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डिजिट

Bottoms up!

Regimes come and go, and with them follow buzzwords, campaigns and propaganda. There were the Five-Year Plans, and later, India Shining, India Inc, Incredible India, Brand India, and who knows how many others.

Though it may not be very apparent from my general cynicism, I'm actually quite an optimist. I genuinely want to believe all these schemes are all well intentioned and directed at the betterment of everyone – people like you and me.

The objectivist in me however, cannot help but try and dig deeper. Can this sort of top-down model to uplift a nation really work? What's missing? Why can't India be the nation that it should be?

The more I ponder the more I keep coming to just one answer – Technology.

Yes, yes, this is Digit and we are a technology magazine and you'd expect me to say something like that. But it's not an exaggeration. Allow me to present my rationale.

The transformative power of technology can be witnessed throughout history. Look at the Nordic region – Finland with its "right to the internet" or Sweden, which at one point was one of the poorest nations in Europe, now is consistently ranked one of the most technologically innovative countries in the world.

In India small beginnings of this technology seeding can been through e-governance initiatives, projects such as 100 Smart Cities, and now the Digital India initiative. We all know e-governance is much needed to curb corruption, frauds and scams. I remember talking to the Secretary of IT (Maharashtra) a while ago and he had described an interesting anecdote of how they were able to digitally cross reference two independent consumer databases – Aadhaar and Gas Connections – to catch fraudsters who claimed to be below the poverty line in one database and had multiple connections to their name in another!

There's a huge caveat to this success story though – a major variable in the scheme of things that everyone seems to have overlooked – people. Smart cities inhabited by dumb people won't really work. And overtly smart fraudsters like the ones chronicled above will certainly not augment collective progress.

The only way to make people the right kind of "smart" is by exposure to technology. Of late, the term empowerment has been bandied about so much that it seems to have lost its weight, though there are situations where it genuinely applies. I have seen village folk in the very interiors of my state when I go hiking. Phones are being used for more than just playing Temple Run. Farmers are looking up commodity prices, getting weather updates and the likes. There's irrigation technology, electrification and a lot more springing up where previously there was nothing. Overall the divide between the urban youth and their country cousins seems to have gotten narrower – all thanks to tech. Technology affects culture and technology affects mentality (more often, for the better).

But to even get to that stage, there should be a huge push on an allied sector – education. And nothing other than the infusion of technology can help increase education's reach. We had done a huge story back in 2013 about how technology could transform education. How smart learning infrastructure could potentially bring the high quality urban teaching resources to the mofussil. It's only when the non-metro India (the ***real*** India some would say) gets access to the same level of education and technology would the mentality of a nation change towards the path of progress.

But that's what we need – it's something so obvious, it's almost a no-brainer – but it has nothing to do with what will be done. Why? If at all we have learnt anything from books such as 1984, or even George Carlin's thinly-veiled sermons disguised as standup, is that it's always beneficial for the ruling classes to keep the masses ignorant. Technology is the only thing that can change that. Why do you think hackers were looked at as such a threat right from the late '80s?

I'm not one to shun wisdom even if I see it at the most innocuous of places – random graffiti,fortune cookies or, god forbid, even WhatsApp forwards. Take for example this brilliant aphorism on the back of a truck that struck a chord somewhere. "Mera Bharat Mahaan" was proudly written in bold, but the sobering irony followed with "***Banana Hai***" written in a small font.

And how do we put this truck wisdom into use? Here's an unusual idea - how about we actually try to make these development schemes work? What excuse would policy makers have then?

What do you guys think, will it work?



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"Can a top-down model to uplift a nation really work? What's missing? Why can't India be the nation that it should be?"

Let me know at:
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My worst (digital) fears...



Jayesh Shinde
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"Wanna know what I fear the most? It's 2 AM on Saturday and I'm deeply immersed in some game on my PS4 (Witcher 3, for instance). I've waited all week to finally play uninterruptedly for hours on end. Just as my grin spreads from ear to ear, and I clock one hour of gameplay, suddenly there's a power cut."

