2013. In total, by 2020, Ericsson predicts there will be at least 6.1 billion subscribers in 2020 compared to the 3.2 billion mobile subscribers right now.



Currently smartphones account for just 37 percent of the market, so there is a lot of opportunity for smartphone device makers. Emerging markets like India, which added nearly 18 million new mobile subscriptions in the third quarter of 2014, have become the focus of global operators and device vendors.

Ericsson predicts that video traffic will increase tenfold by 2020, and will constitute 55 per cent of all mobile data traffic. Currently streaming music and video services are responsible for a large amount of the data used, rather than video calling. In the next few years with the introduction of 5G services, more users will shift to the superfast services more quickly than was the case with 4G or 3G rollouts.

"The falling cost of handsets, coupled with improved usability and increasing network coverage, are factors that are making mobile technology a global phenomenon that will soon be available to the vast majority of the world's population, regardless of age or location," said Rima Qureshi, senior vice president, chief strategy officer and head of M&A at Ericsson. "The Ericsson Mobility Report shows that in 2020 the world will be connected like never before," Mr Qureshi added.

WhatsApp update brings end-to-end encryption for Android users

WhatsApp latest update for Android adds strong end-to-end encryption, enabled by default. This is said to be the strongest security any major texting app has offered, even when compared with similar tools from tech giants like Microsoft, Google and Apple. The company has stated that the feature will come to iOS users soon.

WhatsApp has partnered with Open Whisper Systems

for the launch and is using open source code to build in the new features. With "End-to-end" encryption WhatsApp won't be able to decrypt the messages itself, even if law enforcement agencies compel the company. With 600 million users globally WhatsApp is the largest platform to adopt the system.

"WhatsApp is integrating Text secure into the most popular messaging app in the world, where people exchange billions of messages a day," says Moxie Marlinspike, Open Whisper System's creator and a well known software developer in the cryptography community. "I do think this is the largest deployment of end-to-end encryption ever."

According to reports TextSecure has been encrypting WhatsApp messages for a week now. Open Whisper CTO Moxie Marlinspike says that the company will also add a feature to allow users to verify each others' identities based on their cryptographic key which will work against man-in-the-middle attacks that intercept conversations. "Ordinary users won't know the difference," says Marlinspike. "It's totally frictionless."

Marlinspike says it took six months to get the code ready for such a large deployment, and work began shortly after Facebook acquired WhatsApp. "Most of our efforts have been focused on making our code easier to consume," Marlinspike stated. "I've been really impressed with the dedication and commitment WhatsApp has to the project."



Samsung plans to launch fewer smartphone models next year

Samsung Electronics is planning to cut the number of smartphone models it will launch from next year. The company going to reduce one-third of its smartphones in order to cut prices in the face of intense Chinese competition.



A company spokesman confirmed the strategy during a presentation in New York by the South Korean conglomerate's head of investor relations, Robert Yi. Yi stated that the company which reported a near 50 per-cent plunge in third-quarter net profit last month following a 20 per-cent drop in the previous quarter will reduce the number of smartphone models in 2015 by 25 to 30 percent.

"[Lowering the model number] will allow us a chance to lower the prices of [remaining models] through mass production," said Yi. "In low- to mid-end products, price is the most important, and for high-end products, it is innovation."

Samsung's two largest competitors, Apple (AAPL) and China's Xiaomi, have limited number of smartphone models. Since the iPhone's launch in 2007, Apple has pushed out only 9 models, while Xiaomi has sold 6 Mi phones in the last four years. By comparison Samsung has pushed out hundreds of smartphone models in the past few years.

Samsung also plans to launch more budget devices to compete with Chinese rivals like Xiaomi, Huawei and Lenovo to gain its market share in emerging markets. According to reports Samsung is planning to launch a new range of budget smartphones based on its homegrown Tizen OS. The company is planning to make India the launch pad for its Tizen OS due to the increased competition from domestic smartphone makers like Micromax and Karbonn.

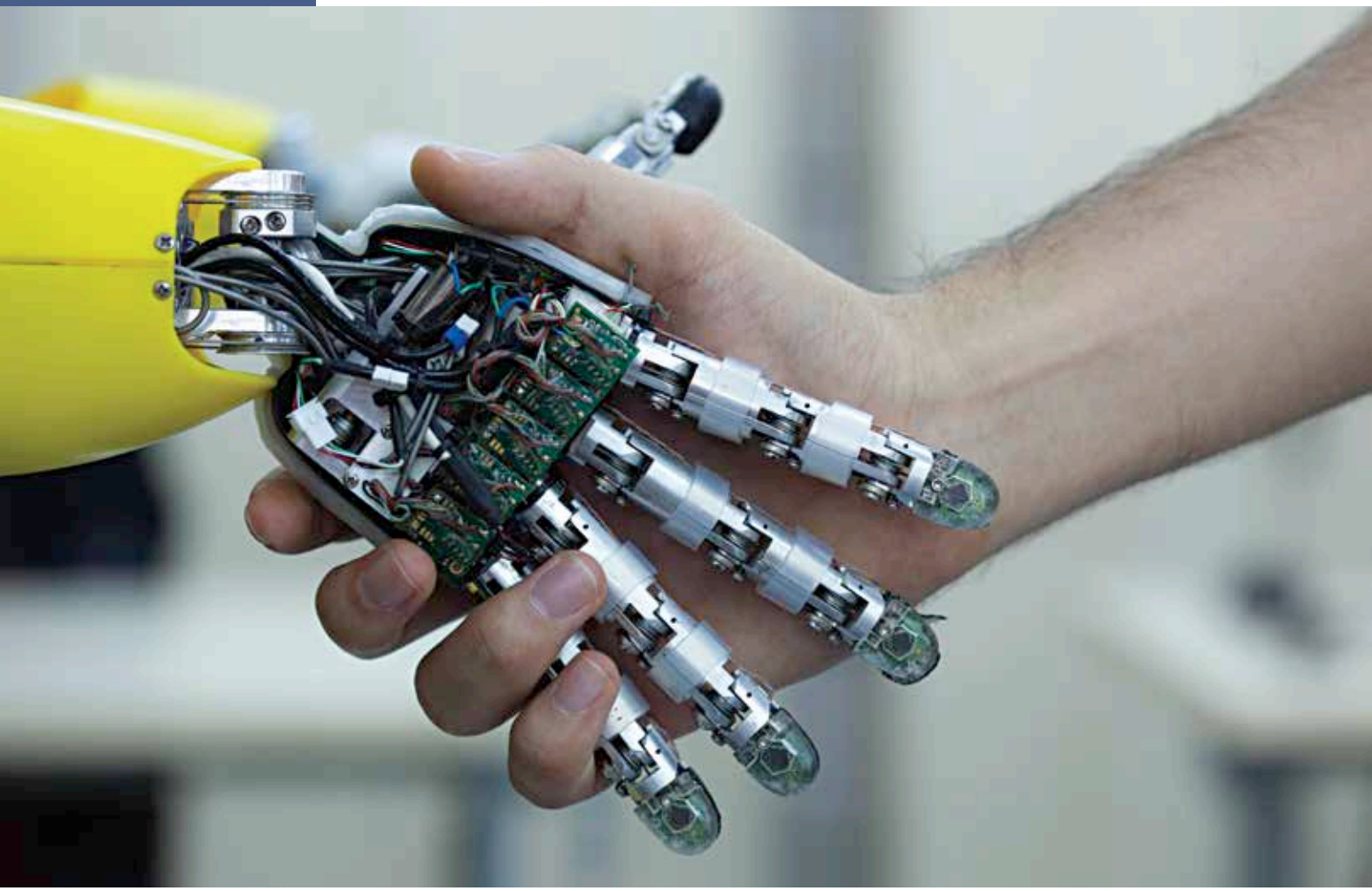


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Space age
NASA's latest paper discusses the possibility of fuel-free engines for space travel



FreeSync coming in 2015
AMD's open source FreeSync which will go head on with NVIDIA's G-sync, is coming to Samsung monitors in 2015 **http://dgit.in/AMDFreeSync**



Has the Age of Robots arrived?

Some of the latest advancements in Robotics are mind boggling. Good time for humanity to re-assess the three laws, we think

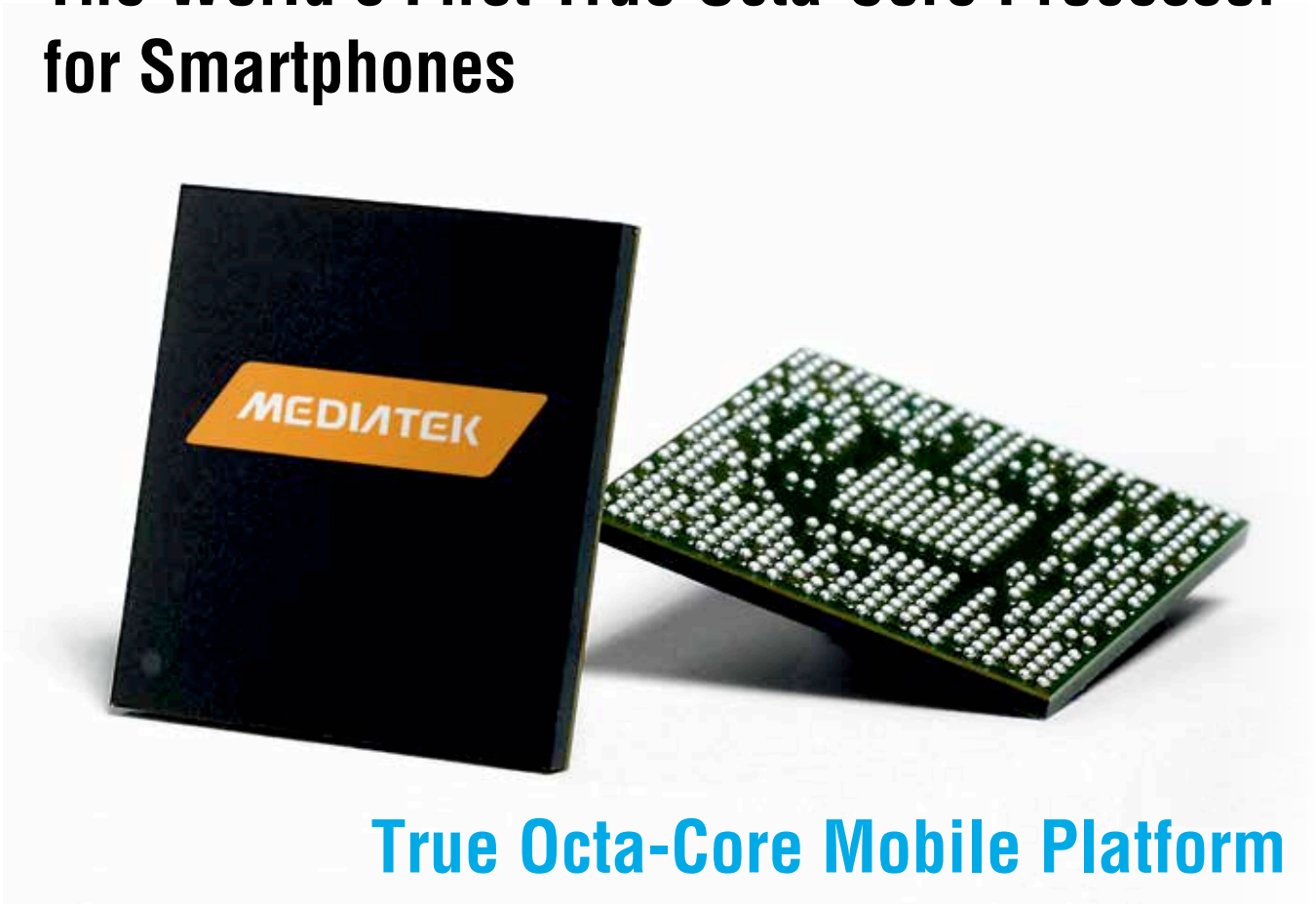
Elroy Desmond
readersletters@didgit.in

"... you just can't differentiate between a robot and the very best of humans."
–Isaac Asimov

Humanity has never taken no for an answer. Ever since the Wright brothers proved to the world that taking to the skies wasn't simply wishful thinking, we've been uncovering ways to circumvent the logistically abhorrent obstacles we measly human beings face on a daily basis. In fact, some things we take for granted today were thought to be absolute dreams by generations past – take the convenience of storing your entire music collection in your pocket, for example, or the luxury of having a face-to-face conversation with a loved one

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Wall climbing pads
A team at Stanford University has built a pair of Gecko-inspired wall climbing pads, where testing is still underway **http://dgit.in/WallClimb**

Blood clot injections
Researchers at MIT and Texas A&M University have created a biodegradable gelatin injection that would cut down on blood loss **http://dgit.in/HydrogelInj**

living on the other side of the planet. That being said, advancements in mainstream electronics will continue to grab all the important headlines: How good is the new iPhone? Is the latest version of Android worth the upgrade? Why are my new Xbox games so terrible and more bug-ridden than my latest build of Linux?

Amidst this mess of consumer gadgets and internet services, most of us pay little heed to the ground-breaking advances made in the field of robotics, some of which would undoubtedly leave you having to pick up your jaw off the floor. Although there are a myriad of examples to exhibit, here are some that in our opinion have stood out in terms of scale as well as sheer brilliance and innovation.

Mechanised mules

Fewer sights this year have been as technologically awe-inspiring and eerily nerve-jangling than the sight of Boston Dynamic's ground-breaking robotics project, BigDog. To the uninitiated, this intimidating robot looks better suited for the sets of a horror movie. However, the engine-powered hydraulic actuation system that controls its four legs make it clear that this 150-kilogram metallic marvel is a testament to how close we are to perfecting robots that can accurately replicate the bionic movements of animals.

BigDog is no small fry to operate, though. It's packed with close to 50 sensors, many of which are used to measure a massive array of parameters – ranging from attitude, acceleration, engine speed, and temperature to the motion and force of joint actuators and the internal engine's hydraulic pressure. Controls are conveyed through the on-board internal computer, which processes signals that vary the position and force of the joints as well as their velocity and altitude during locomotion.

BigDog is funded by the US-based Defence Advanced Research Projects Agency (DARPA) with an aim to serve as a pack mule that can accompany soldiers on rough terrains that conventional ATVs cannot traverse. The project has seen tremendous improvements over the course of its development. In fact, in 2013, Boston Dynamics released video footage of a modified BigDog that possessed an arm with the ability to pick up and throw large objects weighing up to 23 kilograms.

This project is just one of many attempts of the US army to replace grunts with robots. Some more examples are the well known unmanned drones and the lesser known sentry tech guns, such as the Phalanx CIWS – an automated weapons system for defence against anti-ship missiles. If there ever was an organisation that had a love affair with Robotics, it's the (specifically American) military.



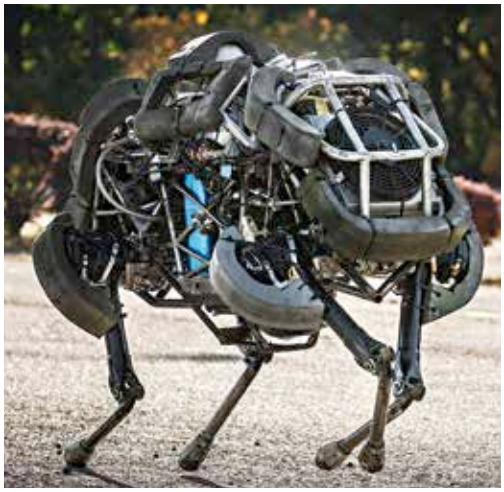
Poop scraper not included

Robo-raptors

East Asian countries such as South Korea and Japan have always been at the forefront of cutting-edge developments in the field of robotics. South Korea, in particular, has served up some extremely interesting bionic oddities – from humanoid robots that replace fans at stadiums by duplicating the actions and emotions of their remote human counterparts at home to deadly machine gun-toting and grenade-launching robot sentries such as the SGR-A1, which detects intruders using cameras and heat and motion sensors.

Similarly, researchers and engineers from the MSC Lab at KAIST – a public research university in South Korea – have engineered a robot that's best described as a fast-running biped robot capable of reaching speeds of up to 46 kilometres per hour on a treadmill with off-board power. Dubbed as the 'Raptor', it has a functional design heavily inspired by the velociraptor (insert Jurassic Park reference here), with two under-actuated legs and a tail, which is used for assisted pitch control that provides stability over high obstacles.

Many will highlight the similarities between the Raptor and the world's current faster robot, Boston Dynamic's very own 'Cheetah', which has managed to record an astounding 49 kilometres per hour. Despite their similar speeds, however, the two robots are strikingly different. The Cheetah is a hefty quadruped powered by hydraulic actuators, while the Raptor is a compact biped 3-kilogram automaton with legs made of a lightweight composite material.



Boston Dynamic's WildCat looking for the next dog it can send scampering

However, these robots have a long way to go in comparison to land-tested robots such as BigDog, considering they've only been tested on treadmills while supported by a mechanical rod for safety. Boston Dynamics hopes to test and unveil a new version of the Cheetah known as WildCat, which should be able to run independently outdoors by the start of 2015.

Animatronic arachnids

When we think of animatronic robots, we generally think in the scale of bots the size of domestic dogs; because who among us hasn't fantasized about owning our very own pet robot? Unsurprisingly, very few think of 'pets' along the scale of more manoeuvrable insect-sized mechanoids.

In fact, the two robots in this section may score the highest on a uniqueness scale as well as for pure creep factor.

The now increasingly popular 'T8' is the first name you'll hear when talking about mechanised arachnids. This wirelessly controlled octopod robot is made up of high-resolution 3D-printed parts and uses a total of 26 motors: three in each leg and two in the abdomen. The robot is powered by the Bigfoot™ Inverse Kinematics Engine, which performs the necessary calculations for controlling the real-time motions of the robot. Thus, giving the T8 some life-like organic movements, much like those of the garden-variety tarantula. Owing to its portability and novelty factor, the T8 is more of a collector's item among robot aficionados and can even be ordered online, provided you're willing to shell out a cool $675 (₹41,738).

While the T8 may be purely for novelty appeal (seeing as it doesn't serve any functional purpose other than scaring your friend's pants off), the limbless 'R2G2' robot is anything but non-functional. Developed by University of Maryland Mechanical Engineering Ph.D. student James Hopkins, this snake-like robot mimics the reptile's 'limbless' locomotion style of linear motion by expanding and contracting their bodies (unlike the usual S-bending motion we're accustomed to seeing them in), mainly with the aim of stealthily attacking unsuspecting prey. Tests have shown that R2G2 can crawl through pipes and over tricky surfaces such as grass and gravel. In addition, Hopkins' faculty advisor, Professor S.K. Gupta states that the robot can be used to carry equipment up tricky inclines and to click photographs at rare, hard-to-reach places.



A fun gift for the whole family

MacGyver robots

Anyone who has watched *MacGyver* will remember the whacky devices cooked-up by the resourceful super-agent, who once even fashioned a working rocket-powered harpoon gun out of some ridiculous,



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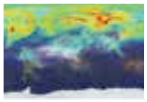
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almost junk-like objects that he found lying around. We always took extra comfort and felt a sense of security in the fact that to come up with innovative solutions, one needs to possess the sort of creativity that couldn't be coded on a computer. Even the thought of a robot solving a problem with a MacGyver-like approach was laughable.

Hopefully, it shouldn't alarm you that robots are now starting to do exactly this! In a video submission to the IEEE International Conference on Robotics and Automation 2004, Georgia Tech's 'Golem Krang Robot' was shown to use the very objects that were posed to it as obstacles to perform the specific task required of it, i.e. rescue a trapped person stuck behind the door blocked by the above mentioned obstacles. The robot used objects in the environment as tools to clear other objects that blocked access to the door, which it then opened to rescue the 'victim'.

Just a few years ago, this sort of situation would have only been believable in a Sci-Fi movie. However, in this scenario, the robot is programmed and designed on the basis of a novel concept called 'Environment Aware Planning' (or 'ETAP'), which lets it analyse available objects and resources in the environment and subsequently implement a plan of action that optimally uses these objects to complete the task. This type of technology can be used to design more self-aware robots that can be deployed in complex search-and-rescue missions. It can also be used to solve constructional or logistics-related problems, which would take longer if they were carried out by humans.



The real question is: Can it win at Jenga?

Wearable robotech

For a country like Japan, which prides itself on the score of technological advancements it has introduced world over, it comes as no surprise that the government will be increasing investments in healthcare robots to assist the ageing population (over one-quarter of Japan's population is aged 65 years and older). It will do this by extending financial subsidies to help firms develop inexpensive nursing care robots. The government aims to produce healthcare robots that will be ready for the market by 2016 at a selling cost of nearly $1,000 (₹61,835) a unit.

Fortunately, there's been considerable progress in the field of bionics and biomedical engineering. We now have extremely advanced and highly functional 'wearable robots' or 'exoskeletons', which are essentially mechanoelectrical suits worn by disabled individuals to assist them with basic biomechanical functions. Take, for example, the Robot Suit HAL – a futuristic suit used in the medical rehabilitation of patients who've suffered a stroke or spinal cord injury. The suit captures human nerve signals sent from the brain to the muscles and uses these signals to control the movement of the joints in the suit.

Alternatively, a DARPA-funded project exists in which engineers are designing a robotic exosuit to improve the endurance of soldiers, who have to routinely carry heavy backpacks over long distances. Known as the 'Mobility Enhancing Soft Exosuit', it's made using lightweight and flexible materials and aims to prevent and reduce musculoskeletal injuries suffered by military personnel. Similar to the HAL suit, a working prototype comprises a series of webbing straps that are positioned around the lower half of the body. This prototype contains a low-power microprocessor and network of supple strain sensors that act as the respective 'brain' and 'nervous system' of the Soft Exosuit.



Pictured here: Tony Starks's biggest fan

Automatonic swarm-bots

The whole concept of 'swarm robotics' is relatively new in terms of general knowledge of the masses. Video gamers, however, will identify with the concept of 'swarming', which is referenced in the popular *StarCraft* series of real-time strategy games. Much like in the game, the term 'swarm' in robotics refers to a collection of robots that move and behave in a predictive and collective pattern in order to accomplish tasks that couldn't have been achieved by a single robot.

It's one thing to imagine a single robot behaving autonomously. A huge swarm of similar robots behaving with a potentially dangerous group-hive mentality is a different beast altogether. The US Navy recently dabbled with the idea of using 'swarming' drone boats programmed to act autonomously and with minimal human guidance. In a recent example of a naval training exercise with these drones, a large ship (referred to in the exercise as the 'high-value unit' or 'HVU') was making its way



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Nanoparticle Sensors
Nanoparticle sensors have been developed by a team of MIT researchers that could monitor tumours or other diseases. **http://dgit.in/NanoMonitor**

down the US state of Virginia's James River while being escorted by 13 small guard boats. When the overhead helicopter crew detected a potential 'threat' in the form of a suspicious boat, the drone boats detected the threat via infrared sensors and quickly and efficiently manoeuvred to encircle themselves close enough to the threat so as to engage it and/or close off any potential escape or unrestricted access to the HVU.

The greatest advantage of such technology is that such an operation, which would normally require 40 people to successfully pull off, now requires just one operator. It goes without saying that the possible applications for swarm robotics are limited only by our imagination. Take, for example, the idea of nanobot swarms. What was once just a concept that could be simulated via software is now in the realm of reality. Researchers from Harvard University have conceptualised the 'Kilobot', a swarm of thousand nanobots that perform synchronised actions to rearrange themselves into various shapes. The icing on this robotics cake is the cost efficiency of such systems. Each robot in the Kilobot costs just $14 (₹865) and consists of two vibrating motors on four frail legs.



"On my way to my interview with Amazon!"

However, the most interesting and ground-breaking innovation in the field of swarm robotics would have to be the flying swarm drones developed by University of Pennsylvania professor Vijay Kumar and his team. Kumar's drones are lightweight, inexpensive to build and easy to program. He hopes that they can be used in emergency response work by surveying buildings after an earthquake or other disaster. Although the technology has tremendous room for improvement, it's a marvellous and pioneering piece of robotic innovation.

In fact, watching these flying swarm bots co-ordinate in series after series of complex flying manoeuvres – from choreographed swarm tactics to avoiding aerial obstacles – is a truly memorable experience, one that stirs up feelings of awe and pride in our technological advances.





Satellite plans of SpaceX
SpaceX is in the early stages of developing advanced micro-satellites operating in large formations, as confirmed by Elon Musk **http://dgit.in/MicroSats**



Binge-watch marathon
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The Impossible Engine explained

Has NASA really discovered a fuel-free thrust technology for space travel?

Samir Alam
readersletters@digit.in

It would seem that NASA broke physics this year. In a paper released on 28 July 2014, titled 'Anomalous Thrust Production from an RF Test Device Measured on a Low-Thrust Torsion Pendulum', scientists at NASA quietly dropped a bomb on the physics world. It followed up the release of the research paper with a presentation at the 50th Joint Propulsion Conference two days later, which further excited the scientific community. And in some cases, even led to the drawing of battle lines concerning the implications of NASA's research for humanity. So what was this paper all about? Well, it's quite simple really – the potential for fuel-free space travel. Ain't that a kick in the head?

Anomalous sounds dodgy

Space travel has always been a tricky venture. Ever since the first probes and rockets were sent out by the Soviet Union, we've witnessed the unchanging nature of the basic technology. Escaping gravity costs us, a lot. And most of that cost is rooted in the propulsion required to break free of the Earth's pull and set us free in space. The only means to achieve such power is through the burning of fuel, which poses the core problem. Even though rocket fuel technology has developed over the last 60 years, it hasn't changed all that much. Even with the reusable Space Shuttle, the fuel-to-vessel ratio is 30:1, which means that in order to thrust 1 kilogram of mass out of Earth's gravity, we require 20 kilograms of fuel, which is already weighing down the craft at the time of lift off. The expense is just too high for space travel to be an affordable pursuit.

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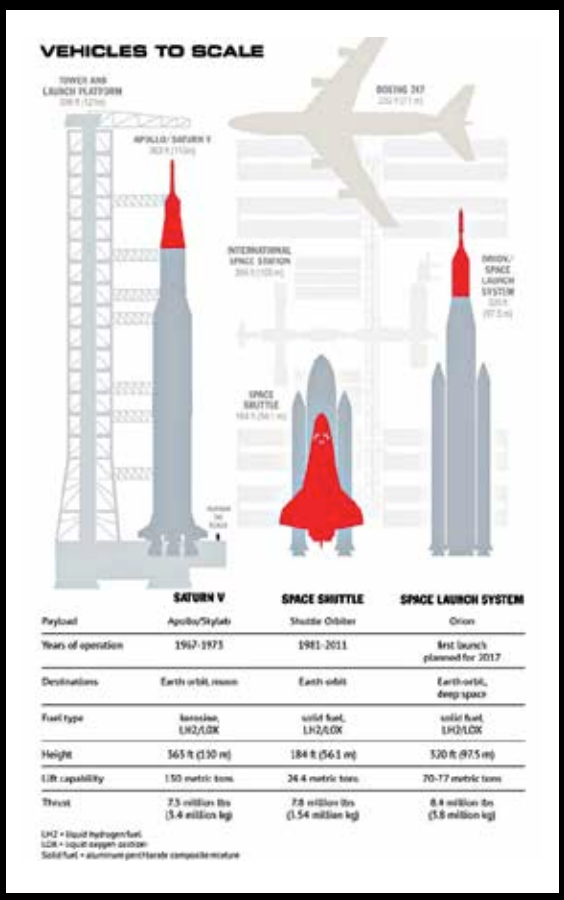
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All current spacecrafts consume up to 90 percent of their launch weight as fuel, making space travel very expensive

In light of this massive restriction, the need to invent a more cost-efficient manner to power our rocket thrusters is critical. This is why NASA's 'Anomalous Thrust Production' paper is rocking the boat of conventional knowledge. As per the experiment conducted by scientists at NASA's advanced propulsion think tank (known as 'Eagleworks Laboratory'), a mechanism has been discovered for generating thrust without the use of any fuel propellent. The technique in question tested the existing idea of a Cannae drive, invented by Guido P. Fetta in a controlled laboratory setting. The experiment involved placing the Cannae drive devices on a super-sensitive torsion pendulum to measure the conversion of electrical power into thrust which moved the pendulum.

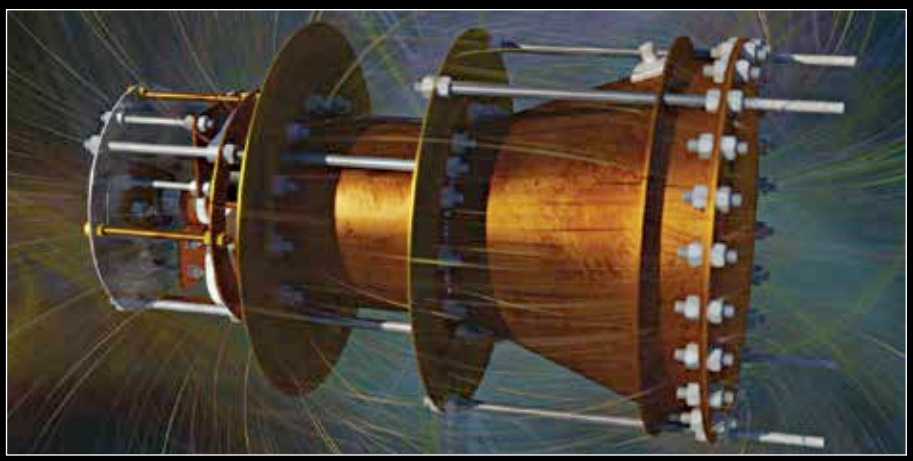
Cannae devices are metallic, fully enclosed, conically-tapered cavity, in which one side is narrowly tapered forming a chamber. Inside is a magnetron, which produces microwaves that cause directional thrust towards the narrower end of the tapering device. The entire process requires no reaction fuel and is powered by electric current. In the case of the NASA experiment, scientists were able to use 30 watts of power to generate between 30-50 micronewtons of thrust – they termed this thrust 'anomalous'. In all practicality, the thrust generated was negligible but points towards a seemingly valid proof-of-concept for the use of such devices for propulsion. The reason this experiment is creating controversy is simply because the 'anomalous thrust' is anomalous and shatters the very foundations of basic physics.

Breaking laws ain't easy

The basic rules of physics and energy are taught in middle-school, but here's a refresher. We all recall that in the natural world there's always conservation of momentum. In physics, momentum is the product of a body's mass and velocity. For centuries, it has demonstrated the phenomena of conversion rather than creation or destruction. The textbook definition of 'conservation of momentum (and energy)' states that neither can be created nor destroyed, simply converted from one form to another. The results of the NASA experiment fly in the face of this law since the thrust generated is produced as if from thin air. Conventional propulsion takes place when hot gases released on burning fuel are allowed to escape through nozzles against the direction of travel to generate thrust. This is the result of momentum transfer between the escaping gas and the moving craft. However, in the case of NASA's experiment there's no such transference taking place. The equation appears out of balance.

The reactionless propulsive momentum observed in NASA's experiment is vaguely identified as being due to transfer via the "quantum vacuum virtual plasma", which some experts don't even believe to exist. And while NASA remains silent about the detailed physics behind the effects observed, it has said enough to set off both, supporters and admonishers in equal measure. The experiment implies that there's some sort of loophole in conventional physics that's being attributed to "quantum vacuum virtual plasma" which is code for "we don't know what the heck is going on".

Although science thoroughly approves the breaking of old laws with the discovery of new ones, in the case of quantum mechanics the lines of old and new are blurred. The limited observational data on quantum mechanics is significantly limited and even more sparingly understood by scientists. Therefore, it's seen as a lazy answer for phenomena which aren't directly understood under conventional



The NASA-tested Cannae drive is the third such "successful" experiment in reactionless drive technology

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Audi will soon be launching its Hydrogen version cars with the A7, that could go 300 miles on a tank **http://dgit.in/AudiHCar**

laws. Some critics have even questioned the parameters of the experiment, claiming that the observed results may have simply been an error in experiment design or some overlooked parameter. After all NASA has done it before, when it claimed to have successfully tested an anti-gravity device which just turned out to be interference affecting the measurement instruments.

In light of NASA's own controversial history, when it comes to such experiments we can assume that the government agency would have to be very certain about the results before releasing them to the public. On the other hand, it would've been a lot easier to dismiss NASA's claims as premature and not clearly understood if it was the first organisation to attempt such a device. Interestingly, it's the third group to have made such claims, and being the most reputed has garnered the most attention. The first two experimental claims came from respected British scientist Roger J. Shawyer and Juan Yang, Professor of Propulsion Theory and Engineering of Aeronautics and Astronautics in China.

The many who came before

The earliest and most trusted source of the idea for a reactionless propulsion engine came from Roger J. Shawyer in 2006. It was the idea for the EmDrive, also known as the RF (radio frequency) resonant cavity thruster. The design of the original EmDrive was similar to the one tested by NASA in July 2014, and it made use of the tapered resonant cavity powered by a magnetron generating microwaves. He claimed that in experiments, there was a successful conversion of 300 watts of power to 85 millinewtons of thrust.

The news made headlines with many hailing it as a breakthrough in Propulsion Engineering. However, since it was a part of a private venture, it couldn't be academically investigated or verified by outside agencies. Shawyer has continued his claims that the device doesn't violate the laws of conservation of momentum and energy. Instead, he attributes the thrust to be the result of imbalance in 'radiation pressure' between the two faces of the device. Till date, there has been no verified explanation or understanding of this rationale by scientists.

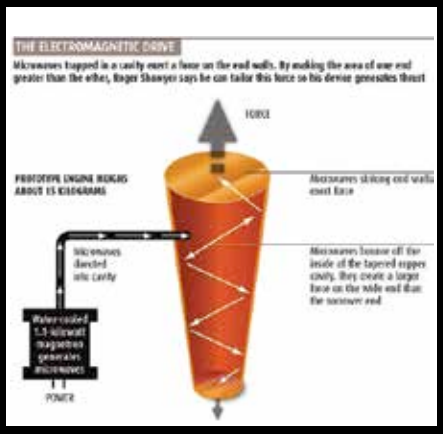
Another similar experiment was conducted by Juan Yang at the Northwestern Polytechnical University in Xi'an, China in 2010. Yang used the same design as the EmDrive and claimed that her experiment was a massive success. Her claims stated that in terms of quantum theory, it was possible to achieve 456 millinewtons of thrust from 1 kilowatt of power and that she had achieved 720 millinewtons from 2.5 kilowatts of power in experiments. However, due to the relatively closed nature of Chinese academia there has been no successful validation beyond the publicly released research papers, which in themselves raise more questions than they answer.

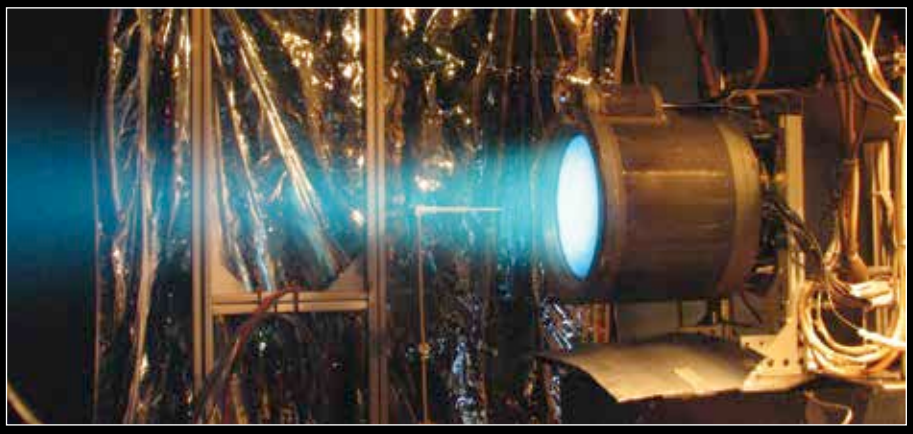
So far, all the publicly available experiments attribute their results as a variation of quantum theory of relativistic propulsion. But, we know that there's far too wide a knowledge gap in the field of quantum mechanics for there to be any meaningful consensus among experts. We should remember that science relies on replicable, observable, explainable and experimental results, and not just a majority consensus amongst scientists. In light of these realities, we should exercise caution in accepting the experiments results from NASA, Shawyer and Yang and not view them as set in stone. But, we really do wish they prove to be true.

The Tyranny of the Rocket Equation

In its research paper, NASA declared that the expected ratio of thrust-to-power for its Cannae drive powered engines in flight applications would be about 0.4 newtons per kilowatt of electric power. To put this in context, the state-of-the-art thrusters used in orbit today require only .06 newtons per kilowatt – which is seven times lesser than what NASA claims possible. This means that if the technology for such reactionless engines can be harnessed, then we can significantly cut the costs and difficulties of space travel.

The dynamics of space travel are built on simple Newtonian physics. The third law of which states that in a closed system, every action has an equal and opposite reaction. We study these equations in school and can see how they apply to space travel. In order to escape the Earth's gravity from the surface, we require a velocity of 11.2 kilometers per second. To find out the amount of fuel required, there's a simple equation known as the 'Rocket Equation'. It tells us that an object can apply acceleration to itself





Although the experiment shows thrust, there's no clear explanation as to how the system works

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5G at World Cup
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Moto KeyLink
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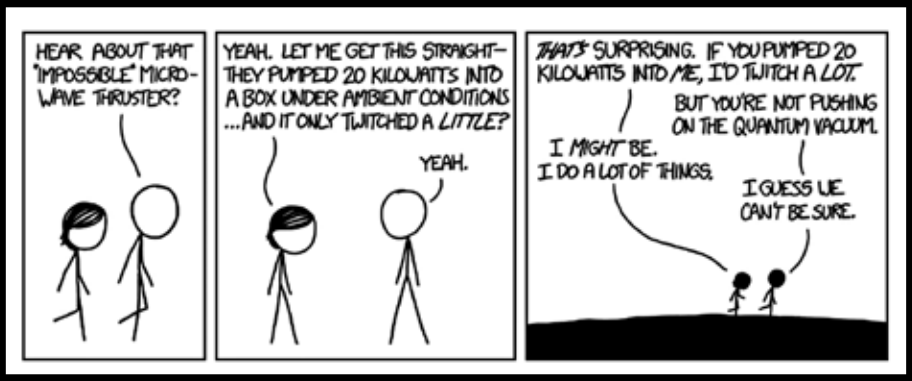


Image: http://xkcd.com/1404/

by expelling a part of its mass with high speed. This expelled part is the fuel, which is combusted to produce thrust. However, the irony of the equation is that the greater the speed required, the greater the fuel mass that needs to burn, further increasing the total mass of the craft – this problem is affectionately called 'The Tyranny of the Rocket Equation'.

The Rocket Equation isn't flexible, and depending on the destination, usually results in 83-96 percent of the craft mass being composed of fuel. That's the cost of space travel. And even with fuels with the highest energy content in use today, such as hydrogen-oxygen mixes, we still spend a considerable amount (83 percent) of craft mass as fuel in getting enough thrust to escape gravity. Keeping this reality in mind, the potential benefits of a fuel-free propulsion system are the stuff that dreams are made of. It would allow us immeasurable flexibility in space flight at very little cost. Such a system would be akin to what we see in Science Fiction, where space crafts silently and smoothly take off and land from planets, and are able to freely manoeuvre along the emptiness of space without having to factor in precise trajectories to conserve fuel.

First Mars, then the universe!

If scientists are able to reconcile and explain the "anomalous thrust" generated from EmDrive devices, Cannae drives and any other seemingly quantum-based reactionless propulsion, we may have to rewrite some physics textbooks. But, it would also mean that we've finally crossed the immense hurdle posed in our exploration of space and everything that comes along with it. By solving the energy problem in space travel, we can envision a future where potential colonisation and habitation efforts can be affordably designed.

Reactionless drives don't necessarily mean free fuel, since electricity will always be the driving force – at least under current designs. Their greatest immediate utility won't even be to get a spaceship off the surface of Earth, but to make interstellar space travel faster and cheaper. Using the energy from these new drives, NASA conservatively estimates that we can feasibly conduct a manned mission to Mars from Earth orbit at significantly cheaper and faster rates. With the help of the new drives, a 90-tonne spacecraft could use a 2-megawatt nuclear-powered reactor to generate 800 newtons of thrust.

Using current technology, there would be thousands of pounds of fuel required for a trip of this scale and would take six months each to travel back and forth. This would be in addition to the hundreds of tonnes of fuel required to get us into orbit. The journey would further be dependent on factors such as planetary alignment for fuel-efficient travel trajectories. This would mean that a human crew would need to stay near or around Mars for nearly 18 months in wait for their return launch window, which means additional supplies and mass to the spacecraft. With the new reactionless drives, this would be reduced to a couple of hundred tonnes of combined mass with a total of eight months travel which includes a two-month stay on Mars. With improved technology over time, we can easily imagine this ideal future.

Sceptic but hopeful

Good science is sceptical by nature. It questions and critiques every aspect of claims made by eager researchers. So, even as the results of NASA's experiments face closer scrutiny and criticisms, we know that in the long run truth will be discovered. And even as we hope that scientists will discover new methods and technologies to make the EmDrive and Cannae drives possible, we know that even in failure it isn't the end of innovation. Other means of achieving the same goal such the theoretical 'Alcubierre' drive and solar sails are also being explored. Physics may have its limits that stop reactionless drives from becoming a reality, but there's no limit to the human capacity for imagination and innovation.



If proven, reactionless drives could support a generation of space travel for everyone

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Graphics driver woes, minimum system requirements #Fail, SSD buying confusion. Ohh! the horror...

Can a SSD run on IDE? Can my ageing desktop play the current crop of games? How do I update my graphics card drivers? We answer them all.

Q SSD on IDE

I have a Gigabyte G41MT-S2P (Socket 775) motherboard. Will an SSD run properly on my system? I read somewhere that it needs AHCI, so I looked for it and didn't find anything. Also ICH7 doesn't have that. My board has ICH7/R. Some say that SSDs will run fine on IDE. I can't find a proper answer for it. Help me please. Thank You.

- Nikhil Chopra

A AHCI is necessary for certain features to work but SSDs do work if the controller is set to IDE mode. As for ICH7 having AHCI or not, the Wikipedia page says it does and here's the exact line which can be verified by going through the ICH7 datasheet as well - "Only the ICH7DH, ICH7R, ICH7-M, ICH7-M DH chip have AHCI support". But it would be better to check your BIOS to see if you can set AHCI or not. There will be a drop in performance if you use IDE and people have run benchmarks of SSDs on IDE as well as AHCI. Here is a good benchmark: *http://dgit.in/IDEvsAHCI*. So you can run an SSD with the controller set to IDE. However, for your motherboard, we have found one mention where someone has used an SSD but not only did the person get lower speeds, but the entire capacity of the drive could not be utilised. We'd suggest getting in touch with Gigabyte for further clarification.

Q Can I update drivers?

Hey Team Digit, I have an Alienware X51 Series desktop with these specifications:

- Processor - Intel Core i5-4460;
- GPU - Nvidia GTX 745 (OEM);
- RAM - 8GB (1666 something MHz, I don't know)

My question is that, can I update my graphics driver because GTX 745 (OEM) seems rare to me and I've never heard of it. Also please mention whether I can upgrade my graphics hardware and RAM too. Thanks.

- Debasmith Mandal

A Though the NVIDIA GTX 745 OEM card is only available through custom built machines, it is still listed on the NVIDIA drivers website. So yeah, you can update your drivers without worry. And since NVIDIA GeForce Experience checks for updates automatically, you needn't worry about checking for compatibility since the software does it for you.

The GTX 745 is a discrete card so you can easily pop it out and replace it with any other SKU while making sure that your PSU can power it. You can also upgrade your RAM which is probably running at 1600 MHz currently unless there is some overclocking that was done by the manufacturer. Running a system information tool like Speccy should help, but you can use any 1600 MHz module running on the same voltage since the Alienware website states that to be the default configuration.



Select your GPU model from the dropdown list.

Q Can I run it?

Hi Team Digit, I have a problem at hand. My system configuration is:

Intel Core i3 530 2.93GHz;
4 GB DDR3 RAM;
500 GB Seagate Hard Disk;
Intel DH55TC Motherboard;



The Sapphire Radeon R7 250 1GB is a good card to go for.

Is my system configuration enough to play games like COD:Advanced Warfare, Far Cry 3, Crisis 3? If not, what component of my system should I upgrade? My budget is within Rs.6000. Thanks in advance.

-Aravindan Sridhar

A Dear reader, looking at your dilemma, we suggest that since you have money to purchase games like Call of Duty: Advanced Warfare, FarCry 3 and Crysis 3 each of which retail for $60, you can certainly save some money and invest more of it into upgrading your PC as a whole. For playing current games at good frame rates, you need a decent GPU. In your current budget, you can only go for the Sapphire AMD Radeon R7 250 1GB which is okay for that budget. Don't expect to get much of a visual experience using it though.



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Enhancing your Gaming Experience on Linux

Yes gaming on Linux is a reality. Make it a reality that you enjoy with these tweaks.

Kshitij Sobti
readersletters@digit.in

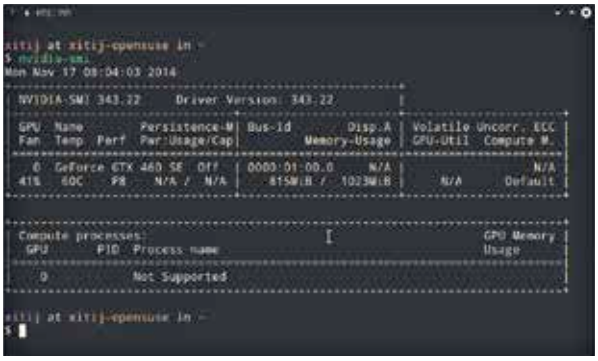
2014 has been a great year for Gaming on Linux, and 2015 can only improve on it. This year saw the release of AAA games such as Civilization V, XCOM: Enemy Unknown, Tropico 5, Borderlands 2, and Borderlands: The Pre-Sequel, and also high profile indie releases such a Wasteland 2, Planetary Annhilation, Dreamfall Chapters, and even Broken Age. There are of course hundreds of other games smaller titles that were either ported to, or released for Linux this year. Linux Gaming is definitely a 'thing' now, a enough of a thing to make a popular web store like Gog.com change its mind and start supporting the platform.

Even before the very idea of this Linux gaming revolution was but a blip in anyone's radar, there were credable arguments for Linux as a gaming platform. Linux has been for a long time, the gaming platform that gamers deserved, but didn't really need. You are justified, of course, in asking why we think so.

It all comes down in the end, to what makes a platform good for gaming. Gaming is a very specialized kind of computer activity. It taxes the computer in ways that other software don't, to the extent that people often have specialised hardware (graphics cards) that are of greatest benefit only while gaming.

When playing a game, you would hope to have as little interference between the Game itself, and the bare metal of your hardware. As few as possible other software running. It's why a console like the PlayStation 3 could manage for so long with a now laughable 512MB RAM.

Linux happens to have a huge advantage in reducing the gap between the game and the underlying hardware. It is endlessly configurable to the point that it can run efficiently on both tiny watches, and supercomputers that take up a room or few.



You can control the formatting and output of this command to a large extent.

Linux can go the distance, and it only needs someone to take charge.

'Hardcore' gamers often tweak their system to an extreme, disabling every unnecessary service, or even downloading sketchy versions of unbloated Windows (often going by names such as MicroXP) or dubious legality. They invest in expensive and elaborate cooling systems, just to push FPS from 80 to 82.

Linux of course encourages you can go as deep as you want and remove whatever you don't need. Go ahead change the maximum CPUs count in the kernel config from 512 to 4 and save KILOBYTES of RAM! Or, do something more useful maybe? The point is you have the option, if you want to you can recoming software for your specific configuration to boost performance, and if even you don't do all this yourself, someone will and they will release a gaming-specific distro just for you. Like what Valve is doing with SteamOS.

With that said, let's get to the crux of the matter. You've listened to our advice and switched to Linux (kudos!) or you were already using Linux (and we take retroactive credit for that) and now you want to do some bloat-busting, and generally spruce up your Linux gaming experience.

Bustin' Bloat

Turn off unnecessary services

Linux is not immune to the curse of unnecessary services. The ones we list can be turned off to improve performance, at least while gaming. Some of these are 'core' services that provide basic features, others might be specific to distro, desktop environment, or other software installed.

Here are a few services that you can do without while gaming:

- vmware / virtualbox / libvirtUnless you have one of those supercomputer-that-fills-a-room-or-few chances are you won't be running a virtual machine while playing games.
- avahiMostly used for discovery of network services like shared media libraries and such.

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Automobiles of the future
As part of a future-gazing concept, a design consultancy IDEO has many interesting concepts on automobility **http://dgit.in/IDEODesign**



DSLR-like phone camera
Sony's new Exmor sensors could bring in DSLR-like autofocus in smartphone cameras **http://dgit.in/SonyExmor**

- bluetoothUsually not needed on a desktop, doubly not needed while gaming.
- cupsLinux's printing service.
- apache / nginx / mysql / postgresqlWeb and database servers that can sometimes be installed without your explicit knowledge when required by other software.
- sambaThis service allows networking with Windows users.

How do I stop the above services you ask? The answer depends on which Linux distro you use. For users of recent Ubuntu versions, you will need to run `sudo service <service_name> stop`

In most other recent distros the command you need to run is `sudo systemctl stop <service_name>`

If you use KDE software, also run `akonadictl stop` to turn off some services that run in the background syncing email, calenders etc. And `balooctl stop` to stop file indexing.

Turn off Desktop Composition

Desktop composition is the somewhat recent trend of using the graphics card to render the desktop environment, such as windows, window controls etc. It's generally a good thing since it utilises the GPU to do things it best designed for while freeing up the CPU. When playing a game though you GPU has better things to do.

On Gnome 3 and Unity, you cannot turn it off directly, but in recent versions the compositor recognises when a game is run and gives it all the resources (not a perfect solution, but it's the one you have). On KDE you can have it automatically suspended when there is a fullscreen window, or use the Alt-Shift-F12 shortcut. You can also type the following on the command line, or make it part of the script launching a game:

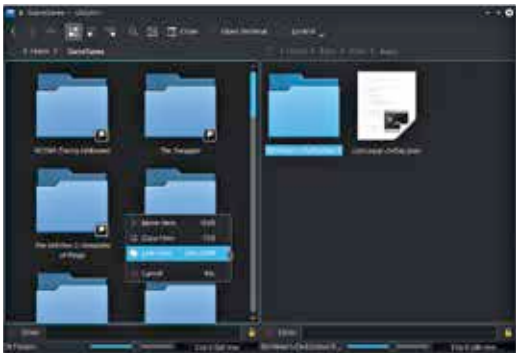
```
qdbus org.kde.kwin /KWin toggleCompositing
```

Close resource intensive applications

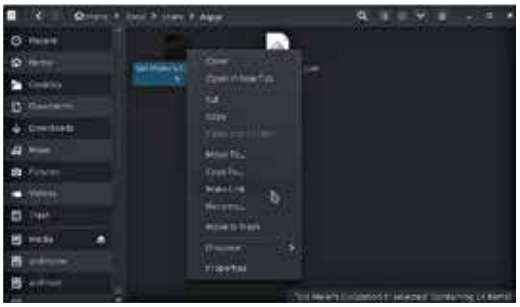
Perhaps this seems too obvious an advise to bear repeating. But we feel it important to note which kinds of application can be resource intensive.

For instance all browsers now endeavour to use the GPU to improve browsing performance, which makes them all the worse to have running in the background when you are playing a game. If the app uses the GPU at all (there will only be more such apps going on) then you shold probably shut it down before you launch a game, and see if it reduces GPU usage.

Wait, but how does one know the GPU usage? Well, you can...



When you drag-drop a file in dolphin, you get the option to create a link.



Nautilus allows you to create a link in the same folder using the context menu.

Use performance monitoring tools for your GPU

Since such tools are tighly linked with the GPU driver, the tool you use will depend greatly on the graphics hardware on your system.

For instance if you have an NVIDIA card, you can use the handy nvidia-smi command line tool that comes with the official driver. You can run `nvidia-smi -l` to have it constantly update every few seconds. A graphical alternative would be `nvidia-settings`.

For AMD users, the raedontop command should work with both open- and closed-source drivers. For Intel users there is `intel_gpu_top`. These tools might not be installed by default though.

Switch to a lighter desktop environment

This is a contentions recommendation so we feel that we need to clarify: this is not recommending a permanent switch. Keep using the desktop of your choice, just switch to a lighter one before a gaming session. After all, the fancy features of your favourite desktop environment are wasted when you are playing a game in full screen mode.

Openbox is a good choice, given that it is less an an MB is size. If you want to automatically start Steam when you launch OpenBox, you can add a .desktop file pointing to it in `~/.config/openbox/autostart`

You can even configure this to launch Steam directly in big picture mode by adding `-bigpicture` switch in the .desktop file.

If you have a Debian-based system like Ubuntu, you can install the SteamOS packages giving you almost all SteamOS features without needing to install it.

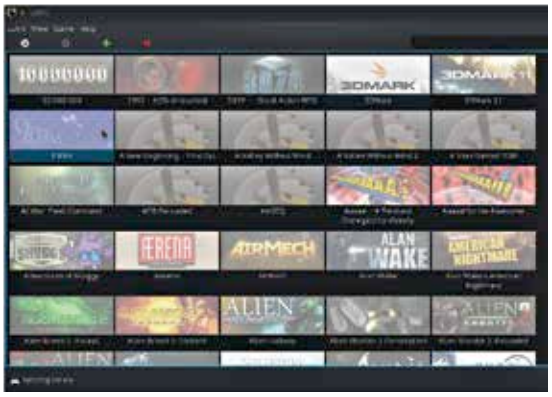
This could be a pain point since it will require you to log out of a running session, but know there are are alternatives, just Google 'How to run multiple X sessions'. It solves many problems but is too involved to go into here.

Manage game saves better with symlinks

While both Windows and Linux have it this point of time an established standard for where games and other applications should store their data, most developers simply ignore the advice. The result is that save files are scattered all over the place.

The good news is, you can link all these into one single place, say a folder called 'Game Saves' in your home directory. Creating a link (in this case a symlink / symbolic link) on Linux is possible through both the GUI and command line. If you use Dolphin you can simply drag a folder / file from its original location to the destination, and you will see an option to move, copy or link the file. Choose to link it. In Nautilus (Gnome / Unity) you can right click any file / folder and choose 'Make Link' this will

create a link to the folder / file right next to it. You can drag this to the folder of your choice. If you prefer the command line you should already know how to create a symbolic link with your eyes closed, and using just your left pinky.



Lutris needs some work to configure its many platforms.

Now that all your saves are in one place it is also possible to...

Sync your save games to your cloud storage

If you use a file sync tool like Dropbox you can even have all your save games automatically synchronised to your online storage by placing these links in your synced folder.

Some sync tools have a problem syncing when links are involved (for complicated reasons we wont go into here) so if your sync tool, or backup tool does not support symbolic links, there is still a way out. Instead of creating a link to all save folders in one location, move the save folder / file there, and then create a link back in the original folder.

Use a Windows install of a game to seed the Linux download

Games are, for the most part media such as videos, audio, images, and 3D geometry none of this content is actually platform-specific. There should be no reason why you would have to re-download all this data again separately for Linux and Windows. Unfortunately, no game store we know actually provides you game data files separate from the platform-specific libraries and executables.

If you use Steam though, there is a solution that often works. If you have a game installed on Windows via Steam, and it is also available for Linux, you can copy over your Windows install of a game in Steam to Linux, and then start the install on Steam for Linux. Steam will detect verify the files in the install directory and often it will just redownload a few dozen MB of data that corresponds to executables libraries and such.

Note that this will work even if you copy from someone else. If you have a friend who has a Windows (or Linux) install of Half Life 2, you can copy that over to your Linux (or Windows) install and have it ready to run in a jiffy.

On Windows, Steam games can be found in the SteamApps/common directory inside your Steam folder (wherever you installed it). On Linux it can be found at `~/.local/share/Steam/SteamApps/common`

Utilities, tools and Resources

Lutris: Lutris is essentially a meta-platform that can manage games installed using numerous other platforms. It can be used to manage native Linux games, Steam for Linux games, Wine games, games installed on Wine through Steam, games running on an emulator for NES / SNES / N64, games installed for ScummVM, Dosbox, Frotz, browser-based games, if you can think of it, it can probably manage it. It can also sync your game setting online, and can sync games with your Steam library.

QJoypad: This nifty tool lets you configure what the buttons in your game controller do. Control the mouse with the analogue sticks, map mouse click to buttons, the directional pad to arrow keys, or whatever suits your fancy. Its a nifty way to play games that don't support a controller using a controller, or to generally use your control as a remote control.

GLXOSD: This is the closest thing you will get to Fraps on Linux. You might have to compile this yourself though, unless you use Ubuntu.

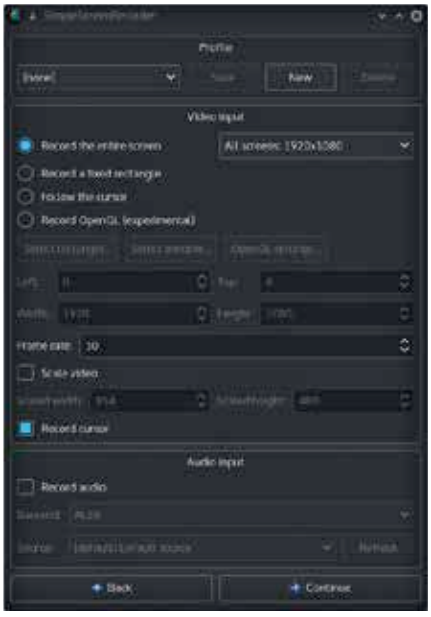
Bumblebee: If you have one of those laptops that switches between an internal Intel GPU and an NVIDIA GPU this tool is essential to manage that.

Unigine Heaven / Valley: These are some of the best graphical benchmark tools available for Linux currently (outside of benchmark modes in games.)

PCGamingWiki: This is an absolutely brilliant resource for PC gamers. It offers everything from information about which stores offer a game, how to troubleshoot a game to save game locations. Just Google the name of any game followed by PCGW and chances are the first result will be to this wiki.

PlayOnLinux: It is an exceptional software for for managing different Windows software installed on Linux via Wine, and even different versions of Wine. It includes profiles for many Windows games, so it can download and install the components that a game needs to run and create a shortcut to directly launch the game. It can even automatically download a game from Gog.com if you provide your credentials. While PlayOnLinux focusses on Games it can also be used to install software such as Microsoft Office or Photoshop.

Codeweavers Crossover: It is essentially a commercial GUI for Wine, but its creators actually contribute to the development of Wine, so if you can afford it do purchase it.



If you quickly want to record a game and throw that up online, this one is a good bet.

CastAwesome / SimpleScreenRecorder / Open Broadcaster Software: These tools let you record gameplay and (with some effort) even broadcast it via Twitch.

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OS X YOSEMITE

Make an OS X Yosemite installation disk

Since the Mac App Store was introduced, all the OS releases and updates have been directed through it. This is why – unlike Windows – you don't get a permanent physical copy of the OS release. However, you can create a bootable installation of Yosemite or any other OS X release on a USB drive. This will be helpful in a crisis or while installing the OS on a different Mac without downloading the huge 5GB package again.

You need a USB flash drive (a pen drive) with 8GB minimum storage. Download OS X Yosemite from Mac App Store and make sure you complete this process before proceeding with the installation as the system deletes the downloaded installation files after you've installed the new update.

Firstly, format the drive with 'Mac OS Extended (Journaled)' file system and name it 'Untitled'. Open the terminal and type the following:

```
sudo /Applications/Install\ OS\ X\ Yosemite.app/Contents/Resources/createinstallmedia --volume /Volumes/Untitled --applicationpath /Applications/Install\ OS\ X\ Yosemite.app --nointeraction
```

Then press [Return]. The process will continue after you type in the administrator password. It will take around 20-30 minutes for completion.

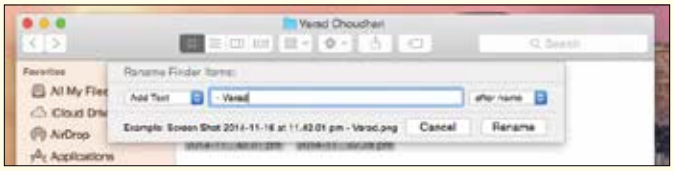
Selectively mute message threads

Like with iOS, you can selectively mute message threads on your Mac. This feature comes in handy if you're getting annoying messages from someone you don't want to hear from. To selectively mute message threads, open Messages app. Select the thread you want to mute -> Details -> Check 'Do not Disturb'.

Rename multiple files at once

Mavericks offered a batch-renaming feature, however, Yosemite takes it to a whole new level. Select the batch of files you want to rename -> Right-click -> Select 'Rename (x) items'. You can rename it in three ways: Replace Text, Add Text and Format.

Replace Text works just like traditional Find and Replace, where you can find the text present in the file name and replace it with another name. Add Text appends the current file name(s) with the one you specify. Format lets you completely change the name by choosing a specific format of file name(s).



Add text to append at the start or the end of the file

Try the new Dark Mode

With Yosemite, you can change the color of the menu bar and dock to a darker shade with a black tint. To do it, go to System Preferences -> General -> Check 'Use dark menu bar and dock' located under Appearance.

Share screen in Messages app

You can share your screen with a friend or a client while chatting using iMessage. Some prerequisites for this to work:

– Both users must be running Yosemite,

– Both users must be signed into iMessages

– A text conversation must have been started, otherwise the needed button doesn't appear.

To share your screen, initiate a text conversion -> Click on 'Details' -> Tap the double-screen icon -> Choose whether you want to share your screen or see theirs.

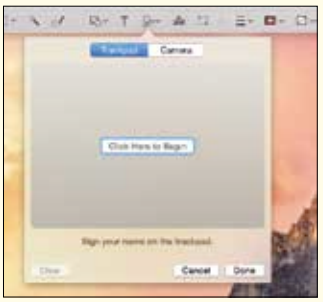
Record your iOS device screen using QuickTime

Yosemite allows you to record your iOS device screen using QuickTime. This feature is aimed at developers who want to make video demos of their app. To use this feature, your iOS device needs to be updated to iOS 8. Also, this recording feature doesn't work with old devices that have a 30-pin dock connector. This is where it pays off to own an iOS device with a Lightning Connector.

To record the screen, connect your device to your Mac using the Lightning cable and unlock your device. Launch the QuickTime Player on your Mac -> Go to File Menu -> Select 'New Movie Recording' -> Click on the small arrow next to the red recording button -> Select your iPhone -> Hit the recording button to start recording.

Create signatures using Trackpad

With Trackpad you can now input your signatures as well, and it works flawlessly. To do it,



Select Trackpad, hit the begin button and sign

OS X Yosemite.....54
Enhance browsing on Firefox.....55
Mastering Outlook.....57
Evernote.....61

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.



Just type any currency you want to convert and search will convert it within a fraction of second

load any document in Preview or using the Markup on Mail app -> Click on signature button -> Select Trackpad -> Create your signature.

Use Spotlight search as currency converter

The scope of Spotlight search is not local anymore. It can be used to perform search over the Internet as well. With this happening, you can perform many actions right from your desktop. One such task is currency conversion.

Just go to the Spotlight search and type "1 USD to INR" and it will come up with the result. Handy, isn't it?

Close Safari tabs on other iOS devices

The 'Continuity' feature introduced in Yosemite is very useful if you don't stray outside Apple's ecosystem. With this feature, you can do the same task from multiple Apple devices without interruption. To make the most of this feature, you can use it to close Safari tabs – that you maybe don't want family members to see – currently running on another iOS device.

To use Continuity, you need to be logged in to the same iCloud account on both the devices. If this is your cup of tea, then head over to Safari and go to the tabs view. There you'll see all the tabs that are currently running on Mac as well as your iOS device. Just close whichever you don't want.

Use hot keys to move the dock

The dock (usually residing at the bottom of the desktop) can be moved to the left or right by using hot keys. To do it, press [Shift] while clicking the divider bar on the dock to move it to either side of your screen.

Selectively delete Safari history

Safari lets you delete history selectively in Yosemite. Earlier, it was a boolean affair i.e. all-or-nothing. Now you can choose whether to delete history from the past hour, the day before, 48-hours before, etc.

Be untraceable with private windows

Safari in Yosemite has added 'DuckDuckGo' as another search option along with Google, Bing and Yahoo. DuckDuckGo is a search engine that doesn't track you, thus, helping maintain your privacy.

To use it as your default search engine (in place of Google), click on the magnifying glass to the left of the address bar and select 'DuckDuckGo' from the list.

Place and answer iPhone calls from Mac

Another newly introduced feature in Yosemite, 'Handsoff' lets you place and answer iPhone calls from your Mac. With this feature, you'll never miss any calls if you're working on your Mac and your phone is away from you.

To place calls, you need your iPhone and Mac to be logged in to the same iCloud account. In addition to this, both should be connected to the same Wi-Fi network. Now that being done, open FaceTime app -> Log in to your account -> navigate to FaceTime Preferences -> Check 'iPhone Cellular Calls'.

Send and receive SMS from Mac

The Handsoff feature extends to send and receive SMS as well. Make sure you satisfy the prerequisites, and then from your iPhone go to Settings > Messages > Text Message Forwarding > Enable it for your Mac. Doing this will show a verification code on your Mac. Enter the displayed code and tap 'Allow'. That's it! Now, you can send and receive text messages from your Mac.

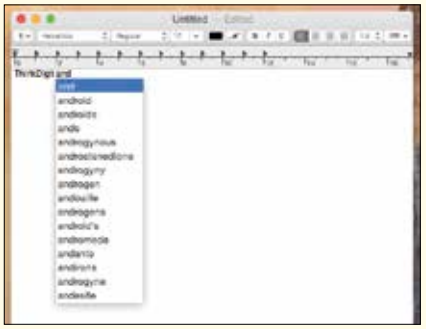


Click the magnifying glass, select DuckDuckGo and start typing in the address bar

Use iCloud Drive as a Dropbox alternative

iCloud Drive is Apple's answer to Dropbox, Box.in, OneDrive and other cloud storage services. iCloud was initially aimed at syncing iOS and Mac application data, however, Apple extended its usability to store other user files as well.

Yosemite comes integrated with iCloud Drive. You can locate it in the Finder menu. Just sign in to your iCloud account, and drag and drop files into your iCloud Drive. They'll automatically be uploaded.



Hitting ESC will suggest the next word. This can sometimes be redundant

Use Quick Type anywhere

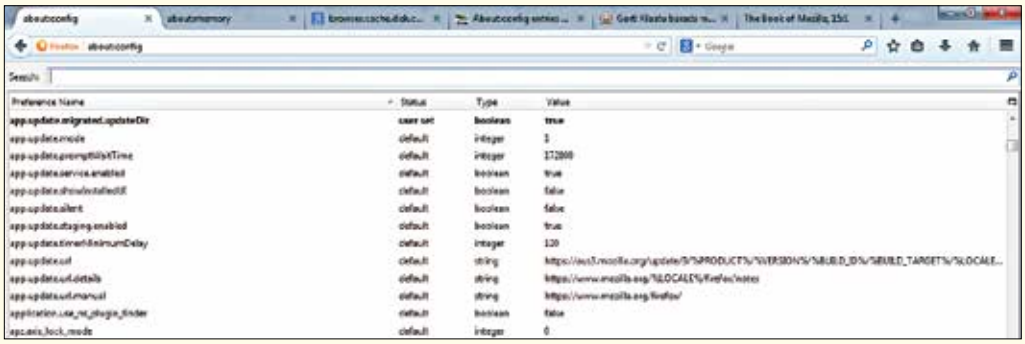
Apple has introduced the iOS 8-like QuickType feature in Yosemite as well. This feature shows suggestion for the next word to be written. For this to work, you must be writing in an Apple app. While writing, just press the [ESC] key and it will bring up suggestions for the next word.

ENHANCE BROWSING ON FIREFOX

Mozilla Firefox

Firefox is an extremely popular web browser that's developed

and distributed as part of a free Open Source project by the Mozilla Foundation. Firefox has gained ground over the past few years due to its customability and light-weight nature. In this section,we'll follow the same route as we did for the Chrome section and list a few general tips followed by tweaks in the browser configuration to enhance performance and usability.



Mess with tonnes of options in the about-config page

Use a keyword to search within a site

This trick bypasses the process of opening a website to search within it; the hack simply condenses it into a single search from Firefox's address bar, also called the 'Awesome Bar'. Open any website with a search bar (E.g. www.amazon.in) –> Right-click on search bar –> Add a keyword for this search. In the tab that opens, enter 'amazon' as the keyword. Now if you want to search for an external hard disk on amazon.in, instead of opening the website and using its search bar, you can simply type your query along with the keyword – 'amazon external hard disk 1 TB', in this case– in the browser's address bar and it will throw up the search results from the website. In this way, you can search for a query in any non-Google search engine or website with a dedicated search bar, similar to the Omnibox's 'add a new search engine' feature in Chrome.



Some Easter Eggs await!

Discover Easter Eggs

Firefox has an awesome group of developers, which is most evident by the sheer ingenuity of the Easter eggs hidden in the browser. Check out the 'about:robots' page (Type 'about:robots' in the Awesome Bar.). It actually has references to pop culture usage of robot-themed media and makes a reference to 'The Hitchhiker's Guide to The Galaxy' and 'Futurama'. The 'about:mozilla' page leads you to a serious looking quote from what's called 'The Book of Mozilla'. This entire book can be seen here: https://www.mozilla.org/en-US/book/. The book supposedly tells the story of Netscape Navigator's battle against Internet Explorer.

Boost UI performance

We briefly spoke about how Chrome's performance could be boosted by using hardware acceleration. On Mozilla, there's a basic provision for doing the same. Go to Settings -> Advanced -> General. Check the boxes next to 'Smooth scrolling' and 'hardware acceleration'. Enabling these options might provide a fractional speedup while browsing graphics-intensive pages.

Change the default email client setting

When you click on 'send mail' links on Firefox or any other browser you're immediately directed to your default mail client such as Outlook (on Windows). Firefox allows you to change this setting. Simply go to Preference -> Applications -> Search for the content type 'mailto:' On the right, you can change the action type by selecting from a dropdown list. Using this option, apart from email you can set default applications that the browser can use to open files such as JPEG, MP3, etc.

Use the about:config page

The 'about:config' page is where all the subtle tweaks are done, which if experimented with responsibly could enhance your internet browsing experience. This is the chrome://flags equivalent of Firefox, in which Mozilla has bundled some really brilliant features. We'll first introduce you to a few usability-enhancing tweaks and follow them up with some tips to boost performance. As we mentioned in the context of Chrome, these features are guaranteed to work 100 percent of the time, but at times could prove to be detrimental. However, the features listed below are relatively safe and you can revert to your old settings anytime by using software called 'FireTune' made for Firefox.



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See changes in preferences without closing the Options menu

Every time you make layout changes in Firefox using Options, you must close the menu to observe the change and reopen it to make more changes. Wouldn't it be brilliant if you could preview the changes without closing the Options menu? Fortunately, Firefox has a hidden fix for this.

Open a new tab and type 'about:config'. Click on "I'll be careful, I promise". Once the config page is open, simply search for 'browser.preferences.instantApply' and change the pre-set value to 'true' by double-clicking to toggle.

Preview tabs the way Windows allows with ALT+TAB

[CTRL]+[TAB], by default, simply changes the active tabs on Firefox. It would be useful if that function could be modified to preview tabs in a similar way to what [ALT]+[TAB] does on recent Windows platforms. Fortunately, we can do just that. Open the about:config page and search for the preference name 'browser.ctrlTab.previews'. It's set to 'false' by default. Simply double-click to toggle the value to 'true' and you can preview tabs with [CTRL]+[TAB] after you restart Firefox.

Reduce restore delay

Sometimes, post minimising the browser, you experience a slight delay in the display of the webpage once the browser has been maximised again. This delay can be reduced. Go to the about:config page -> Right-click -> New -> Boolean. Name the boolean variable as 'config.trim_on_minimise' and set the value to 'false'. This prevents the delay and reduces RAM usage when Firefox is minimised.

Open search results in a new tab

When you search for a query in a search engine, the results open in the current tab and this can be annoying. To enable search results to open in a new tab in Firefox, simply set the preference name 'browser.search.openintab' to 'true'.

Select complete URL in the address bar (Linux) and autofill

When you click a URL in a browser in Windows or Mac, the entire URL gets selected. In Linux, however, you have the cursor sitting in the middle. It sounds like a small problem, but could actually get quite cumbersome at times. To select the entire URL with a click on Linux-based platforms, simply change the preference 'browser.urlbar.clickSelectsAll' to 'true'. To enable autofill for URLs in the Awesome Bar, set the 'browser.urlbar.autofill' preference to 'true'.

Reduce Menu Display delay

This tweak reduces the delay seen in the display of various browser menus. Create a new integer named 'ui.submenuDelay' and set it to '0'.

Disable interface animations to increase general speed

The UI of Firefox is built in such a way that there's a brief animation whenever a user opens, closes or switches a tab. Now, in principle this should have a negligible effect on the browser's performance, but switching off this animation does no harm visually and actually makes moving across tabs and reshuffling quicker. Set the preference 'browser.tabs.animate' to 'false' in about:config.

Induce network-related tweaks for optimised browsing

You could perform some network-related tweaks to boost performance. Users on slower and faster connections might want to decrease and increase the value of 'network.http.max-connections' and 'network.http.max-connections-per-server', respectively. The latter set on a higher number allows the user to browse the site while downloading multiple contents from it. Low speed connection users could set 'network.http.pipelining' to 'true' for sending multiple requests before receiving a response from a site.

Render web pages more efficiently

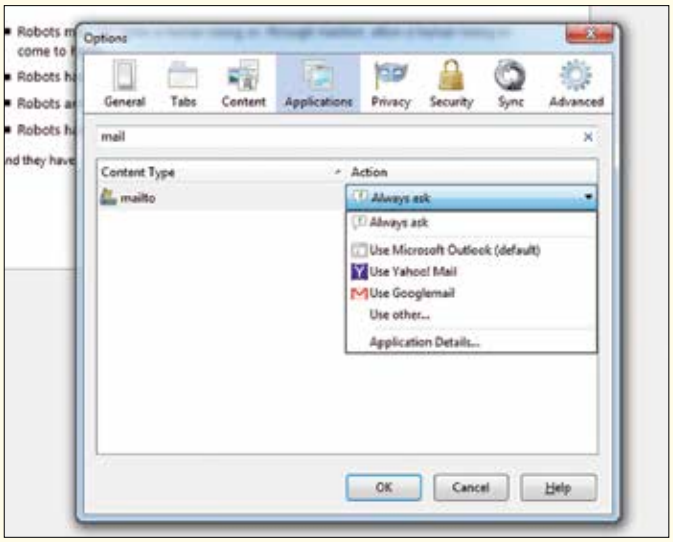
To make pages render faster, create a new integer, name it 'nglayout.initialpaintdelay.delay' and then set it to '0'. This setting reduces the delay time between the initial rendering of a web page (that usually has light content) and the actual content that follows. Setting the delay to 0 will allow the browser to render the page as soon as possible.

Increase offline cache size to work better offline

Users with limited internet access will find this tip helpful, as it allows them to continue working offline. Increase the offline cache value by changing the value of the preference 'browser.cache.offline.capacity'. The default value is 512000 (about 500 MB) but you can easily up it to a couple of GBs for your convenience.

MASTERING OUTLOOK

Love it or hate it Microsoft Outlook is one of the most popular email clients. It has nearly 16 percent of the market share just edging ahead of Gmail and trailing Apple's iOS clients. As an early enterprise productivity product Microsoft has ensured that Outlook is the de facto system on any PC desktop that runs Windows. So given the apparent ubiquitousness of the system it is very likely that everyone will come across it at some point or another, either in the office or at home. To ease this experience we present to you a handy assortment of shortcuts,



Change the default mail client like this

secrets, features, tips and tricks to make you a pro at using Microsoft Outlook.

Adding Personal Email

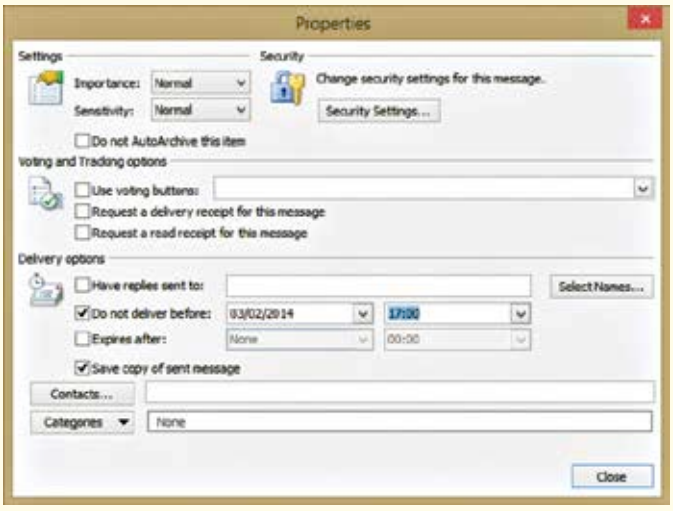
Although Outlook is predominantly used for work emails it is always handy to have your personal email account added to your work system as well. To add your personal email to Outlook - whether it is Yahoo or Gmail - all you have to do is go to the File tab and select the Add Account option. This will open up the Add Account wizard which will guide you through the rest of the process. In this wizard the most important thing to note is that instructions from your email service provider regarding POP or IMAP email access procedures. However if you are using Outlook 2013 with Outlook.com then all you need to do is input your email ID and the program will take care of the rest. You can also access Outlook.com from older version of the Outlook client by clicking on the "Manually configure server settings..." option wherein you must select Microsoft Outlook Hotmail Connector. This is impor both your email along with your personal calendar from Outlook.

Adding Google Calendar

Since most people rely on the free Google services on their mobile devices for calendar event planning it makes sense to import your Google Calendar to Outlook as well. This must be done through Google Calendar where in the left hand panel you need to click on the drop-down menu that gives you the Calendar Settings. Here select Private Address > ICAL to obtain the iCal URL of your calendar. Now switch to Outlook and goto File > Account Settings > Account Settings... where selecting the Internet Calendars tab will give you an empty field in which you need to paste your iCal URL. The calendar will take a little time to sync and will be imported to Outlook. You can also do the reverse process of having your Outlook calendar imported to your Google Calendar but that requires third-party tools such as gSyncit which in its free version limits you to one Google Calendar to one Outlook Calendar syncing.

Schedule Email Dispatch

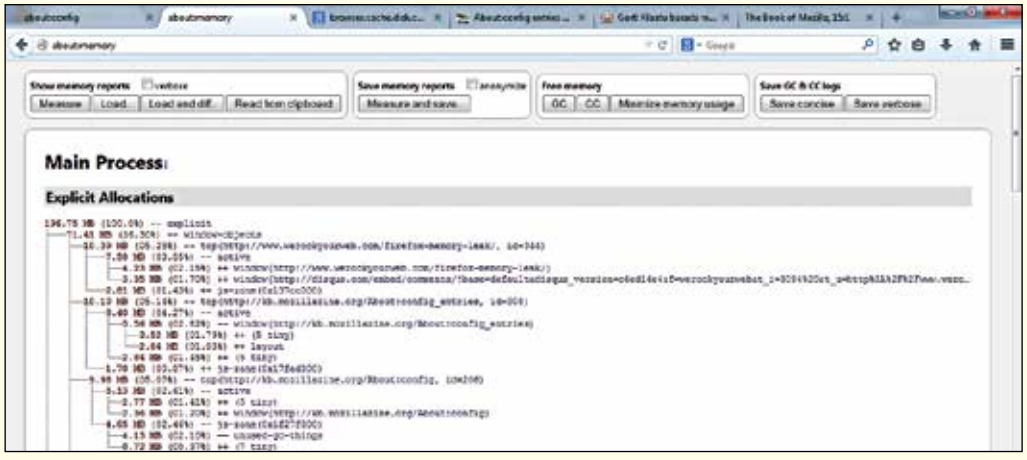
Maybe you need to have an email sent at a specific time and aren't in a position to wait until then. No problem - just schedule the email to be sent at your desired time and you don't even need to be on your machine. Just type out the email that you wish to be sent and then switch to the Options tab and click on Delay Delivery. This option presents you with an options menu where you can make your custom selections in a "Do not deliver before:" option where you can enter the date and time. After making your selections click Close and then click on the Send button. The message is then marked for delayed delivery at the time and date of your selection. If you're working from a Microsoft Exchange server you can proceed to close the desktop with Outlook on it but if you're working off POP or IMAP then the application and the machine will need to remain online until the time of the scheduled delivery.



Variety of custom options for scheduling available.

Using Quick Parts

In the routine process of office work you may have a standard



About-memory is worth having a look at



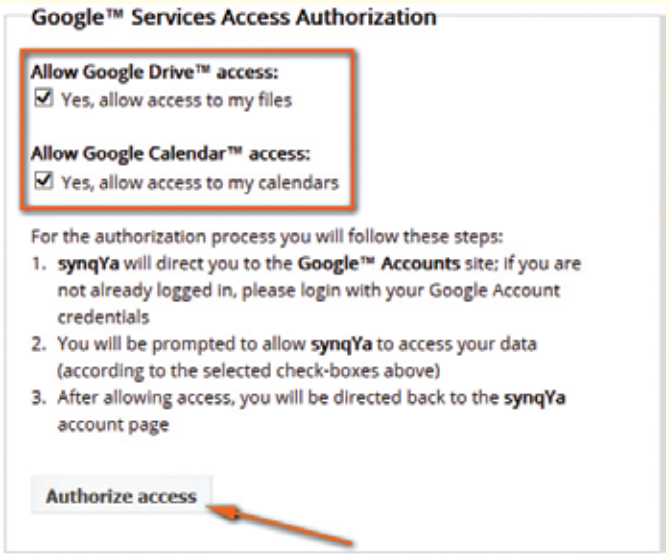
section of text content that you need to send out. Such frequently used default messages can be saved as Quick Parts, saving you the need to either type out or copy-paste the text from another file. All you need to do is highlight the text that needs saving from the composer window and then switch to the Insert tab. Here click on the Quick Parts dropdown menu and choose "Save selection to Quick Parts gallery". This adds the text to your type detection so that when you begin typing the same message again Outlook sends it on your screen as a pop-up where you just need to hit the return key and it will be inserted into your mail. Another way of inserting the text from Quick Parts is to select it from the Quick Parts dropdown menu.

Filter Emails

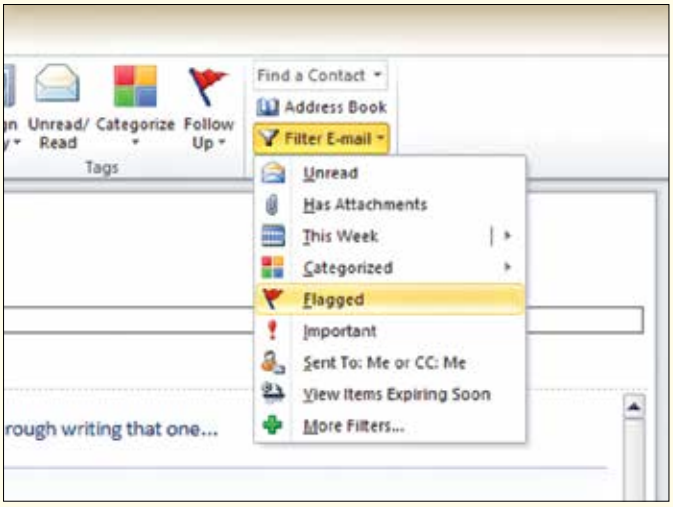
The Filter Email option is also a useful means of finding specific emails from your inbox. The drop down menu for this can be found on the extreme right side of the Home tab. Selecting any of the menu options will immediately filter the mailbox down to show only specific types of emails based on your selection. To look further into the search results you can just begin searching from the Search bar. The search options can be changed from the Search Tools tab which can be activated by selecting "More Filters" from the dropdown menu where additional settings and options like "Recent Search" list also appears making it easier to repeat an often look for term.

Common Search Folders

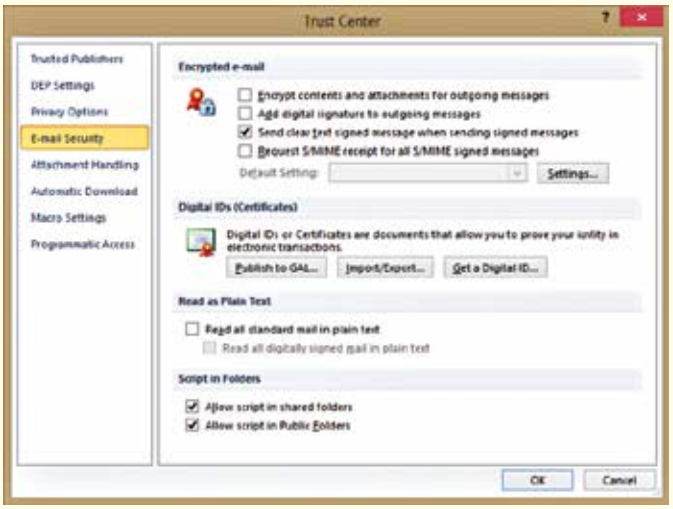
If you find yourself searching for a term quite frequently in your inbox search options then using a Search Folder is a helpful trick. To do so go to the Folder tab and select the New Search Folder option to create a new Search Folder. At this point you will be presented with a variety of templates which can orient your folder by certain attributes like mails from specific people or mails marked important. You can even create your own custom template based on your search category by using the "Create a Custom Search Folder" option. This new folder will now appear in the left window pane of the Outlook window inside which you will be able to see all the emails that conform to your selections. You can rename this folder anytime you like with Right Click and Rename Folder option as well.



Google Services Authentication needed to execute link



Multiple frequently used filters already available.



Digital ID required to use encryption and digital signatures

Cryptographically Yours

In situations that demand security and confirmations so that your recipient knows that the email is genuinely from you Outlook has an option for cryptographic signatures in the emails. The same option allows you to encrypt the body of the email and the attachments along with it so only the recipient who has the the key can open them. To do it you need to go to the Trust Center Settings which can be found via File > Options > Trust Center. Here just click on Email Security and enable digital signing and encryption by ticking of the boxes. This would require you to create and import a digital ID which can be gained by clicking on the "Get a Digital ID" button which will direct you to a number of providers.

Grouping Messages

In office jobs the amount of email received can vary and often lead to hundreds of emails per day from all sorts of sources. The process of managing all this incoming mail is a productivity nightmare. In order to make the inbox well organised and emails easy to find the option of grouping messages can prove very useful. This option can be implemented on either a single mailbox or across all your mailboxes on a need basis. To

do this first go to the View tab and tick the box next to "Show as Conversations". Then click on the "Arrange By:" menu bar at the very top of the message list and make the selection of "View Settings..." from the dropdown menu where you can make further customisations to the grouping options as per your needs.