Let me know your thoughts on this column at: *facebook.com/jayesh.shinde / @jshinde | jayesh.shinde@digit.in*

All of us who aren't invincible – Chuck Norris, I'm looking at you – harbour some or the other legitimate fear in our lifetime. Some of us fear losing control of oneself, while others fear loneliness. Where some harbour fear of heights (myself included), there are quite a few who are afraid of public speaking. These days, the prospect of no 3G connection is fast escalating from cause of frustration to something that's making people a lot more paranoid, fearful even – it's true.

Wanna know what I fear the most? It's 2 AM on Saturday and I'm deeply immersed in some game on my PS4 (Witcher 3, for instance). I've waited all week to finally play uninterruptedly for hours on end. Just as my grin spreads from ear to ear, and I clock one hour of gameplay, suddenly there's a power cut. No, no, no, no, not today, not now. I curse loudly. The power doesn't return until Monday morning, as I'm getting dressed to leave for work. Billions of blue blistering boiled and barbecued barnacles!

An entire weekend wasted with no gaming. That's one of my greatest fears.

You know what else I fear? Croaking before witnessing the day when 1Tbps affordable internet becomes a reality in every home in India, including mine. Why? Because I've had pathetic internet speeds throughout my life till now – I just don't know why. Maybe in a previous life I worked for a company that didn't deliver on its claims and promises to valued customers, gathering a lot of bad karma in the process, paying heavily for it in this life.

In my travels abroad, having had the honour of representing Digit in various overseas conferences, I've come to realise the importance of our most valued document as Indians – our passport. Nothing else is respected or recognized when it comes to establishing your identity in a foreign land other than your passport. And getting one in India is akin to going through a special circle of hell altogether. So another one of my fears is that one fine day this passport application process will sort itself out, it will all happen through a click of the button, interviews through video conferencing, remote verification of documents, the whole nine yards... all of this through software and technological innovations, no need to go to Passport Seva Kendra. But I won't be there to witness that day. My luck just gets better and better, doesn't it? Hang on, there's more.

Like the friendly, neighbourhood astrophysicist, Neil Degrasse Tyson, I too harbour the fear of not being alive around the time we finally come in contact with extraterrestrial life. Maybe our "deeply immature" attempts of METI will attract our trigger-happy Overlords to exterminate us in the first place, but hey, I'd still rather die in an alien scourge than some boring "normal" way. How cool would that be?

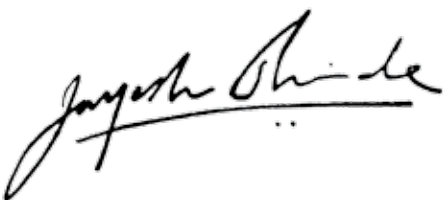
On a slightly more serious note, though, there are some things that really scare me. Things that are a direct consequence of our digital existence. Like identity theft.

As part of Digital India, a lot of efforts are directed towards centralizing sensitive private documents of citizens in services such as E-lockers, E-signature, linking bank accounts to other integrated government services, and more. Imagine if all of this data is breached? Worse, if all of this data is lost and my identity ceases to exist in the eyes of the government? Colour me pessimistic, but identity theft can be a bad consequence of haphazard digitisation.

Stories of cyberbullying don't seem just sensational anymore, they feel real. Especially with raising a child, making sure they don't fall prey to this menace of our digital society is an increasing fear in my mind of late.

My last and final worry as far as this month's column is concerned is that despite all our technological advancements humanity's going to self-destruct – or send everyone back to the dark ages – through the Great Cyber War that's surely around the corner. Who needs aliens to bring down highly evolved homo sapiens? Sigh.

What are some of your worst digital fears, dear reader? Write to me, I'd love to hear your story.



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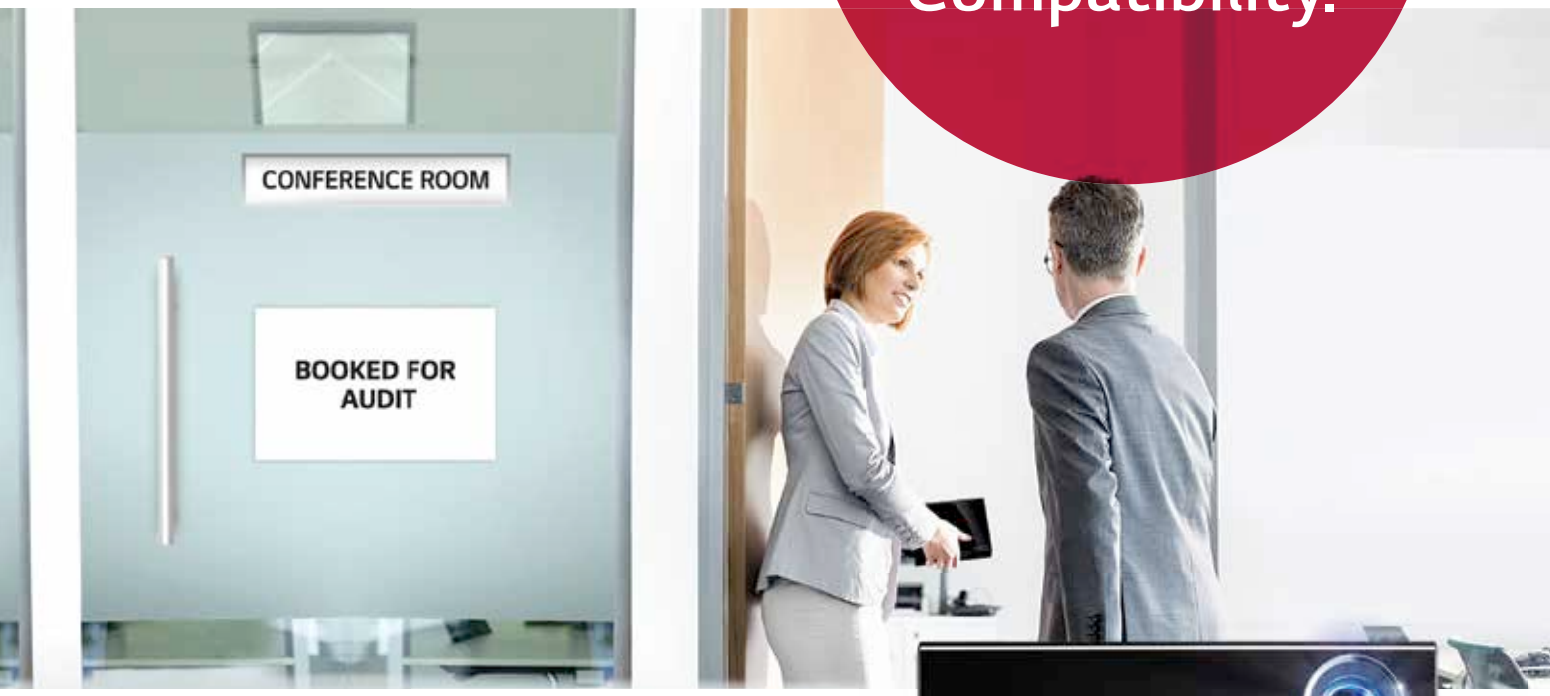
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Cured or flatlined?

A recent Symantec report – based on data gained from enterprise solutions of theirs – says spam is finally dying out. For the first time in over a decade, spam accounted for under 50 per cent of emails. With them calling it a five-year-low in spam, this news suggests that finally the effort versus reward ratio of spammers is falling drastically enough to finally see a significant reduction. And the security companies say it's their anti-spam filtering that's caused this.

Back in 2013, Kaspersky also released results of a similar study which was a new five-year-low back then. Somewhere around 72 per cent of email back then was spam. From 72 per cent to just under 50 per cent is a rather large dip. One that no one will ever complain about, but a significant, and thus interesting dip nonetheless.

What's even more interesting is that the total amount of email being sent per day is still going up! Of course enterprise users account for most of the email being sent out, which estimates suggest is between 180 to 220 billion email messages a day. Yes. 220 billion. Per day. On average. Of this, about 100 to 120 billion are enterprise mail, and 80 to 100 are end-user emails. That's all of us 2 billion-ish people who are online, emailing using private services such as Gmail.

It comes as no surprise to me that many experts believe that the total amount of email sent is soon going to start reducing, or at least become more stagnant a number, to start with. The newest generation that's joining the online technology population just don't like email as much as their older counterparts.

Now, I'm old, especially in technology years! I may be in my late 30s, but even I can testify to an ever reducing reliability on email to communicate personally. Not for work though! That's one area where I am still totally dependent on email, and perhaps the main reason why I'm still using a BlackBerry 10 phone instead of Android one – they're just awesome for email!