Advanced Spam Block

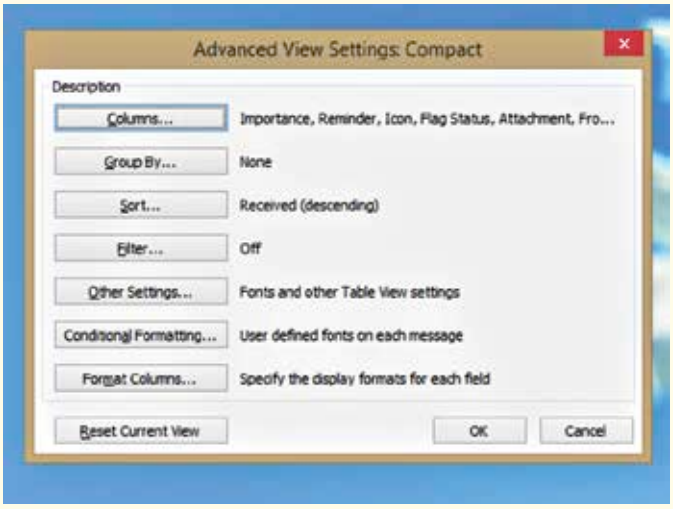
A workplace email can easily attract large amounts of junk and spam emails. Getting rid of these or avoiding them can be frustrating given the large number of work mails. Usually you can just delete the email as Junk but there is a better way. In the Home tab click the Junk drop down menu and select "Junk Email Options". This opens a configuration dialogue box where you can specify the parameters of what you consider junk mail. Using this feature you can block out specific people or web domains or whole countries from which you are receiving the junk mail. You can also have unimportant (but not junk) instantly deleted by choosing the Ignore option. This will not block the source from reaching you but new emails in the Ignored conversation thread will be put in the bin as soon as they arrive saving you tons of time and trouble.



Quick Steps improves productivity radically

Tasks in Quick Step

You can also automate Outlook to perform frequently used tasks such as inviting a number of contacts to a meeting or forwarding an email to a specific contact. Quick Steps is a great way to save time and have these routine tasks taken care of without worry. In the middle of the Home tab you can see the presets of the Quick Step options but you are free to set up custom task routines as well. To do so click on the drop down arrow next to the option and select "New Quick Step" button. Here you can create a customised sequence of steps and actions that can flag, move, categorise and delete messages at an instant. By clicking on the "Manage Quick Steps" option you can access the dialogue box where you can even edit and duplicate your shortcuts to create a variety of task routines as you require.



Numerous Rules and Formatting options to choose from

Automatic Clean Up

Over time we find that emails pile up year over year, with one conversation continuing along multiple threads. In order to save space and neatly organise your inbox Outlook has a Clean Up tool which can do wonders. The Clean Up tool goes through each email conversation in your inbox and deletes the ones that have been quoted in their entirety within another subsequently sent email. This means that the old messages that are often tagged under a newer mail are left remaining while the older mails are deleted off the system. Since the content of the older mails is anyway present within the new mail the need for redundancy isn't high. To use this Clean Up option go to the Home tab and click on the Clean Up menu to affect a single email thread or an entire folder. This opens up and alert window where the Settings option lets you choose what types of messages should be filtered and deleted and which ones shouldn't be disturbed.

Using Rules and Conditional Formatting

Another feature of Outlook that can radically make your inbox more easy to manage is the Rules option. The Rules menu can be found in the Move section of the Home tab and allows you to create and administer the "rules" by which all incoming emails are automatically processed as they arrive. When selecting an email prior to clicking it will offer you the option of transposing the same



rule to similar emails as well. By clicking on the Select Create Rule option you can choose from the given options to instruct Outlook on how to sort the mails along criterias such as sender name, size of email, date sent, recipient and much more. A similar option as Rules is the Conditional Formatting options available under the View tab's View Settings option. This tool doesn't affect the placement or organisation of the emails but is used to format them via colour coding or font styles to make them visually more accessible.

Delegate Access

Usually when you go on vacation or are away from your system for a long period an automated response is easy to set up. But if you have an assistant that you would like to delegate access to update your email and calendar than Outlook has the right tool for you. In order to do this goto the File tab and select Account Settings menu and select the Delegate Access option. Its important to note that whoever you wish to grant access to your Outlook account should have the same version of Outlook on their machine as well with the contents stored on the Exchange server. If you keep your email on your hard drive then this option isn't really for you. Otherwise, after clicking on the Delegate Access option you can select Add and enter the names of the people you wish to grant access. There is a dropdown menu where permissions can be granted. The default selection is to grant your delegate access to your calendar and task list while your emails and contacts remain private but you can change this depending on how you feel about your delegate.



The Note option creates floating Post-Its

Post-It Notes

While working on Outlook it can become necessary to jot down certain notes or copy parts of an email for later use. Luckily Outlook comes with its built in sticky notes feature which can be accessed by pressing Ctrl+Shift+N while in Outlook. This will create a new note which can moved around the screen and placed anywhere. The default view of the note is the typical yellow post-it style but it can be customised to reflect categories that are colour coded. To manage the notes you need to click on the Note icon at the bottom of the View window pane. This will allow you to organise, print, copy and search within your notes from the top-right part of the window where the search field is located.

EVERNOTE

Send email directly to Evernote

Like Tumblr, the note taking app, gives you your very own email address to which you can send notes. Once you enter the required details – such as title of the note (subject of your email), notebook to which you want it uploaded (add @notebookname after email subject), tag (#tagname), reminder (!date) and content of the note (email body) – and press 'send', they'll automatically be uploaded to your Evernote account. E.g. Your subject line will look like this: Fast Track to Arduino @FT Ideas !2014/11/01 #NovEditmeet. Say you want to combine this note with another existing note that has the same title, simply add an ' +' at the end of your subject line.

Where do you get this email address? In the web version, go to `Settings > Account Summary > Scroll down to 'Email Notes To'`.Right beside this is your personal email ID. To find it on your desktop program, go to `Tools > Account Info or Account Info > *Your name*` on your phone app.

Besides using the address to upload notes, you can also provide the ID when subscribing to newsletters or on services such

ADVANCED EVERNOTE SEARCHES

SEARCH FOR NOTES...	WITH THESE PARAMETERS
with encrypted text	encryption: *(You don't need to type anything after the colon.)*
with checkboxes that are complete or incomplete (i.e.checked or unchecked)	todo:true or todo:false
with checklists	todo:*
with a specific keyword in the title	intitle:KEYWORD
within a specific notebook	notebook:
with a specific notebook title and keyword	notebook:NOTEBOOKTITLE KEYWORD
containing any of the specified terms	any:
with the specified tag	-tag:
based on when they were originally created	created:YYYYMMDD
based on when they were last updated	updated:YYYYMMDD
with an embedded image	resource:image/*
	OR resource:image/ PNG, resource:image/gif, resource:image/gif, etc.
that include an audio file	resource:audio/*
that include one or more ink files	resource:application/vnd.evernote.ink
that include no images	-resource:image/*
with text inside images	recoType:handwritten *OR* recoType:picture

KEYBOARD SHORTCUTS

TASK	WINDOWS	MAC
Create new note	[Ctrl] + [N]	⌘ + [N]
Switch to Evernote & jump to a new note	[Ctrl] + [Alt] + [N]	^ + ⌘ + [N]
Encrypt text within a note	[Ctrl]+[Shift]+[X]	[Shift] + ⌘ + [X]
Save text and screenshots:	⊞ + [PrtScrn]	[Ctrl] + [Alt] + [V]
Clip selected text	⊞ + [A]	Caps Lock, Caps Lock (press twice quickly)
Paste clipboard content as new note	[Ctrl] + [Alt] + [V]	[Ctrl] + [Alt] + [V]
Search in Evernote	[Win] + [Shift] + [F]	[Option] + ⌘ + [F]

as Pinterest and Facebook to receive notifications. Or you can simply share it with people whose mails (notes) and attachments you want to store and refer to later. Use this wisely. You don't want to end up being inundated with spam.

Automate note creation with IFTTT, Zapier or Elasticio

Notes can be automatically created for you via one of these cloud integration services. These saved notes can be your Google calendar event, images and posts from your social media accounts (Facebook, Twitter, Flickr, Instagram, etc) or blog post backups. All you have to do is authorise access to all your respective accounts, and every time there's an update, a note is automatically created in your Evernote. Head over to dgit.in/letsautomatestuff.

Perform highly accurate searches

While recent searches show up when you perform a new search, you're probably aware of Evernote's 'Save Search' feature. 'Refine Search' lets you go a step further and search notes inside notebooks, with tags, dates, attachments and to-do lists. What if we told you that you could perform even more advanced and precise searches? Refer to the table alongside for the search parameters to use. Note that there must be no space after the colon. For a comprehensive list of more such parameters, head over to dgit.in/helpmeimlost.

Use keyboard shortcuts

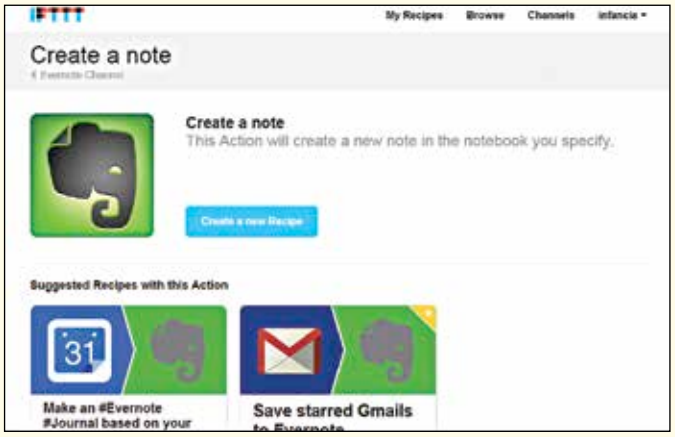
You can customise these shortcuts (see table) under `Tools > Options > Hot keys` or `Application > Options` in OS X. For a comprehensive list of shortcuts, go to http://dgit.in/evershorts (Windows) or dgit.in/evershortsmac (Mac).

Create references to other notes

Create a table of contents

Now, let's say you have a notebook containing hundreds of notes. It would be a hassle to look at each of these notes to see its contents. What a waste of time! Avoid this situation by giving your notes proper self-descriptory notes and half your problem is solved right there. Then, for an eagle eye view of all your notes at a glance, a table of contents (ToC) or index would be your saviour.

To create this, click on the notebook for which you want an index. Then, select all your notes (Press [CTRL] for Windows or [CMD] for Mac and click to select). `Right-click > Choose 'Copy Note Links' > Create a new note > Paste the copied note links into it.` Give the index an appropriate title, set a reminder without a date and you're done. Setting the reminder will ensure that the note is always at the top of your other notes, thus enabling it to serve as a ToC.



Automate note creation with IFTTT

Jump between related notes

Alternatively, if you want to jump between related notes, simply select the note you want to jump to. `Right-click > Choose 'Copy Note Links' > Go to the note from which you want to jump to the previously selected note > Paste the copied link into it.`

Merge multiple notes

If you're like us, you probably use Evernote as a repository to capture all your stray thoughts and ideas on your phone while on the move. Wouldn't it be great if there was a way to somehow combine all those notes into one single note? Here's how to do that. When you have access to your laptop or PC, open your Evernote desktop program. Go to the notebook containing the notes you want to merge. Press and hold the [Shift] key and click to select the notes you want in one note. (For Mac, press [Cmd] + [Shift] + [M]) You'll see a pile of your selected notes on the right-hand side of the interface. Below this are a bunch of options, among which 'Merge' is one. Click it and voila! One note! (no pun intended)

Merge two or more Evernote accounts

To quickly merge one account with another, log in to your



secondary account, go to `File > Export > Export as a file in ENEX format > Export`. Then, to import these files to your primary account log in to it. Go to `File > Import > Evernote Export Files... > Pick the .enex file you exported in the first step.`



Set up Two-Step Verification

If you want to only export notebooks and not the contents of the entire account, go to your secondary account. `Right-click on the notebook > Select 'Export Notes...' > Export as a file in ENEX format > Export.` Then follow the above method to import these files into your primary account. A pop-up will tell you that data importing was successful and that these notes are placed inside a local notebook called 'Imported Notes'. Here, it will also ask if you want to store the notes in a synchronised notebook (i.e. notebooks that are synced across the web, desktops and phone/tablet apps). Click 'Yes' (if you want to access the notebook on all platforms). Right-click to rename this notebook.

Use Evernote templates

We'll be putting that Import-Export feature to use here again, so hope you were paying attention in the last tip. To create your own Evernote template, first create a new note and include all the required fields for your template. Once done, export it by right-clicking on the note in the Note Panel. To use the template, simply import it, select the imported template note from the 'Imported Notes' notebook and right-click it. Select 'Move to Notebook' and put it into the right notebook. So, for example, a minute of meeting template will go in a 'Meetings' notebook. Follow the same process for importing others' shared templates that you download. You can find some here: http://dgit.in/freestuffhereicome and many more neatly categorised at KustomNote (dgit.in/somanytemplates)

Alternatively, simply create a template note in a notebook titled 'Templates' and select 'Copy to Notebook' by right-clicking on it. Then, move it into an appropriate notebook.

Secure your notes

Set up Two-Step Verification

Protect your account from unwanted entities accessing your notes by turning on Two-Step Verification. This is especially useful if you store important information about yourself here. In the web version, go to `Settings > Security Summary > Two-Step Verification > Enable`. You'll see a pop-up warning you of the possibility of losing access to your account should you be unable to provide the verification or backup code along with your password. Click 'Continue' and 'Send Verification Mail' in the subsequent pop-up box. Back on the Security Summary screen, enter the confirmation code sent to your your email address. Click 'Continue' and enter your phone number. Wait for the verification code on your phone. Type the code received in the next screen that pops up. Then enter an alternate phone number and you're done.

Going forward, every time you log in to Evernote with your username and password, a verification code will be sent via text message to the phone number you provided. There's an option to use an Authenticator app instead of a phone number, but we suggest going the phone number route in case you mistakenly delete the app in the future or lose your phone. If, however, you do lose your phone and are worried about someone misusing your data, you can revoke access from Evernote's web version via Settings. Once revoked, the app will request a password the next time it's launched.



Kustom gives you access to hundred of free templates

Encrypt your data

You can encrypt part of a note or an entire note using a password. No one will be able to read that text without the password. To encrypt, press [Ctrl] + [Shift] + [X] (for Windows) and ⇧ + ⌘ + [X] (for Mac OS X). Note though that this encryption method only works on desktop versions. Viewing the same note on the web or an app will show you the entire note without any encryption.

Use collaboration apps & tools

Save recipes in a pleasant and user-friendly UI

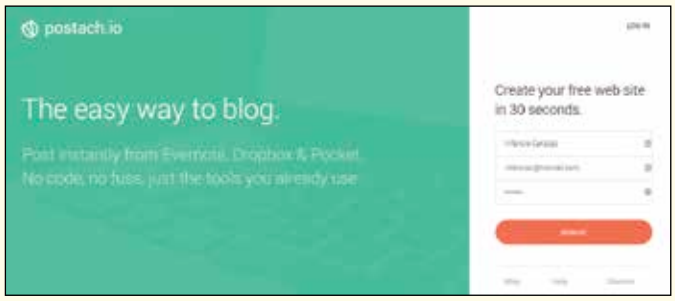
The 'Evernote Food' app works beautifully along with Evernote. Any notes saved in the note taking application are swooped up by this nifty app and displayed in an easy-on-the-eye manner. It will suggest recipes for you and let you save meals at restaurants you specify. Whether you're a foodie or not, this is a must-have app. After all, everyone eats, right?

Curate a website using only your notes

Ever look at your notes and wish "Sigh, if only the world could know of how deep a thinker I was." or sought to have a forum where you could have others validate your thoughts? You can auto-publish your Evernote notes – whether they're images, audio or videos/YouTube – to a simple blog powered by them. This lightweight blogging platform, called 'Postachio', includes everything from customisable themes and RSS feeds to built-in Disqus commenting and multimedia support.

To set up the blog, first sign up at http://postach.io and authorise the service to access your Evernote account. Then,

go to Evernote, create a notebook dedicated to the blog and create a tag called "published". And you're done with setting up auto-publish. The next time you compose a note and tag it with "published", it will automatically upload itself to the blog you created during sign-up. See an example of notes turned into posts at http://dgit.in/notespostachio. If you want to preview the post right away, go to Postachio's dashboard and click the 'manually sync' icon to publish post. Alternatively, you can try out Cilantro (www.cilantro.io - formerly Everblog.me), which does the same thing. If you've been looking out for a Twitter alternative without the 140-character limit, this is it.



Signing up on Postachio takes no more than 30 seconds

If you're feeling overwhelmed at the thought of having yet another web property and prefer using one of your existing blogs, you can integrate Evernote with Wordpress, Jekyll or Tumblr using BlogWith (http://blogwith.co/). Sign up on the site and a new notebook named "BlogWith" is created in Evernote. Any notes you compose in this notebook will be synced to your blog.

Visually map your notes

When we're brainstorming or need a quick view of the connections between a cluster of variables, what do we do? Many of us resort to mind mapping, don't we? It's quick, it's easy, it does the job. If you're a visual thinker and want to view your notes the same way, you can visually map them with 'MohioMap' – a web-based app that you can find on the Chrome store at http://dgit.in/mohio. Besides laying bare all of the contents of your notebook, it helps you rediscover old notes you forgot existed. You can assign tags and edit notes and tags right within the app to clean up and better organise your data. Looking at your notes this way will help you identify patterns and find hidden connections. When you discover a new relationship between notes and if you want to remember it, you can use the 'Jump between related notes' tip we discussed before.

Transcribe your audio notes

If you've been using Evernote for a while now, you'll notice that there's an audio record feature. This option lets you save audio clips of upto 25MB in size (i.e.the maximum size of each note). A great feature when you have only one hand free, say, when the other is holding on to There is, however, no in-built feature to transcribe this audio at the moment. No worries. There's an app for that. It's called 'Voice2Note' and will convert upto 30 seconds of audio to searchable text. The free version lets you transcribe upto five notes per month. (The pro version will automatically transcribe the note for you.) Register at dgit.in/iheardeadpeople and authorise it to connect to your Evernote account.

Tweet to your EN

If you're a frequent Twitter user, this will be helpful to you. With this tip, you'll be able to tweet directly to your Evernote account, where they'll become notes. All you have to do is follow @myEN. On following you back, it will DM you a link, which you'll use to connect your Twitter account to Evernote. That's it. The next time you want to upload a note, simply direct message @myEN the note. If you want to send yourself a note *and* make it public, include @myEN when updating your Twitter status as usual. To retweet others' tweets – say, customer service interactions to follow up on – as notes, simply retweet and add @myEN at the end.

Alternatively, there's a Twitter client called 'Twipple' that will let you do the same thing. It currently works only with iOS devices, however, a social networking app called 'Seesmic' will allow you to send tweets to Evernote from your iPhone *or* Android device. TweetDeck and Twitter for Android are other services that will let you do the same via the < icon.



Evernote - connect to google

Send pics directly to Evernote from your DSLR

Did you know that there's an SD card which lets you connect to a Wi-Fi network? The memory card called 'Eye-Fi' fits into your digital camera's SD card slot. Your clicked pics are automatically and wirelessly uploaded to your computer, phone or tablet. Its Evernote integration enables your pics to be sent as picture notes. Say, you're out in a forest taking pics with no internet connection of any sort. Whenever you walk into the range of a hotspot, the card will automatically send all the queued-up pictures into Evernote. What more, pics with text are recognised by the note taking app thanks to its optical character recognition (OCR) feature, increasing its efficacy. Get it here: http://www.eyefi.com/ for approximately Rs.3710 (2 GB) and going up to Rs. 13,556 (8 GB).

Chat from Evernote

One of Evernote's newest features is 'Work Chat'. The in-built option enables you to message your fellow Evernote users. The notes/notebooks you reference get displayed in the chats so that they're quick to find and open. All you have to do is integrate your Google contacts with Evernote. In your desktop client, you can find 'Work Chat' right on the toolbar.

68 **GeekLife**
We take a look at the most overhyped and overrated products and announcements of the year.



Mood changing device
An upcoming device promises to change your mood by zapping your head using a smartphone.
http://dgit.in/AppMood



iKettle

This trendy looking smart kettle promises to make a mark in your daily habits from the time you wake up till you get your daily dose of caffeine. This is the world's first Wi-Fi enabled electric kettle that can be controlled through an iOS and Android app from anywhere in the world, no less from the comfort of your bed. It can wake you up with an alarm and perfectly heated water at a desired temperature, or you can just instruct the kettle to maintain water at a particular temperature for as long as you want. All set for the smart life, you? Make it happen!

Drool on towards your smart home dream

Sen.se Mother

There are only two possible reactions to this device – extreme happiness or extreme terror. Happiness because it sits in your home, sensing everything and sundry, in a connected smart home environment. Terror because we live in a post-Snowden world. Be that as it may, equipped with an army of sensors (Sense Cookies) which can be placed around your home, which you control through Sense Mother (hah!), this thing can track and record everything from whether you've brushed today to how many cups of coffee you've brewed, from whether you've taken your medication to sense how many people are in the house at any given point of time. Wanna try? Be our guest.





Railgun on Army vehicles

Railguns always bring in the glory be in movies or games, and BAE systems want them in future army vehicles



Smarter solar panels

A new solar power system is easy to install and which configures itself, performing safety checks. http://dgit.in/EasySolarP

LIFX

We've all switched from incandescent to CFL to LED lightbulbs, but that hardly makes any of them smart compared to Lifx, a lighting device unlike any you've seen so far. It connects over Wi-Fi and can be controlled by a smartphone app. Not just that, the Lifx lightbulb can be programmed to fade-in, fade-out light or colour transitions, and asked to automatically adjust brightness depending on the time of the day. What's more, the lightbulb is good for up to 40,000 hours of usage, or 27 years (if used for 4 hours per day)!





August

In the world of smart locks, which is still at a fledgling state, August stands tall and proud. An ordinary looking device with extraordinary powers, one that promises to reduce several keys in your keychain. With 128-bit AES encryption, this lock protects your keys as well as the physical door to your house through a bolt that only opens if a paired phone is within Bluetooth range. Keys can be generated and distributed to family members or guests who have the compatible app on their phones to gain access to your August smart lock protected property. Alternatively, if you want to control the lock beyond Bluetooth range, it has the capability to join a compatible smart home hub to let you do that. Ain't that sweet?!

Ubi

This is essentially a palm-sized voice-operated computer that plugs into any power socket and pairs with your home Wi-Fi to give you a taste of what the future of computing promises to be. With a 1.2GHz dual-core Cortex A9 processor running on Android 4.1, this tiny computer – which is the work of just three engineers from Toronoto – is capable of performing searches, schedule alerts and alarms, even sense environmental conditions in every room thanks to its built-in temperature, light, pressure and humidity sensors. Supported smartphone apps let you tinker and tweak the device's settings to tailor your needs. The possibilities are endless.





Coffee on the ISS
Remember ISSpresso, the first coffee machine that works on zero-gravity? It has finally reached the ISS



Chernobyl drone tour
A filmmaker paid visit to a 30-year old Chernobyl disaster site with his GoPro and drone. http://dgit.in/ChernoDrone

8 Over-hyped tech products and services of 2014

Sometimes you're better off keeping your money where your wallet is...

Vishweshwar Jatain
readersletters@digit.in

1 Apple iPhone 6

This year, a Polish man called Darius Wlodarski became famous for "being the guy who stood in a queue for 44 hours to buy an iPhone, in the hopes of winning back his estranged wife". But long queues don't hide the fact that there is nothing ground breaking about the iPhone 6 – sure, it's bigger and faster, but what about innovation? Just a few weeks after the release, pictures of bent iPhones were circulating all over social media with the solemn advice of not keeping the device in your pocket, as the chassis was prone to bending.



Beckham would be proud.

The scandal even got its own name and hashtag: #bendgate. Apple's nightmare became its competitors' joy when brands like Samsung, LG, Asus, and HTC started promoting their products in the guise of satire. More recently, an Arizona man suffered first and second degree burns after his iPhone caught fire inside his pocket following a minor rickshaw accident. Ouch! Some users have also complained that the seam between the aluminium and glass was pulling out their facial hair. So yes, if you like disappointment and pain, you can't go wrong with the iPhone 6.

2 BlackBerry Passport

The first thing you'll want to do when you buy the Passport is have your tailor increase the width of pockets in your pants and jackets. It's almost as if BlackBerry put together a focus group and the only feedback they received was: "Just make it really wide, okay?" BlackBerry once catered to a market segment largely overlooked by everyone else – the professionals who just wanted to get work done without any distractions. These people typically scorn the touchscreen keyboard, think that watching videos on a phone is a waste of time, and aren't interested in playing Angry Birds. After many years of dwindling market share and dishing out confused products, the Passport is a desperate attempt from BlackBerry to win back their original user base, who have since moved on to the greener pastures of iOS and Android. To be fair, not everything is wrong with Passport, it sports a long battery life, sharp display, a decent camera and a robust build, but that fails to make up for the awkward keyboard, clumsy software and the fact that it's practically unusable with one hand. And it's the squarest phone ever; really, it's freakishly square.



Human hand for scale.

3 Smart watches

Ever since Apple announced that it's working on a smart watch, everyone from LG to Samsung to Motorola has jumped the bandwagon in



Alienware Alpha
The Alienware Alpha is smaller and more powerful than the other game consoles but is still in its alpha stage. http://dgit.in/AlienwareAl



"You got the time?" "Yeah, let me just charge my watch."

an effort to score a piece of the pie before things get too hot. And although Silicon Valley geeks are all too eager to put one on your wrist, the question that begs to be asked is: How many of us are actually interested in buying a smart watch? After all, moving beyond the snob quotient, isn't it just another gadget you need to worry about charging constantly? The screens on most of these watches are too small to read more than 2-3 lines of text. And anything that you can hope to do with a smart watch, you can do equally if not more easily do by simply pulling your phone out of your pocket. Android Wear developers even announced that your smart watch won't work unless it is connected to an Android phone or tablet. Perhaps the real problem with smart watches is that, as of now, they don't really bring anything new to the table in terms of user functionality apart from being the new gimmick that gets everybody's attention at the party. If manufacturers don't think of new innovative features for smartwatches, they won't stand the test of time.

4 Xbox One

Gamers buy gaming consoles to play games and not to watch TV; that's not too complex an idea to understand. Yet in an effort to make their product more versatile, the guys at Redmond gave Xbox One a few features that no one really asked for, making it an odd love child of a gaming console and an all-purpose entertainment system. And god help you if you didn't like the boxy Metro UI of Windows 8 because you're going to see it each time you turn on your Xbox One. Add to that the unbelievably complicated DRM restrictions and you begin to understand why a lot of gamers are not only looking beyond the hype of Xbox One but are quite frankly hoping that this isn't the future of gaming they were promised. The cloud-oriented nature of Xbox One also means that users always need to be online in order to play most games; even in the case of single player, offline games, users need to login at least once each day. Many have even criticized Microsoft for being anti-consumerist.

5 Google glass

Google Glass was made available to consumers in the US in May this year, and you could get your hands on one if you happened to have an uncle there. A certain website lists "a conversation starter" as one of the pros of Google Glass; well, if you need an awkward-looking gizmo wrapped around your face to start conversations — maybe you should just give up and quit trying. Jokes aside though, there just aren't a lot of real-world applications for Google Glass at the moment. You can click photographs, make a video, ask for directions, search Google, check your social media accounts, and send a message. That's about it. Plus, there are a lot of security and privacy concerns bogging it down that need to be sufficiently addressed and tackled. Not to mention it's going to be really difficult



Nice try, Microsoft.

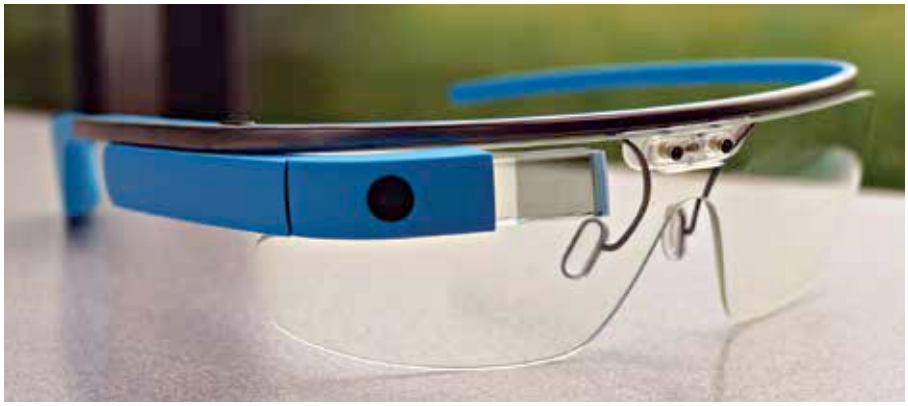




Tesla and BMW unite
Tesla and BMW are in talks on a collaboration for sharing batteries and other lightweight components.



Air quality detector
A wearable device that uses optical sensors to detect pollution will build real time air quality maps. **http://dgit.in/AirQualCla**



Voyeurism made easy.

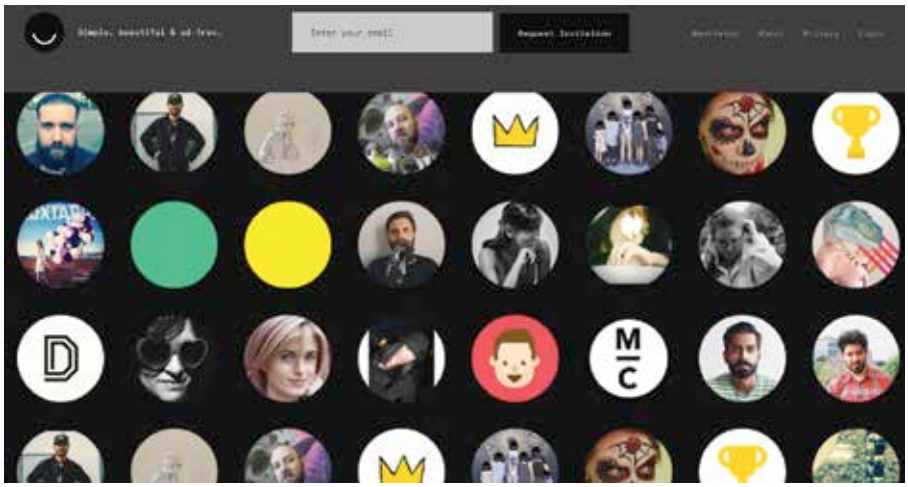
not to come across as a raving lunatic while muttering commands into it when you're walking down the street or sitting in a coffee shop. And it's expensive.

6 Ello

Ello is a social network with a mission. "You are not a product," reads its slogan, and I'm sure that it's an idea what we can all get behind. Its manifesto states that on networks such as Facebook and Twitter, "Every post you share, every friend you make, and every link you follow is tracked, recorded, and converted into data. Advertisers buy your data so they can show you more ads. You are the product that's bought and sold." This is all absolutely true. Ello pledges never to show ads or "sell you"; it received significant press coverage after launch, has over a million users and was being branded as the "Facebook Killer". It's a lofty idea, but it isn't easy to trump a network that has 1.3 billion active monthly users. And so even though it was launched with much fanfare, Ello is finding it difficult to live up to its own hype. Firstly, being new, Ello simply isn't as refined and user-friendly as Facebook and Twitter are. Secondly, there aren't enough users on Ello for it to be interesting in a way that Facebook is, for instance. Lastly, there have been rumors that it has accepted venture capital — and since venture capitalists never give out money for nothing, it's difficult to see how Ello plans to remain the always-free-forever service that it started out to be.

7 Yo

Earlier this summer, a little app called "Yo" which was released on April Fools' day for Android and iOS almost broke the internet when news of it raising $1.5 million started doing the rounds on various news websites. Even the app's founder, Moshe Hogeg, admits that it's stupid app. It's the perfect example of how strange things can get blown out of proportion in Silicon Valley. Here's what the app does: It allows users to send and receive "Yo"s to people added in your app as contacts. That's it. It does nothing more. It's simplicity (if you can call it that) was the reason that got so many people from developers to investors wondering why on earth would someone invest so much money into an app which does close to nothing. But Hogeg thought they were on to something. Since its release, Yo has been downloaded 2 million times and at its peak, 4 million "Yo"s were sent in a day. But after the initial crazed died down, the app has witnessed a steady decline in user interest. The developers keep talking about the million ways in which the app can be used in the future, and it very well may be, but as of now, it's one damp squib.



Struggling to live up to the hype.

8 Internet of Things

Tech companies have finally found a way to make you watch ads on your microwave while you make popcorn. Internet of Things is a natural progression of electronics wherein everyday objects such as fridge, microwave, TV, cars, dog collars, door locks, vending machines, clothes, shoes and even diapers are connected to the internet and each other. One of the most common examples given to explain the Internet of Things goes something like this: You run out of milk, your fridge automatically detects it, and orders a fresh carton for you. As geeks we don't sit around trying to analyse if this is indeed a legitimate problem that needs to be solved; it just sounds way too cool to debate that. But then again there do arise two problems that we aren't ok with: One, imagine the privacy nightmare when almost every little gadget inside your home starts keeping a log of what you do, from your food habits to how many times you visit the bathroom! And the second problem ironically is that the IOT dream is taking way too long to come to fruition, which is why it finds a place in our list of over-hyped things. Unless the Internet of Things actually promises anything remotely useful, it will remain in the over-hyped category.

worldview

OUR PICK OF THE BEST TECH ARTICLES FROM AROUND THE GLOBE

(MUST READS)



HIDDEN FEATURES OF VLC

VLC Media Player is everyone's favourite media player for a reason - it plays nearly everything that you throw at it, works across platforms on Windows, Mac, Linux and Android, and most importantly, is free. It does, however, have a tonne of features that let you manipulate media in interesting and useful ways, such as converting between different file formats or downloading videos from YouTube.

http://dgit.in/wvVLCFeatures

GLUTEN, MUCH?

Gluten is one of the most widely consumed proteins in the world, and is the chemical responsible for the chewy, stretchy nature of bread. However, for about one percent of the world's population, Gluten can be deadly, causing permanent damage to the small intestine. But just why is everyone rushing onto the Gluten-free bandwagon, and is it really as unhealthy as its made out to be?

http://dgit.in/wvGluten

WASTE TIME ON THE INTERNET FOR AN A

Come next January, students at the University of Pennsylvania will be able to attend a class, where for three hours a week, they will sit in a single room with just their laptops and a WiFi connection. Learn more about the course on 'Wasting Time' here:

http://dgit.in/wvWasteTime

[Ars Technica Corner]

KEEPING SOME BITCOIN HANDY



Bitcoin, the virtual cryptocurrency has seen its share of both die-hard users and skeptics, but one man just pledged his devotion to the currency by having an NFC chip injected into his hands. One has data that can be overwritten - such as contact details, and can be simply scanned using an NFC enabled device, while the other contains his encrypted private key. **http://dgit.in/NFCchip**



Coding behind bars

California's San Quentin prison is notorious for housing some of the fiercest inmates, but in true Silicon Valley fashion, two entrepreneurs are giving programming lessons to 18 inmates at the prison, with the hope that these skills will help them later on. **http://dgit.in/SanQuentinPrison**



Staying out of the hospital - on purpose!

Studies have shown that people who have a clear purpose in life, spend lesser time in the hospital. Keeping a goal that one can work towards, is an important part of psychological and physical well being. Learn how: **http://dgit.in/PurposefulLife**



Understanding Ebola

The Ebola virus is the latest pandemic to have gripped the world with fear, but just what exactly IS Ebola? Ars Technica gets in touch with a virologist at the University of Columbia to give us a lowdown on what makes Ebola so deadly. **http://dgit.in/wvEbola**

SHORTS

WEALTH INEQUALITY AND THE RICH

Thomas Piketty's controversial novel, Capital in the Twenty First Century has bought wealth inequality to light. However, Michael Lewis (another author) argues that such a wealth divide may actually be hurting the rich more than the poor.
http://dgit.in/wvWealthGap

WHO IS ANONYMOUS?



Anonymous best known for its digital vigilante form of activism, has always been an object of mystery and intrigue. A closer look at the people behind the movement reveals some less-than-noble tale of sexism, bullying and needless trolling. More here:
http://dgit.in/wvAnonymous

A SCIENTIFIC WORKOUT?



Spending long hours at the gym isn't the best way to get your optimum workout. However, scientists have devised a 7 minute workout plan that aims to exhaust your muscles by working out at 80% of your maximum heart rate.
http://dgit.in/wvWorkout

OBAMA AND NET NEUTRALITY



The ongoing fight between citizens and ISPs over net neutrality got some much needed help from President Obama, who publicly pledged his support to preserve the free and open nature of the internet.
http://dgit.in/wvNetNeutrality

The 5 biggest comeback stories in technology

No one can have a bad streak forever...

– By Nikhil Pradhan

After Nokia surprised everyone with its Android tablet, the Internet has pretty much decided that the old tech giant is on its way to a magnificent comeback. Whether (the non-Microsoft owned part of) Nokia actually lives up to everyone's expectations is a story yet to be told, but it can learn from some of the giant comeback stories we've witnessed in the past.



Apple

While the '90s are often remembered as the decade of decadence and economic boom, for Apple, the decade was terrible. The Cupertino based company lost plenty of market share in the PC segment to Microsoft and its Newton PDA was a failure. However, the next decade saw Apple's emergence as the most valuable company in the world after it launched three revolutionary products back-to-back: the iPod, the iPhone and the iPad.

Motorola

Motorola has made it a habit of scripting comebacks. Once the feature phone segment began its spiral into obsolescence, Motorola jump-started the Android ecosystem with its original Droid smartphones. However, the company soon found itself pushed to the sidelines by the likes of Samsung, HTC and LG. After about a year of floundering, Motorola got its groove back and released the Moto G this year, a phone that has emerged as one of the most successful Android devices ever and has pushed the (now Lenovo owned) company to the top of the Android pyramid. That's not it as Motorola is the one who got a chance to release a Nexus phone this time which should help it maintain a strong footing in the market.

AMD

Like Motorola, AMD is another company that has made a decent comeback more than once. After years of flagging behind Intel, in 2001, AMD launched the Athlon XP processor that not only beat the Pentium 4 in terms of performance but was also priced at half the cost. If that wasn't enough, in 2008, and again after a couple of years of settling into the No. 2 spot, AMD released the R700 GPUs that included cards like the HD4850 and HD4870 that shook the market thanks to better performance and value than the competing Nvidia Geforce cards. Now that AMD powers both the Xbox One and the PS4, the company's importance as a graphics technology giant can't be disputed



Nintendo

Nintendo was pretty much synonymous with gaming during the '80s and most of the '90s but then, just like Apple, it was almost given a knockout punch by two under performing products- the Nintendo 64 and the Gamecube. With both the Xbox and the PS2 ruling over the console market, it appeared like Nintendo would become a footnote in gaming history. Then, in 2006, it launched the Wii, a console that relied on motion controls, and broke all sales records. The Wii ended up selling over 100 million units and easily became the best selling console of the last generation.

Microsoft

To be fair, Microsoft hasn't really had to write a gargantuan comeback story yet because it still remains one of the largest tech companies in the world. However, in the latter half of the last decade, after the emergence of Android and iOS, it looked like Microsoft had lost the plot. The Redmond giant's only presence in the smartphone market was Windows Mobile, an obsolete OS that was as embarrassing to look at as it was terrible to use. Fortunately, Microsoft realised the error of its ways (a little too late, some will argue), and in 2010, launched Windows Phone, a smartphone OS that looked great and focused on usability, on the Nokia Lumia 800. Today, Windows Phone stands as a serious alternative in the smartphone segment to Microsoft's credit.



TYPING WITH YOUR THOUGHTS

If you've always wanted to control a computer with your mind, your time has come. The Wadsworth Centre in Albany, New York has come up with a brain-computer interface that allows you to type with your thoughts. It uses a helmet with electrodes connected to your head. More here: http://dgit.in/wvTypeThought

THE SPREADSHEET WAY



Spreadsheet software (think Microsoft Excel) have become ubiquitous in the business world, but the concept actually goes back more than 3 decades, starting with VisiCalc. Read noted journalist Steven Levy's nostalgic take on spreadsheets here: http://dgit.in/wvSpreadsheet

GOING VIRAL



Ever wondered How and why does a piece of media go viral, and is there a science behind it? A conference at MIT entitled "What Makes The Internet Awesome?" attempts to answer this question. Read more to know if you can also do something to go viral online. http://dgit.in/wvViral

RECREATING THE HUMAN HEART



Doctors Bud Frazier and Billy Cohn may have cracked the code to creating an artificial heart. Their creation, a 10,000rpm, non-beating artificial heart might be the best emulation of a human heart yet. http://dgit.in/wvArtificialHeart

How offline retailers can make a comeback

Growth of e-commerce websites does not mean dead end for the traditional brick and mortar retailers.

– By Kul Bhushan

Google recently published a detailed study on the massive growth of e-retail industry in India. The study said the online commerce will become a whopping $15 billion market by 2016. While e-commerce is evidently growing, traditional brick and mortar retailers and wholesalers have taken a huge hit. Apparently, retailers are finding it tough to compete with the heavy discounts offered by the online stores.

Despite multiple challenges, offline retailers shouldn't give up hopes on competing with the e-commerce websites. However, they need to innovate, expand and most importantly go aggressive on areas where online retailers are still struggling. Offline retailers already have the infrastructure for ensuring enough stock and advantage of face to face interactions. While they can continue to focus on these areas, here are some suggestions on how they can beat or at least compete with online retailers:

Contrary to the notion, offline retailer can very well take advantage of the ongoing online boom. One of the options that's being widely considered is Omni-channel Retailing under which they can provide seamless customer experience via multiple channels, and target today's well educated and informed consumers.

One of the dimensions of Omni-channel Retailing is a deeper integration between web and store so that when a customer buys anything online he gets customer support at a store, and vice versa. Under the Device2Web model, customers can access the web store through various Internet-connected touch points such as mobile phones, kiosks, tablets etc.



"They (offline retailers) need to adopt Omni-channel Retailing, where they integrate these touch points to provide shoppers a 'buy anytime, anywhere' experience. For example: Shoppers can try products in store and buy online, buy from a store and place a return/exchange request online," says Mr Mehul Jobanputra, CEO and Cofounder of Desi-Dime.com.

Improved customer service:

As per the Google study, a lot of online shoppers aren't satisfied. A lot of customers have complained about the complicated return process. About 67% said that the return process is too complicated and expensive. Trust is another major issue for non-buyers as 55% of them don't trust the quality of the product online, says the Google study. Slow internet has also been pointed out as a major hurdle for online shoppers.

A recent study on India's E-Tailing Industry –Seller's Perspective 2014 done by Spire Research and Consulting also said that lack of robust payment mechanisms; Cash On Delivery (COD) options were prone to risks as well as payment delays. Also, difficulties in logistics and order placements were some of the key obstructions faced by sellers/respondents in the e-tailing space. The studies clearly state that customers are very unsatisfied with the services part offered by e-commerce stores.

Competitive discounts, Cheaper extended warranties:

Offline retailers should also consider giving deeper discounts and cheaper extended warranties along with a personalised shopping experience. In our brands versus e-commerce analysis, we had pointed it out brands are reluctant to let their products sell through sites such as Flipkart and Snapdeal.

Offline retailers need to play on the personal touch. They need to ensure their staff are highly trained and are able to guide customers to what they want to buy. Online shopping while convenient is impersonal. Read the full article here: ***http://dgit.in/OComeBack***

ROCKETJUMP

Nothing speaks fun like a well made action video. RocketJump is the YouTube channel of the popular digital movie



studio with the same name. You'll find host Freddie Wong bringing in a plethora action short-films like "Light Warfare", "Real Life Portal Gun" and more. VGHS or Video Game High School which is a completely crowd funded web-series is also a creation of RocketJump and you can watch the entire series here.
http://dgit.in/vwRocketJump

(QR Code)

For a list of all the links from this section, head over to http://dgit.in/WV_Dec2014
Or point your phone to the QR code above.

(PRODUCT LAUNCHES)

MOTOROLA NEXUS 6



Google's highly anticipated flagship device - the Nexus 6. was released this month. It features a huge 5.96" screen, a quad-core 2.7GHz processor, 3GB of RAM, and an improved 8MP camera. It's also the first device running on Android 5.0 Lollipop.
Price - ₹44,000 onwards

AMAZON ECHO



Google has Google Now, Apple has Siri, Microsoft has Cortana, and now Amazon has Echo. It's a cylindrical device that's always on and connected and uses speech recognition to identify queries thrown at it like math questions, searches and more.
Price - $199 (approx ₹12,300)

HTC NEXUS 9



The long-rumoured HTC-manufactured Nexus device turned out to be a 9" tablet, dubbed the HTC Nexus 9. Featuring a screen with a 4:3 aspect ratio similar to iPads, Google's newest tablet features a sharp HD display and uses the NVIDIA's K1 chipset.
Price - ₹28,900 onwards

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Free Internet - forever
An amazing new device called Lantern promises to provide free internet using openly broadcasted radio waves. Watch this to know how:
http://dgit.in/wvLantern



Amazon Echo - A Parody
Watch this hilarious parody of the Amazon Echo device, with Echo assuming a slightly snarkier and sarcastic tone.
http://dgit.in/wvEchoParody



Old fashioned Emoji
Nick Offerman's latest creation is a series of Emoji characters, carved out of premium wood. Each emoji is hand crafted and is on sale.
http://dgit.in/wvNickOfferman

The good design playbook

>>Good design is more complicated than you'd think. Find out what goes into good UX> by Varad Choudhari

You might have heard of the term 'UX' quite often. Ever wonder what it is? Or did you merely dismiss it thinking that it's something related to the UI? The UX has become an important part of the product development cycle. Many industries are hiring UX professionals to shape their product. If you've always been curious about the term, here's an in-depth guide to introduce you to UX.

What is UX?

UX is an acronym for 'User Experience'. It defines how a user feels while interacting with the system. The system could be anything – a website, a mobile app or even a desktop app. UX shouldn't be confused with UI, as both are entirely different concepts. Here's a brief explanation of both concepts.

- **UI:** This is an acronym for 'User Interface'. It deals with how a website or an application looks. It covers the entire look of the application including the colors, fonts, icons and images used. The user interface is entirely about the visual and interface design.
- **UX:** It deals with how easily a user can, well, use the app and how easily the app would serve to satisfy his requirements.

Consider this example: Say, you're making a mobile app. When designing the interface (UI) of your app, you should not only consider how great your app will look, but also how easy it will be to use, i.e. how great the user experience (UX) will be.



The all-new minimal 'Material Design' by Google

Suppose your UI looks exceptionally good (think: along the lines of Google products), however, after opening your app the user doesn't understand what he's supposed to do next. Then, no matter how great your app looks, it will be completely useless.

*coding matters

*Open Source .Net can't match Java

>>According to Red Hat Director, open source .Net has to travle way long to match open source Java

http://dgit.in/1vEMB2X

*PS4 SDK 2.0 unveiled

>> Sony unveils PS4 SDK 2.0 adds support for the Shareplay, Themes, Share Factory and YouTube Upload features have been introduced.

http://dgit.in/1vJkyPV

*Mobogenie offers app promotion package

>>Mobogenie to offer the premium $1000 App Promotion Package for free to the Star Developers.

http://dgit.in/1tex5V2

A UX-rich app, on the other hand, will itself guide the user about what he's supposed to do next. It will answer the first question that comes into the user's mind – "Why am I here?" An app's efficiency is directly related to its UX design. The more efficient your app, the better is the UX design and vice versa.

UX is eventually related to UI as the UI must be designed in tandem with the UX principles. The person who studies and evaluates this is a User Experience Designer.

UX Designing – What does it involve?

UX designing is something that anyone can do, but the problem is not everyone can do it well. Two things you should keep in mind before starting off :

1. Know thy user
2. You're not the user

Before starting off with the design, you should know about your user base. This is a very important step, since without knowing about targeted users, their habits and tendencies you can't design a good experience.

In most cases, you aren't the user. That's why a design you find easy to use won't be the same for other users.

Similarly, what works for one set of individuals may not work for another set, because as human beings, everyone is different. Hence, UX designing may not work well every time. To deal with this, since we can't predict the actual experiences, specific user experiences and behaviours are generalised and used.

UX designing starts by considering the requirements. These can be:

- Business requirements, that are put forth by your company
- Design requirements, which includes a specific design to be used
- Technology requirements, which deal with the programming language and platform you'll be using
- User requirements

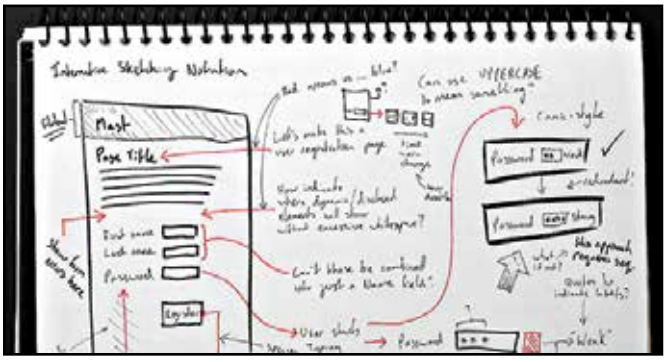
Once you're aware about the requirements, you'll go ahead and analyse the user base. Consider the following questions before proceeding:

1. Who is your user base?
2. Does your user base demand some special requirements?
3. Do they want you to solve a particular problem?
4. What mental models of a user do you need to consider?
5. Why will a user use your product?
6. When will a user use your product?
7. How will a user use your product?
8. Are there any accessibility concerns you need to take care of?

After collecting all this information, you need to analyse the functions of your product. You should consider "What primary action does the user need to perform?" This is the main task that your product will perform. While your product can have various functions, analysing its most primary function and designing the product accordingly for a particular user base will add to its great UX design.

Secondary task or several primary related tasks will follow then. You should consider what the user will do next, how he will end up doing the secondary task and design the experience accordingly.

In addition to this, you should consider whether there are multiple methods to perform a singular task, what kind of help you need to provide the user, what errors might occur and what inconsistent state the user might end up in.



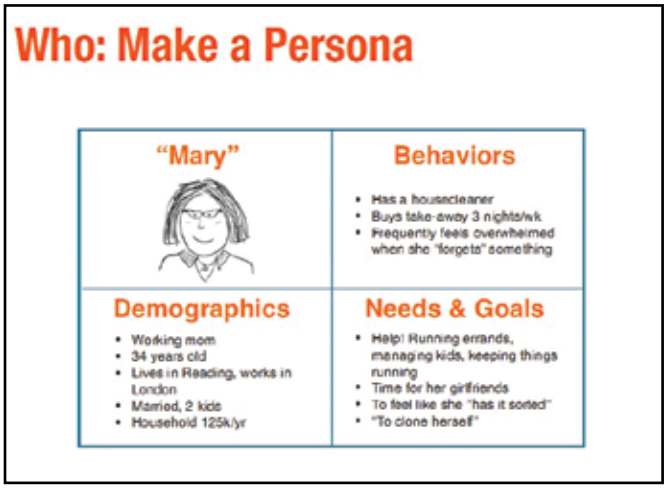
Sketch the elements of the UI to get a rough idea of the design

With this, the analysis phase considering the user's point of view is over. Next, you'll get into the technical terms to figure out your course of action for handling the functions that you've determined will happen.

You must be able to forsee what will happen at the front and back end, and decide what technology you need to adopt for quick retrieval of information, such as whether to rely on local database or use a database server. Imagine your user to be the laziest person on this planet, and automate most tasks to require minimum (and, if possible, no) user interaction.



User Interface mock-up made after the user analysis



An example of a persona

Sketching

You have all the data needed to start designing a user interface. Time to start sketching! This first step in creating the UI will ensure that the data collected from the user analysis, task analysis and function analysis is correctly reflected in the designed UI.

Sketching on a piece of paper is fast and easy. It will help you get good ideas and eliminate the bad ones. Once on paper, you'll easily understand where things such as options and menus need to be placed and how easy it will be for the user to get to them.

Wireframing

Wireframing is the next step in designing a UX-rich UI. While sketching gives you a rough idea for the creation of your UI based upon the analysis, wireframing gives you a rough guide for the layout of your product.

Wireframing is easy to perform. Neither do you need to know coding nor do you need to be good at graphic designing. There are readymade tools available with a drag-n-drop feature for creating wireframes, such as Mockingbird. These tools come preloaded with wireframed-UIs of various platforms.

Personas

A persona is depicted as a specific person, but is not a real individual. It's a fictitious identity which is synthesised from observations of many people. These people include the ones analysed previously.

It's very important for personas to reflect the pattern that you've identified in your user base. Keeping this in mind, you can design and present your persona by inventing details to make it believable.

Scenarios

A scenario is an imaginary story featuring one of your personas. It's the story of how your product fits into the life of your persona.

Storyboarding

Storyboarding is an effective way of capturing the how, why and when of someone using your product. This is represented in visual sequences of events showing the user's interaction with your product. The visuals can be anything from a hand-made rough sketch to an extremely polished comic-like design.

User testing

An actual user will play an important role in shaping the UX. In end-user beta testing, you'll ask a user to use your product and perform tasks planned for them.

This is a very straightforward approach, as you'll directly see how much the user struggles to use your product. Here, you'll know whether your design strategy was right, and if it wasn't, where it went wrong. And you can make the corrections accordingly.

*pointers

>>Interesting developer videos



***Learn 8.1 Complete**

>>Learn everything on Windows Phone 8.1 development. You'll get to understand about interesting stuff like the Navigation model, XAML layouts, MVVM and more.

Duration > 46:37

http://dgit.in/WinDevBeg



***Hello MATLAB**

>>Watch how MATLAB works and how you can perform operations like plotting a signal, matrices operations in MATLAB, Using FFT and more.

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http://dgit.in/Matlab_Intro



***Visual Studio Cross Platform Development**

>>Learn everything there is about cross platform development in Visual Studio from web to apps, Apache Cordova, WinJS and more.

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http://dgit.in/VSCross



***50 Examples**

>>Get an overdose of Angular.js in no less than 50 examples that cover single page app concepts, angular features, libraries and models

Duration > 1:04:48

http://dgit.in/Angular_JS

UX Design Principles

Now that you know what goes into UX designing, it's time to look at the set of standard principles for UX design. These principles largely depend on the kind of product you're building. They may either be generalised rules or rules set by the company for its own product.

1. UX is a life cycle

People experience things over time. Not everyone likes a particular product all at once. They might not have a good experience with your product at first.



Ask a user to perform the tasks you've planned

Thus, user experience is a life cycle that includes creating awareness, setting up the first time use, getting into regular use and even depreciating it.

2. Context is king

It's easy to create a product, if you know how that product will perfectly fit into the user's life. It's thus necessary for a UX designer to carry out in-depth research about the product's user base.

3. UX is invisible

UX hides behind the UI. A user will rarely notice your hard work behind offering such a seamless experience. Therefore, as a UX designer prepare to be ignored despite any success you have – nobody talks about your success. All the credit will probably be given to the UI designer.

4. Great experiences are simple

We've often heard the phrase 'less is more', however, this isn't always true. UIs are shifting from

volume-centered design to minimalistic design, but not every minimal design offers great user experience. A simple experience is not about volume, but clarity. A simple experience might appear easy to design, but in reality it's not.

5. Great experience is about control

Things going out of control is something no one ever likes. The same is applicable to your product. Your product should always be in the control of your user. If it's not, you can't surprise him with an abundance of features. Your user shouldn't be stuck at any step wondering what to do next.

As stated earlier, there may be many principles, but these are some of the standard principles followed by most UX designers. They don't change across different platforms.

Conclusion

The growing dependence on technology means that developers are looking forward to making apps for every problem faced in our day-to-day lives. There's an abundance of apps in app stores across platforms, however, not all of them go viral. Amongst the millions of apps in the stores some were noticed because of an exceptional idea turned into reality, while the others that featured simple ideas went viral because of their great UX design.

Many apps went viral simply because they had a sleek and simple UI. The all new Google Inbox is an example. Its newly introduced design is pleasing – be it the blue colour, the design or the mix of straight and curved edges. Additionally, the alarms and reminder features are great as well.

As mentioned earlier, your user could be the laziest person on the face of the earth. Considering this, Google employed machine learning algorithms to bundle your emails based on their content (primary, social, promotions, updates and forums), and it's really accurate. Additionally, these algorithms help keep your inbox spam-free. This provides the ultimate experience to the user as the application itself does the job of categorising his email.

UX has become one of the most essential parts of the product development process. Like we said earlier, anyone can come up with a UX design, but not everyone can do it well. This calls for a UX professional who will be dedicated to shaping the product and making it UX rich.



Mock ups for designs look like the above illustration

Among the important tasks included in the product development process are the wireframing, storyboarding and flow chart creation. There are lots of tools available to perform these tasks, the best of which are: Mockingbird, Framer, Lovely Charts, Solidify, Simulify, ForeUI and Creately. You may use these tools to create a perfect wireframe and flow chart for your product within minutes.

Finally, it's the UI. Following the process of ideation, sketching and wireframing you'll have a clear idea of how your UI should look. Once you've finalised the UX-rich UI design, you're set to create the graphic elements for the UI. Adobe provides the best tools for designing graphic elements. You can either use Photoshop, Illustrator, Fireworks or InDesign depending upon the type of element you're designing.

That being done, it should be submitted to the application developer for coding. You should supervise the UI from time to time to see whether the developer is making it exactly the way you want. At the end of the process you'll see your hard work turned into reality. >

*the source code



*Google fixes Lollipop's battery draining bug

>>Google has fixed the battery draining problem reported by most Nexus 5 users in the next minor Lollipop update.

http://dgit.in/1r0tD5h



*Bugs still exist in iOS 8.1.1

>>Apple pushed the iOS 8.1.1 claiming bug fixes, however, they still exist in the operating system.

http://dgit.in/1tpK0mi



*Microsoft updates Intune

>>Microsoft has updated the Intune Company Portal App offered as a deployable download at Microsoft's Download Center.

http://dgit.in/1AGCYCh

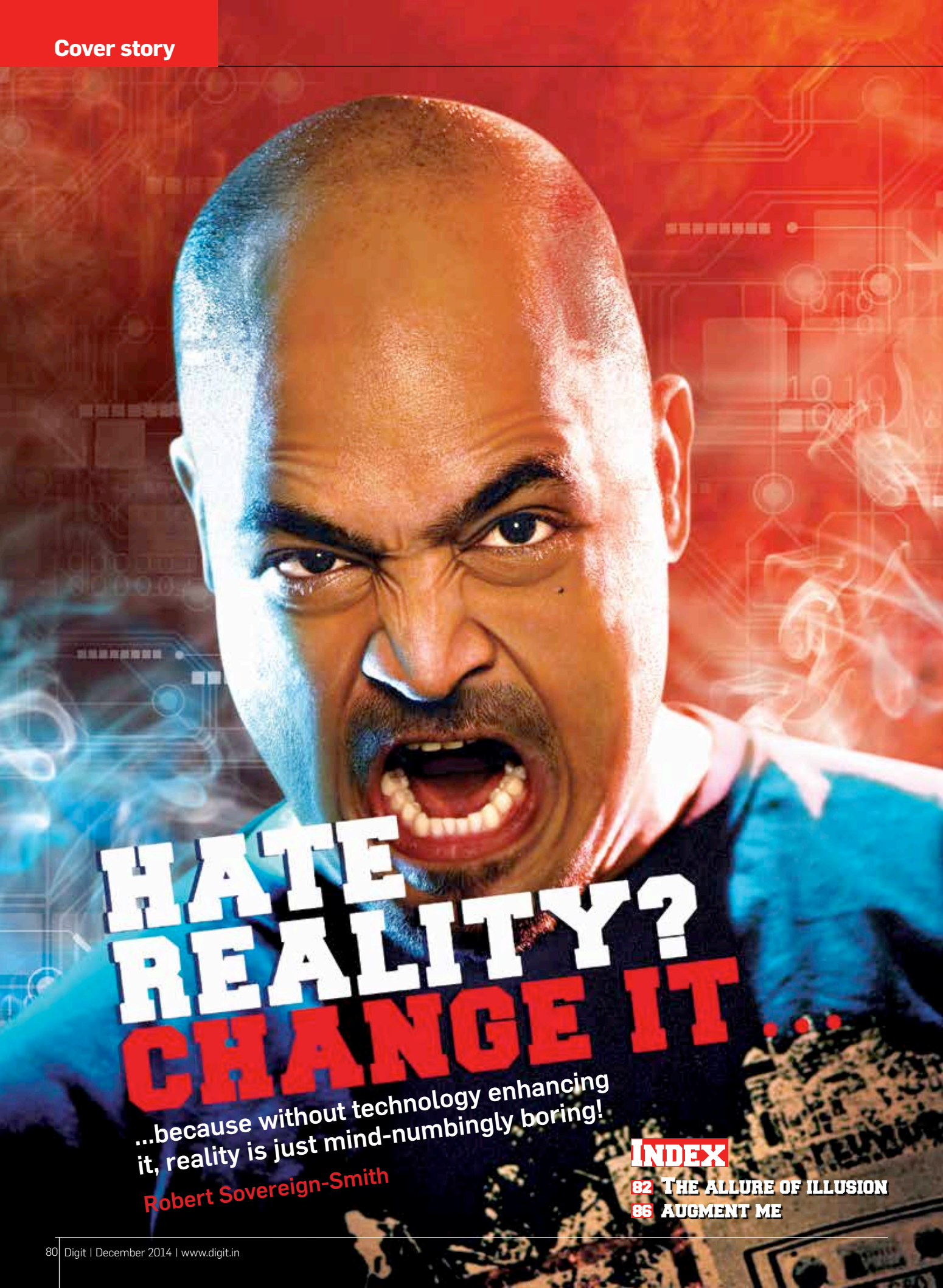
डिजिट अब हिंदी में

देश का सबसे लोकप्रिय और विश्वसनीय टेक्नोलॉजी वेबसाइट डिजिट अब हिंदी में उपलब्ध हैं। नयी हिंदी वेबसाइट आपको टेक्नोलॉजी से जुड़े हर छोटी बड़ी घटनाओ से अवगत रखेगी। साथ में नए हिंदी वेबसाइट पर आपको डिजिट टेस्ट लैब से विस्तृत गैजेट रिव्यु से लेकर टेक सुझाव मिलेंगे। डिजिट जल्द ही और भी अन्य भारतीय भाषाओ में उपलब्ध होगा।



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डिजिट



HATE REALITY? CHANGE IT...

...because without technology enhancing it, reality is just mind-numbingly boring!

Robert Sovereign-Smith

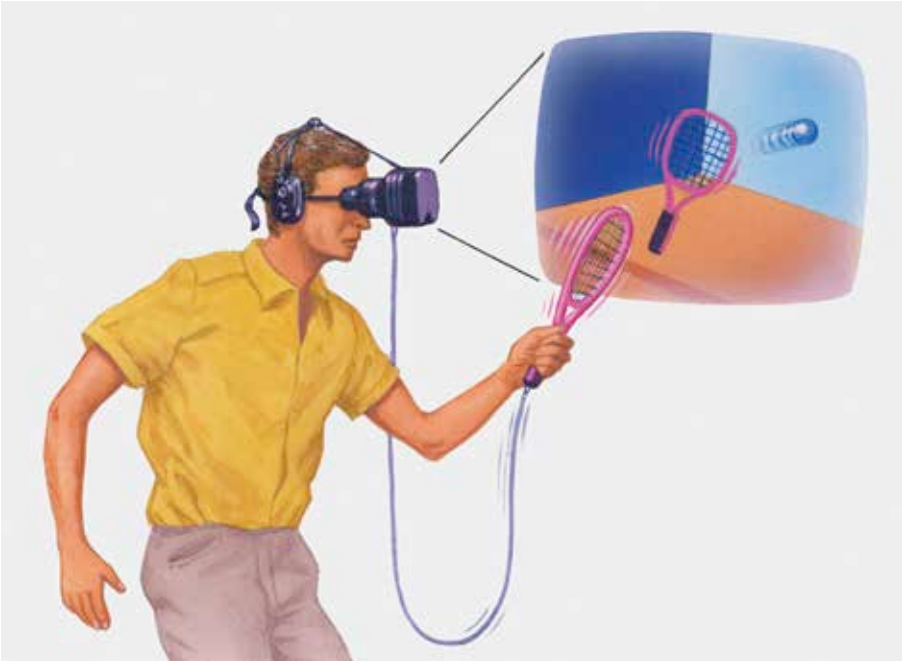
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So what is "reality" anyway? What's "real"? Is the smart phone the world has got it's nose buried in real? Is having a ton of Facebook friends who you never meet with, reality? Technology has invaded most of our lives, but not everyone's life, and thus the very definition of reality is about as clear as the vision of a near-sighted senior citizen without spectacles, stumbling about on a very dark and foggy night.

It's not like we can break technology users into simple haves and have-nots groups. The haves are made up of the have-a-littles and the have-a-lots, then there are the have-too-muches and the lives-only-in-cyberspaces... Some people live in a virtual world, eating only takeout and drinking energy drinks to stay awake and get even more time with tech, whilst others only ever interface with technology on an urgent need basis, which could be anything from once a day to almost never.

For the purpose of this magazine, which is certainly read only by the haves, and perhaps we can stretch a little to assume it's mainly read by the have-too-muches, we're simplifying things and assuming "reality" for us includes everyday technology, and enhanced-reality (reality+?), which is what this cover story is about, is using some existing and some yet-to-be-released-to-the-masses tech that we think will change our lives forever.



Why is this important? As early adopters, Digit readers are usually on the cutting edge (if not owning cutting-edge tech, then definitely reading up and knowing everything there is to know about said tech), and it's the people on the cutting edge that define what becomes of a technology. You will talk to those less learned than you and influence them. Some of you will jump early on to the bandwagon and start creating apps, services and more for this reality+ future. Others will be, say, amongst the first Indians to get things such as the Oculus Rift, whenever it's released, and will set the tone for how it's perceived by the have-nots, or the not-yets.

Amongst the other stories is exactly that, our personal experience with virtual reality and the Oculus, and our dreams for the future of VR. Our cover is augmented, but that's just the start of what is possible. With faster 4G networks and things such as videos and advanced augmentations becoming a lot easier to deliver, you can expect such an experience to become mainstream - the norm, instead of the exception. It's not all fun and games though, as you will learn in the pages that follow, in fact technology layered on top of reality may be the way to save lives, the environment, and help educate our kids better.

Enhanced-Reality is the future, and the shift to it has already begun. The only question is how enhanced will our reality be going forward? Whilst some may wonder how "real" such a reality would be to begin with... reality, in the end, is what you choose to make it.

VR IN MOVIES: VANILLA SKY

The concept of cryo-sleep or cold sleep has been breached upon many times and it concerns the preservation of humans at low temperature, with the guarantee of revival at a later date. The concept was also shown in the recent hit movie, "Interstellar". But what would happen when the field of cryonics develops beyond a certain extent, when people who are in cryosleep experience virtual reality simulations, which are basically programmed dreams, that look real and indistinguishable from reality. We won't really delve into how this is relevant in Vanilla Sky, suffice to say that we may have already spoilt it slightly for you and if you're really concerned about spoilers, watch the movie first.

The movie has an interesting take on cryopreservation and lucid dreaming and we must say, it's been done very well. It talks about dealing with tragedy, the assistance that VR can provide in such a situation and it provides a lucid, relatable backdrop to the future of VR and its potential to pervade every aspect of our lives, now, and in the near future.

THE ALLURE OF ILLUSION

VR today is a technology poised for widespread adoption. But why now? And how is your life going to change exactly?

Siddharth Parwatay

If science fiction is a representation of mankind's dreams and aspirations, it may hold important cues to our future. Take the concept of Virtual Reality. It has captivated those slightly more evolved amongst us ever since humanity started asking difficult questions about life, the nature of reality, and the allure of illusion. In fact, the dream of attaining VR has been right up there with space travel, artificial intelligence and immortality. Whether it was the idea of driving hoverbikes in Questworld or experiencing even a few moments in Star Trek's Holodeck, as children too we have always been fascinated by Virtual Reality. And why wouldn't it be fascinating? The promise of VR is too great to ignore. The possibility of putting on a pair of glasses and escaping the mundane, being transported into worlds of untold splendour in an instant, isn't just appealing, it's downright exhilarating!

One of the earliest efforts to make this dream of developing artificially generated sensory immersion a reality happened with the ironically (or aptly?) named Sword of Damocles head mounted display created by Ivan Sutherland in 1968. While working together with David Evans at the University of Utah they created a simulator which was huge and clunky but served as a proof of concept. Though rudimentary, it worked. It gave users a genuine illusion of being in a virtual environment.

The decades that followed saw waning interest in the technology in the consumer space. VR head mounted displays or experience zones that did eventually reach consumers were relegated to malls and arcades, still too expensive for them to be a household phenomenon. It's reported that at this time, VPL Research, one of the pioneering companies to actually build usable VR tech, sold its headsets for $100,000 a pop. Naturally the technology only found takers in niche industries and as logic would suggest, so



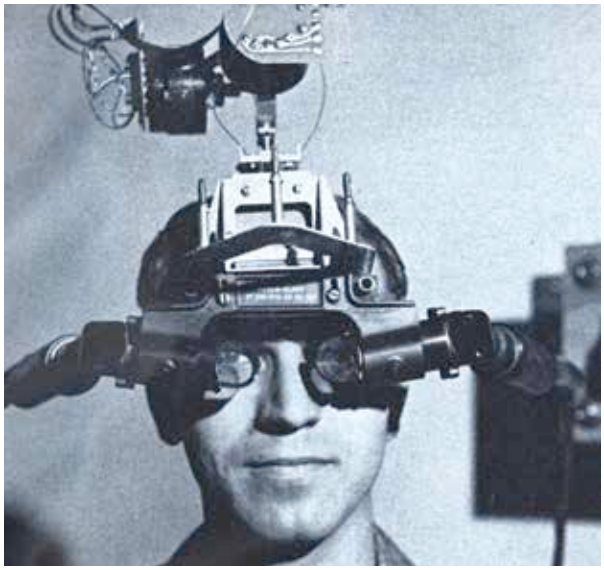
Your gateway into the world of illusion

IMAGE: WWW.LOVE2TECH.COM

did the military. Surgeons used HMDs to practice surgeries in super speciality hospitals, pilots ran simulations for flight training, and few architectural big wigs made virtual walkthroughs of their drawing board designs.

Soon the biggest names in gaming got the memo and experimented the best way they could. The mid-90s saw the release of Nintendo's Virtual Boy – a console that was almost unanimously declared a disaster. Users complained of nausea and the graphics just didn't look better than the gimmick that it turned out to be. Some would say they reached for the moon too soon. The supporting technology was just not available at that time.

Reality is a persistent b**ch. And it wasn't until 2009 that it met its match in the form of a plucky 16 year old kid named Palmer Luckey.



The Sword of Damocles hung over the user's head

The rift is bridged

Sitting in his garage, Palmer Luckey was fixing broken iPhones and investing whatever money he was earning to acquire high end gaming equipment and amassing a collection of old VR equipment through auctions. All the equipment he got his hands on only served to highlight how "not there" the technology was. It was plagued with lag i.e. a delay between the user moving his head and the actual visual panning in sync. This is one of the main things that causes nausea because your brain feels out of whack when deciphering visual stimulus. If it wasn't lag then the head mounted displays were too bulky to be of any practical use or the field of vision was too narrow to make them any good.

It was when he took apart these VR systems that he realised what the problem was. Many of these systems were using complicated lenses to warp the image to create the illusion of immersion. Palmer figured he could use off the shelf lenses and use software to distort the image to his need. Another fortuitous occurrence was that by this time smartphone displays had become quite advanced and quite cheap, thanks to their ubiquity and manufacturers trying to outdo each other with every given iteration. Palmer then used these smartphone parts to create the first prototype of what he called the Oculus Rift.

The experience that this little prototype delivered was far more lifelike and truly immersive. With motion tracking sensors mapping the user's head movement you could look around your virtually created environment. Soon this would expand to the possibility of inspecting objects by leaning in closer, even peering around walls. The chasm between the real and virtual was that much closer to being bridged.

Many iterations later Luckey was lucky enough to get his first big break when cult game developer John Carmack took an interest in his little hobby project. He took the Rift to the 2012 E3 conference and wowed audiences with the promise of this window to the unreal – something journalists and audience members had never experienced. The rest of the story we all know – a Kickstarter campaign that aimed for a humble $250,000 in funding but ended up netting $2.4 million within days. This culminating in Facebook buying out Luckey's fledgling company lock and stock for a cool, $2 billion.

The unreal awaits

The Oculus Rift is no longer just a product. Sure it's a device, but it's also a catalyst spearheading an entire movement – a sort of steady march towards the unreal. It has already inspired me-too devices like Sony's Project Morpheus and Samsung's Gear VR. Clearly the collective tech itself is on a steep curve towards improvement. The retail version of the Rift is slated to have a resolution higher than 1,920 by 1,080 pixels per eye (check the box on how it works) which would make the experience even more immersive than what we've experienced so far.

The mere fact that Facebook has entered the fray is proof enough that VR is now poised for widespread adoption not just in gaming but even other forms of social interaction. Imagine virtual experiences tailor made to your needs. Imagine travellers checking out hotel rooms by walking around in them before booking without ever leaving the comfort of their homes. And why limit yourself to worldly experiences? Reportedly

VR in pop culture: QuestWorld



Adventure was given a different albeit interesting meaning with The Real Adventures of Jonny Quest, an animation gem of the 90's. The most fascinating episodes were the ones that took place in the virtual world of QuestWorld which showed the protagonist and his followers inside a computer generated three-dimensional world meddling with stuff while on an adventure. Originally created for simulating experiments and as a research platform, QuestWorld was a very real virtual world. The reality of this virtual realm was such that fatal harm done to an avatar in the QuestWorld would actually be damaging to the user's body and brain (The Matrix?). QuestWorld is a perfect example of simulated reality and how it can be useful for experimentation without harming the real world (but you're not exempt).

Sony is already working with NASA to make a VR simulation of Mars, based on the images sent back by the Mars Rover.

Having tried the DK2, many in the Digit team itself don't think this is a far fetched reality. When you put on an Oculus Rift (even at the stage it is in today), your mind believes it is in those digitally created worlds. It's not uncommon for first time users to move their hands about trying to reach out to grab those objects that are so convincingly there right in front of your eyes. Your senses are thoroughly fooled. Perhaps that would be the next step in the evolution of this category – fooling all of your senses.

Even now early adopters are combining controllers like the Razer Hydra to bring in tactile immersion into their gaming. So if for example you are using a gun in a game, you will need to flick the Hydra to reload your weapon, and because you are holding a rod in your hand it can bring you ever so closer into thinking it's the handle of a .45 Magnum. If you are a fan of innuendo think of the preceding sentence as a metaphor for another interesting application of this sunrise technology – porn.

We were both tickled and aghast recently when we saw the launch of a new case for the iPad called the Launchpad by none other than infamous sex toy maker Fleshlight. Without mincing words the attachment literally let you have sex with your iPad. Can you imagine something like that being ported for use with the Oculus Rift? If VR is going to make it so easy for you to get off, would you ever take it off?

You could easily find yourself living more and more in a VR environment. Want to watch a movie? How about experiencing a 50 foot screen right in your home? Just pop on a VR headset and you could easily do that and in a more immersive way. This is not too far away considering the rate at which resolution for small screens (the kind used in VR headsets) is increasing. Even before a retail unit of a VR headset is in the market, filmmakers are already experimenting with the opportunities this technology opens up. Condition One's Zero Point is one example. It is the first 3D, 360-degree documentary film to be released exclusively for Oculus Rift. And this movie is more than just the illusion of a large screen created because it's so close to your face. The 20 minute movie has had people sweating in the midst of a military training exercise and even flying off a cliff apparently.

Extrapolating this further you have a real possibility of virtual presence devices. Yes, the kind Sheldon Cooper creates in the Big Bang Theory but infinitely more sophisticated. There could be motorised devices that will beam sensory information to you and you'll be in the comfort of your home wearing a VR head mount. Scary isn't it? Or exciting? Sounds a lot like the future we saw in the Bruce Willis starrer Surrogates.

Maybe years into the future we'll have VR-ready human with sockets for upgrades and eyeballs with focal length of about 4cms. How about thumbs with little fingers like a fractal explosion? You'll need all of them to control your virtual presence units. Maybe even monkey-style feet adapted to control an even bigger array of controllers!

SO HOW DOES THE RIFT WORK?

The first thing you need to know about the Rift is that it replaces your entire field of vision with a digitally created image. This doesn't mean that there is a wrap around screen in those chunky glasses. The screen is actually large enough to only take up about 100 degrees of your vision. On this screen the Oculus projects two images – one for each eye. A set of lenses then combines those two images into one stereoscopic image which gives the illusion of depth or what we commonly call 3D. It's kinda how you would see double when looking at an object that's very close to your eyes. But when you squint the two objects merge into one and focus clearly. Creating depth perception is only part of the process that creates true immersion though. The headset has sensors that detect orientation and a camera tracks your relative position in the environment through a series of IR markers on the headset. This enables 6 degrees of freedom of movement and is is responsible for allowing you to lean into objects or peek around corners. Confused? You won't be once you build your own Rift. Be sure to check out page no. 12 of SKOAR where we show you how to build your own Oculus for about ₹500.



Zero Point is a 3D, 360-degree documentary film

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AUGMENT ME

Augmented reality is set to change not just your perception of the world, but who you are...

Robert Sovereign-Smith

You've already scanned our cover and seen the augmentation we did to it. If not, do so now, because this intro sort of depends on you doing so, in order to be taken in context.

Back? Impressed? Don't be. What we did, is absolutely nothing compared to what you will see all around you in just a few short years. Reality, as you know it today, needs an upgrade, and it's going to get it a lot sooner than you think.

AR vs. VR

So what's the big difference? It's all the unreal and surreal and anything but "real", why differentiate? To start with, VR (virtual reality) as the name suggests is virtual. It's by definition, not real. So if you want to experience the feeling of standing on top of Mount Everest, looking around you, VR will be able to take you there and maybe even blow cold air up your shorts to give you actual shivers... it's about letting you live out your imagination. You will soon have VR movies - imagine Jurassic Park, but where you get a personalised experience of the events occurring, because each one of you is free to roam the virtual world and approach the action from a different perspective! That's VR; it's a show! Games, movies, things that you can experience sitting in a chair.

The new idiot box, and some suggest it's just one more way for humanity to sit on it's @$$ getting fat and unhealthy. Some would go as far as pitching the two against one another in a battle for survival, but we think this is far fetched. There are people who believe that AR is better, because it makes you want to go out and do stuff, not just sit in a chair. There are others who argue that Facebook bought Oculus VR because they wanted to stay competitive with Google Glass, however we think that's akin to comparing apples to red sneakers! Google Glass will enhance your reality, and Oculus will enhance your virtuality, and you're going to want both! The couch potatoes aren't getting fat because of technology, they're just choosing the technologies that allow them to stay lazy... at Digit we never blame the technology, only the users!

Augmented Reality (AR), however, is taking what's real, and enhancing it using technology to almost add additional senses while perceiving the "real world". This enhancement could be just simple information, or more complex layers on top of what you see. Think Superman's X-ray vision to be able to see what's happening on the other side of a building...



A contact lens plus glasses solution from Innovega (innovega-inc.com) looks really good already

AR Apps

Many of you have been using AR apps for some time now. Most of these take physical products or images and overlay them with information that you can interact with. Although even simple things such as

playing a video inside the bezel of a picture of a TV screen are impressive when you see it the first time, there's so much more that's doable.

We've partnered with Blippar for this issue to give you a taste and whet your appetite, and you will find a few more AR-able images as you go through the magazine, and also SKOAR!, so remember to keep an eye out for them.

Third eye

A concept that all of us Indians are familiar with is the third eye. Usually symbolised by a tika or a bindi that we wear on our forehead, the idea is still basically a belief that humans can start sensing more than what's visible to all or easily sensed by the majority by meditating and attaining enlightenment. It's also a belief in the Chinese culture, and in many other Asian belief systems, which basically means that about half the world already accepts that augmentation of our experiences are very desirable, enough to spend years trying to get to that level.

So what's technology going to do here? Help you take a shortcut and not require years of dedicated meditation and learning of skills? Perhaps, yes. If the ability to "perceive the world better" is the art of learning how to use our third eye, then yes, technology is going to give us that shortcut.

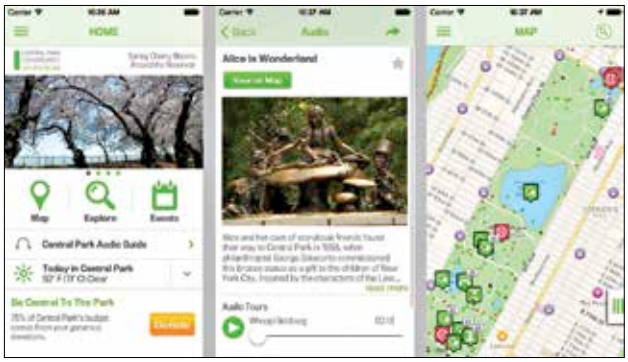


An idol of Shiva from Cambodia depicting the third eye - the power of the gods?

How? Imagine that you can already use VR apps to look around you (mostly in the US for now), through products such as Google Glass, or your smartphone screen, and see information that you never ever could before.

For example, walking down a New York street with the right apps installed, you could look down a street and see what businesses/offices are inside which buildings; are they open right now?; how far to a hot dog?; which of the 16 pizza places nearby has the highest rating?; can you park a car here?, if so from what time to what time?; any cycle rental places around?; which street corner are you most likely to find a cab?; where's the closest subway station? Then, for those in a tearing rush, as many of us are, when you do get to the subway, how do you know which subway car will drop you off closest to the exit at your destination stop? There truly is an app for everything.

Then there's guides for Central Park, information about ferries, all that touristy stuff, and even an app that augments your experience in the New York Public Library - not just the discovery of titles you haven't read, but creating lists, putting a title on hold for you to read, and doing a lot of what you would in person using your library account...



A must-have app if you're ever in New York and just want to take some time out to chill in the park

Remember, all of this is being done right now, just not in your city or country, but how long before it's common place globally? As we've suggested to you before... globalisation was hot earlier, now it's all about localisation, because locally is where you live your life.

Although everyone attempts to build an app that no one with a smartphone in the world can live without, maybe the best way to start is to build an app that no one with a smartphone in Bengaluru can live without...

Google Glass and other AR wearables are attempting to give you the fabled "third eye", or basically any additional information that you deem to be important when outside in the "real world".

Tying it all up

The fact is technology is able to achieve AR today. Using your smartphone and a cellular data network, already you have access to all the information that's out there. You could be standing on a road in Bandra, Mumbai, not know where you are, and just tap on a map application to find out within a meter.

Hungry? You'd probably open up Zomato to see what's around you and choose a restaurant that has the kind of cuisine you're hungering for, at the right budget, and also with recommendations from other foodies like you - perhaps even recommendations from some of your friends.

Just the way we use map data would be astonishing for someone who's lived under a rock for five or six years. It's also perfect for stereo-typical men who hate asking for directions... Think about it. Today, with Google Maps and a cellular data connection, you are able to travel almost fearlessly in most major cities around the globe. Although you may think of this as just reality, or the "way it is", it's actually augmented or enhanced reality. However, it's also augmented and enhanced you to the point where what once used to be a hard and scary task, now is commonplace. Technology has made us bolder travelers for sure, amongst many other things.

What we really need, however, is a way to tie it all up, and provide an almost seamless experience based on our individual needs.

For example, assume that you are a person who travels abroad a lot, and thus are always in new cities and need to find your way around the place. You also need a lot of help calculating currency



At close to a lakh ($1,500) the cost for this is certainly not worth it right now. Maybe once there are a million apps for it...

conversions, flight booking, frequent flier management, changes in schedules, hotel stay, and when you get the time, a little sightseeing as well.

Your needs from an augmented system are very different from, say, someone who does a lot of travelling inside a city, has to find new businesses/clients, grab quick and cheap bites to eat while on the go, and be on top of the weather and traffic conditions in the city so as to make the most of the limited hours in the day.

Currently, you have to do all the searching and finding out and ask all the right questions, even though all of the necessary answers are already out there. They're just masked behind different systems, different data sets, and different proprietary constraints. You can get multiple apps to do each of those tasks, but you can't yet get an experience tailored to you that could perhaps use the databases and services of multiple apps and just provide you with a single, simple, seamless interface.

This is what we mean by "tying it all up", and it will happen, by mergers and buyouts, or by interesting new revenue sharing models, but it will happen. How are we so sure? Because it's what we need and want, and are willing to pay for. If you're willing to pay for something, once there are enough of people like you, someone will be make that something to help part you and your money. That's just how the world works...

Applications

It's easy to slot AR into a nice niche for the travellers, or outdoorsy types who love gimmicks. Look at the examples we've given thus far, it seems like all the apps available are for that purpose - find your way, what's here, sell you stuff, etc.

That's only what's available now, when it's just starting to be adopted. Imagine when everyone has a phone powerful enough to show 3D graphics overlaid on what's shown on the camera, or when everyone has a heads-up display (HUD) in order to interface with technology. That's when everything really becomes possible. So what's this future going to look like? Let's take a look.

Mixed reality

To start of, first let's understand the concept of what some people call mixed



A wonderful experience, no doubt, but not something you want to wear outside

reality. This is because in the strictest of terms, a lot of the apps and applications you are likely to come across have both AR and VR. Take for example an app that shows you data about the monument in front of you. If it has labels and just simple data overlaid on the visual of the monument, then it's just augmenting reality. However, if it starts showing you images of, say, Stonehenge, as we think it was thousands of years ago, and plays a video of druids chanting in front of new looking stones, then that's delving into virtual reality's domain. In this issue itself you will find a puzzle that you can solve just by scanning a picture jumble, and that's, well mixed reality... Basically what we've been calling "enhanced reality" or reality+ all this time.

The only reason we mention this, is to avoid getting angry letters about the example usages of "AR" that follow, saying "How can you call that AR, that's VR." Since everyone has their own definitions, ours is, if it's overlaid on something you're experiencing in real life, it's AR / ER (enhanced reality), and if it's imaginary, like a game or experiencing deep sea diving while sitting in a chair, it's VR. Savvy?

Advertising

It's a necessary evil, and without it, most technologies would cost way more than they do now. Actually, most anything would cost way more than it does now, including this magazine you hold in your hands, without advertising spends to subsidise it all. For one thing, there'd be no "free" apps without advertising, and you can expect this to continue.