I get between 200 to 1000 emails a day in my official inbox. Of this, about 100 make it through to my priority inbox, and about 30 need me to respond to them immediately as they arrive. The other 70 are either forwarded to others or only require me to read and forget about them. The ones that don't make it to my priority inbox I either make time for at the end of every day, or on a weekend; though I've also been guilty of getting to it only after a month! Some of you readers who have got a reply from me many moons later will testify to this.

Anyway, that's a typical workday for me in terms of emailing people. Like every other person on the planet, I also have a personal email account, and although that's also configured on my BlackBerry, it's not something I get to every day. Sometimes it's only once a week that I get to emails from the few friends and family members who still communicate only that way with me – usually people over 50, or those who live in really small towns and don't own smartphones.

That's just how it's become. Instant personal communication is done through WhatsApp, or some other IM, and official work is done over email. Not for long though, because at Digit we already do most of our communicating with colleagues over WhatsApp. Enterprise users are already using other services such as Asana for team collaboration, and Slack for better communication, rather than just depending on email.

Coming back to the non-work experience though, I've got more WhatsApp spam in the last year than ever before. It's a lot easier to block them, but they did try. I don't even encounter ads on the web. It's only as paid facebook posts or in-app advertising these days.

The simple fact is, as slowly as the ice caps are melting, email for personal use is dying. It's finished. Kaput. Gone. Obsolete. Yes, I'm exaggerating. I'm jumping the gun. With good reason, though. If the porn industry, the spammer industry and the malicious code industry start jumping ship, you know you're on the technology equivalent of the Titanic!

As much as security companies would like to thump their chests and stake claim on the laurels for finally defeating the spammers, the fact is the game has changed, and it's us that changed it – by developing new habits. What we should ask ourselves is whether it's the cancer that's being defeated gradually, or the patient that's slowly dying? Has email been saved, or is it just dying a natural death? Cured or flatlined? What do you think?



Robert Sovereign-Smith
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"The newest generation that's joining the online technology population just don't like email as much as their older counterparts."

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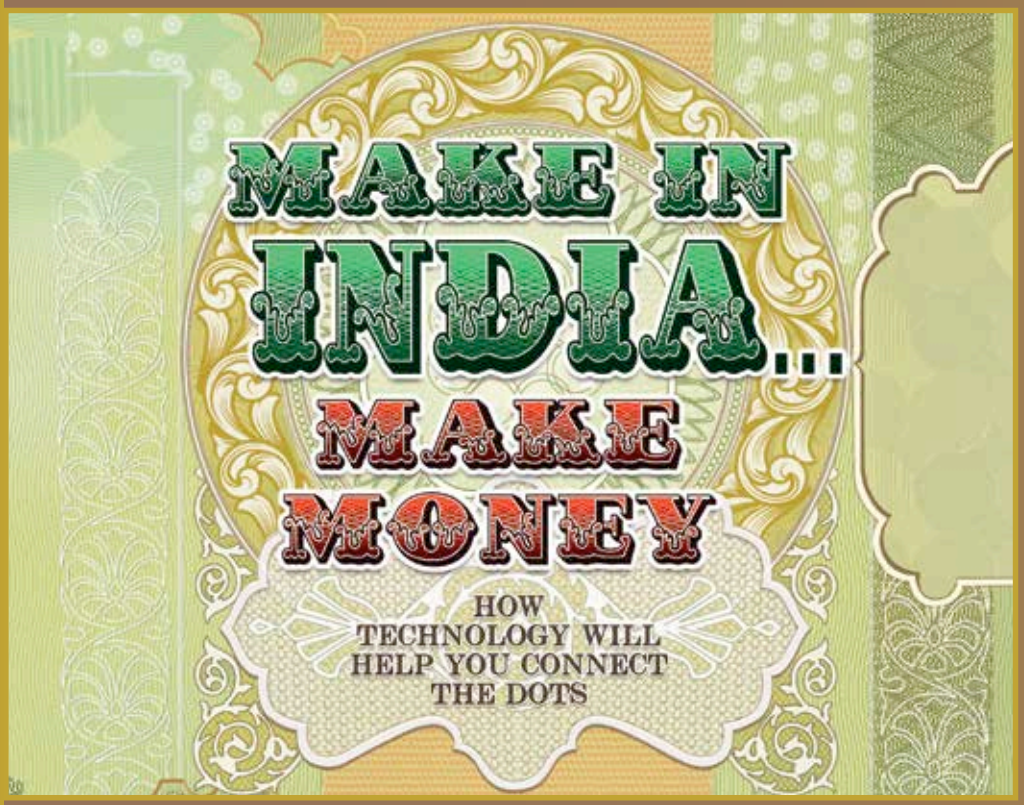
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Feedback for the July 2015 issue of Digit