Enhanced reality will depend heavily on advertising; you can count on this. What this means is that every aspect that we mention hereafter will also have an advertising angle to it. You will be coaxed into buying new things in ever-increasing new ways, but now the advertising will be way more contextual than either Google or Facebook can offer. For example, while walking in New York, not only will you be told where the broadway theatres are, you will be told what's playing now, and also have an ad thrown up that says you get the cheapest tickets at xyz service (even if it's not true), and thus be enticed to buy a ticket right then and there.

That's not all, expect Minority Report style advertising - personalised and perhaps for your eyes and ears only, if you're wearing something like Google Glass in the future. With data gathering being everything, you can even expect customisation of ads to greater extents - so if you have a thing for people from the far east, all you will see in advertising is them, whilst someone else might only see dark skinned models trying to sell them things. The possibilities are endless, we just hope adblockers can keep up!



Remember the personalised advertising in Minority Report? It's where we're headed...



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Fraud-proof hai!

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Me-Commerce

If current times are the heydey of e-commerce, the next shift will be to Me-commerce. Another thing AR/ER allows you to do is get rid of the language barrier. Let's say a Japanese tourist is shopping in India, and wants to know all about the silk saris on display, he's going to have to ask in broken English, and get a reply in even more broken English, and so much is lost in translation that it's sometimes funny. However, thanks to AR being married to existing technology such as, say, RFID tags, perhaps he could just get all the details he needs, including where the saris were made and what makes them special. All he has to do is haggle on price. You'd also be thankful to AR when you travel to Japan and want something simple to eat that doesn't contain Octopus or Squid's feet, or whatever!



The ARC4 developed by Applied Research Associates for the US military makes AR a tactical advantage

You can already use your webcam to see how different spectacle frames look on your face when buying those online. Now imagine clothes shopping online using the same technique. AR could show you outfits and how they'd fit you, and how a shirt and pant combo look on you, etc.

The biggest change that will happen is total personalisation of the whole e-commerce experience. You can already feel it happening. Browse around shopping sites for a keyboard and suddenly magically all you see are keyboard ads. Think of that but for everything, everywhere you go, and you get the idea about how your shopping experience - online, offline, in game, while on holiday, anywhere! - will be unique to you and you alone. That's what we mean by me-commerce.

Military

Everything good usually comes from being developed by the military; that or the porn industry... Soldiers equipped for advanced warfare have been using AR for ages. Some would say simple night-vision optics could be considered AR, as the reality is pitch black, and the augmentation is the ability to see clearly. You can also consider head-mounted displays that soldiers use to tell them about terrain, identify buildings and give them accurate locations. Pretty soon every soldier will be able to see live satellite feeds overlaid in 3D on what he sees, and know exactly where the enemy is moving - even behind ridges or buildings - and thus be always aware of dangers. Like GPS, most of that technological capability will trickle into our everyday use.

Driving / Directions

Thanks to GPS, we're more aware of exactly where we are in our cars than anywhere else. So many of us already use GPS to navigate unfamiliar routes, but imagine subtle paths being marked right on to your windscreen! Instead of a voice telling you "Take the second right.", and then only muttering "Recalculating" as a way of saying "You went the wrong way dummy", GPS systems could just have a subtle arrow and say "Take that right".

If you are uncomfortable with something on your windscreen when driving, maybe it could just show on your phone when walking. Basically street view, but as you see it, and not in a clunky maps interface.

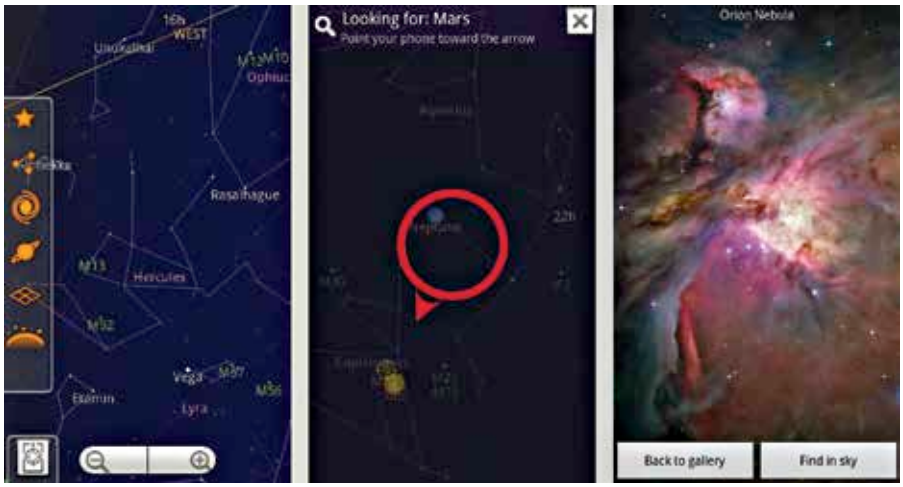
Medicine

Imagine a doctor walking in to see you and thanks to your medical history, already knowing all your past ailments, because depending on which part of the body he examines, he knows if you've had surgery, complained of pain, taken antibiotics, etc, to treat that part of the body.

Imagine overlaying in 3D the scans a doctor has performed on you, showing exactly where problem areas are, and thus being able to explain it to your relatives better. We will cut here, remove this tumour you can see here, etc.

Education

Education for everyone from medical students to engineers is just begging to be AR-ed. Visual aids are already increasing like never before in education, and you often hear people say that nothing grabs the attention of kids today like a screen. There's a reason for that - it's just easier to understand something with a video or a diagram. Now imagine medical students learning about parts of the body and being able to use their phones to see exactly where each part is, and be shown each vein and artery that's mentioned, etc. Engineering students could get 3D models of parts being shown in their textbooks, and the possibilities are only limited by our imaginations. Maybe this



Sky Map is a must have for star gazers the world over, educative and fun at the same time



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will be the way kids finally get cell phones into schools...

Manufacturing

When we say manufacturing, we mean specifically anything design related. Imagine how easier life would be as a designer if you could manipulate 3D models in real-time but on an existing base. So here's a basic design for a robot, now build creatively on it, and be able to make it animate and run to see if you got the balance all wrong. Some may even imagine the assembly of items that are done by hand, or parts where humans assist robots such as on car assembly lines, where the human could look through a HMD and be shown the sequence of assembly, and also what goes where.

Decor

This one's a no brainer. How many times have you bought furniture and then gone, damn, I thought it was bigger / smaller. If you haven't done that, then you've certainly sweated it out moving stuff around a room trying to find a better and fresher layout for all your stuff. Those of you with significant others have heard the words, "Let's move that sofa against this wall, put the dining table (which weighs a ton and a half) the other side of the room, and bring that large cupboard to this side..." Trust us, AR is excellent for saving time with such stuff.

Not just that, wondering how your house would look if you painted the big wall like a black and white chess board? Or maybe you're thinking about buying these lovely deep purple satin curtains, but are worried how they'd go with the furniture... Why sit around and Photoshop, when you can see it AR-ed?

Tourist stuff

Go see the Taj, but be given the tour by an actor pretending to be Shah Jahan... Walk down London, and see how the London Bridge changed several times to arrive at its current look... See the great Pyramids and the Sphinx, but not in their 2000+ year old state, but as they looked brand new... just overlaid on what you're looking at in reality... Walk through the Louvre, but with your own personal virtual guide, and little virtual tags on every display piece that give you more information. The personal guide will speak your native tongue with a terrible French accent, obviously, for authenticity.



Some day this will be even more of an experience than it is already

Archaeology

Imagine digging to uncover, say, an ancient building, but being able to overlay your calculations of the pattern of where to dig for maximum efficiency on the actual ground. Or you've just discovered one wall of a structure, and now want to extrapolate to see how far the wall might run, and compare that with the topographical layout of the site...

Everything else

Surely by now you can imagine a whole list of ways AR or ER can be useful going forth. As always write to us and tell us some of those suggestions. We'll give the most interesting ones some goodies and publish those suggestions as well.

Beyond HMD / HUD

Yes, we hate wearing things on our heads. It's true. Heck, VR would probably have taken off much sooner if headsets were cool. It's only now with them becoming lighter with more pixels packed in and enough processing power to do realtime rendering that VR is garnering interest, however, whilst we're OK wearing a stupid headset to be taken deep into imaginary land, we're not going to be walking about the street with those ugly things on. Heck, even wearing Google Glass seems a little lame to some. So what's the hope for AR then?

Work is being done on contact lenses that can act as a display. It's still early stages, but then again what hasn't been? Then there's always your trusty phone / tablet / device that connects you to everything... it will definitely have a screen, and that can always be a portal to an enhanced reality. However, it may sound like science fiction, but we fully expect direct brain connections with technology to rule the roost. Maybe a simple and small skull cap can be used to interface you with technology, and thus show you whatever it is you want to know, without even needing to ask for it - just think it... When that happens, the next stage of evolution will have occurred for our species... thus the title... Augment me...

Warped reality in movies

The Matrix is one of the first few movies that was completely based on a hypothesis that reality can be simulated and showed us quite vividly how humans actually lived (or were virtualized) inside a simulated world not knowing of its existence whatsoever. Although, the idea that the universe that we live in can be simulated is quite chilling, it's also very interesting and scientists across the world are working towards turning it into a reality. According to the movie, the Matrix worked by providing a false sensory input directly to the central nervous system of connected individuals. Achieving this in reality is quite difficult as it isn't as simple as placing someone on a treadmill with screens all around as the someone in question should also feel or rather believe that the world that he's in is as real as it gets. By using a research area called Optogenetics, scientists have genetically engineered animals like roundworms and mice to have light-sensitive proteins in their brain by using lasers to zap a few of their neurons. By doing this, they were actually able to stimulate reward pathways in mice for some time. But all of this was done at a miniscule level which is nothing compared to what would be required for simulating a world for humans. What would most certainly bake your noodle is the possibility of us being actually inside a computer simulation right now but there is no way to know about it for sure. Or is there?

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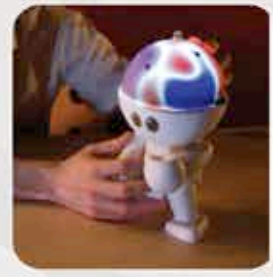
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The Ultimate Fight for Supremacy

The Zero1 Awards signify the pinnacle of achievement for products across categories...for this year only, of course!

Besides dipping mercury levels, nip in the wind, and the end-of-the-year holiday cheer, December is also Zero1 Awards season as we like to refer to it around the Digit Test Centre. All through the year, through a range of comparison tests and bazaar reviews, not to mention online reviews and DGT pages, all of us reviewers in the team have tested and rated just under 500 products in 2014. In the process, we've dished out numerous Best Buy, Editor's Picks and Best Performer Awards through all 12 issues of Digit magazine this year. However, this award right here – take a look at the trophy alongside – is even more exclusive and elusive than all the rest, because it's a carefully selected compilation of the best performing products of this year. Each and every single one of these winning products represent nothing but the pinnacle in their respective categories' performance standards. That's what Digit's annual Zero1 Awards are all about. What matters? Performance, performance, and only performance! What doesn't? In the wise words of Metallica, "Nothing else matters."

All the various categories of products we test and write about – month in, month out – are represented in this year's Zero1 Awards. We've added a few new categories this year, reflecting the changing trends: Wearables is in, despite being a young segment; so are Mini PCs, and Hybrid Laptops – perhaps the category that exploded the most with a whole host of products, after Mid-Ranged Smartphones around the 15k mark (which is also represented this year). Through the pages of DGT this year, we got to try our hand at some not-so-regular category of products –like high-end luxury watches, motorbikes and even expensive cars (Lamborghini Huracan and BMW Mini Cooper, anyone?). But again, we are only coming to grips with this hitherto uncharted territory, and it's too early to start giving away Zero1 Awards to them just yet.

A lot of care and effort has gone into selecting the product categories for Zero1 Award to ensure we have reviewed enough products in all these categories to be absolutely sure about our stand, and pick the best performing product (aka Zero1 Winner) in all of them through a series of industry-standard benchmarks and unbiased subjective tests. Through the pages that follow, you will see us summarizing the highs and lows of a Zero1 Award product category in the introduction of their respective pages, trying to give our readers an idea of what transpired in that product category this year, and predict future trends (if any). Not just crowing the Zero1 Award winner, we also list out 2-3 products that came close to winning but missed out narrowly – because, hey, just because they didn't win doesn't make them unworthy of your consideration. Remember, any product mentioned or written about in the Zero1 Awards pages are all outstanding products of the year. This is our effort to inform our readers about not just the absolute best performing products in their respective categories but to also give them other products to mull over, products that possess a unique trait or two. Needless to say, if they weren't special, they wouldn't be featured in the pages of Zero1.

Since October, the team has been inundated with a constant influx of devices and have seen enough of them to the extent of even dreaming about them in their sleep. Yep, that's what happened to a team member who shall remain nameless. Many thanks to all the brands who participated in Zero1 Awards automatically by sending us products throughout the year. Congratulations to all the winners! For all those products who came short and missed out on the coveted prize, better luck next time.

Here it is then. Team Digit is proud to announce the winners of the Zero1 Awards 2014. These are the best performing products of this year. Read away!

– Jayesh Shinde

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DSLR Cameras

Smartphone cameras have long since displaced the point-n-shoot as the camera of choice for most scenarios, but the image quality of a DSLR is yet to be matched by any digital imaging product so far, at least, as far as consumers are concerned.

DSLRs offer unmatched shooting speeds and clarity, when paired with some degree of skill and the right lenses, and while a novice might be intimidated by the sheer size of a DSLR and the plethora of controls on offer, it's actually not that bad once you get started. If you're serious about photography, or just want better photographs, spending a little over 20K is all you really need to pick up an entry-level DSLR.

Zero1 winner

Canon 5D Mark III

For a two year old camera to win Zero1 is unusual, but it's testament to the quality of the camera that it stands up to brand new cameras launched today. It's missing out on features, most notably in the video department, but it's a blazing-fast camera with fast auto-focus, excellent low-light performance and accurate white-balance.

On a purely, shall we say, clinical level, the camera offers less detail than the D810 and is also just a bit more aggressive with its noise reduction on default settings, but that's like saying that a Ferrari accelerates from 0-100 in 5 seconds as opposed to 4.8 seconds on a Lambo. The difference doesn't matter unless you're hell-bent on extracting the very last pixel of detail from an image, regardless of noise.

That said, it's important to note that while this camera is better than the D810, it's so very slightly ahead that it's only of academic importance. Only a photographer who really knows what he wants can pick between the 5D Mark III and the D810.



Nikon D810

Price: ₹1,81,000 (Body)



Canon 1200D

Price: ₹25,000 (with 18-55mm IS II lens)



Nikon D3300

Price: ₹28,000 (with 18-55mm VR II lens)



▲ CANON 5D MARK III

Price: ₹1,90,000 (Body)

Runner Up

Nikon D810

The D810 is Nikon's latest entrant into the full-frame DSLR space and it is a fantastic camera. The only reason it's falling behind the 5D Mark III, and even then, only by 0.5 points, is that the noise gets a little more noticeable as you increase ISO, requiring more aggressive noise reduction at those levels.

The camera does feature a much lower ISO of 64, which should make a world of a difference in studio photography, because the camera is incredibly sharp. We could very clearly observe even the texture of the SpyderCUBE that we use for calibrating our images; the amount of detail in the texture was not visible on any other camera or any other ISO, even on the D810.

While the 5D Mark III is the winner, the D810 might still be the more feature-rich option.

Worthy mentions

Canon 1200D

This makes for a great camera if you're just starting out in photography. It's got a lot of features, though slightly less so than its Nikon counterpart, and can boast of image quality that is excellent. It's not a 5D Mark III but as an entry-level camera, it's perfect. Throw on a 50mm f/1.8 lens and you have a superb photography tool at your disposal.

Nikon D3300

This camera lagged behind the 1200D in terms of image sharpness and colour tone, but the difference was only slight. It offers more features including a noticeably higher ISO range and better noise control at higher ISOs, but the loss in sharpness is still an issue. Regardless, if it's a Nikon camera that you want, you can't go wrong with this one; and it's not that much worse than the 1200D anyway.

Smartphone – High End

This is not just about being the best in class, it's about the biggest thing in the smartphone market. These phones are beasts in their own right povide unparalleled and uncompromised performance, albeit with hefty price tags. Once considered a thing of luxury, for those who have money to throw around, recent studies point towards aspiration and the fact now is that the high-end segment sells more in India than ever before.

What exactly do we aspire for though? The best camera? Unparalleled stock Android performance? The fastest updates? Or just a mean beast of a machine? The answer to all these questions is no. What you really want when you're spending the big bucks is everything and everything you shall get.

Zero1 Winner

Sony Xperia Z3

Ooh, a controversial decision! Not at all actually. Sony may not have the numbers to prove it, but there's no denying that it has been making some of the best smartphones in the market recently. The Xperia Z series was the company's real war cry for the Android market and it has never looked back. The Xperia Z3 is the best there is. It has a powerful Snapdragon 801 SoC along with Sony's trademark 20.7 MP camera. You wanted it all? You get it with this.

It has top class performance with the best camera and fluid Android performance. The Xperia Z3 goes upto 48k on AnTuTu and has very good scores on graphics tests as well. In addition, the device can give you almost one and a half day's worth of battery life.

You name it, the Xperia Z3 has it. The cherry on the cake is the IP67 waterproof tag that the phone comes with. So it's not just a well built phone performer but also one that can swim. There's really no going wrong with this one.



SONY XPERIA Z3
Price: ₹45,000

Second Place

Moto X (2nd Gen)

When it comes to utilizing the power of Android, while keeping one eye fixed on the price tag, there's no phone that comes close to the Moto X (yes, not even our winner up there). Motorola put in all its experience into the Moto X, coming up with a phone that is affordable considering the specifications that it brings. The company's Mobile Computing System lets the processor perform at its best, with stock Android doing the rest. The second iteration of the Moto X is a true flagship from Motorola.

Sound all hunky dory right? Because even though Motorola fitted a 13MP camera in this device, it doesn't even come close to the Xperia Z3. The camera on this device is average at best, which puts it firmly in the second place. If the Moto Maxx were in India right now, it would probably have taken the top spot on the list, but the company's current flagship is suited best for the second place.



Moto X (2nd Gen)
Price: ₹31,999



Apple iPhone 6
Price: ₹53,500



Samsung Galaxy Alpha
Price: ₹38,800

Third

Apple iPhone 6, Samsung Galaxy Alpha

Apple's iPhones have been known to top this list before. Not the new iPhone 6 though. The device still lacks a good enough battery and is too big and cumbersome for its size. It's not a bad phone to go for, but definitely not the best high-end smartphone. Apple needs to find a workaround for its battery issues fast. The iPhone 6, though better in terms of battery life than the 5S, is nothing compared to an Xperia Z3 or Moto X. That keeps it from being the best overall performer.

Smartphones up to 15k

After the launch of Moto G (1st gen) earlier this year, the mid-range smartphone segment lay open to innovation. In the aftermath we saw phone manufacturers go wild with specifications, screen sizes, SoCs, cameras, just about everything that can be quantified in a phone. The year brought various phones from Indian manufacturers as well as from old timers like Nokia, Sony, Samsung and LG.

This year we also saw an invasion of the Chinese companies like Xiaomi, which brought the Mi3 taking the market by storm. With its flagship like specs, mid-range price and limited stocks, the phone saw multiple flash sales ending in seconds. ZTE also launched its V5 smartphone this year, another decent performer. Asus came up with a brilliant line-up of phones, entering the thick of things.

We have news that the coming year will bring the new Zenfone range from Asus. Phones with 64-bit processing prowess may also hit stores in the budget segment. Next year would be another battle of the mid-rangers, with better specs and more cut-throat pricing.



Motorola Moto G (2nd gen)
Price: ₹12,999



Asus Zenfone 5
Price: ₹12,999



MICROMAX CANVAS NITRO
Price: ₹11,589

Zero 1 Winner

Micromax Canvas Nitro

At first glance the Micromax Canvas Nitro may not look as fancy as its other competitors in the market but as wise people say "Never judge a book by its cover". Micromax Canvas Nitro is a performer, period. While every other phone manufacturer is fiddling with a quad-core SoC in this category the Nitro is packing a 1.66 GHz octa-core MediaTek SoC, which churns out performance like not other. The device also has 2GB RAM and 8GB internal storage, the phone has a 5-inch 720p display. We put the phone through some rigourous usage, with games and 1080p videos, sometimes simultaneously, but were unable to find any lag in the performance of the phone. The 13 MP rear camera is the best in the category, and only the ZTE V5 comes close. You would be thinking the battery would be dead by now but surprise surprise, the Canvas Nitro gives almost 14 hours of battery life. So, if it's performance that you're after then this is it.

Second...

Motorola Moto G (2nd gen)

Motorola Moto G (2nd gen) is based on the tried and tested recipe of a handsome looking phone with decent specs and low price. The new version from Motorola is packing a Qualcomm Snapdragon 400 quad-core SoC clocked at 1.2GHz. The graphics part is handled by the Adreno 305 GPU and there is 16GB of internal storage (expandable to 32GB) and 1GB of RAM. All this doesn't sound that much on paper but it performs flawlessly in the real world and we didn't have any hiccups while we tested the smartphone. The camera and the display in the smartphone are not its plus points and could have been better. Maybe Motorola will become wiser when they launch a new version for this much liked phone.

Third...

Asus Zenfone 5

If we were giving out best design awards for budget category smartphones, the Asus Zenfone 5 would have won it in a heartbeat. The good looking phone from Asus is running on Intel's Z2560, which is a 1.6GHz dual-core processor. We were quite impressed that a dual-core phone which was able compete with the likes of quad and octa cores. The phone also has 2GB of RAM and commendable build quality. Though we generally like stock Android over any UI, the Zen UI does make a compelling case for itself. With CES 2015 round the corner, we have news that Asus will be refreshing the Zenfone lineup, maybe it would stand a better chance at winning then.



ASUS ZENFONE 5 (8 GB)
Price: ₹9,999

Smartphones Under 10k

The competition in the smartphone market has long moved to the mid-range and budget department. It is in this range where the sales happen the most and the compromise has been reduced, thanks to Motorola and some others. A lot happened in this range this year, with companies like Xiaomi entering with their new business models. Online sales are allowing them to cut the prices, while selling devices which were once considered to not belong to the under 10k segment.

There's a lot of competition here and it is quite close. The contenders, Asus, Motorola, Xiaomi, Huawei and many others, have all made legitimate claims on the consumer's pocket. This one is probably the toughest range to choose from.

Zero 1 Winner

Asus Zenfone 5 (8 GB)

Asus made a major statement with its Zenfone series of smartphones. The best amongst the Zenfones is the Zenfone 5, which sports an Intel Z2560 dual-core SoC with hyperthreading technology. The phone performs like a boss, with Asus's ZenUI running smooth and lag free.

The hyperthreading technology essentially allows the dual core processor in the Zenfone act like a quad-core, giving it high benchmark scores on AnTuTu, 3D Mark etc. On top of that, the Zenfone 5 offers an 8MP camera that is better than some 13 MP shooters in the market. To top it all off, the phone's battery lasts you a full day very easily. There really was no room for complaints.



Moto E
Price: ₹6,999



Xiaomi Redmi 1S
Price: ₹5,999



Android One
Price: ₹6k to ₹7k

Second Place

Moto E

You just can't ignore this phone can you? The Moto E was for long the best phone in this department. In fact, if not for the Zenfone 5, it would perhaps have taken the prize yet again. The phone landed in second place because the Zenfone 5 essentially offers the same performance as the first gen Moto G, the Moto E's elder brother.

The Moto E is still a good phone to buy, but it doesn't have a good camera and isn't the performer that the Zenfone 5 is. The phone was meant to revolutionise the budget range and it did that, but the competition is tougher now and its older hardware and weaker performance means Motorola will have to upgrade in order to get back in the driver's seat.

Third Place

Xiaomi Redmi 1S, Android One

We couldn't complete this list without mentioning a few more phones. The Xiaomi Redmi 1S would take the cake, if these awards were for the most disruptive smartphone in the market. The online strategy, combined with the first gen Moto G-like specifications made it the most interesting smartphone in ages. The phone didn't live up to the spec-sheet though and that disappointed us and dropped it to the third place. It's still a value for money device.

Google also made an effort to revolutionise the budget range, but the Android One phones seem to have fizzled out. We're yet to see the 'revolution' as the phones seem to offer nothing out of the ordinary and can't make a legitimate claim over the others in this segment.

The benchmark scores for these devices are mediocre, even lower than the Moto E, meaning they're nowhere close to what the Zenfone 5 offers. Perhaps future Android One phones willake a difference, but for now, the first three phones by Micromax, Karbonn and Spice don't hold a candle to the others mentioned on this list.

Smartphones – Phablet

The focus seemed to have shifted to making compact phones for a while, but with Quad-HD screens, one needs a bigger display. Enter phablets. A lot of people love them and many more want them. The good ones come at a price though, which means they deserve a whole new segment for themselves. A bigger screen though means less room for mistakes, because the smallest chink sticks out like an eye sore.

The Nexus 6 and iPhone 6 Plus were the biggest names in the phablet segment this year. What does that mean? Both Apple and Google are ready to play, which means everybody else is going to come in now.

Zero 1 Winner

Samsung Galaxy Note 4

The Galaxy Note was the first real phablet that made any impact on the smartphone market, making Samsung somewhat of a pioneer in this segment. The company took some flak with the Note 3, but has upped the ante with the Galaxy Note 4. We called it the best phablet in the market in our review and it really is.

The Galaxy Note 4 sports a Snapdragon 805 SoC, which when combined with the revamped Touchwiz UI, means you're holding a beast incarnate in your hand. The AnTuTu scores go up to 48k and the Note 4 never skipped a beat when we tested it.

Adding to all that is Samsung's 16MP camera, which is very good and has good low light performance as well. What really makes this tje best phablet though is the Super AMOLED Quad-HD display, which takes the pixel game to a whole new level. It's vibrant, bright and works well under sunlight. So there you have it, the best phablet today.



Apple iPhone 6 Plus

Price: ₹62,500



LG G3

Price: ₹35,999



SAMSUNG GALAXY NOTE 4

Price: ₹55,399

Second Place

Apple iPhone 6 Plus

Apple's entry into the phablet segment was arguably the most awaited thing this year. But when it came to best overall performance, we had to go with the Note 4. The iPhone 6 Plus is a performer no doubt, but it's Full-HD screen doesnt match up to the Quad-HD Super AMOLED on the Note 4. That is what puts it in the second place.

You're going to buy this of you're an Apple fan, but that's just about the only reason why you would buy this. The phablet segment was all about Android and the iPhone 6 Plus is not enough to pull users from the Android ecosystem. Maybe next time Apple.

Third

LG G3

Can a phablet be small enough that it can be called a phone instead? Well LG definitely thought so and the company proved it too. The LG G3 is its flagship and it sports a 5.5 inch Quad-HD display, but its overall dimensions are similar to many 5 inch devices. Also, LG introduced buttons on the back of the device, instead of the side, allowing it to make the phone slimmer and easier to hold.

The Snapdragon 801 SoC performs very well, but it still doesn't match up to the 805 on the Note 4. The LG G3 is just a generation behind and in terms of overall performance, can't take much more than the third spot right now. The AnTuTu scores go up to about 45k and in sheer numbers, the phone is at third.

It has a good camera though and the laser autofocus system is very fast. The camera perform well under low light too. Both Samsung and Apple are a step ahead though.

Camera smartphone

One of the most adored and important features of a smartphone today is its camera. With improvement in technology smartphones are now equipped with cameras that can produce some really high quality pictures. Gone are the days where one would require a separate camera when going on a vacation as today a decent smartphone with a good camera module does the job. This year saw some really fantastic smartphones offering high quality cameras.

We saw Sony launching two flagships in one year including the Xperia Z2 and Xperia Z3 both of which offer a 20.7MP camera module and 4K video recording with the latter offer an ISO boost of 12800. Samsung also introduced some worthy camera smartphone with a brand new 16MP sensor on the Galaxy S5 and the same unit along with OIS on the Galaxy Note 4. Apple launched the brand new iPhone 6 with yet again an 8MP sensor but it continues to maintain an edge over others.

Zero1 Winner

iPhone 6

Apple proved yet again that it has the potential provide the best and while overall we were not impressed with the smartphone, it managed to awe us with its camera. The iPhone 6 might not have a high megapixel count when compared to other flagship camera smartphones, but it certainly provides high quality pictures. The secret behind it are the algorithms that have been implemented in the camera app. The auto white balance, like always, is impressive and adapts well. The camera offers zero shutter lag and a fast auto focus system which is sharp and accurate. The high 240-fps feature is also a great add-on bringing in super slow-mo videos. In low light conditions, noise is under control and the flash helps, too.

The iPhone has always had an excellent camera and Apple has maintained it again on the iPhone 6. It get the award as it performs flawlessly without any hiccups and produces some of the images we have seen on a smartphone.



IPHONE 6
Price: ₹53,500

Worthy mentions

Sony Xperia Z3

Sony provides camera modules for a number of smartphones and well, it saves the best for itself. The Xperia Z3 came shortly after the Z2 with similar features and capabilities, but it improved a lot in the low light department with an upgraded ISO 12800 capability. The 20.7MP sensor with an f/2 aperture produces one of the pictures we have seen on a smartphone with rich and accurate colours in almost all lighting conditions. The boosted ISO capability works well as pictures taken in low light turn out to be amazingly sharp with very low levels of noise. Even the camera app offers some great features and modes making it an excellent camera on a smarpthone. The Z3 also offers 4K video recording which produces sharp and vivid videos. The Xperia Z3 comes really close to the iPhone 6 when it comes to camera quality, but it needs some stability improvements.



Sony Xperia Z3
Price: ₹39,810



Samsung Galaxy Note 4
Price: ₹55,399

Samsung Galaxy Note 4

Optical image stabilization is slowly crawling into more and more camera modules of smartphones and Samsung has finally implemented it in their latest flagship phablet. Samsung has used a 16MP sensor with an f/2.2 aperture just like the Galaxy S5 and added OIS which improves on the focusing and sharpness of the pictures. The pictures have vivid colours and controlled auto-white balance, but some pictures tend have high saturation. The HDR mode is worth mentioning as it vastly improves the exposure and quality. The Note 4 definitely has a worthy camera and proves that Samsung is not going to go easy when it comes to the camera wars, and this is definitely worthy of your consideration.



IPAD AIR
Price: ₹28,900

Tablets 10-inch

Apple has been the ruler of the 10-inch tablet market, thanks to the iPad, over the past few years and we haven't seen a lot of tablets that leave a similar impression. This year we saw tablets adopting high-resolution displays going as high as QHD (2560x1440p). The 10-inch size proves to be more productive as well as you can always attach a keyboard or even a mouse to get more out of the device. Tablets also went slimmer cutting down thickness that is comparable to some of the slimmest smartphones. Some interesting launches included Samsung's new Tab S 10.5 with a brilliant looking Super AMOLED display and slim design. There was also Lenovo's Yoga Tab 10 which included a unique kickstand, a metal body and was perfect for multimedia purposes. In terms of productivity, Windows tablets prove to be the best and we saw an interesting tablet from HP called the Omni 10 which was a good blend of hardware and performance.

Zero1 Winner

iPad Air (16GB Wi-Fi)

Apple proved again that it is can defend its title and the iPad Air is definitely the best 10-inch tablet to buy. It features a 9.7-inch display with a 2048x1536 pixel resolution and is thinner and lighter than its predecessor. It weighs in at 469gms for the Wi-Fi-only device and 478gms for the Wi-Fi and cellular. It runs an A7 processor clocked at 1.39GHz, paired with 1GB of RAM. The iPad Air's solid-state storage options range from 16GB, through 32, 64 and 128GB which makes it the only tablet with such a high capacity option. The high-resolution display proves it worth while playing multimedia content as high-quality videos look sharp and vivid. While the hardware sounds slower than a lot of Android tablets, it still manages to provide enough power to run high-end games or play HD content. With a simple interface it has a fluid OS which provides a great user experience.

The iPad provides an extremely stable interface and a powerful performance package which hardly any Android tablet can reach. Apple, yet again, defends its title for the best 10-inch tablet.



Samsung Galaxy Tab S 10.5
Price: ₹44,800



HP Omni 10
Price: ₹27,900

Mentions

Samsung Galaxy Tab S 10.5

Samsung gave a jab to the iPad Air with the Galaxy Tab S 10.5 by providing some high end hardware and pricing it similar to the Apple product. The Samsung Galaxy Tab S 10.5 has a 10.5-inch has a 10.5-inch Super AMOLED display with 2500x1600 WQXGA resolution and is powered by an Exynos 5 Octa (1.9 GHz QuadCore - 1.3 GHz Quadcore) along with 3GB of RAM.The tablet comes with an 8MP main camera with LED Flash and 2.1MP front-facing camera, 16/32GB internal storage and WiFi ,WiFi Direct, Bluetooth 4.0, IrLED connectivity options. It also features a finger-print scanner which improves on security and is a simple password solution on the tablet. With such high-end specs, it is a powerful tablet and is probably the only Android tablet that comes really close to Apple's iPad Air.

HP Omni 10

The 10-incher HP Omni 10 has the best hardware among most of the Windows tablets out there with a fast Intel Atom Z3770 quad-core processor with a base speed of 1.4GHz and burst speed of 2.4GHz. There is 2GB of RAM and 32GB of internal storage which can be expanded via a microSD card. The resolution on the 10.1-inch display is 1920x1200 which offers better pixel density and a crisp display. The larger display also means a lot of battery usage, for this HP has smartly put in a 6200mAH battery which offers a pretty good battery backup. In terms of productivity, the HP Omni 10 is a great tablet as it offers full-fledged Windows 8.1 and you can actually use it like a proper PC by just attaching a keyboard.

Tablets 7-inch

A 7 or an 8 inch tablet is a perfect multimedia device sitting between smartphones and large screened tablets and laptops. While it is powerful enough to provide you with features like internet browsing, gaming and video playback, it is small enough to fit easily in the smallest of pockets without bringing bulk to your everyday routine. Some of these small tablets also come with voice calling facilities, making them even more productive. The mid-sized tablet category has always been dominated by Android tablets but since the launch of iPad mini, things have stirred up a bit. Until last year, the Nexus 7 was one of the best options in the 7-inch category but now we have a number of brands launching tablets to give it some serious competition. Tablet like the iPad mini 2, Huawei MediaPad X1,and the Samsung Galaxy Tab S 8.4 were some of the most impressive launches that we saw this year.

Zero1 Winner

Samsung Galaxy Tab S 8.4

The Android category dominates in the 7-inch space and this year we gave the title to Samsung's Galaxy Tab S 8.4. The tablet features an 8.4-inch Super AMOLED display with 2500x1600 WQXGA, an Exynos 5 Octa (1.9 GHz Quad-Core +1.3 GHz Quad-core) with 3GB of RAM and runs on Android 4.4 Kitkat with TouchWiz on top. The tablet comes with 16/32GB internal storage and supports up to 128GB storage via a microSD card. Other than that you get an 8MP main camera with LED Flash and 2.1MP front-facing camera. Connectivity options include WiFi, WiFi Direct, Bluetooth4.0, IrLED. The tablet is powered by a 4,900mAh battery. The performance on the tablet is excellent and the hardware provides immense power to do extensive tasks be it gaming or just sending an email. The octa-core processor and the 3GB of RAM provide a lag free experience and the 2K Super AMOLED display just makes it the tablet to have. The battery usage is also optimized as Samsung has vastly improved the way its chipset controls the usage of battery. This was evident in our video test as it managed to squeeze out about 19-20 hours of video playback.

One of the best displays, a powerful SoC and a great battery life makes the Galaxy Tab S 8.4 the best mid-sized tablet for the year 2014



Apple iPad mini Retina

Price: ₹28,900



Google Nexus 7 (2013)

Price: ₹24,000



SAMSUNG GALAXY TAB S 8.4

Price: ₹37,800

Mentions

Apple iPad mini Retina

The iPad has always been the best tablet in the 10-inch category but the launch of the iPad mini proved that Apple wants to dominate the 7-inch market as well. The new iPad mini Retina uses almost the similar housings as the original iPad mini, but has a higher resolution "Retina" display, a faster processor and faster Wi-Fi. It features a 7.9-inch 2048x1536 (326 ppi) LED-backlit IPS display, a dual core 1.3 GHz Apple A7 processor, 1 GB of RAM, and 16 GB, 32 GB, 64 GB, or 128 GB of flash memory storage. You get all the goodness of the original iPad in a small form factor without compromising on the overall performance. If you think the a 10-inch iPad is too big, the iPad mini Retina is definitely the best option.

Google Nexus 7 (2013)

Google's ultimate tablet is still one of the best 7-inch tablets as it offers a powerful performance package in an affordable price. It features a 7-inch full-HD display (1920x1200 pixels), implying a boast-worthy pixel density of 323ppi. It is powered by a quad-core Qualcomm Snapdragon S4 processor clocked at 1.5GHz, and features 2GB of RAM. The tablet comes in two storage variants 16GB and 32GB, with no expandable storage and also features a 5MP rear camera and a 1.2MP front-facing camera. The Nexus 7 is still one of the best Android tablets to have as it runs on stock Android meaning a smoother experience. Also, it has got the brand new Android 5.0 Lollipop update, making it even more sweet.



CABINETS:
Corsair Obsidian 900D
Price: ₹24,899

Cabinets

Computer cabinets are the home of your precious components and over the course of time, we have seen, tested and used a ton of cabinets from every size, price range and category available. These are the best of the bunch.

Zero1 Winner
Corsair Obsidian 900D

This is not a case, it's a frickin' closet. With enough room to mount the most demanding hardware, it's one of those cases in the market that enthusiasts lust for. Being the previous winner of the coveted Zero1 title didn't stop the 900D from winning it again this time. The space, features and the professional brushed-metal finish of Corsair's flagship are the reason that we used it for our Ultimate PC build this year.

Runner Up
NZXT Phantom 820

With its futuristic design, the NZXT Phantom 820 is bound to make heads turn if you have it on your desk. One of the most impressive things about the 820 is its amazing build quality and it performs well, too.

Worthy Mention
Cooler Master 690 III

The original 690 is considered to be a legend among mid-tower cases and, Cooler Master has upgraded the classic by making subtle but incremental changes to it. The 690 III still carries the same design as the original and improves on it with a multitude of useful features while still being a good performer.



NZXT Phantom 820
Price: ₹16,836



Cooler Master 690 III
Price: ₹6,999



Epson EH-TW8200
Price: ₹2,54,000

Projectors

Given the right conditions, a projector should be the centrepiece of your home entertainment system. Prices are definitely falling, as we've seen year on year, and more projectors in the market are tuned for entertainment (even the ones selling as office projectors). An HDMI port is pretty much a default on any projector you'd buy now, something that wasn't commonplace until last year. Even though it remains a gimmick, stereoscopic 3D is definitely getting better with each passing year, as we experienced while testing projectors all through this year. What's next on the horizon? Why, 4K UHD projectors, of course!

Zero1 Winner
Benq W7500

The Benq W7500 is our winner for only one reason – it's the best projector we've seen all year when it comes to pure visual performance. Whether it was watching high-definition movies, YouTube videos, reading large chunks of text, a bit of gaming, this projector stood up to the task with great aplomb. It has very good brightness levels and one of the best contrast levels we've seen on a projector, and it's sharp, too. It's 3D performance is also pretty good, although this part of the performance matrix had very low score. A worthy winner, if there was one!

Runner up
Epson EH-TW8200

Performance is the name of the game on the TW8200, as it's easily one of the brightest projectors we've encountered. It offers a range of viewing modes for getting the best output, no matter what the scenario – gaming, Full HD movie playback, stills, or text. Forget ghosting or lag, this projector has close to exceptional colour range, as per DisplayMate's test results. It's 3D ready and the accompanying glasses make for a nice 3D viewing experience, too.



PROJECTORS:
Benq W7500
Price: ₹2,30,000



ASUS PB287Q
Price: ₹54,000

Monitors

This is the year for 4K and high-res displays. Not many of us will spend more than ₹10,000 on a monitor of course, but the fact that we're slowly seeing 4K monitors trickle into the market means that it won't be long before 1080p starts looking old. Let's not forget Apple here either, their new retina iMac's will, if nothing else, present a very plausible case for higher resolution displays.

In terms of technology, there really isn't much to write about yet. We're seeing features like G-Sync and LightBoost, but the technology isn't yet mainstream and we'll probably have to wait until next year for such supported monitors to become more commonplace. In the meantime, well, there's IGZO, a panel technology that we have a lot of hope for, considering its potential for improving response time as well as reducing power consumption.

Other than that, there's not much to report. Monitors have markedly improved in quality since last year and it's now routine for us to see panels that offer contrast ratios in excess of 500:1. BenQ has been particularly prominent, offering some great HD displays (G series) at very reasonable prices (though you really should stay away from their E series panels) and ASUS and Dell have both impressed us with their high-end IPS panels.



BenQ BL3200PT
Price: ₹75,000



BenQ GW2255HM
Price: ₹9,700

Zero1 Winner

ASUS PB287Q

If you want 4K done right, then this is the monitor that you want. The monitor is among the more gorgeous ones we've tested and comes quite well-calibrated out-of-the-box. We measured a contrast ratio of about 700:1 at 75% brightness and a maximum supported brightness of 300cd/m2 with a 97% sRGB CIE graph, figures that are all the more impressive considering that this is a TN panel that we're talking about.

What all those fancy numbers mean is that the PB287Q is offering you the image quality of an IPS panel, with the response time of a TN one (up to 4ms according to our measurements, though it's rated at 1ms). Ideal for gaming, editing and anything else that you can think of doing with that panel. At a price of just Rs.54,000, this is a steal. The Dell UP3214Q is also a superb monitor to consider, if you really need 4K quality, but it's about three times the price and, the last time we checked, had major issues with lower resolutions.

Worthy Mentions

BenQ BL3200PT

If it's contrast ratio you want, and our in possession of a highly flexible budget, this just might be the panel for you. The BL3200PT is a 32" 2K panel that offers up a contrast ratio of around 950:1, resulting in stunning image quality. The refresh rate does suffer owing to the VA technology that the monitor is based on and if you're a heavy gamer, you might have some trouble. Refresh rate aside, everything about this monitor screams quality. It's very well built and comes with a nice control pod as well. There really isn't anything we can say against the monitor other than the fact that it's a bit on the expensive side and that if it's really image quality you want, you can get cheaper, but smaller, IPS panels.

BenQ GW2255HM

For those on a budget, the GW2255HM has a lot to offer. You can pick it up for just under 10K and if you do, you won't be disappointed. What your money gets you is a very impressive contrast ratio of almost 1100:1 and a somewhat less impressive brightness of 240cd/m2. It's a VA panel, so as with the BL3200PT, the refresh rate is terrible, but the colours are as saturated as can be expected. The monitor is overly sharp and could do with a bit of tuning but other than that, it's a good deal at the price.



HARD DISK DRIVES:
WD VELOCIRAPTOR
Price: ₹15,765

Hard Drives

The shifting focus of having easily accessible data at all times on the cloud has led to a stagnation when it comes to innovation in the consumer HDD segment. Obviously more focus is on enterprise drives since that's what cloud storage data centres make use of. We have seen the SATA 3.2 revision bringing in newer interfaces but not much is being done by hard drive manufacturers to take advantage of that. SSDs are slowly gaining popularity and with declining PC sales manufacturers no longer have a wide supply-demand gap. Yet, every now and then we get to see a sliver of innovation. SSHDs are part of that sliver. These hybrids are yet to achieve mainstream popularity but that won't be for too long.

Zero1 Winner

WD Velociraptor

Last year's winner takes the crown yet again. This particular Velociraptor, the WD1000DHTZ was introduced in 2012 and is yet to be beaten by any other drive. SSHDs do come close and even get ahead when it comes to seek time (read/write) but when looking at the overall performance the Velociraptor comes out in the lead. Hopefully, the next year should see some decent improvement in SSHD technology which may lose WD its crown.

Worthy Mentions

Seagate SSHD

Seagate has been leading the way when it comes to SSHDs. WD and Toshiba have hybrid drives in the market but not with performance as consistent as Seagate offers. Toshiba drives offer better read speeds but they only offer 2.5-inch variants while Seagate caters to the 3.5-inch desktop market as well.



Seagate SSHD
Price: ₹9,200 (2TB)



SanDisk Extreme II
Price: ₹7,500 (120GB)



Plextor M6s
Price: ₹4,399 (128GB)

Solid State Drives

Solid State Drives have improved on all fronts this year, be it speed, capacity, durability or form factors. The one change that deserves the biggest mention is that of 3D V-NAND. We've seen Intel come up with 3D transistors and it was only natural that it was to be replicated across all implementations. This means more capacity thanks to the stacking; and lower power consumption.

Zero1 Winner

Samsung 850 Pro

Being a manufacturer of NAND chips gives a brand complete freedom over innovation. The 850 Pro is the first to implement 3D V NAND and we'll be seeing the 850 Evo having the same chips as well. This potent combination gives Samsung a clear edge over its competitors, outperforming every SSD we've tested this year by a long margin. What's more, with the increased TBW(Total Bytes Written) capacity of 3D V NANDs the durability of these SSDs is insane – Samsung is offering a 10 year warranty on the 850 Pro.

Worth Mentions

SanDisk Extreme II

Close on the heels of the 850 Pro is the SanDisk Extreme II which won our recently conducted SSD benchmark comparison test. Very good, this SSD!

Plextor M6s

With just a minor drop in performance and a not so minor drop in price is the Plextor M6s. If you aren't fussy about losing out on performance by a small margin to get more storage space, grab this one.



SOLID STATE DRIVES:
SAMSUNG 850 PRO
Price: ₹7,999 (128GB)



BOSE SOUNDLINK SPEAKER III
Price: ₹22,388

Bluetooth Speakers

Our bluetooth speaker comparison test this year was quite an eye opening experience. One insight was that bluetooth speakers are not a gimmick – they're a category that's here to stay. We did see a multitude of speakers in all shapes and sizes offering a whole lot of unique features this year. Some could be daisy chained wirelessly to other speakers, some were rugged enough to be thrown around, some even resistant to water splashes, and then there were a few that did come close to the audio quality and power that you expect from wired speakers and in a few rare cases exceeded those expectations. Those are speakers we'll be talking about in our Zero1 awards writeup this time around.

Zero1 Winner

Bose SoundLink Speaker III

The predecessor to this superlative speaker – the SoundLink Speaker II – was our winner in the bluetooth comparison test we did early this year in February. Naturally our expectations from it's next iteration – the SoundLink Speaker III – were high. And it does not disappoint. The Bose SoundLink Speaker III takes off beautifully from where the SoundLink II left off. It's about the same size but significantly improves bass performance and extreme highs. Now every high cymbal comes soaring above everything else and the lows are deeper than anything we've heard in the portable space. It's louder this time around, too. All in all at ₹22,388 it's the best portable speaker money can buy, and yes it's a significant cache of moolah. Money well spent, though.



Get Together by House of Marley
Price: ₹19,990



JBL Charge
Price: ₹6,000



Bose SoundLink Mini
Price: ₹16,875



JBL Pulse
Price: ₹9,000

Worthy Mentions

Get Together by House of Marley

Made out of natural bamboo and fabric, this monstrosity although humongous, is certainly nice to look at. Not very big on clarity or precision, it's big on decibel levels. It is the loudest portable speaker we've had, nudging out the previous title holder – the Logitech UE Boombox. The Get Together's dual 3.5 inch drivers and 1-inch dome tweeters belt out a collective 20W RMS which is enough to get your outdoor party grooving. Be warned it's heavy and bulky but if volume is what you are looking for it might suit your needs. At ₹19,990 it's not exactly cheap and you might want to also consider our Zero1 winner which is only a shade less loud but leaps ahead w.r.t. audio quality.

JBL Charge

The Charge has been a long favourite here at the Digit Test labs for two reasons: one, it manages to combine two different product categories – a power bank and portable speakers, and two it doesn't compromise on audio quality. The powerful 6000 mAh battery makes for a much stronger use case for carrying around another device in your bag. If you're in the mood for some tunes, it's a rich and powerful speaker. For times when you're running out of juice on your phone, it's a life saving breath of power. At a market price of about ₹6,000 it's a value for money for purchase.

Bose SoundLink Mini

The SoundLink is an impressive piece of engineering wizardry to begin with. It's passive radiators are supposed to face opposite directions reducing vibrations. And guess what, it works! The ability of this little thing to churn out radiating, room-filling lows was impressive. It's deceptively loud and impressively accurate. Its small but heavy so not exactly ultra portable. At a price of `16,875 it provides a great price option between the mid range JBLs and the ultra-high end SoundLink III.

JBL Pulse

The JBL Pulse is a funky little novelty number that doesn't sound bad at all. With the integrated array of LEDs on its grille, it's like a modern day rendition of a lava lamp. These lights "pulsate" to the music that you're playing in five pre-programmed patterns (with additional patterns available for download via an app). The colours and the patterns look quite trippy and the speaker is quite the conversation starter. At its street price of about ₹9000 it's a must buy if you want something different from your portable audio.

Processors

Nothing too exciting when it comes to processors. Intel has been releasing a tonne of processors each year and so has AMD kept its focus on APUs. Intel's IGP received a much required improvement with Iris Pro and AMD has been working a little magic behind closed doors with its HSA architecture. Carrizo will the very first processor to be fully compliant with HSA which means the IGP can be made use of for computation tasks as well. Kaveri APUs which were released earlier this year gave us a taste of what HSA has to offer. Intel moved to the X99 platform with support for DDR4 memory. AMD on the other hand has voted to wait out till DDR4 achieves mainstream popularity and becomes affordable. Which is a smart move given that their processors are overlooked by the enthusiast segment in favour of Intel.

Zero1 Winner

Intel Core i7 5960X Extreme Edition

The enthusiast market has been dominated by Intel for quite a few years now and this year too it seems AMD will be nowhere near the top. The X99 platform came out to much fanfare since it's been two years since we've seen a platform update. The processor didn't push for a big improvement when compared to the 4960X but that's what happens when there is a platform change. The focus is more on getting things right rather than getting a major boost in performance. Needless to say, 2 extra cores and 4 extra threads have resulted in a much better multi-core performance increment.



PROCESSORS
INTEL CORE I7 5960X EXTREME EDITION
Price: ₹72,499



NZXT Kraken X60
Price: ₹8,273



Cooler Master Nepton 240M
Price: ₹9,999



CPU COOLERS
CORSAIR H110
Price: ₹9,500

CPU Coolers

As time progresses, we see more and more improvement in terms of cooling performance of CPU coolers. Most of the improvement that we've seen is from the liquid coolers cantonment as let's simply face it, air coolers have a limit to how good they can get as size is a limiting factor for them which isn't necessarily the case for liquid coolers. But for Zero1, all that matters is performance and as far as that is concerned, no new coolers have upstaged our previous winners, save for one. Behold, our CPU freezing champions!

Zero1 Winner

Corsair H110

Double Kill! The Corsair H110 won the Zero1 award for the best CPU cooler last time and it still reigns supreme. Well, 120mm radiators are passé. Take a 140mm sized radiator; no take two of them, merge them together into a long 280mm radiator now add in an equally majestic pump and tubing. Top this up with a pair of silent Corsair fans and what you have is the H110. Still going strong!

Runner-up

NZXT Kraken X60

Since the NZXT Kraken uses the exact same design and specifications (except the fans) as the Corsair H110, so no wonder it performs this well. The Kraken X60 even went slightly past the H110 in cooling performance but lost out in its noise performance.

Worthy Mention

Cooler Master Nepton 240M

The Nepton 240M from Cooler Master came extremely close to winning the trophy but fell short by a hair's breadth. Nevertheless, the Nepton 240M is a wonderful performer, extremely silent and worth your attention.

Wearables

This year saw the dawn of wearable devices and while these devices have been around for sometime it has finally reached a stage where they are smarter, more intuitive. We saw some interesting products from various brands during the year and almost all of them provide two major functions, notifications and health analysis.

One of the biggest announcements in the wearable sector was done by Google where it revealed the Android Wear platform along with the first set of Android devices from partner OEMs. The first wave of devices included smartwatches from LG and Samsung which somehow didn't feel impressive but Motorola's Moto 360 gained a lot of attention thanks to its round design. Google has confirmed more than 12 partners in the Android Wear program and devices from Asus and Sony are already on their way and we expect other brands to follow.

Zero1 Winner

Moto 360

Motorola has made a comeback into the mobility world and it is not shy into venturing in the wearable market. The Moto 360 looks impressive with its simple and comfortable design. The large round dial makes it look just like an everyday watch and you can wear it all day without feeling an extra bulk on your wrist. The display is a 1.5-inch IPS panel with a 320x290 pixels which is the highest among all the current available devices. The display is bright and performs great under the sun. Coming down to the hardware, it runs on an old TI OMAP3630 processor, but it doesn't feel sluggish at all, in fact it is great on performance. The experience is smooth and the touchscreen is quite responsive which is protected with Gorilla Glass 3. In terms of functionality you can get all your notifications from your smartphone, reply to some texts or emails, control music, and keep a track of your fitness thanks to the built-in pedometer and heart-rate monitor. You can also give voice commands and surprisingly it is very accurate providing quick and correct results. The best part about the watch is that it can charge wirelessly by just popping it on the bundled dock charger. Comparing to all the Android Wear watches available in the country, the Moto 360 not only performs the best it offers more features as well. We think Motorola has done a good job in providing a fluid and lag free experience and that is why it deserves the award. If you really really want a smartwatch, this is the one to buy.



MOTO 360
Price: ₹17,999



LG G Watch
Price: ₹14,999



Samsung Gear Fit
Price: ₹12,100

Mentions

LG G Watch

LG made an early jump by announcing the G Watch along side the launch of the Android Wear platform. Unlike the Moto 360, the G Watch comes with a plain square watch-face and the design somehow is very flat and simple. It does look like an ordinary watch making it a great device to have around your wrist. The square display is an IPS panel with a dimension of 1.65-inches and a 280x280 pixel resolution, which sounds decent, but under the sun it isn't that bright. Running on a Snapdragon 400 SoC, the performance is almost similar to the Moto 360 but we wish it was a bit more responsive. The only area where it outshines the Moto 360 is the battery life, as you get a bit more juice thanks to the larger 400mAH battery when compared to Moto 360's 320mAH. The performance on the G Watch is worthy of a mention, however judging by the overall performance and features, it just falls short of the winner.

Samsung Gear Fit

The Gear Fit is a great looking health-band that also acts like a watch and a notification tool. It comes with a curved AMOLED display and the straps feel comfortable on the wrist. The Gear Fit has a built in heart-rate sensor and also a pedometer which keep a check on your health statistics. Thanks to the vivid display, it works great indoors and outdoors and various watch faces make it look quite attractive. It also offers a better battery life of about two and a half days. Unlike Android Wear the Gear Fit is not very intuitive and lacks features to reply yo your notifications. The performance is quite good despite random connectivity issues. It does the job well and is fast enough to show your notifications and health stats.



MFDs:
HP M126NW
Price: ₹12,075

Monochrome MFDs

Let's be frank, this is the most boring category in this test but it's also an understandably neglected one. When it comes to monochrome MFDs, especially laser ones, there's really no difference in quality that'll matter to the average person. What matters more is reliability and consistency and of course, the cost of printing. Since we're only interested in performance here, we'll strictly focus on reliability and consistency and thus we measure the ability of the printer to reliably print a few 100 pages of mixed content, the speed at which it does this and the consistency of the output. We also test for alignment and other miscellaneous aspects.

Zero1 Winner

HP M126NW

The M126NW stood out with its text quality, and even more surprisingly, image quality. If that wasn't enough, the print speed was also impressive. Do bear in mind that we're only comparing this to other laser printers. Expecting stellar black and white photo prints from a laser printer is simply asking for too much. It's a well-built printer and proved to be quite reliable in testing. Other than at the highest print quality settings, it never really struggled.

Worthy Mentions

Brother DCP L2541DW

Brother has always been a brand that's given us consistently good performance in even the worst of situations the DCP L2541DW doesn't disappoint. We're happy to report that this is a sturdy, feature-packed printer that performs quite well and handles large print loads with ease. The only reason it's not winning Zero1 is because the HP has better print quality. But honestly, only the most discerning of buyers will really care that much about print quality.



Brother DCP L2541DW
Price: ₹16,350



Netgear Nighthawk R7000
Price: ₹20,699

Routers

There has been a bump in overall throughput which was unexpected since we hadn't seen any implementation of the new chips from Broadcom, and Broadcom was powering every flagship router last year. Turns out the show stopper turned out to be a competitor this time – Quantenna. Their QSR1000 is the reason behind the winner this year with a 4x4 configuration ensuring more spatial streams to work with. However, in August Netgear announced the R8000 Nighthawk which is a successor to the R7000 released last year with the new Broadcom chips. However, the new Broadcom chips were still 3x3 so to get more throughput Netgear introduced another band. We've even seen economy routers under ₹3,000 with support for 802.11ac.

Zero1 Winner

ASUS RT-AC87U

The RT-AC87U happens to be the first Wave 2 router to hit the market with the major improvement being MU MIMO and 4 spatial streams. However, the final implementation of Wave 2 routers will see a much larger jump in throughput which we are eagerly waiting to see. The RT-AC87U at the end of the day provides greater throughput on a per-client basis compared to the competition.

Worthy Mentions

Netgear Nighthawk R7000

It was unfortunate that we couldn't get the R8000 in time for the test. However, the R7000 is not a bad router at all. Price drops over the last year have made it a lot more budget friendly. The throughput increment of the R8000 over the R7000 is massive so unless you're in need of the extra bandwidth you can make do with the R7000.



ROUTERS: ASUS RT-AC87U
Price: ₹24,500

Gaming Headsets

Being audiophiles, it's hard to like gaming headsets simply because a set that's really optimised for pro-gaming is one that, by design, must compromise on the actual quality of the audio in favour of positional accuracy and the clarity of every tone. This has been an interesting year as far as gaming headsets go. We did see some markedly better sets at very reasonable price, well within the reach of most gamers.

Zero1 winner

Steelseries Siberia V2

Last year's winner is still the unrivalled champion of Zero1. The V2 is a set that manages to ably blend a pleasant sound signature with the positional accuracy required of a great gaming headset. It's definitely not the ideal set for music or movies, but it's not bad at either and that should be sufficient for most. It's in games that the V2 really shines, impressing us with its accurate rendition of every source of audio in-game. It's expensive, but offers unmatched performance.

Worthy Mentions

Kingston HyperX Cloud

The HyperX cloud is a brand new gaming headset from Kingston and it surprised us with its overall performance. While the set isn't as accurate as the Siberia V2, it proves itself to be a good all-rounder. This is a set for those who enjoy their games and other multimedia, but would rather not invest in a separate set for both tasks.



GAMING HEADSETS:
STEELSERIES SIBERIA V2
Price: ₹8,000



MINI PCS:
ZOTAC EI750 PLUS
Price: ₹70,000



ZOTAC EN760 Plus
Price: ₹62,499



Kingston HyperX Cloud
Price: ₹7,500

Mini PCs

Small form factor machines are getting stronger and stronger each year. There are plenty of contenders in the market but some companies are still holding out. ZOTAC is one of the big players in the Indian scene and they have multiple series aimed at different user scenarios. Almost, every manufacturer is squeezing in more components in the same space but for the sake of keeping costs low they've resorted to using one RAM module instead of two with the option of populating the other slot. Also, very few manufacturers are using non-ULT processors. Hopefully, the scenario might change throughout next year.

Zero1 winner

ZOTAC EI750 Plus

The EI750 Plus is one of the few processors out there to have Intel's Crystell Well processor. The other notable SFF PC with a processor from the same lineup would be the Gigabyte Brix. However, we compared this with the ZOTAC EN760 Plus which has the 4200U processor coupled with an NVIDIA 860M. Needless to say the EN760 was ahead when it came to graphics performance while the EI750 Plus was ahead when looking at CPU compute numbers. At the end of the day we used weighted scores to decide which was the winner and the EI750 Plus took the crown. The Core i7 4770R in the EI750 Plus was the sole reason that pushed it ahead. Had it not come with Iris Pro 5200 we'd have the EN760 Plus here instead.

Worthy Mentions

ZOTAC EN760 Plus

Having discrete graphics is a boon for any SFF PC. Especially, if it aims to cater to gamers. The EN760 Plus has NVIDIA's 860M which is an implementation of the same Maxwell chipset as is in the GTX 750 Ti so gaming performance is leagues ahead of the EI750 Plus but that's about it.

Gaming Laptops

Laptops are a difficult category for us, they seem so limiting when compared to the potential of a PC, especially when said PC can give you better performance for a third of the price of a normal gaming laptop. That said, we've been forced to accept that we live in a world where not everyone can be tied to a PC and there are many who'd love to take their gaming with them.

Keeping that in mind, we've always tested gaming laptops with that ideal in mind. We look for devices that are worthy of playing the games we want, at the resolutions and settings that we want. A laptop needs to be a complete package because what you get is what you'll have to live with till you get another laptop, so choose wisely.

Haswell is the biggest revolution in laptop tech. in a long time, but that's about it, which is a bit disappointing. Also disappointing is the fact that we haven't really received many laptops for testing, given that only a handful of new laptops have actually launched in India. We've seen a lot of new gimmicks, which includes backlit touchpads, RGB-backlit keyboards and even one particular laptop with a mechanical keyboard!

Another point in favour of laptop gamers is that in-game graphics seem to have plateaued at a point that's comfortable for laptop gamers, only losing out on extra graphical oomph that only the best of PCs will be able to handle anyway. What's the configuration of an ideal gaming laptop today? A 4th generation i7 CPU, 8GB RAM and an Nvidia 850M series card of better. Such a system is perfect for running most games at medium-high settings, which should be enough for most of us.



ASUS G551JK-DM053H
Price: ₹90,000



MSI GE60 2PE
Price: ₹1,12,000



MSI GS60 2PE
Price: ₹1,38,000

Zero1 Winner

ASUS G551JK-DM053H

This is an interesting laptop for a number of reasons. First, its hardware is quite good as the device sports an Intel i7 4710 CPU, 8GB RAM and an Nvidia 850M GPU. What's interesting is that this laptop outperforms the likes of the MSI GE60 and GS60, both of which sport 860M GPUs. The laptop is also cheaper than the aforementioned competition and thus, it offers up a combination of price and performance that's hard to match.

The laptop does suffer in some departments, particularly screen quality, where we see too much backlight bleed and the keyboard and speakers aren't comparable to the competition. But then again, the touchpad is very nice and temperatures are kept in better check (which is probably the secret to its better performance).

Worthy Mentions

MSI GE60 2PE

If ever a laptop deserved to be ogled at, this has to be it. It's a very nice looking device with a stunning screen, we mean it, stunning. The quality of the display is so good that it puts many high-end desktop displays to shame as well.

Display aside, the hardware is good, our test model came with an i7 4710 CPU, 8GB RAM and an 860M GPU. Performance is excellent but for some inexplicable reason, it lags behind the Zero1 winner by a small amount in real-world gaming tests (by as much as 20% in Bioshock Infinite). Still, if you can get past that, this laptop offers you a more wholesome feature set, but at a price.

MSI GS60 2PE

The only thing that really separates the GS60 from the GE60 is that fact that the GS60 is sort of like an Ultrabook variant of the GE60. It's also slightly better equipped, sporting 16GB RAM, but it also compromises a bit on the keyboard and screen quality. Don't get us wrong, the keyboard and screen are quite excellent and better than that on most laptops, but they pale in comparison to their stellar counterparts on the GE60. This is an excellent choice if you want a light and portable gaming laptop.

Mainstream Laptops

Last year, the knives were out, and obituaries spewed everywhere. Tablets were outselling laptops, as the post-PC era had well and truly begun. Notebook PCs aren't going down without a fight, oh no sir! This year proves it beyond any shadow of doubt, that laptops are the new desktop PCs – they're not as popular as they once were, but that doesn't mean no one wants one, either. The laptop computers launched this year have evolved to be slightly sleeker, more trendy than ever before. And when it comes to internal hardware, they've continued to keep pace with the latest and greatest component level refreshes to give users a greater buying proposition – specially in the performance segment.

Equipped with the latest Intel Core processors, and the fastest, newer and improved graphics chips from AMD and NVIDIA, nothing could stop some of the fastest laptops we've reviewed this year from giving full-fledged desktop computers a good run for their money.

Zero1 Winner

Lenovo IdeaPad Y50-70

This 15-inch laptop from Lenovo is a premium product, aimed towards users who desire the best entertainment – be it multimedia or gaming – and it does so with great aplomb. The IdeaPad Y50-70 notebook comes with a very good, if not impressive, combination of hardware components: just take a look – a quad-core Intel Core i7-4710HQ processor clocked at 2.5 GHz (with Turbo Boost capability of reaching 3.5 GHz), 8GB RAM, 1TB HDD + 8GB SSD (hybrid storage), and NVIDIA GeForce GTX 860M graphics with 4GB GDDR5 dedicated memory. Forget day-to-day multitasking – it handles all that with a yawn – this ensures that most modern games are playable easily at high settings. No complaints from the device's HD 1080p screen or audio performance (thanks to onboard JBL speakers) either, as it continued to hold its head up high throughout our performance tests. The laptop's backlit keyboard and touchpad are definitely one of the best input device combos we've had the pleasure of interacting with this year. The keyboard's typing experience is near perfect and the touchpad's feedback is equally impressive. One thing's obvious about this laptop – you won't be disappointed by its performance.



LENOVO IDEAPAD Y50-70

Price: ₹79,990



Toshiba Satellite P50t-B

Price: ₹86,000



Acer Aspire E5-571G

Price: ₹63,000

Close second...

Toshiba Satellite P50t-B

This laptop comes with the exact same CPU as the Lenovo Y50-70, 16GB of RAM, 1TB hard drive, and AMD Radeon R9 M265X graphics with 2GB GDDR5 memory. This Toshiba laptop's pièce de résistance is obviously its 4K UHD display, which Toshiba proudly claims to be the "first in the world" for a laptop screen. The IPS display is very good and the 4K resolution is definitely great to work with. However, despite having a pretty good GPU, gaming on 4K is far from perfect, and the graphics performance is just a notch below our Zero1 Winner. With a brushed metal screen lid and an all-silver look, the Toshiba Satellite P50 carries its premium laptop tag with great distinction. Its brushed metal screen lid feels great, backlit keyboard is a joy to use, and a responsive, well-built touchpad, rounds up a very good input experience. Even its onboard audio, courtesy of Harman Kardon speakers, is better than most others. The audio visual experience on this machine is worth experiencing. This isn't a mass market laptop by any stretch of the imagination, limited only to early adopters and geeks who want to boast of a 4K display notebook. Worth every penny, if you desire this.

Distant third...

Acer Aspire E5-571G

The Aspire E5-571G seems like an unimpressive laptop from the outside, but its innards are what matters here: there's an Intel Core i7-4510U processor in there, accompanied by 12GB of RAM, 1TB hard drive, and NVIDIA GeForce 820M graphics with 2GB of dedicated VRAM. Overall, in terms of performance, this laptop comes behind the Lenovo and Toshiba notebooks, and is a nice option to consider for anyone who's interested in a multimedia device which can also dabble in gaming and not stutter or suck at it.

Business Laptops

The world of business laptops is a slow-moving one, and for good reason. Compared to hustle and bustle of consumer notebooks – which is a constantly churning space with the latest and greatest products thrown at the wall by brands, hoping that at least some of them stick with consumers and get sold off the shelf – business laptops as a category is aimed at slightly more discerning buyers who know what they want. Unlike mainstream consumers like you and me, businesses seldom update their IT hardware on an annual basis – if a business laptop is bought for office use, it won't be replaced for a good 3 to 5 years, easily.

This year, most business laptops from all the major brands have received the latest 4th generation Intel Core chipset update. While the lines between consumer and business laptops are blurring fast – especially in the ultrabook range – brands are still trying hard to preserve the essence of a business laptop, focusing on security, reliability, performance and build quality. With improved onboard Intel graphics on business laptops launched this year, getting our hands on business laptops with discrete GPUs was quite a task! Something to do with "all work and no play" when it comes to office policies, we think. To wrap up, this was another unimpressive year as far as business laptops are concerned, but we've managed to review and compare most of the machines launched in the market. Next year promises to be much the same. Or maybe not. Fingers crossed.

Zero1 Winner

Dell Vostro 14 3446

This is the only business laptop we reviewed all year that we can call positively call as colourful, simply because it comes with a maroon screen lid. The Vostro 14 is nicely built, with a chunky exterior, and a textured plastic screen lid that's different from most conventional business laptops. Apart from the omission of a TPM chip – to encrypt data at the hardware level – every other performance metric on the Dell Vostro 14 was stellar. The Vostro manages to beat everyone else (including laptops that are priced more than 2.5 times higher) in terms of pure brute performance. This is made possible thanks to a large part because of the bundled discrete GPU it has – NVIDIA GeForce 820M. The Dell Vostro laptop also comes with MaxxAudio for better-than-average audio, anti-glare screen for better viewing experience. With 3 hours of battery backup on a single charge, it's a laptop that strikes a great balance between brute-force, number crunching performance and battery performance – something you don't say about every laptop out there.



DELL VOSTRO 14 3446

Price: ₹47,000



Acer Travelmate PM645

Price: ₹67,412



Lenovo ThinkPad S1 Yoga

Price: ₹1,12,418

Worthy mentions

Acer Travelmate PM645

The PM645 is understated in its design. It offers a perfectly adequate CPU and a healthy, 8GB of RAM. The device is powered by an Intel Core i5-4200U, which is standard in this segment, but Acer's thermal management works very well, allowing the CPU to give its full potential, taking this laptop far ahead in our CPU performance benchmarks, outperforming most competing devices. At the same time, the battery life is quite good, with the device clocking in at a little over 4 hours in our tests, which is the best among business laptops we tested this year. You can easily expect close to 6 hours of usage or more if you're just browsing or typing all the time, not consuming multimedia. We liked the battery life, loved the keyboard and were very impressed by the temperature management on this business laptop.

Lenovo ThinkPad S1 Yoga

The only tablet-laptop hybrid worth of consideration by business users, the Lenovo ThinkPad S1 Yoga also provides good overall performance. It has a low-voltage CPU which can multitask with 4-5 apps at once, but can't really set the stage on fire. It has better-than-average screen brightness, contrast ratio. The in-built speakers are good for personal entertainment, as they're both loud and largely distortion-free at high volume. But most importantly, the ThinkPad S1 Yoga's battery life is among the best we've pegged in a business laptop, lasting over 200 minutes in our tests. The ThinkPad S1 Yoga is a very good attempt to mould an iconic laptop into a functional tablet, one that comes with our full recommendation.

Hybrid Laptops

Part tablet, part conventional laptop, we're happy to say that hybrid devices are now becoming mainstream items in manufacturers' portfolio in 2014. They aren't that widespread yet, but you'll be hard pressed to find an electronic store that doesn't house at least one exhibit. While all hybrid devices are technically laptops, not all of them are tablets in the strictest sense of the word. In the attempt to combine the best of both worlds, a few points to remember. Hybrid devices that are below the 50k mark, don't offer good performance for a laptop. They're also slightly bulky, so are hybrids with 13-inch or bigger screens, and uncomfortable to use as traditional tablets meant for single handed use — unless these hybrids have detachable screens. With time and continued human ingenuity, the hybrids will evolve into sleeker, more powerful devices, promising to do a lot more than we can ever think of right now. Until then, we have these.

Zero1 Winner

Acer Aspire R7-572G

This is unlike any hybrid you'd set your eyes on. It's a 15-inch laptop with a multitouch screen which can rotate and sit on top of the keyboard to transform into a large tablet at whim, thanks to its unique Ezel hinge design. While it hardly matters as far as pure performance goes, it should be mentioned that the Aspire R7's touchpad sits on top (and not below, as is the case traditionally) of its keyboard deck. Quirky design aside, the Aspire R7 doesn't set a foot wrong as far as performance is concerned, as its Intel Core i5 chip, 8GB of RAM, 1TB hard drive and NVIDIA GeForce GT 750M graphics with 2GB of GDDR3 VRAM is pretty much the most ambitious hybrid laptop you can get your hands on this year. Granted the graphics aren't meant for hardcore gaming, but with a score of 55.6 fps on Sniper Elite V2's benchmark doesn't wholly discount this hybrid device's gaming chops either. Its audio visual performance is a treat to enjoy, its screen is a gorgeous, 1080p panel that is bright and vibrant and very crisp, easily among the best we've seen on laptops so far. And all this very good performance doesn't affect the battery all that much – we pegged 2 hours 43 minutes in our battery test on high performance preset, which is pretty good given the hybrid's high-end components and large screen. A well-deserved winner!



ACER ASPIRE R7-572G

Price: ₹99,999

Worthy mentions

Lenovo IdeaPad YOGA 2

The Lenovo Yoga 2 is one of the few devices to offer a platform that elegantly embraces Windows 8's touch-friendly UI. As all of you must be aware by now, the Yoga's 360 degree hinge allows the device to seamlessly transition between traditional and pseudo-tablet modes. The device isn't all about the hinge though. Lenovo's always been known to make great laptops and the Yoga 2 is no exception. Its gorgeous screen is one of the first things that hits you when you look at the Yoga. It's about 30% brighter than most ultrabooks and hybrids we've seen this year, and also offers a great contrast ratio.

The IdeaPad YOGA 2's overall performance figures are just a notch below the Acer Aspire R7's performance, with the exception of battery life, though, where the YOGA 2 is slightly better. As a thin laptop that can transform itself into a 13-inch tablet, there's no doubt in our minds when we say that the Lenovo YOGA 2 is one of the best performing hybrid devices you can buy this year.



Lenovo IdeaPad YOGA 2

Price: ₹59,990

HP Pro x2 612

A hybrid device which comes in close behind the heels of the Acer Aspire R7 and the Lenovo YOGA 2, the HP Pro x2 comes with a unique offering. With a detachable 12.5-inch screen (which is also a tablet in this case), the Pro x2 612 comes with not one but two keyboards – a standard keyboard that you'd find on any other HP laptop, and a smaller, lighter travel keyboard, which is remarkably similar to the keyboard found on the Microsoft Surface hybrid device. It's performance isn't flattering compared to the other two top performing hybrids listed here, but it does outperform both of them in one key department – battery life. With an Intel Core i5 chip and fast-paced SSD storage, this is a great hybrid device to consider if you want something light and powerful.



HP Pro x2 612

Price: ₹70,000

Ultrabooks

The greatest driving force in the world of laptops is the push towards making thin, light, sleek and sexy looking notebooks, known simply as ultrabooks. While it's inevitable that the evolution of laptops will mandate thinner, lighter, more powerful machines in the future, it's been an overwhelming push in that direction to realize the future sooner rather than later, as far as ultrabooks are concerned. This year, ultrabooks continued their journey towards packing in more within less – trying to offer the greatest hardware components and performance without upsetting the weighing scales or form factor overmuch. We saw a lot of ultrabooks offering SSD storage by default – a trend that was still a novelty last year. While ultrabook prices have fallen this year, being available at various affordable price points, when it comes to top performance, it's only the highest end ultrabooks that manage to feature into this year's Zero1.

Zero1 Winner

Toshiba Portege Z30t-A

It's difficult to wax lyrical when talking about a tech product these days, but the Toshiba Portege almost succeeded in making us do just that. It's a lovely laptop and has been designed for businessmen, but we would wholeheartedly recommend the device to anyone who wants to get some work done. A TrackPoint is something that we'd expect to see only on Lenovo ThinkPads and it's nice to see it here on the Toshiba Portege, as well. It's as good as any TrackPoint we've ever used and is grippy too. Also, if you want to know what close to an ideal laptop keyboard is like, just find a Portege and try it out yourself. It's among the most tactile and responsive keyboards we've used. With an SSD, the performance of this machine is breezy and right up there, but where this device truly shines is with its display. It's quite gorgeous and with a measured contrast ratio of about 700:1, the best we've seen on a laptop yet. Brightness levels are also high at around 200cd/m2, which makes the measured battery life of about 4 hours that much more impressive. What's more? It weighs just 1.18 kg. A true ultrabook, through and through!



TOSHIBA PORTEGE Z30T-A

Price: ₹1,00,000



Acer Aspire S7-392

Price: ₹99,999



HP Elitebook 1040 G1

Price: ₹1,49,865

Almost won...

Acer Aspire S7-392

The device is very well-built. There is obvious attention to detail and everything about the design feels very polished and refined. The touch-screen on the Aspire S7 is very responsive and a pleasure to use. The measured battery life was slightly low at about 3.5 hours, but that can be attributed to the fact that the device is so slim that it couldn't possibly hold a higher capacity battery. Our battery tests do stress the system considerably so you should expect between 4-5 hours usage from this device at the very most. But in terms of overall performance, the Acer Aspire S7-392 scored just below the Toshiba Portege Z30T-A – not surprising at all, since it has pretty similar high-end components inside, not to mention a 256GB SSD to keep things nice and quick all the time. It weighs a comfortable 1.3 kg, which is one of the lowest we've seen on ultrabooks this year. It's a tough call between the Portege and the Acer Aspire S7 and the Portege Z30T-A. To put it in a nutshell, the Aspire S7 is a better device to show off, while the Portege is a better device to work on.

Respectable third

HP Elitebook 1040 G1

In the world of high-end ultrabooks, where money isn't a consideration, where you desire a thin and light laptop that should hold its own in a boardroom as well as an airport lounge. The EliteBook 1040 G1 is all that and more. Smartly designed, well constructed, with a premium look and feel. The Elitebook 1040 G1 has fast internal hardware, with an SSD thrown into the mix no less, ensuring you don't feel the performance pinch using most business applications. And while we clocked 3 hours 17 minutes of battery in our benchmark tests, the EliteBook 1040 G1 is still not the fastest ultrabook we've tested this year. It's fast, faster than most laptops you'll encounter, but just not the fastest.



Graphics Cards

The graphics segment has been quite an exciting one this year. We've had plenty of new technologies being pushed from the NVIDIA side. To start off, after an early teaser in the form of the GTX 750 and the 750 Ti, the green camp unleashed their next GPU architecture called Maxwell and the flagship cards with these GPUs provide for a median increment in performance but the wow-factor was the pricing on these cards which made them way better than all their predecessors. With Maxwell, NVIDIA seems to have finally caught up in compute power with OpenCL and OpenGL scores being in league of what AMD cards are capable of. While there are just 4 GPUs out there at the moment with the new architecture we wonder when the 960 will be launched. Going back a few generations, we've seen that the 460, 560, 660 and the 760 have all been what most gamers preferred. It has been the sweet spot and 960 is expected to be received in a similar fashion.

On AMD's side we're yet to see any new cards. Their R9 295X2 has been at the top for quite a while and a successor is soon to be launched in February next year. The R9 390X will feature the Bermuda GPU with support for HDMI 2.0 giving way for a lot higher framerates on high resolution panels. We're also hearing of rumours that the R9 390X might come with High Bandwidth Memory (HBM). AMD has been tinkering around with memory modules and even released an SSD line up this year so debuting with HBM seems to be quite plausible at the moment. A light teaser of what we can expect with the Pirate Islands GPU was seen in the R9 285 which offers much better encoding and decoding capabilities. Also, tessellation has been improved which is an avenue in which NVIDIA cards have generally been better at.

Zero1 Winner

AMD R9 295X2

It was no wonder that a dual GPU graphics card was going to win the crown. So it was down to the AMD R9 295X2 and the NVIDIA TITAN Z. The R9 295X2 is a really long card and comes with an integrated liquid cooling setup. Something that the competition doesn't have and also doesn't have the need to either. Cooling aside, the performance was way off the charts. Including the R9 295X2 in our usual charts will be highly unfair since all their metrics get scaled down by a ridiculous factor. So we compared it to the TITAN Z which is the only card that can even come close and it won in every benchmark except one. The surprising part is that this card is priced much lesser than the TITAN Z while being the better performer. All things considered, this card gets to win the Zero1 award in this year's round up.



AMD R9 295X2

Price: ₹1,19,999



ZOTAC TITAN Z

Price: ₹1,39,000



NVIDIA GTX 980

Price: ₹45,999

Worthy Mentions

ZOTAC TITAN Z

We tested the TITAN Z first and it turned out to be thoroughly impressive. Especially since the TITAN series are more focused on compute power but NVIDIA has been marketing it as a gaming card and it does deliver on that front without any hiccups. The card has a massive amount of memory and performance wise is the second best thing to the R9 295X2. It even performs better in Bioshock Infinite but if we look at all the other games and then throw in the compute scores then the TITAN Z gets left behind. The card also commands a hefty price premium.

NVIDIA GTX 980

Maxwell's flagship card stays at the top of the pyramid when you're looking at single GPU graphics cards which is why it deserves a mention here. We don't know if a 980Ti or something along the lines of two Maxwell GM204(s) in a dual chip configuration is in the works but it sure would be fun to see that. If a better value for money is what you seek then the GTX 970 is what you should go for or you can wait it out till the GTX 960 is released.

Bazaar

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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.

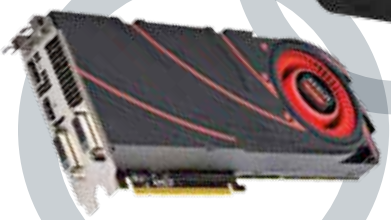
For better understanding of our ratings, here's a quick guide to our overall score

- 10 to 30 — **Extremely poor product.** Keep away!
- 31 to 50 — **Strictly OK.** Not recommended
- 51 to 70 — **Decent product.** Go for it, but there may be better products out there.
- 71 to 90 — **Very good product.** Highly recommended.
- 91 to 100 — **Ground-breaking product.** We've never seen anything like it before. A definite must buy!



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Samsung Galaxy Note 4

The king of phablets

Samsung is known and ridiculed for its plastic smartphones but the Galaxy Note 4 is one of the first few devices from the OEM that uses metal. The front is all glass and at the back, the removable back has a faux-leather finish but now you get a metal frame which feels really strong. The 5.7-inch Super AMOLED panel has a 2K resolution with 515 ppi pixel density which looks absolutely brilliant. The colours are really vivid and the sharpness on the display is unmatched. Since it's an AMOLED display, the contrast is great and blacks looks deep. The metal frame is a great addition and gives the phablet a robust feel.



Interactive review

The back does feature the old flimsy plastic cover, but thankfully it doesn't lower down points in the design department. It blends in well and even offers a decent amount of grip. Of course you also get the S-Pen which fits nicely into a slot at the bottom of the phablet. The S-Pen has a plastic finish with a single button which is slightly difficult to use.

At first glance, the Note 4 seems to look like its predecessor, however it does feature some really good upgrades. The metal frame is an excellent choice, adding OIS to the camera improves the quality and the 2K Super AMOLED panel is just a delight.

The phablet runs on Android 4.4.4 KitKat out of the box with Samsung's TouchWiz UX layer on top. TouchWiz has matured a lot over the years and Samsung has done it right. The latest version of TouchWiz works like a charm, and is almost our favorite UI for Android. Thankfully Samsung has not loaded a lot of bloatware but has included its own app store, Galaxy Essentials, and Galaxy Gifts from where you can download apps as per your requirement. Samsung has also been very generous and is offering a vast list of free apps and app subscriptions with the Note 4.

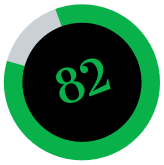
The Note 4 also brings in a brand new resizing feature which lets you resize any running app, making one hand operations easy on the phablet. The S-Pen brings in the true potential of the device as it enables you to not only draw or scribble stuff, but it also lets you cut/copy anything on your display and share it anywhere as an image. The S-Pen lets you control your entire phone and also provides air gestures which essentially feels like a cursor.

The UI is silky smooth and we didn't notice any issues with the overall usage experience. Multitasking is managed well and even memory management works in order. The phablet is truly a powerhouse, handling everything thrown at it. Thanks to the Snapdragon 805 SoC and 3GB of RAM, the Note 4 is definitely one of the most powerful Android devices that you can buy. High end games work flawlessly with no signs of frame drop. Playing movies, especially 1080p and 1440p is a piece of cake for the Note 4. In the benchmark tests, the Note 4 came out with flying colours as it scored the highest in almost all the tests when compared to other flagship devices.

The battery performance is quite impressive as the large 3220mAh battery gives about one and half days of regular use. The new 16MP camera with OIS (Optical Image Stabilization) is something really worth mentioning. The OIS improves a lot in terms of sharpness and focusing. The camera is accurate, focusing is fast and there is no shutter lag. Colour reproduction is controlled and even saturation seems good. The camera app is intuitive and comes with various modes, filters and settings to tinker with. Low light performance is commendable although some pictures turned out to be noisy when compared to the iPhone 6 or the Xperia Z3. Video recording is smooth and videos come out excellent, especially 4K. Audio recording is also crisp thanks to the multiple mics.

Today, when the market is witnessing a trend of large-screened phones, the Galaxy Note 4 stands tall among the crowd, reclaiming the title of being the best phablet around.

Kunal Khullar



Features 88
Performance 85
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Specifications

Display: 5.7 inches Super AMOLED, 2560x1440 resolution with Gorilla Glass 3 (515ppi); **Battery:** 3220mAh, Fast battery charging: 60% in 30 min (Quick Charge 2.0); **Storage:** 32GB; **Camera:** 16MP rear with flash and OIS, 3MP front with 1440p video; **SoC:** Qualcomm Snapdragon 805; **CPU:** Quad-core 2.7 GHz; **GPU:** Adreno 420; **RAM:** 3GB; **Operating system:** Android 4.4.4 with TouchWiz UX; **Connectivity:** 4G, Wi-Fi, Bluetooth, USB with OTG, IR Blaster port

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Moto 360

The best looking smartwatch, that you shouldn't buy yet



Motorola's smartwatch feels top notch, and the quality of the display is great with a pixel density of 205 ppi. The drivers and the ambient light sensor are fitted in a small section at the bottom, cutting off a slice from the perfect circular dial. It does seem odd in the initial few days of usage, but you get used to it. The Moto 360 looks and feels just like a normal watch. You can wear it extensively and you won't feel any difference. It is also IP67 certified which means it is water and dust-proof.

It runs on Google's recently announced Android Wear platform which basically makes the watch act like an extension of your smartphone. You get all your notifications, Google Now cards, and of course the time. Android Wear doesn't offer any customized skins, but you do get some predefined watch faces. You can also give voice input to the watch, just like Google Now. There is also a built in pedometer and a heart rate monitor on board, making it a health companion as well. The most attractive feature is probably the wireless charging feature. Just pop it on the dock and the dial shows you a clock with battery indicator running around the time.

In terms of battery life, the watch lasts for just about 12 hours of regular usage. You have to charge it overnight, if you want to use the 360 daily.