✉ My Digit story started when I was a kid, and I've been inspired by it ever since. Now, I'm 21 (almost 22) and still like it as much as I did as a kid. I used to fight with my father to buy me a Digit magazine (It was ₹125 back then). My father would buy it for me once and say "no" the next time.

I've always loved computers and back then there was no other means of passing time, especially when I entered high school and parents restricted my TV access. Back then, WindowsXP was the dominant OS. However, being famous it also had many problems including viruses (mostly pen drive ones), Windows Genuine Advantage and sudden system crashes. I lost a lot of saved files of GTA and IGI games that came in your CDs.

As a solution to this, I thought, "What if there was an OS that didn't need installation?". Obviously, I never knew that such a thing existed, and planned to make one. In a later Digit issue, I got an orange CD, titled 'Puppy Linux, Bootable Disc'. After using it, I found that such an OS already existed. Then I Googled and ended up on a site called 'livecdlist.com', which showed many similar OSes. I was very happy as I now had an easy way to back up all my files and access the internet when XP crashed. I was also able to get into systems, access their files and also remove viruses from pen drives, as they couldn't run on Linux.

In those days, there were two big magazines in the market that were similar to each other - CHIP and Digit. The thing that attracted me to Digit was the Fast Track booklet supplied with it. It was the magazine's biggest advantage. Other magazines such as PC Quest and PC World were just no match to it.

After schooling, since I was good at computers, everyone told me to go with CSE or IT for my higher studies. However, one thing that I've learnt from Digit is that just being good at computers doesn't mean that you should end up in CSE or IT. So I took Civil, and am now happy after completing it. Even though it was a computer magazine, it had content from all fields of technology such as TVs and mobile phones, among other things. In college, I was finally able to save up and subscribe to Digit, so that I'd remain up to date about the latest tech.

My second year of subscription is ending this month and I have a confession to make: Of all the Digit books that I've bought or subscribed to, I haven't read a single book fully – Its content is so vast. Lack of time due to constant tests and exams in school and college was another reason. Now that I've finished with college, I have plenty of time. I'm happy to renew my subscription again. Doesn't matter if I read them or not, but I'm happy collecting them.

–Vigneshwaran S

Thanks for taking the effort to write in. We appreciate you sharing your story with us. I certainly hope that you do find the time to read the magazines from cover to cover. Keep in touch and let us know what you plan to do now that you are done with your engineering.

– Robert

✉ I'm a 16-year-old from Udaipur. I first saw Digit in 2009. That's when I became your fan. I became so engrossed that my mother started to scold me given the time I spent with my magazine. I have a few suggestions for the magazine:

1. The paper of the magazine reflects too much light when viewed from an angle. Yesterday, while eating food, the text in the magazine wasn't visible, so I had trouble reading it. If you can do something about this, then by all means do so.
2. Too many ads. People want technology and technical advice from you, not ads. Please reduce them. The March issue had an ad on the cover page.
3. Finally, can you show deals in your next issue with the prices of gaming equipment for middle class kids only. An issue dedicated to this may be groundbreaking.

So, that's how I feel about you all. I really lobe Robert and Siddharth uncle. I'm stubborn and won't stop reading your mag, even if God came down to Earth to scold me.