We think that the Moto 360 is the best smartwatch simply because it looks and works great. But, if you can, hold off for a bit as Android Wear is still in its early stages and offers limited features. With some more enhancements to Android Wear, spending ₹18,000 on the Moto 360 may just be more sensible.

Kunal Khullar



Features 65
Performance 75
Value 60
Design 85

Specifications

Display: 1.56-inch display, 320x290 resolution (205ppi) with Gorilla Glass 3; **Battery:** 320mAh; **Storage:** 4GB (Non accessible); **SoC:** TI OMAP3630; **Operating system:** Android Wear; **Connectivity:** Bluetooth, Wireless charging, Voice recognition; IP67 Certified; Wireless charging

Contact

Motorola Mobility LLC
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Website: motorola.in

LG G3 Beat

Bring that beat back!



Price
₹18,500

The LG G3 Beat is an overpriced mid-range smartphone which looks like a smaller version of the flagship LG G3. The phone uses a 5-inch 720p display instead of the QHD 5.5-inch display used on the LG G3 and thus has a narrower plastic shell which is much easier to hold in one hand.

The 5-inch display is commendable but the phone could have done better with a 1080p panel since all other smartphones are moving towards the 1080p norm. The UI of the G3 Beat has been lifted from the LG G3 and comes with tons of settings, submenus and preloaded apps.



Features 67
Performance 78
Value 67
Design 68

Specifications

Display: 5-inches IPS LCD, 1280x720 resolution (294ppi); **Battery:** 2540mAh; **Storage:** 8 GB, microSD card supported; **Camera:** 8MP rear with flash, 1.3MP front; **SoC:** Qualcomm Snapdragon 400; **CPU:** Quad-core 1.2 GHz; **GPU:** Adreno 305; **RAM:** 1GB; **Operating system:** Android 4.4.2; **Connectivity:** 4G, Wi-Fi, Bluetooth, IR Blaster port

Contact

LG India
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Website: www.lg.com/in

Though smartphones are meant to do multi-tasking, the LG G3 Beat is not quite good at it. The phone can easily handle 3-4 tasks at a time but if you try to pinch in an extra game, the phone would start loosing its steam. While testing the device we faced stutter, constant frame drops and slow performance.

The 8MP camera on the LG G3 Beat is remarkable and takes good pictures with its laser auto-focus at hand. The camera is capable of shooting decent 1080p videos but it sans the auto-focus. In the battery department the phone was impressive as well, with a 20 hours of battery life on tap, the phone was able to last more than a day quite easily.

But if you are looking for a smartphone which has a good camera and a good battery life under a 18K budget, you will better off with the Micromax Canvas Nitro.

Hardik Singh

AMD Radeon R9 285

Tonga chipset is more of a feature upgrade

We finally got our hands on the R9 285 which was launched back in September by AMD as part of their 30th year celebrations. The card gives off an impression that it might be faster than the R9 280, afterall, it has been named the R9 285. But as we take a look at the specifications we wonder if that can be the case. The R9 280 and the R9 285 seem to have very similar specifications but the main differences are that the R9 285 is using GCN 1.2 which is an upgrade over the GCN 1.0 that the R9 280 uses. With improvements in the architecture the GPU is more efficient with memory bandwidth and gets away with less of it compared to the R9 280. Furthermore, the TDP for the R9 285 is 190 W while the R9 280 is rated for 250 W. All of this tells us that there have been multiple trade-offs in favour of greater efficiency overall. But generally, this means performance doesn't get a big boost.



For gamers, there has been a marked improvement in tessellation capabilities of the card. This improvement only shows when the card is stressed otherwise at lower loads higher SKUs perform better. So if subjected to a gradual increment of tessellation load, the card will continue to process more efficiently long after higher SKUs start throttling down. The next big feature improvement is related to video encoding and decoding. With higher resolution gaining mainstream popularity graphics cards have to focus on crunching more pixels efficiently rather than letter the same old

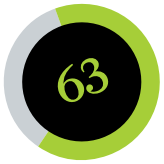


mechanics scale with the load. The R9 285 has an improved Unified Video Decoder which has paved the way for better encoding and decoding performance at higher resolutions.

Being a reference card we weren't expecting any groovy cooling just the bare minimum and rightly so, that's what we got. The card uses two 6-pin molex connectors which is more than sufficient to handle 190W for a few overclocking sessions. During our benchmarks the temperature peaked at 77 degrees celsius during peak load and while idle it was around 42 degrees celsius. We didn't get to test the reference R9 280 so we can't compare it to that. But given all the third-party vendor cards that we did test, we can safely say that the temperatures were in a similar range. So we can attribute the lower temperatures to the improvement in the architecture rather than the stock cooler.

When we look at the performance figures we see that the card performs similar to a R9 270X, so from amongst the cards that we've tested this would be the ASUS R9 270X DC2T and looking at the cards from NVIDIA the figures were close to that of the MSI GTX 760TF. FPS for Bioshock Infinite was off by 20 when at Ultra configuration but everything else seemed to be well within the margin of error. So the numbers were nowhere close to the R9 280 as one would infer from the model number. OpenGL performance was better than the R9 270X but OpenCL numbers were lower than the R9 270X by about 35 points which is quite surprising given that the architectural changes should have improved compute performance or at least have kept it at the same level as before.

Mithun Mohandas



Performance..... 54
Value 75
Build 60

Specifications

Chipset: Tonga; **Base clock:** 1050MHz; **Memory clock:** 1800MHz; **Stream processors:** 1792; **Texture Units:** 112; **ROPs:** 32; **Manufacturing process:** 28nm, PCIe 3.0, 4096 x 2160 digital resolution support, 2 GB Memory; **DirectX support:** 12; **OpenGL support:** 4.4; **Power Connectors:** 6Pin + 6Pin; **TDP:** 190W

Contact

AMD (Advanced Micro Devices)
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Website: http://www.amd.com



Biggest Cargo Ship
Check out CSCL Globe, the world's biggest cargo ship which is more than 1,300 feet long and 200 feet wide **http://dgit.in/GlobeCargo**



Driving on poo
GENeco's Bio-Bus in the UK runs on human food waste that is literally poo up to 300km in a full tank **http://dgit.in/PooBioBus**

ASUS Strix GeForce GTX 980

Cheaper than the competition and just as good a performer

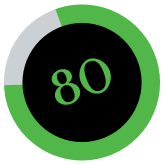


Price ₹49,875 (+Tax)

Having seen the Strix GTX 970 last month, the 980 had us excited. Being the only other custom GTX 980 that we've had the privilege to test, what was keeping us at the edge of our seats was whether this would outperform the ZOTAC GTX 980 AMP! Extreme. But first, the build quality! We noted that the width has been restricted to two slots which is ideal for high end cards since the enthusiast segment is where SLI is most often seen and the ZOTAC card having a protruding chassis on the front kinda loses out on 3-way and / or 4-way SLI on boards with PCIe slots that are too close to each other. The materials used in the construction of the body is mostly comprised of aluminium which is great for heat dissipation. The OdB technology which keeps the fans in an off state till absolutely needed aids noise reduction.

When it comes to performance it scores more than a stock card which is obvious but compared to the competition it's not ahead – with respect to the ZOTAC AMP! Extreme. In games where the ASUS Strix scores 4-7 FPS ahead of the stock card, the ZOTAC variant ends up scoring 4-7 FPS ahead of ASUS. So unless you are finicky about getting those few extra frames, it doesn't matter. The ASUS card is preferable for its factory overclock and sticking to a dual slot width.

Mithun Mohandas



Performance.....87
Value.....75
Build.....77

Specifications

Chipset: GM204; **Base clock:** 1178MHz; **Memory clock:** 1753MHz; **CUDA cores** - 2048; **Texture Units:** 128; **ROPs:** 64; **Manufacturing process:** 28nm, PCIe 3.0, 4096 x 2160 digital resolution support, 4 GB Memory; **DirectX support:** 12; **OpenGL support:** 4.5; **Power Connectors:** 8Pin+6Pin; **TDP:** Upto 300W; **Dimensions (LxWxD):** 289 x 134 x 41 mm; **Warranty:** 3 years warranty

Contact

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Microsoft Lumia 730

The last of Nokia



Price ₹16,450

One of the last phones made by Nokia was also one of its best. The Lumia 730, touted as the 'selfie' phone by Microsoft, is the company's mid-range offering and replaces the Lumia 720 in the market.

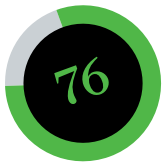
Right at the start, you will notice that the build quality of the Lumia 730 reeks of Nokia. The green review unit was very green, but it would turn heads when you're carrying it. The Lumia line has been known for its bright colours and the 730 mixes that with a very good design. The device is light and compact enough to carry around very easily.

In addition, the 1 GB RAM on the Lumia 730 along with the 1.2 GHz quad-core SoC makes it the Moto G of the Windows Phone ecosystem. The phone doesn't perform as well as some Android phones in the range, but if for regular usage, it is more than enough. The UI is smooth and fluid, with no lags whatsoever.

It's biggest strength though is in its cameras. The 6.7 MP shooter on the back may not sound like much, but it takes some very good images under outdoor and normal lighting conditions. The wide angle front camera also gives good colour reproduction, while being wide enough to fit three people into the frame, when held at arm's length. We put it to the test against the Galaxy Note 4 and the Lumia 730 came out with the better front camera.

It is indeed the best selfie phone you can buy right now and comes at an affordable enough price for Windows lovers to want it.

Prasid Banerjee



Features.....76
Performance.....66
Design.....79
Value.....85

Specifications

Display: 4.7 inch 720p; **Processor:** 1.2 GHz quad-core; **RAM:** 1GB; **Operating System:** Windows Phone 8.1; **Storage:** 8GB, expandable to 128GB; **Camera:** 6.7 MP rear, 5MP wide angle front; **Battery:** 2200 mAh

Contact

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Logitech's G-Labs
Take a look at Logitech's G-Labs Peripherals testing facility where they build their gaming oriented products **http://dgit.in/LogitechLab**



History of Drones
Check out this cool animated video of the history of the drone revolution that is taking over the world **http://dgit.in/DroneHist**



Blackberry Passport

A passport to nowhere

Performance..... 81
Features..... 84
Design & Build..... 59
Value for Money..... 60

Specifications

Operating System: Blackberry OS 10.3; **Screen Size:** 4.5-in at 1440x1440 pixels; **Built-In Storage:** 32GB; **MicroSD Card Support:** Upto 128GB; **RAM:** 3GB; **Camera:** 13MP; **Wi-Fi:** Wi-Fi 802.11 a/b/g/n/ac; **Bluetooth:** 4.0 with A2DP; **Battery:** 3450mAh; **Processor:** 2.26GHz quad-core Snapdragon 801

Contact

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Website: blackberry.com

In terms of design, the Passport is almost a perfect square and emulates a real-world Passport. The Passport fits comfortably in the front pocket of jackets and shirts. That comfort level drops when you put the Passport in your pants pocket. As we've come to expect from Blackberry, the Passport's build quality is uniformly excellent.

The Passport's three row keyboard is very wide and doesn't have any keys for numbers or symbols, but adds virtual rows. Whenever I used the Passport's keyboard, my fingers felt too cramped and I missed a taller touchscreen keyboard.

The Passport's 4.5-inch IPS display is very sharp and boasts of a resolution of 1440 x 1440 pixels and pixel density of 453 ppi. The display has excellent viewing angles and accurate colour reproduction.



Interactive review

In terms of real world performance, the Passport gave me nothing to complain about. Gaming on the Passport is a less than ideal experience mainly because of the display's unorthodox aspect ratio that cuts off parts of a game's HUD getting cut off. The Passport has one of the most powerful batteries we've seen in a smartphone that will help it easily last more than a day.

The Blackberry Passport has great specs, a display of fantastic quality and solid build but it feels like a novelty device and not one for mainstream consumption.

Nikhil Pradhan

Lenovo Yoga 2 Tablet 10.1 Android

Lenovo gets it right this time around



Features..... 90
Performance..... 66
Value..... 64
Design..... 70

Specifications

Display: 10.1-inches IPS LCD, 1920x1200 resolution (224ppi); **Battery:** 9600mAh; **Storage:** 16 GB, microSD card supported; **Camera:** 8MP rear with flash, 1.6MP front; **SoC:** Intel Atom Z3745; **CPU:** Quad-core 1.86 GHz; **RAM:** 2GB; **Operating system:** Android 4.4.2

Contact

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The Lenovo Yoga 2 tablet is a different approach by Lenovo in the tablet market from the current crop of slab like tablets which look like oversized phones. Let me get straight to the point and tell you that the Lenovo Yoga 2 tablet is one of the best designed and thought out tablets out there.

The tablet has an 10.1-inch IPS display with a 1920 x 1200 resolution. The display is bright and usable even under sunlight, however the display is a bit reflective and is a fingerprint magnet. The display features good viewing angles with good colour reproduction.

The tablet running a highly customized UI on top of Android 4.4 Kitkat. Lenovo has tried to make the UI look more and more like iOS, be it the fogged glass look in the notifications drop-down or the multitasking menu or just the home screen but it works fine and we had no complaints.

The quad-core 1.86GHz Intel processor is quite capable of handling multiple intensive tasks at the same time and we had no issues while playing Asphalt 8, watching a 1080p movie or just writing this review on Google Docs. In our standard battery test, the tablet was able to last 17 hours.



The simple stand plays an important role in making this tablet likable and makes the tablet stands out. So, if you are in the market for an Android tablet, and don't really want to consider the Samsung Galaxy Tab 4 (for some reason), this tablet pretty much the one to buy.

Hardik Singh



Powerlace your shoes
Too lazy to tie your shoelaces? Powerlace will bring in the concept of auto-lacing soon **http://dgit.in/Powerlace**



Smart frying pan
The Pantelligent smart frying pan lets you know the temperature levels and when you need to flip the food **http://dgit.in/Pantelligent**

ZOTAC GTX 970 AMP! Extreme

It's the best performing GTX 970 that we've tested so far



Price ₹33,500 (+Tax)

Last month we saw the flagship card from ZOTAC which happened to be the 980 AMP! Extreme. This here follows in the same steps as the 980 i.e. there are three custom SKUs and this particular SKU is the best among all of them. A stock 970 has a base clock of 1050 MHz and the ZOTAC GTX 970 AMP! Extreme has a base clock of 1203MHz which is quite substantial. So feature wise the 980 and the 970 are pretty much the same other than the GPU, of course. We've covered all of these features last month so you can check out that review for all the details which include the Exo Armour, Light.Id and the OC Plus GPU tweaking and monitoring software. As was with the GTX 980, the Exo Armour takes up three slots but the cooling is efficient thanks to the 3 fans.

When it comes to performance we've only been able to compare it to the ASUS Strix 970 and in all gaming benchmarks this card is ahead by 2-9 FPS but OpenCL compute performance is where the difference becomes really prominent with scores exceeding that of the ASUS Strix 970 by about 110 points. The price difference between the ASUS card and the ZOTAC card pays off if you make use of OC Plus to its full potential. We've heard rumours of the GTX 960 being prepped for launch which should provide better value than all 970s.

Mithun Mohandas



Performance.....80
Value.....75
Build.....76

Specifications

Chipset: GM204; **Base clock:** 1203MHz; **Memory clock** - 1800MHz; **CUDA cores** - 1664; **Texture Units:** 104; **ROPs:** 64; **Manufacturing process:** 28nm, PCIe 3.0, 4096 x 2160 digital resolution support, 4 GB Memory; **DirectX support** - 12; **OpenGL support:** 4.4; **Power Connectors:** 8Pin + 8Pin; **TDP:** 145+W; **Warranty:** 5 years

Contact

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MOGA Pocket Controller

A well made and budget friendly portable wireless controller for Android.



Price ₹1,793

The Pocket is the smallest Android wireless gamepad we've seen to date. The front of the device has a flat look to it and the buttons lie flush with the surface in small recessed sections. The button layout is similar to most Xbox 360 like controllers out there and you get two trigger buttons at the top shoulders of the controller which have a soft-touch feel to them when pressed. The back of the device is curved and has a rubber finish to it to improve grip. They've also included a collapsible phone holder or cradle on the gamepad with two levels of adjustment. Pairing the MOGA Pocket to an Android device requires you to download and install the MOGA Pivot app which provides a step-by-step process to pair the controller to your smart devices. The app also provides a categorically divided library of supported games and links to download them to your device which is a nice addition. Although support of games outside of this library is also possible but it may not necessarily be uniform. Mapping controls to games mostly happens automatically and you can download third party apps to save control profiles. The Pocket was comfortable to use and worked well with most games however, if you like to play old school console games on your device using emulators, you'll be slightly disappointed because of the lack of a D-pad. At the price, it's a great controller to go for and we recommend it.

Siddhant Sharma



Feature.....65
Build Quality.....70
Value.....75

Specifications

Connectivity: Bluetooth 4.0; **No. of buttons:** 11; **HID Mode:** No; **Operating Range:** 10ft; **Special app:** Yes (MOGA Pivot); **Battery Type required:** 2 x AAA (not included); **Dimensions:** 76 (L) x 127 (W) mm; **System requirements:** Android v2.3 and up. **Warranty:** 3 years;

Contact

PowerA MOGA
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Harman Kardon Esquire

A little different from what you'd expect



Features 74
Performance..... 77
Build 80
Value 58

Specifications

Driver size: 2 x1.75"; **Amplifier power:** 2 x 10 Watts; **Frequency response:** 80-22kHz; **SNR:** 80dB; **Battery type:** Li-on 7.4V/4000mA; **Rated battery life:** 10 hours; **Dimensions**: 147(W) x 147(H) x 46.5(D)mm.

Contact

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With the portable bluetooth speaker market reaching near saturation, Harman has come up with a nice twist to differentiate its latest offering in this space. It's won the Red Dot Award for design excellence as well as the 2014 CES Design & Innovation Award. Made from aluminium and given a luxurious leather finish, it seems to be designed keeping a traveller in mind. It exudes so much sturdiness in fact, if the said traveller where to find himself in a tough spot it could possibly double up as a bludgeoning weapon. The speaker comes with a nice travel pouch and a travel adaptor 3-port USB adapter allows you to charge multiple devices at the same time.



In terms of features you get NFC and a very high quality conferencing system. We tested the conferencing system for a few of our internal meetings and can vouch for the microphone quality. Music performance isn't bad either. Highs are clear enough and the mids reproduced with as much detail as one can expect in this category. The Esquire is louder than the Bose SoundLink Mini but doesn't have great bass performance. Don't get us wrong there is sufficient bass but it's not as low or as accurate. The way the Esquire is positioned, in terms of price, it doesn't seem like a device targeted at those who seek function over form. Conferencing, looks, and build are what it excels in and would certainly come in handy for those moments when your Lincoln Town Car breaks down and you have to rough it out on the road.

Siddharth Parwatay

JBL E40BT

A functional bluetooth on-ear headset

For quite some time now JBL has been going the Sony way that is, extreme fixation on bass performance sometimes even at the cost of overall clarity. Perhaps it's just an effort to pander to local tastes, but whatever the reason purists have been hard pressed to find non-bass tuned headphones in the market. Against this backdrop, the sound signature of the JBL E40BT is a pleasant surprise. It's unlike a typical JBL headphone and the bass isn't isn't overpowering and this is despite it being advertised as having "PureBass performance" whatever that is.

In terms of new features there is something known as "ShareMe" which lets you stream music wirelessly to another ShareMe-equipped headphone. We weren't able to test it, but it isn't really a feature to die for.



The construction isn't that great and feels a little sub par to be honest. The headphones fold at the earcup hinges and even turn flat for easy carrying and storage. It's interesting to note that the Li-ion battery rated at 16 hours play time charges through the audio jack itself. A cable with USB at one end and the audio pin at the other is bundled with the headset in addition to a regular audio cable for when the battery is fully drained.

The sound quality is considerably lower than a wired headphone – even JBL's own Bassline headphone which we'd liked despite it's overpowering bass. You should go for the JBL E40BT only if you're decidedly against wired headphones. And even then another option would be the TDK WR 700 which we still remember fondly but it isn't easy to get hold of.

Siddharth Parwatay



Features 70
Performance..... 65
Build 58
Value 55

Specifications

Driver size: 40 mm; **Impedance:** 32 ohms; **Sensitivity:** 114 dB SPL/V; **Frequency Response:** 20 Hz - 22 kHz; **Battery:** Lithium polymer (3.7V, 610mAh)

Contact

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Game releases 2015
Mark your calendars through this link here which tells you about the release dates of video games of 2015 **http://dgit.in/2015Games**



castAR ships AR glasses
castAR, a pair of augmented reality glasses developed by ex-valve engineers have shipped their first pair **http://dgit.in/castAR**

Apple iPhone 6

Apple takes on the big screen

Apple's new device comes with arguably the biggest makeover ever seen on the iPhone, but does it really clear the high standards that the company has set for itself?

At 6.1 mm, this is the slimmest iPhone till date and Apple has gone back to the rounded edges that the very first iPhone came with. The iPhone 6 though doesn't feel as premium as the 5S before it. The bigger screen seems to have taken Apple out of its comfort zone. While the device has very good build quality, it isn't the efficient design philosophy that we've seen on iPhones till date.

This is possibly the most slippery iPhone that Apple has ever built. You're definitely going to need a cover for this smartphone (there goes the slimness and form factor), because it tends to slip out of your hand very easily. In the initial four hours of usage, we had already almost dropped it six times.

The camera protrusion on the back, frankly doesn't bother much. What we hate more are the hideous plastic bands for the antenna. These stick out even more in the Gold version of the smartphone. The overall look and feel, though good, pales in comparison to the iPhone 5S. The front panel seems out of place in the entire design.

It is also very light, but when was the last time you heard Samsung beat Apple in the design department? The recently launched Samsung Galaxy Alpha has the same display size as the iPhone 6, but is 14 grams lighter than the iPhone 6. Of course, the plastic body on the Alpha helps in reducing the weight. Don't get us wrong, the iPhone 6 is still light, but it feels much bulkier than it is. On paper it weighs 129 grams, but it feels bulkier and heavier.

On the 4.7 inch display and Apple went with 1334x750 pixels in order to ensure that the 326ppi pixel density introduced in the iPhone 4 remains the same. We had no complaints about the iPhone 6's display in general. It retains Apple's amazing Retina displays and no room for complaint.



Interactive review

Price ₹53,500

Till now, the iPhone has been about premium feel and top of the line performance. The iPhone 6 though is all performance. The new A8 processor inside is faster than the A7 and gives very good performance. Does it heat up? Which iPhone doesn't? Does that affect the performance? Not really. Games like Real Racing 3, Asphalt 8 and some others, run like a charm on the new iPhone.

Here's the beef though. Where's the battery life to use that performance? The overall battery life is better than the iPhone 5S, but it is not even close to being enough.

If there is one area where the iPhone 6 excels, it's the camera. While the device still has an 8 MP camera,, detailing and white balance on the iPhone 6 is definitely better than the 5S. Apple's camera is in fact the greatest testament to the fact that the megapixel count doesn't determine the camera quality. The iPhone 6 takes amazing pictures in normal outdoor lighting and is good even under low light.

Not just that, the new phase detection autofocus is super-fast. The only other phone camera that is this fast with its autofocus is the LG G3. The 8 MP images on the iPhone 6 can give any other smartphone and even some cameras a run for their money and it is easily one of the best phone cameras that you can find in the market.

So, time to sum it all up and conclude. While the Apple iPhone 6 does provide better performance than the 5S, you will know this only by benchmark scores. So, if you're an Apple fan and thought iPhones need to be bigger, then go ahead and buy this – you'll love it for sure. If not, buy it only if you have something below the iPhone 5. Also, if you're planning to move from Android to iPhone, then prepare to give up the huge customisability options and battery life. You're going to miss those things for sure. But hey cheer up, you just bought an iPhone!

Prasid Banerjee



Features 71
Performance 84
Design 79
Value 85

Specifications

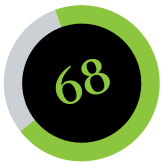
Display: 4.7 inch 1334x750p; **Processor:** Apple A8 64-bit dual-core; **RAM:** 1 GB; **Operating System:** iOS 8; **Storage:** 16/32/64GB; **Battery:** 1810 mAh

Contact

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JBL Synchros E10

A good IEM to move out of the budget segment



Performance..... 73
Features..... 70
Value..... 68
Build..... 62

Specifications

Driver size: 9 mm; **Impedance:** 32 ohms; **Sensitivity:** 105 dB SPL/V: **Frequency Response:** 10 Hz - 22 kHz; **Cable length:** 1.2 m

Contact

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The new Synchros E10 from JBL finds itself fitting snugly into a category that is fast growing – a category comprised of slightly above entry level IEMs designed for users who want to go beyond the EP630s and EM1s of the world. Worldwide this is not such a segmented category. Elsewhere all of these headphones are clubbed under sub $50 range, but here in India this higher range of the entry level segment is gaining traction.



The Synchros E10 has the typical JBL sound signature – well represented mids and highs with an overload on bass. In terms of performance it's got what you would need – clarity, tonal accuracy and a decent soundstage. Although if you compare the E10 to a reference monitor level IEM you'll find that the lower midrange is a little more enhanced than usual giving them a slightly warm sound signature.

In terms of features it hits the right spots as well with its flat, tangle free cable and see through box it comes in that doubles up as a carry case. But how does it hold against the competition? Take the similarly named and priced SoundMagic E10M as a reference. Compared to it the Synchros E10 falls slightly behind in terms of pure aural performance. The SoundMagic is a superior albeit more delicate headphone and hence there is a trade off. At the same time the Synchros doesn't come with spare ear tips which was a bit of a downer.

Overall though it makes for an almost perfect substitute and hence a recommended buy.

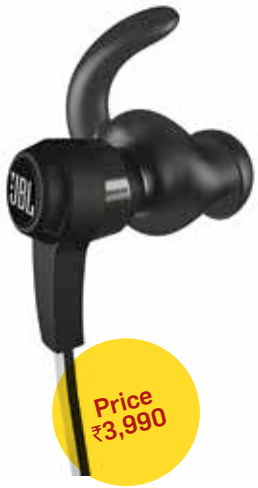
Siddharth Parwatay

JBL Synchros Reflect

Delivers the thump needed for your workout

The Synchros Reflect is designed for a better fit by utilising a pair of flanges that help secure it firmly in your ears. It's named "Reflect" on account of the thin line of reflective paint that runs along it's flat cable, supposedly enabling night time runners to be seen for safety. It's got some other nifty features too like in-built magnets on the housings that keep your buds click together when not in use.

The sound quality is certainly better than the Synchros E10 and the Reflect's sound signature is more balanced. It leans slightly closer to the neutral or flat response signature that we so dearly want. Personally the bass end dipped and the higher end of the spectrum enhanced is still a better tuning proposition than vice versa. Not surprising then that Pull Me Under by Dream Theater seemed harsh compared to even the Bose QC 20 which we use as an absolute reference. Cord harmonics was a problem but the nice little shirt clip takes care of it in a jiffy, so even when you're running the cables don't let any noise travel up. The build quality is quite good too.



In this emerging sports IEM segment there aren't too many options out there. There is the more expensive Audio-Technica ATH-CJX9 which seems slightly more refined and provides better isolation – but no magnetic housing or reflective cables. Another upgrade is the Sennheiser OCX 685i Sports but that may be out of your budget. All this makes the Synchros Reflect a worthy purchase if you're looking for your next pair of gyming / running in ear headphones.

Siddharth Parwatay



Performance..... 72
Features..... 70
Value..... 65
Build..... 75

Specifications

Driver size: 8.5mm; Frequency response: 10Hz - 22kHz

Contact

Harman International Pvt Ltd.
Phone: 1800 108 1234
Email: info@harman.com
Website: www.harman.in



Water to Fuel
German company has made a machine that could convert water and carbon dioxide into liquid hydrocarbons **http://dgit.in/FuelWater**



3D-printed livers for sale
As 3D printing enters new areas, Organavo has got scientists excited as their 3D-printed livers are for sale now **http://dgit.in/3DLivers**

OnePlus One

One doesn't simply ignore this



Interactive review

Price ₹24,999

It's been a month of big phone launches in India and the OnePlus One is a fitting culmination to it. The so called 2014 flagship killer is in India and we got a chance to take it through the motions before it went on sale. So without further ado, here's what we thought of the OnePlus One.

It belongs to the phablet category, so the size is expected, although you wonder if the bezel size on the top and bottom could have been cut some more. Nevertheless, the OnePlus One has a Sandstone finish on the back, which feels very premium.

The 5.5 inch display of course makes it big but add to that the 8.9 mm thickness and 162 grams weight and you have an overall bulky device. The OnePlus One is easily one of the biggest smartphones you can find right now.

The bigger a smartphone's display, lesser the margin for error. The 5.5 inch full-HD display does well under sunlight and though it is a little fingerprint intensive, we had no problems using this device outdoors. But even little things start sticking out at this size. The display is dull compared to other full-HD smartphones. Perhaps one of the trade-offs the company had to make in order to keep the obscenely low price tag.

We've read so much about the OnePlus One till now that the expectations from this phone were massive. The Snapdragon 801 chipset inside performs well on this phone. While it does get hot when put through resource intensive games, we could easily get 30 minutes of gaming out of this phone at a stretch.

Nevertheless, the 801 also ensures that the CM fork runs smoothly on the device. There were a few app crashes, but that was because of the unstable ROM and not the usual bad memory management issues. More on that later.

A major differentiating factor in the OnePlus One is in the fact that it comes with CyanogenMod 11S out of the box. This gives the phone a fresh new feel compared to other Android smartphones. More importantly though, it a lot of super user privileges making the device a power user's dream. You can customise everything from the buttons to your icons, wallpapers and themes.

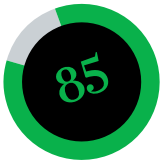
There's one problem though. CyanogenMod isn't the stablest ROM you can find. We got an update almost immediately after unboxing the device, but there were some crashes that were most likely a result of an unstable ROM. As mentioned above, the processor performs well and memory management in KitKat is quite good, so the only reason we can think of is the ROM.

On a day of normal usage, with some light gaming, this device got us through the day with about 30-35% battery to spare. With our regular gaming, which is quite a bit, we still got through the day before the low battery warning flashed on the screen. Also note that the screen brightness on the phone was always on max.

The 13 MP camera though was a disappointment. It may be enough for those who don't focus on photography a lot, it isn't really a stellar performer. Images taken under normal lighting seemed quite undersaturated and the auto-focus quite slow. The camera lacks exposure control, which often ends up blowing out objects in images. Also, the focus stutters a lot when lighting conditions are uneven.

It's hard to overlook the price of this smartphone, which makes this phone worth every penny. There are a lot of reviews that have overlooked the shortcomings of the phone because of the price factor. So, if you're planning to buy this phone then forget the reviews that you've read so far. The OnePlus One is definitely worth the price, especially if you want a phablet. But the phone does cut some corners for this, just like Xiaomi did for the Mi3 and will definitely do for the Mi4.

Prasid Banerjee



Features 87
Performance 83
Design 79
Value 98

Specifications

Display: 5.5 inch 1080p; **Processor:** 2.5 GHz Qualcomm Snapdragon 801 quad-core; **Operating System:** CyanogenMod 11S, Android 4.4.4 KitKat; **Camera**: 13MP rear, 5MP front; **Battery:** 3100 mAh; **Storage:** 16/64 GB; **RAM:** 3 GB

Contact

OnePlus
Phone: NA
Email: NA
Website: oneplus.net



Bonds' LaserWatch
Man builds a watch that could fire lasers that could pop balloons and cut through duct tape **http://dgit.in/laserwatch**



Flickr wall art
You can now buy wall size versions of other people's photographs under the company licensed artists or creative commons licensed images **http://dgit.in/FlickrWall**

D-Link DIR-850L

When you need more bandwidth on a budget

62

Performance..... 67
Features..... 60
Build Quality..... 58

Specifications

Wireless LAN Chip: Realtek RTL8812AR+RTL8192CE; **Memory:** 128 MB DDR2 800 MHz; **Protocols:** 802.11 b/g/n/ac; **Bandwidth:** 1200 (867@5GHz+300@2.4GHz) Mbps; **Ethernet:** 4x LAN, 1x WAN, GbE Ports; **Wi-Fi:** 802.11ac, Without modem; **Warranty:** 3 years

Contact

D-Link (India) Ltd.
Phone: 1800-233-0000,
Email: divya.shetty@dlink.co.in
Website: http://www.dlink.co.in

A few months back we tested out one of D-Links economical DIR-803 wireless AC router. This here is a slightly mid-range router or rather this is where mid-range begins from. The looks are quite familiar and synonymous with D-Link's cloud series of routers. And as is the case with all similarly designed routers, the antennae are on the inside and are what D-Link calls smart antennae. The body is quite light and glossy on the curved surface with a matte finish on the top. There are plenty of ventilation holes on the top and the bottom of the router.



Price ₹4,599

All ports are Gigabit Ethernet which is a nice thing to have in products that are near the lower end of the price spectrum. There aren't that many indicator lights on the device. The two orifices on the front could have been fitted with a spiral arrangement of LEDs to help the user monitor all the ethernet ports and it isn't too much to ask for.

Setting up the router was a breeze and it even allows you to sign up for the mydlink service in the setup process itself. The online service is a polished version of remote router management which has been around for quite a few years. The absence of SmartBeam would mean that the performance will falter as you move the client further away from the router and it shows. However, there are two radios with plenty of bandwidth to make up for that. If you do wish for that particular feature then you can always check out the DIR-860L.

Mithun Mohandas

HTC One M8 Eye

Nice. But not much of an upgrade, actually.

76

Features..... 78
Performance..... 72
Value..... 76
Design..... 79

Specifications

Display: 5 inches Super LCD3, 1920x1080 resolution with Gorilla Glass 3 (441ppi); **Battery:** 2600mAh; Storage: 16GB; **Camera:** 13MP dual-lens rear with dual-tone flash, 5MP front; **SoC:** Qualcomm Snapdragon 801; **CPU:** Quad-core 2.5 GHz; **GPU:** Adreno 330; **RAM:** 2GB; **Operating system:** Android 4.4.2 with Sense 6

Contact

HTC India
Phone: 1800 266 3566
Email: dgit.in/1y5V5Oh
Website: htc.com/in

The HTC One M8 Eye is exactly the same smartphone as the original M8 except for the dual-13MP lenses. If you put both the handsets together, one can't tell the difference. You get the same elegant metal body carved to perfection and the same brilliant looking 5-inch full HD screen. It even weighs the same at 160gms which is fairly decent considering the all-metal body.

There is no update in the design of the One M8 Eye when compared to the One M8. The finishing and materials used are exactly the same, which still makes it the best looking phone in the market. Also the minimalistic and flat design of Sense UI feels great. Not much bloat in there, nothing that irritates at least.



Interactive review

Price ₹38,500

Performance on the M8 Eye surprised us as it turned out to be better than the M8. Looks like HTC has tuned up the Snapdragon 801 chip and certainly improved on the OS. In terms of battery life, the M8 Eye gives almost a full day of charge on normal usage. Just like the M8, the camera on the M8 Eye is fast and the tap to exposure feature is impressive. In low-light, the performance is decent, but we expected better.

The HTC One M8 Eye is hardly an update from the M8. For the price, the M8 Eye is a great phone, but we would also suggest the HTC One E8, Samsung Galaxy S5 or Moto X.

Kunal Khullar

Of online data storage

Which cloud backup solution to use when offline data storage just isn't enough?

Agent 001
agent001@digit.in



Long ago, I anticipated a proble to hit all our lives once they went digital. But not until a couple of years ago did I truly started taking steps to get a grip on it. T problem? The exploding, absolutely mi numbing amount of data we were generating, not just consuming. And there's a big difference between the two. Photos and videos shot through your smartphone camera, even higher resolution images and 1080p videos captured through that fancy new DSLR you bought in Diwali, and soon enough you'd have scurried around to buy an external hard drive to store all of these precious moments. But if you're like me, who's taken up a massive family project of digitizing every film camera photo captured since the early '50s, offline data storage costs can spiral out of control, and hard drives don't last forever either. How many redundancies can you maintain?

It's when I started investing in online data storage. Not before I had tried a whole hog of free services like Dropbox, Box.com, Flickr, and others. The thing about free storage is that it's good to try out at first, but not something you'd want to depend on wholeheartedly. Free service providers tend to hold back on features and efficiency of service that they otherwise provide to paying customer, in my experience. What's even more important is that unless you pay for a service, you aren't entitled to fully question how it functions. If a service is free or in beta, chances are that it can get away with anything by a mere apology – if there's loss of data or server downtime, you can't hold them accountable, unless you pay for their services.

For anyone who doesn't want to spend a dime and backup all their photos (not videos), then Flickr is a great option to start off with, especially since it gives 1TB of free storage. The only problem with Flickr is it doesn't have a good bulk photo uploader in its repertoire right now, but if you can plow through this minor road bump, then it's a great early option to explore. Flickr has a paid option too, in case you fall in love with the service. Convenience of use, especially uploading from a PC, was my biggest concern here.



I then explored paid hosting with both Amazon Cloud Drive and Google. I paid $25 per year for 50GB of storage on Amazon for a year, and loved the experience, especially since it has a smartphone app that immediately syncs all your phone photos in the cloud (much like Dropbox). With Google, I persevered with paying $2 per month for an additional 100GB of storage on top of the 15GB I had through Gmail. Cost-wise, Google was cheaper than Amazon, but both of these cloud storage giants couldn't solve my basic problem. Space. With the volume of personal data I was generating, I calculated that I would run out of both Google and Amazon's storage limits within a year. Not the most economical way out for me, unfortunately.

What I've recently signed up for is a game-changing offer from Microsoft, who's trying to make a big push into the cloud storage market. Through its Office 365 Home plan, for an annual cost of ₹4,199 (or $70), I stand to get up to 5TB of data storage through OneDrive. That is hands down much greater than Flickr, Amazon, Google or Dropbox. OneDrive works much the same way on a phone (through an app) or Windows or Mac computer (through a constantly synced folder), therefore it's super convenient. What's more, recently Microsoft announced that all paying customers of Office 365 are entitled to unlimited data storage through OneDrive. So, I'm literally paying just under ₹400 per month for backing up all the data I want into the cloud, and be able to access it through anywhere that has an Internet connection. As per convenience, ease of use, and data storage limit, OneDrive access through Microsoft Office 365 is the most economical cloud backup solution available on the

market currently. Why do I call it game-changing? Because you can bet your bottom dollar that Google, Amazon and others will come up with matching or even more lucrative cloud backup solutions in the months ahead.

The decision you have to make is simple: Is it worth your monthly DTH subscription cost? And... do you have a fast enough broadband connection to begin with?

Q A budget 2.1 speaker set for ₹3,000

Dear Agent001,
I am planning to buy a 2.1 speakers for my laptop, LED TV. My budget is ₹3,000 Rs. Could you please tell me the best available options out there in the market within this range.

– Vijay Patel

A A good option at ₹2,800 right now is the Edifier Speaker 2.1-M1386. The speaker isn't very loud – not entirely surprising considering the small footprint and 30W RMS rating – but it's enough for a mid-sized room. The sound doesn't distort even when you push it past the 80 percent volume mark. That means you can't really drive the unit beyond its working threshold, which is a good thing. Even at high volume the crossover unit seems to be sending the right frequencies to the tweeter and woofer. The clarity and overall performance didn't make us sit up and take notice but it fits squarely between low end inexpensive speakers like the Umax Boombastic USP 3200 and our favourite – and slightly out of your budget – F&D F680, which is precisely where the Edifier is priced.

Q Need a decent CPU cooler for OC!

Hi Agent 001, I play a lot of games and I also like to tinker a lot with my PC. Recently, I was reading about overclocking online and thought to give it a try. I am thinking of overclocking my CPU and I just want to do a small overclock, nothing too high. My system configuration is:

- Processor: Intel Core i5 4440;
- Motherboard: Gigabyte GA-H87-D3H;
- RAM: G.Skill Sniper 8GB (2x4GB);
- GPU: GTX 650 Ti Boost;
- HDD: 1TB Western Digital Green.

I'm running my CPU on Intel's stock cooler and I want to upgrade to a better cooler. My budget is between ₹2,500 to ₹3,000 max. I don't need anything fancy as I won't be overclocking extensively. Please suggest a good CPU cooler for my budget.

– Ronak Chaudhary

A Since you won't be overclocking a lot, the budget that you've set aside for the cooler is fairly decent. In fact, ₹3,000 is a sweet spot as you get good performing air coolers at this price. Go for the Cooler Master Hyper 212 X as it's available for ₹2,850 and it's an excellent air cooler even with its single fan configuration but if you wish you can add another when you wish to push the limits a little further. Using it, you would easily be able to push your CPU ahead in terms of the overclock.

DSK INTERNATIONAL CAMPUS
animation | video game | industrial design

CONNECTING GAMES FOR FUN!

The year was 1993. One night in October, while kids were busy tricking or treating on Halloween, a couple of young men were quietly working on a project that they claimed would revolutionize the way humans interact with virtual environments. And they had a revelation!

Two weeks later, one of them managed to connect two computers, both running a level of the game they were developing. He invited his colleague John Romero to connect digitally. By connecting avatars who could communicate and interact in real time within a 3D space, this guy had created history!

That guy was John Carmack, the game was Doom – a revolutionary game that single-handedly defined the first-person shooter genre and, played an instrumental part in kickstarting LAN parties.

EVERYONE'S INVITED

A LAN party is a casual gathering of two or more gamers who co-exist physically and virtually to play a list of predefined games on PC (not phones or consoles), with the intention of having fun and share a great time together. They usually attend in the house of one of them, with computers at hand to start playing.



LAN parties are essential to the ethos of gaming – to have fun and build something.

The variety of games is extensive and each produces a different experience on the participating player. This is because they must adapt to the artistic, technological, cultural circumstances and challenges presented by each one of these games.

The popularity of these LAN parties has grown so surprisingly, that there are now a string of public and private initiatives worldwide that promote not only the social and virtual interaction, but also education and creation of new technologies through academic programs, conferences, workshops and project presentations.

From game development perspective, these LAN party-centered initiatives are extremely important for the independent producers who want to get in touch with other enthusiasts and together understand the gaming industry trends.

Social interaction is an essential human activity, and what's better than to do it in an atmosphere of great participation and entertainment? If we take LAN parties to a whole new level with educational and productive development programs, we would greatly potentialize the creation of new technologies in the world.

Article by José Eduardo Téran, a game programming trainer at DSKIC, he hails from Venezuela. This Campus has trainers from UK, Venezuela, USA, France & Sri Lanka, which corroborates that the world is aware that the next big development in video game is happening in India and at DSKIC. For more information, visit dsksic.com.

Advertorial



Solar-powered headphones
London-based startup Exod have a Kickstarter for Helios, a solar-powered bluetooth headphones
http://dgit.in/HeliosHeadph



Faster transfer rate
A new circuit design could possibly double the rate at which your phone transfers data
http://dgit.in/FasterData

SPEND SMART

All the awesome gadgets that you could possibly want are listed here for your perusal. Keep browsing and keep shopping!



STEREO SPEAKERS

Brand	Model	Configuration	Max Output	Chassis Material	Frequency Response	Price (in ₹.)
Audioengine	A2+	2.0 Channel	60 W	Metal	65-22,000 Hz	16,750
Audioengine	A5+ Bamboo	2.0 Channel	150 W	Wood	50-22,000 Hz	33,500
Circle	Aura	2.1 Channel	28 W	Plastic	NA	2,874
Creative	SBS A120	2.1 Channel	9 W	Plastic	50-20,000 Hz	1,449
Creative	GigaWorks T20 Series II	2.0 Channel	28 W	Plastic	50-20,000 Hz	6,750
Creative	GigaWorks T40	2.0 Channel	28 W	Plastic	50-20,000 Hz	11,450
Creative	GigaWorks T3	2.1 Channel	NA	Plastic	30-20,000 Hz	17,500
DigiFlip	PS01	2.1 Channel	8.8 W	Wood	NA	999
Edifier	X220	2.1 Channel	22 W	Plastic	50-20,000 hZ	1,950
Edifier	M1385	2.1 Channel	28 W	NA	50-20,000 hZ	2,590
Edifier	P2060	2.1 Channel	30 W	Plastic	NA	2,650
Edifier	P3060	2.1 Channel	30 W	Wood	NA	3,000
F&D	U213A 2	2.0 Channel	3.6 W	Plastic	NA	500
F&D	W330BT	2.1 Channel	56 W	Plastic + Wood	25-20,000 Hz	4,300
F&D	F680	2.1 Channel	70 W	Plastic	20-20,000 Hz	3,000
F&D	A333U	2.1 Channel	42 W	Plastic + Wood	50-20,000 Hz	2,450
Genius	SW-T2.1 1800	2.1 Channel	50 W	Plastic	50-20,000 Hz	3,850
Harman Kardon	Soundsticks III	2.1 Channel	65 W	Plastic	44-20,000 Hz	10,290
iBall	Tarang Lion	2.1 Channel	40 W	Wood	20-20,000 Hz	2,900
iBall	Tarang V7	2.1 Channel	NA	Plastic + Wood	NA	1,850
Intex	IT 2475 Beats FM & U	2.1 Channel	40 W	Plastic	20-20,000 Hz	3,150
JBL	Creature III	2.1 Channel	20 W	Plastic	50-50,000 Hz	4,990
Klipsch	ProMedia	2.1 Channel	200 W	Fibre	31-20,000 Hz	11,676
Lenovo	C1530	2.1 Channel	NA	Plastic	NA	1,600
Logitech	Z313	2.1 Channel	25 W	Plastic	NA	2,699
Logitech	Z623	2.1 Channel	200 W	NA	NA	10,740
Logitech	Z443	2.1 Channel	55 W	Wood	55-18,000 Hz	3,810
Mitashi	HT 44 FUR	2.1 Channel	36 W	Plastic	50-20,000 Hz	2,399
Mitashi	HT 97BT	2.1 Channel	80 W	Plastic	20-25,000 Hz	5,300
Philips	IN MMS4040F/94	2.1 Channel	NA	Plastic	NA	2,570
Philips	MMS 1515F	2.1 Channel	NA	Plastic	NA	1,660
Philips	IN-MMS 2550F/94	2.1 Channel	NA	Plastic	NA	2,359
Sony	SRS-D9	2.1 Channel	60 W	NA	50-20,000 Hz	4,556
Zebronics	ZEB-SW2650RUCF	2.1 Channel	38 W	Plastic + Wood	NA	2,500
Zoook	ZM-SP2100	2.1 Channel	26 W	Wood	NA	1,277
Zoook	ZM-SP5100	2.1 Channel	60 W	Plastic + Wood	NA	3,390
Zoook	ZM-SP2600	2.1 Channel	22 W	Plastic + Wood	NA	1,886



Biggest Lithium battery
To buffer the energy needs of a part of California, a power plant is installing hundreds of Lithium-ion batteries **http://dgit.in/LargestLiIon**



Pinc VR for iPhone
For left out iPhone users, Pinc VR will turn your iPhone 6 or iPhone 6 Plus into a virtual reality headset **http://dgit.in/VRiPhone**



MID RANGE SMARTPHONES

Brand	Model	Operating System	Processor (in MHz)	RAM	Display Size	Primary Camera	Battery Rating (in mAh)	Price (in ₹.)
Alcatel	Onetouch Idol X+	Android 4.4	2000 MHz Octa Core	2 GB	5-inch	13.1 MP	2,500	14,999
ASUS	Zenfone 5 A501CG	Android 4.4	1600 Mhz Dual Core	2 GB	5-inch	8 MP	2,110	12,990
BlackBerry	Z3	BlackBerry 10.2.1	1200 MHz Dual Core	1.5 GB	5-inch	5 MP	2,500	14,044
HTC	Desire 816G	Android 4.4	1300 MHz Quad Core	1 GB	5.5-inch	13 MP	2,600	16,796
HTC	Desire 820	Android 4.4	1500 MHz Quad Core	2 GB	5.5-inch	13 MP	2,600	24,910
Huawei	Honor 6 H60-L04	Android 4.4	1700 MHz Octa Core	3 GB	5-inch	13 MP	3,000	19,999
Lenovo	Vibe X2	Android 4.4	2000 MHz Octa Core	2 GB	5-inch	13 MP	2,300	19,999
Micromax	Canvas Nitro A310	Android 4.4	1700 MHz Octa Core	2 GB	5-inch	13 MP	2,500	12,990
Micromax	Canvas Knight A350	Android 4.4	1700 MHz Octa Core	2 GB	5-inch	16 MP	2,350	14,149
Motorola	Moto G (2nd Gen) 16GB	Android 4.4	1200 MHz Quad Core	1 GB	5-inch	8 MP	2,070	12,999
Motorola	Moto X (1st Gen)	Android 4.4	1700 MHz Dual Core	2 GB	4.7-inch	10 MP	2,200	17,999
Nokia	Lumia 1320	Windows Phone 8	1700 MHz Dual Core	1 GB	6-inch	5 MP	3,400	17,364
Samsung	Galaxy Grand 2	Android 4.3	1200 MHz Quad Core	1.5 GB	5.25-inch	8 MP	2,600	16,530
Samsung	Galaxy S5 Mini	Android 4.4	1400 MHz Quad Core	1.5 GB	4.5-inch	8 MP	2,100	21,999
Sony	Xperia C3	Android 4.4	1200 MHz Quad Core	1 GB	5.5-inch	8 MP	2,500	19,332
Yota	Yota Phone C9660	Android 4.2.2	1700 MHz Dual Core	2 GB	4.3-inch	13 MP	1,800	23,499



HIGH-END SMARTPHONES

Brand	Model	Operating System	Processor (in MHz)	RAM	Display Size	Primary Camera	Battery Rating (in mAh)	Price (in ₹.)
Apple	iPhone 5S (16GB)	iOS 8	1300 MHz Dual Core	1 GB	4-inch	8 MP	1,560	42,589
Apple	iPhone 6 (16GB)	iOS 8	1400 MHz Dual Core	1 GB	4.7-inch	8 MP	1,810	53,500
Apple	iPhone 6 Plus (64GB)	iOS 8	1400 MHz Dual Core	1 GB	5.5-inch	8 MP	2,915	71,400
BlackBerry	Passport	BlackBerry 10.3	2200 Mhz Quad Core	3 GB	4.5-inch	13 MP	3,450	49,389
Google (LG)	Nexus 5 (32GB)	Android 5.0	2300 MHz Quad Core	2 GB	4.95-inch	8 MP	2,300	30,600
Google (Motorola)	Nexus 6 (64GB)	Android 5.0	2700 MHz Quad Core	3 GB	6-inch	13 MP	3,220	48,999
HTC	One M8	Android 4.4	2500 MHz Quad Core	2 GB	5-inch	Dual 4 MP	2,600	41,900
LG	G3 D855	Android 4.4	2500 MHz Quad Core	3 GB	5.5-inch	13 MP	3,000	38,999
Motorola	Moto X (2nd Gen)	Android 4.4	2500 MHz Quad Core	2 GB	5.2-inch	13 MP	2,300	33,999
Nokia	Lumia 830	Windows Phone 8.1	1200 GHz Quad Core	1 GB	5-inch	10 MP	2,200	27,900
OPPO	Find 7 X9076	Android 4.3	2500 MHz Quad Core	3 GB	5.5-inch	13 MP	3,000	37,990
Samsung	Galaxy S5	Android 4.4	2500 MHz Quad Core	2 GB	5.1-inch	16 MP	2,800	36,199
Samsung	Galaxy Alpha	Android 4.4	1800 MHz + 1300 MHz	2 GB	4.7-inch	12 MP	1,860	37,999
Samsung	Galaxy Note 4	Android 4.4	2700 Mhz Quad Core	3 GB	5.7-inch	16 MP	3,220	57,500
Sony	Xperia Z3	Android 4.4	2500 Mhz Quad Core	3 GB	5.2-inch	20.7 MP	3,100	49,990
Sony	Xperia Z3 Compact	Android 4.4	2500 Mhz Quad Core	2 GB	4.6-inch	20.7 MP	2,600	39,549

digit KILLER RIGS

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

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BASIC RIG

Processor	Intel Pentium G3220	4,150
Motherboard	Gigabyte GA-H81M-S1	3,500
RAM	Kingston Value RAM 2 GB 1333MHz	1,500
HDD	Toshiba 500GB	3,100
Monitor	Acer V196HQL 18.5 inch LED Backlit	5,450
Graphics Card	None	0
Cabinet	NZXT Gamma	2,490
PSU	Corsair VS450	2,200
Speakers (2.1)	Creative SBS A120	1,350
Optical Drive	Samsung SH-224DB/IDDS	990
Mouse	Amkette Ash Black (Bundle)	550
Keyboard	Amkette Ash Black (Bundle)	0
Sound Card	None	0
Total		**₹25,280**

HTPC

Processor	AMD A8-5600K	6,850
Motherboard	MSI FM2-A75MA-P33	4,750
RAM	G.Skill RipjawsX DDR3 2 GB (2 x 2 GB) PC RAM (F3-12800CL9D-4GBXL)	4,270
HDD	Western Digital WD20EZRX 2TB	5,500
Monitor	None (your TV)	0
Graphics Card	None (HD7560D onboard)	0
Cabinet	Cooler Master Elite 120 Advanced	2,977
PSU	Cooler Master Thunder 450W	2,560
Speakers	None	0
Optical Drive	Samsung SH-224DB/IDDS	990
Mouse	Microsoft Desktop 2000 wireless combo	1,850
Keyboard	Bundled	0
Sound Card	None	0
Total		**₹29,747**

ENTRY-LEVEL GAMING

Processor	AMD FX6300	6,999
Motherboard	Gigabyte GA-970A-DS3P	5,850
RAM	G.Skill NS DDR3 4 GB (2 x 2 GB) PC RAM (F3-10600CL9S-2GBNS)	3,575
HDD	Seagate Barracuda 1TB	3,700
Monitor	Dell S2240L	8,650
Graphics Card	Sapphire Radeon R7 260X 2 GB	9,450
Cabinet	NZXT Gamma	2,490
PSU	Cooler Master Thunder 450W	2,560
Speakers	F&D F680	3,000
Optical Drive	Samsung SH-224DB/IDDS	1,000
Mouse	Amkette Ash Black (Bundle)	530
Keyboard	Amkette Ash Black (Bundle)	0
Sound Card	None	0
Total		**₹47,804**

MID-RANGE GAMING

Processor	Intel Core i5-4440	11,500
Motherboard	ASUS B85M-G	5,575
RAM	Gskill RipjawsX F3-12800CL9D-8GBXL (2 x 4GB)	6,200
HDD	Toshiba 1TB DT01ACA100	3,880
Monitor	Dell S2240L	8,650
Graphics Card	ZOTAC GTX 660 192-bit 2 GB	12,999
Cabinet	Thermaltake Versa H21	2,980
PSU	Seasonic S12II 620 Watts	5,630
Speakers	F&D F680	3,000
Optical Drive	Samsung SH-224DB/IDDS	990
Mouse	CM Storm Devastator (Bundle)	3,000
Keyboard	CM Storm Devastator (Bundle)	0
Sound Card	None	0
Total		**₹64,404**

ULTRA HIGH-END GAMING

Processor	Intel Core i7-4790K	22,850
Motherboard	ASRock Z97 Extreme6	14,340
RAM	Corsair Vengeance 16GB CMY16GX-3M2A1866C9B	13,499
HDD	WD WD30EZRX 3TB + Samsung 850 Pro 256GB SSD	20,245
Monitor	BenQ BL3200	73,899
Graphics Card	ZOTAC GTX 980 ZT-90201-10P Standard	44,999
Cabinet	NZXT Phantom 820	16,836
PSU	Cooler Master V1000	15,200
Speakers	Logitech Z906 5.1	19,499
Optical Drive	LG Blu-ray WH16NS40 RW	5,699
Mouse	Roccat Kone XTD	5,800
Keyboard	Corsair Vengeance K70	8,460
Sound Card	ASUS Xonar Phoebus	10,500
Total		**₹2,71,826**

PRIMARY DIGIT TEST RIG

Processor	Intel Core i7 - 4960X (Extreme Edition)	70,000
Motherboard	ASRock X79 Extreme 9	28,499
RAM	Corsair Dominator 32GB - 2133MHz (8GB x 4)	36,599
HDD	Toshiba DT01ABA100V	3,879
SSD	SanDisk Extreme II 240GB (x2 for HDD testing)	25,750
Graphics Card	ZOTAC GTX 980 AMP! Extreme Edition	50,999
Cabinet+ Cooler	Cabinet (NA) + Intel RTS2011LC - Stock AIO	NA
PSU	Corsair HX1050	16,291
Monitor	BenQ GL2460HM	11,600
Optical Drive	NA	NA
Mouse	Razer Ouroboros Elite	10,999
Keyboard	Roccat Isku FX	7,500
Sound Card	ASUS Essence STX	8,999
Total		**₹2,71,115**

digit RECOMMENDED BUYS

From smartphones to graphics cards, here's what we recommend for your next purchase!



TOP 3 BEST SMARTPHONES

Brand	Model	Price (in ₹.)
Sony	Xperia Z3	49,990
Motorola	Moto X (2nd Gen)	31,999
Apple	iPhone 6	53,500



TOP 3 GAMING LAPTOPS

Brand	Model	Price (in ₹)
ASUS	G551JK	90,000
MSI	GE60 2PE	1,12,290
MSI	GS60 2PE	1,48,000



TOP 3 PREMIUM POINT AND SHOOT CAMERAS

Brand	Model	Price (in ₹)
Fujifilm	X100s	68,000
Sony	DSC-RX100 II	34,989
Fujifilm	X20	28,000



TOP 3 ULTRABOOKS

Brand	Model	Price (in ₹)
Toshiba	Portege Z30t-A	1,00,00
Acer	Aspire S7-392	99,999
HP	Elitebook 1040 G1	1,49,865



TOP 3 BUDGET GRAPHICS CARDS

Brand	Model	Price (in ₹)
ZOTAC	GTX 660 192-bit 2GB	12,999
ZOTAC	GTX 750TI 2 GB	10,740
Sapphire	Radeon R7 260 X 2GB	9,250



TOP 3 BEST GRAPHICS CARDS

Brand	Model	Price (in ₹)
Sapphire	Radeon R9 295X2	1,19,999
ZOTAC	GTX 980 AMP! Extreme Edition	50,999
ASUS	GTX TITAN Z	1,39,000



TOP 3 BUDGET TABLETS

Brand	Model	Price (in ₹)
ASUS	Nexus 7 2013 (32GB + WiFi)	17,999
Apple	iPad Mini Retina 16GB WiFi	27,500
Digiflip	Pro XT911	14,999



TOP 3 BEST TABLETS

Brand	Model	Price (in ₹)
Samsung	Samsung Galaxy Tab S 8.4	37,800
Apple	iPad Air 2 (16GB WiFi)	36,000
HTC (Google)	Nexus 9 (32GB + LTE)	44,900



TOP 3 BUDGET TO MID RANGE IEMS

Brand	Model	Price (in ₹)
SoundMAGIC	E10M	3,000
Cowon	EM1	1,199
Creative	HITZ MA350	1,349



TOP 3 GAMING HEADPHONES

Brand	Model	Price (in ₹)
SteelSeries	Siberia V2	8,000
Kingston	Hyper X Cloud	7,500
Thermaltake	Ttesports Level 10M Diamond	19,992



Apple VR apps
Apple will soon be making its own virtual reality apps for iOS and OS X **http://dgit.in/AppleVR**



Wonder Director
Wonder Woman gets its director, Michelle MacLaren, director of Breaking Bad takes the lead **http://dgit.in/WonWoman**

The world according to ARM

We had a chat with Guru Ganesan, MD ARM India on what the future holds for the company and if he's worried about the competition.



Guru Ganesan, MD ARM India

Nikhil Pradhan
nikhil.pradhan@digit.in

Intel is clearly scaling up its presence in the mobile SoC segment. Is ARM concerned about this?

Guru Ganesan: So, ARM does not make chips, our partners do that. The most important thing in this segment is power and cost and our partners are happy with our technology today because we deliver both efficiently. Even with Intel's recent developments, it is still struggling in the mobile and tablet segment primarily because of the power hungry requirements of its processors.

We're different than Intel. What is important for our success is the ecosystem we have developed. There are more than a thousand companies participating in our ecosystem and by that I mean partners who've directly engaged with us for licensing, building SoCs, developing operating systems, apps, all of them. So, they all come together and build products.

This is what happens in the ARM ecosystem, we work together, we compete against each other and we come out with better products at the end. ARM's success depends on our partners' success because we get royalties from them and as long as our partners continue to do well, so will we.

Isn't there a dearth of competition in the ARM ecosystem? Apart from MediaTek and Qualcomm, there don't appear to be many success stories.

Guru Ganesan: Yes, Qualcomm is a big player, there will always be big players and we want big players in our ecosystem because their survival will depend on our technology...

But won't that lead to a lopsided relationship between ARM and Qualcomm?

Guru Ganesan: No, it may take up a sizeable percentage of the overall numbers but there are many other players as well. We have names like Apple and Samsung but I'd like to reiterate that the presence of big names is good for us. However, at the end of the day, the products have to offer value for money for success to follow.

Also, whenever one company makes too much money in a segment, the competition is sure to follow. Just like MediaTek, we expect more players to enter the segment.

Where do you think the embedded or IoT segment is headed? Are segments like home automation and car technology significant for ARM?

Guru Ganesan: Absolutely. That holds big potential for us in the future and ARM processors are already in a lot of wearables, in home technology such as NEST which was acquired by Google, and many other similar products.

If devices in the home have to operate on a battery and stay economically feasible, ARM processors have an advantage because of our low power consumption and cost.

We also recently announced mbed OS for use in embedded devices and it will help in the adoption of IoT devices.



Sony Pictures hacked

Sony Pictures has been hacked by a group which calls itself #GOP after one of its server was compromised **http://dgit.in/SonyPicHack**

Let's talk about mbed OS vs. Android. Is mbed OS designed to compete against Android in the IoT segment?

Guru Ganesan: A. Yes. In the embedded segment, we need a better designed OS with a focus on power consumption and mbed OS is that solution. Most devices in this segment already run on ARM processors and the mbed OS should further help our partners to make better devices.

IoT is itself an evolving segment and it is up to the manufacturers to come together and standardise it while also compete with each other to bring more features into the segment. IoT is a segment that will see a lot of variety in terms of product design and operation so there needs to be some standardization as well.

With mbed OS we are providing a solution for our partners to help them develop products faster.

In what aspects does mbed OS actually beat Android? Why did ARM develop it?

Guru Ganesan: It's too early to say. mbed OS is much more suitable for the segment and we've been developing it internally for quite some time.



While I don't know the exact details about how Android differs from mbed OS, our solution is a natural fit especially since our hardware already powers a lot of embedded devices and therefore is an extension.

Where does India stand in terms of ARM's global operations?

Guru Ganesan: So, India has ARM's second largest design center in the world after our headquarters in Cambridge. ARM is not a huge company but the kind of impact we have on the industry makes people think we are a 30,000+ company but in truth, globally, we only have about 3,000 employees out of which about 400 to 500 work in India. We have a lot of talent in India and we also attract a lot of the folks who left India about 15 to 20 years ago, who end up coming back to the country to work with us.

What is the roadmap ahead for the ARM v8 64-bit SOC?

Guru Ganesan: We have been developing the 64-bit architecture since 2007. And since then we have managed to license it out to many of our partners and have gained a lot of traction in both the enterprise and (now) smartphone markets.

We have full confidence in our partners and that they will see the segment forward.

You can read the interview online: **http://dgit.in/arm-india-guru-interview**

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Total Security. Total Peace of Mind.
Total PC and Mobile Security
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Free License of Mobile Security
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Does not slow down your PC
Runs with 512mb RAM, Pentium processor
Offline Registration
Microsoft Partner
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Protection against Spyware, Malware, Adware, Key logger, Rootkit, USB / External Drive Protection & two way Firewall.
Virus Protection, Email Protection, Web Filter, Anti-Phishing, Internet Optimizer, PC Cleaner RAM Optimizer.
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Custom made cockpit
Gamer builds a custom rig with three projectors and head tracking to play Elite: Dangerous **http://dgit.in/GamerShip**



Blood Sport suspended
Kickstarter project that collected blood when you actually lose blood during a game was suspended **http://dgit.in/BloodGame**

Flickering into focus

One of the largest repositories of public domain images on the Web, Flickr allows you up to 1TB of free image storage. No mean feat. Not settling on its laurels, the service's leading matador, Bernardo Hernandez, drops his guard to discuss the core values of the beloved photo-sharing site, and also the technology that makes it tick. Excerpts:



Bernardo Hernandez
Flickr

Jayesh Shinde
jayesh.shinde@digit.in

Are there any plans to integrate videos into Flickr in a larger way? Bigger play on videos in the future? Take on YouTube, for instance?

Bernardo: Video is a critical part of today's visual content. However, we want to concentrate on photography for now. Right now, you can actually upload up to 3 minutes of video from your desktop and from your phone you can upload up to 30 seconds of video. Right now, according to the feedback from our community, we're serving the basic needs for video well, and our plan is to keep increasing that capacity. As we update our infrastructure, we will keep supporting video to the best of our abilities – without any intention of becoming a video site. Flickr's all about photography, we mustn't forget.

Why does Flickr still lack a comprehensive software tool for bulk uploading photos from a desktop?

Bernardo: Previously, we had a cap of batch uploading 500 photos through the Web browser, but there's no cap anymore – we removed the batch uploading cap a few months ago to make it slightly more easier for Flickr users to bulk upload photos. But you're absolutely right, there's no comprehensive tool yet, and we're working on ways to make it much easier and convenient from uploading from desktops, and we're going to have good news for you very soon.

How does Flickr compare to Instagram? Any thoughts on the rivalry?

Bernardo: The photography space is huge right now. It's easily one of the largest categories of content on the Web – it's the second largest content revolutions on the Web after email, in fact. And there's space for many providers and they can be very successful by providing a specific solution to their users. We have no intention of becoming Instagram at all. We believe Instagram does what it does really well which is all about capturing a moment, sharing that moment for instant gratification. But they have many limitations when it comes to photography – things like only one aspect ratio, low resolution pictures, no way of organizing your picture, etc. But Instagram does something very unique and therefore they've been so successful. We're very complementary to each other. Flickr wants to be the platform where all those things happen. We want to give users a photography platform that makes organizing, managing and sharing your pictures with the people that you care about in an effective way. That's where we're different from the competition, as no one's really doing that.

Explain to us the kind of technology that keeps Flickr running?

Bernardo: Sure. As you can imagine, we're one of the largest repositories of freely usable public domain photographs in the world, and to power the whole experience our infrastructure has around 7000 servers, the site was written in PHP, we have around 200 APIs, all running on technology that's 10 years old. We're migrating to a more data-enabled technology, better integrating with the infrastructure of Yahoo. We believe that reliability and performance is a feature, so serving the photos as fast as we can, trying to reduce latencies, etc, is critical to our services.

The future of photography, and Flickr, will see a big push into mobile?

Bernardo: From the beginning, we've been trying to do mobile first. We still have more users using Flickr on desktop than on mobile phones. But in recent times, mobile traffic is growing super fast both in uploads and consumption. From the development perspective, the mobile experience is where most features of Flickr are debuting first. So in many ways, we're committed to serving our mobile users first. But we haven't forgotten that we have a very large chunk of our users accessing Flickr only through desktop. We remain committed to serving them.

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Community
A Digit reader re-visits cryptocurrency to let us know which is the best coin to mine

142



Efficient power plants
A startup called DropWise has developed a water-repellent coating that could increase the efficiency of power plants **http://dgit.in/DropWise**

Zero1 awards: Team edition

Our Zero1 awards are legendary, 10 years old and still going strong. But what about the team that worked so hard to bring you those awards? They're human after all (well, maybe not all of them) and some recognition for their efforts will not go unappreciated.



Bloodlust

This award goes to Siddharth for his dedication to Smite (and no, we can't seem to wean him off it) and his laying waste to hundreds of them, regardless of the state of the magazine. The look of fierce determination and bloodlust when he fires up the game is terrifying to behold *snigger*, but he can get quite unstoppable.

Perseverance

This award goes to Mithun for his dedication to testing products to their breaking point, and inadvertently finding his own. Putting an Nvidia 980 through its paces while leaking bodily fluids (blood, in this case) is not something that's normal for even us titans of the technology world (yes, we're that awesome).





Zero1ng

This award goes to Jayesh, the Big Daddy himself, for Zero-ing in on the Zero1 nominees and ensuring that each and every1 of them was delivered to our test centre. All this in an understaffed, over-worked month, and in the absence of our product coordinator. Such a task is not easy, but the Big Daddy made it look as much.



Magic Trick

A somewhat unusual award, but this one goes to Raaabo for pulling the best disappearing act of them all. How? He managed to successfully run the magazine for 12 months while not making his presence felt, which is quite a feat in itself. Everyone else did manage to successfully hang on to the baton, sort of.

Unwinding

Anirudh deservedly walks away with this award for consistently writing the Unwind section for two years straight (these very words that you see in front of you). Unfortunately, he's now been asked to turn in his salary for that period because as everyone knows, Unwind is not work and that's got him all wound up.





The most lays

Ahem ahem, get your head out of the gutter. This award goes to our revered designer, Baiju, a one-man layout artist who's been laying out Digit pages with gay abandon since as long as we can remember. He's as much a part of Digit as the logo on the cover, and just as inseparable and eminently more reliable.



Low Nexus 6

Disk-encryption on the Nexus 6 and Nexus 9 are enabled by default which reduces the device's performance **http://dgit.in/N6Encrypt**

COD tops $10 Billion

Since its creation nearly a decade ago, the Call of Duty franchise has topped $10 billion in worldwide sales **http://dgit.in/CODSales**

digit DIARY

Where do we even begin? December is the very worst of months for us because this is the one month we're burdened with the testing of products from every category that we test. To put that in perspective, testing one set of products for a regular issue requires about two weeks of prep and a week of testing. Come November, we're supposed to test the very best products across 28 different categories in 30 days and work on Digit and on SKOAR and on two FastTracks and the Encyclopedia and do the DVDs and keep the website running and maintain our sanity (though that last bit is optional since we'd have to be sane to begin with).

Of course, the lovely products do keep us hooked, we're not ones to say no to pitting an R9 295x2 against a Titan Z, if given the chance, but testing products can get wearisome after a while.

How do we accomplish such superhuman feats? Well, partly because we really are supermen (You don't expect your favourite writers to be mere mortals do you?) and also because sometimes, it's the weirdest things that keep us going.

Take Regidi for instance. His entire schedule was disrupted because he had to coordinate SKOAR with Vijay, who was in New York at the time and is as much of a technophobe as your old grandpa. If the divergent timezones weren't problem enough, Regidi had to constantly troubleshoot Vijay's aging laptop over TeamViewer and help setup a files sharing system that wouldn't disrupt workflow. Pizzas, YouTube's "new" music service and litres of coke kept the lad awake those long nights.

And then one fateful night, the rat stole his pizza. This rat is no ordinary rat. We call it Creepicheep in deference to its intelligence and also its premeditated malice. It's been haunting the Digit team these past few weeks, boldly going where no rat has gone before. Nothing seems to phase it, not Jayesh's floor shaking snores nor the hum of the test rig and not even by the gun-toting Hitman doll that Sid keeps on his desk. This rat has evaded all attempts at capture, studiously avoiding the traps and never venturing out without a pre-determined escape vector.

Now we don't know if the rat was keeping vigil, but the moment Regidi popped into the kitchen to grab a glass of water, the rat sneaked out, tipped over the pizza box and disappeared with Regidi's last remaining slice of pizza. The normally calm and reserved Regidi's wrath was terrible to behold (it was his last slice after all). He's now sworn blood vengeance against Creepicheep and will not rest until that monster is slain (or rehabilitated, he can be merciful). It's the hope of running into that beedy-eyed pizza thief in the darkest depths of the night and saying, "you and me buddy, mano e mano." that keeps him awake at night, grinding through products with a wild gleam in his eye.

As it stands, Creepicheep is still on the prowl, unseen and only heard in its rare moments of clumsiness.

This has been a mad month. But hopefully, it's been worth it, for you as well as us. This is Team Digit, signing off for the year.

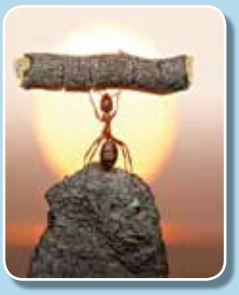


Hoary Adventurer

The venerable Vijay earns this award by SKOAR-ing the highest number of points in the adventurous category. He claims to be hard at work, said work taking him to Hong Kong and New York, but all we see are photos of him cavorting about Central Park (New York) and goofing off at *ugh* an Apple Store of all places.

Tall Talk

Who else but the Ant can win this award? The lad has never ever let us down before, but his inability to demonstrate his strength by lifting a Splendor (he claimed to have previously lifted a Yamaha FZ) left us deeply disappointed in the veracity of the words that now come spewing from the lad's mouth.



NP AV
PC, Laptop
Tablet, Mobile
सुरक्षा
92.72.70.70.50
98.22.88.25.62
india antivirus com



Interstellar happening
Large Hadron Collider scientists explain how some of the ideas from Interstellar are already at work **http://dgit.in/LHCVideo**



Robot Teacher
Mike Rubenstein with two other researchers have built a $10 robot that can help teach kids programming **http://dgit.in/RoboTeach**

digit SQUAD

Every month we highlight some aspiring tech writers and their spirited attempt to get published in the magazine. Let's have more!

Moving on from Bitcoins

Mining cryptocurrency is still a profitable venture if you know which coin to mine, you have the right hardware and you have the right miner software to complete the package.



Praneet Sah

Now that Bitcoins have been around for a long time, it has actually evolved a lot since then. It started off with CPU miners and then came the age of GPU miners and that eventually lead to ASIC miners. And ASIC miners made bitcoin mining almost impossible for the average computer user (not even if you have a powerful rig). So now, what is the way out this? Well, the introduction of new coins have again made the GPU miners feasible. The best coin for mining with a GPU are litecoins (my personal choice) and of course, you can make money off of it although it might take some time and patience and correct settings and powerful GPUs.



The reason why a non-serious miner should focus on GPU mining is because you can't afford to lose your money and with those ASIC miners, you never know the future. Also you can use your GPU to play games and to do other things. Although we'll be focusing more on litecoins, but in case you can't use litecoins then you can give a try to "Dogecoins" or check out the chart at http://www.coinwarz.com/ to find out the most profitable coin which is GPU oriented (scrypt based).

As of now the conversion of litecoins into US Dollars is somewhere near to $3.5 and you can never predict the future price, because of the fact that they keep on changing. Just take the example of bitcoins, they have even reached to 1000 USD and now they are somewhere near $300-$400.

When talking about mining LTC then there are two ways, you can either do it solo or in group. The solo mining is for only those who have got speed in thousands of Khash/s and have got some luck. Since most of us can't afford expensive rigs to reach thousands of Khash/s; therefore we'll be taking up group mining. For group mining I've got luck and better chances with "WeMineLTC.com". Simply go there and register yourself and then create a worker under your account. Generally worker's username must look like "AccountUsername.1" and try to keep password as simple as possible, because if someone else mines for you then why not welcome them? Now we have got some basic things to start off with, now we need to configure miner on our computer.

The AMD powered GPU seem to be much better than the NVidia cards. Another thing to consider is that if you have a NVidia card and not using NVidia's method of mining then it can really lower down your mining speed by almost 100%. As the root of most of the miners we'll be using the CGMiner as base (for AMD GPU's) and obviously would be writing some batch files in order to run it. Do remember to use the "CudaMiner" if you have got NVidia powered GPU. Don't even think of touching "GUI Miner" because it's outdated, old and trash. Let's start off with configuring the miner.

Mining with an AMD Powered GPU

Firstly you would need to download "cgminer v3.5.0" ONLY because any version after it doesn't supports GPU mining and versions before it might have some bugs. Extract it somewhere and open notepad. Now type the following lines –

```
setx GPU_MAX_ALLOC_PERCENT 100
setx GPU_USE_SYNC_OBJECTS 1
cgminer.exe --scrypt -o stratum+tcp://global.
wemineltc.com:3333 -u worker's_username -p
worker's_pass --gpu-platform 1 -d 0 -w 256 -v
1 -g 1 -l 1
```

In the above lines make sure to change the worker's_username and worker's_pass with the worker's detail that you got from wemineltc.com In case the above doesn't works then you may try to remove the things after your worker's password because every computer is different in terms of its power and you never know that what settings would work on which computer. Anyways a little googling might also help. Now you need to save this file as "any_name.bat" in the same folder where you extracted "cgminer v3.5.0". Don't forget the .bat in the end, because it help to run the

above code as a batch file. If you've got a laptop then make sure that it's plugged into power socket. And now you just need to run "any_name.bat" file and mining should start.

Mining with an NVIDIA Powered GPU

You might not realize this in the beginning but if you are using cgminer with an NVidia card then you are really wasting your time. Having powerful rig and using wrong settings will



drastically decrease your hashing speed. If you have NVidia card then follow these steps and nothing else. You need to download CudaMiner and then extract it somewhere. Now again open up your notepad and type the following code –

```
cudaminer.exe -o stratum+tcp://global.
wemineltc.com:3333 -u worker's username
-p worker's_pass -H 0
```

The above must work for almost every NVidia powered GPU, if it doesn't then try running the following code –

```
cudaminer.exe -help pause
```

And in here check the settings or fiddle with things (because you won't learn unless you brick it). Now again save it with "any_name.bat" inside Cudaminer's x64 or x86 folder based on your system setup. Now you need to run this "any_name.bat" file and wait for a minute or so and your computer must start mining, in a pool. You can also overclock your GPU by using "EVGAPrecisionX 16" but be aware that it will void your GPU's warranty and your computer can burn anytime. And now you need to wait as long as you can.

Making 1 LTC is also not an easy task, it requires time along with some good rig. There are several profit calculators available online, such as http://daft.cc/litecoin/ and you must use them in order to calculate your overall profit.

Depending upon your hashing speed, it can take a week or a month also for generating 1 LTC. Now after you have got 1 LTC (at least) you would be thinking that where to cash it out or where does your wallet exist? Well you would need to download "Litecoin-Qt" from here https://litecoin.org/ for the desired platform and then install it and open it up and check the "receive" tab. There you can see a long string of characters and that's your wallet's address. Now you can copy it and put it in wemineltc's pay out address and have your 1ltc in your wallet.

Now next thing is, how to convert 1 LTC into real cash i.e. $3.xx. For this we'll be using https://btc-e.com/. And in here there are many ways to make profit, firstly let's look at the simple way. Go to https://btc-e.com/ and register for an account. After confirming your account, you need to log-in and now click on "Finances" at top-right. Now click on "Deposit" near the "LTC" column and you'll be presented with your unique LTC wallet's address. Now copy this address and open up "litecoin-qt" which you installed earlier on your system. Now click the send tab, and enter the address which you got just now and the amount desired (1 LTC) and click on send. Within few minutes or hours (up to a day) the money would be credited in your btc-e wallet. Now go to https://btc-e.com/exchange/ltc_usd and under "Sell LTC" dialog box, enter the desired LTC that you want to sell and then click calculate and now click on "Sell LTC" and that's it. Just wait for some time and you'll get money in your USD wallet. Now you can again go to finances tab and then withdraw money into your PayPal or any other desired account.

The another complex way is that instead of directly exchanging your LTC with USD, you can exchange your LTC with another crypto currency offered on btc-e and then exchange that crypto currency with USD. This way it can be a little profitable or it can be disastrous. Anyways, when you are dealing with virtual currencies then you must also be aware about hackers and it is possible that you can lose all your fortune the very next day. But don't just stay with LTC, you must keep on moving to the most profitable coin and maybe by the end of year there would be some another most profitable coin.



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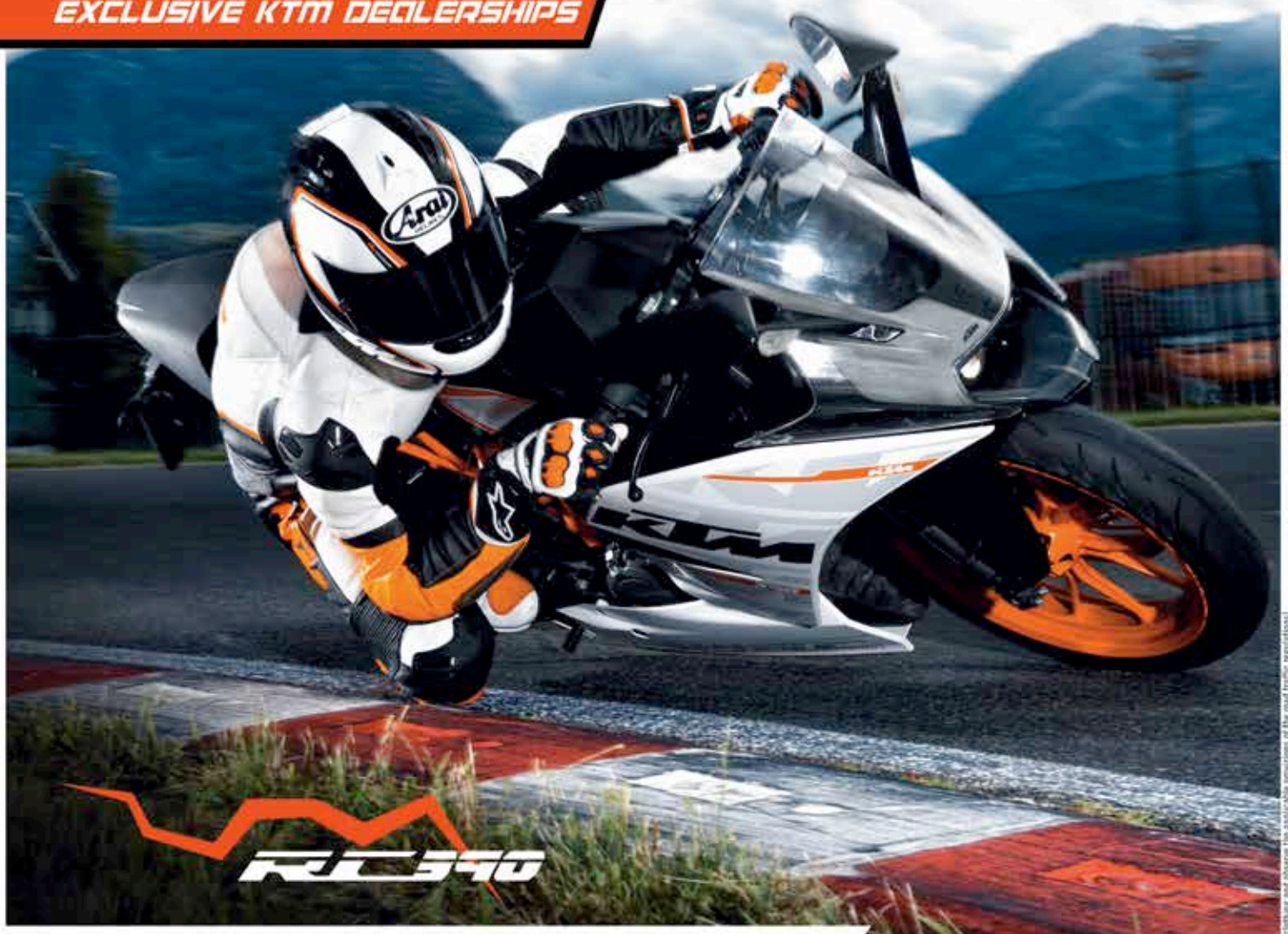
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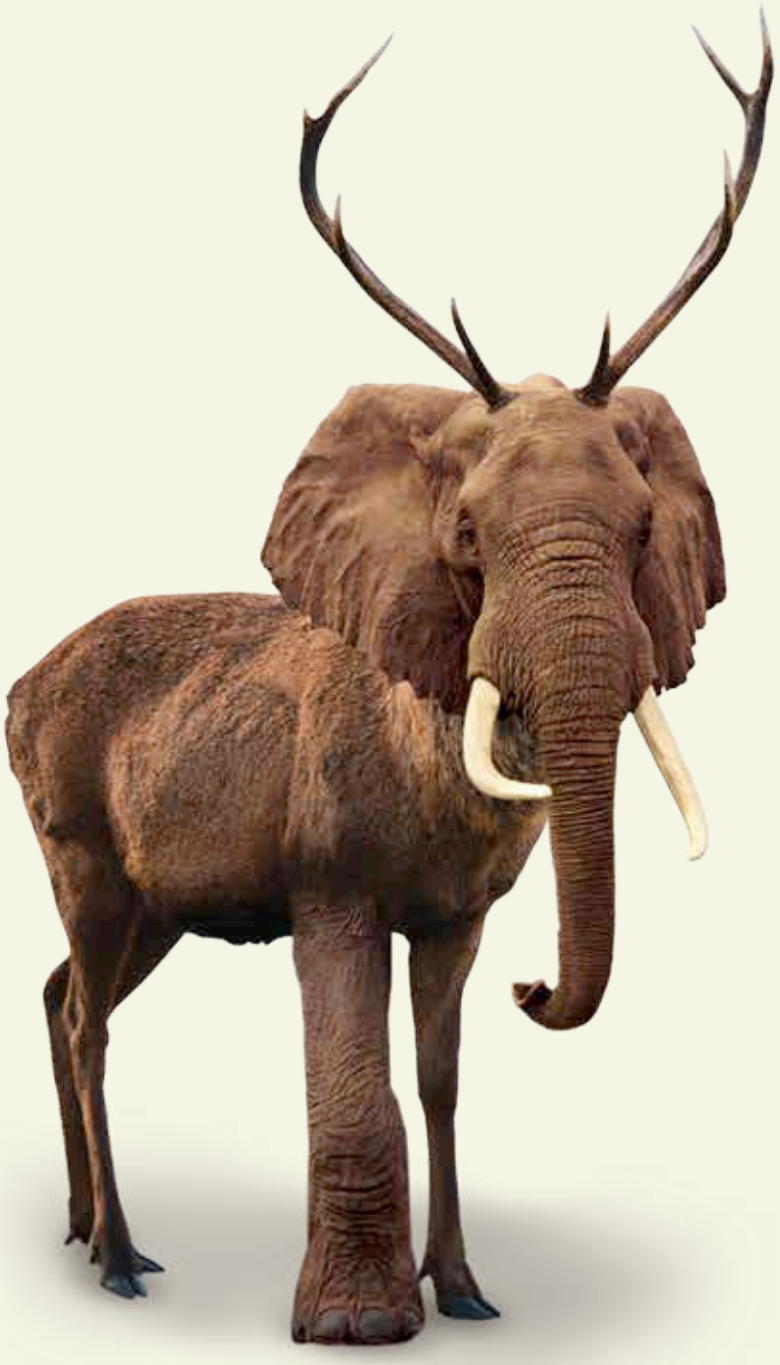
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