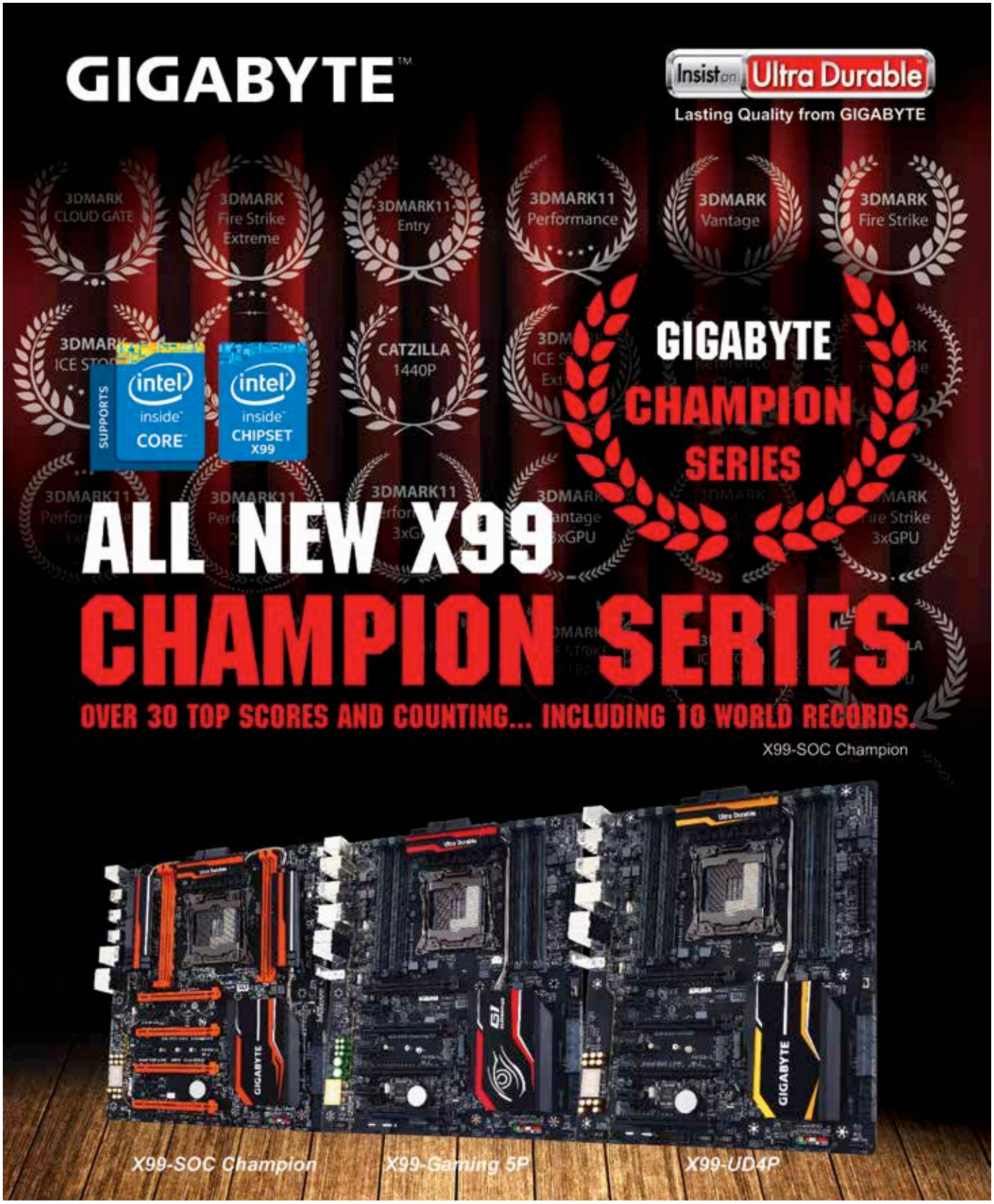
P.S. A personal query: Is there any way through which I can be a part of Team Digit, because I love what you guys do and want to do the same. Please let me know about this and whether I can get a chance to write an article. I'll be glad to give you my latest article on extraterrestrial life. Pretty advanced topic for a 16-year-old kid, eh?

"That's all, folks!"

– Arnav Soni

Let's answer your queries one at a time:

1. There are many different qualities of paper, and the glossier ones usually



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LETTER OF THE MONTH

✉ Yet another awesome edition, but this time the credit goes to SKOAR! Reading Digit last week put a smile on my face on more than one occasion. No wait, it actually made me laugh out loud, in a good way. As is my habit I usually read through the letters first, flip to the end, go through Bazaar pages and Tips and Tricks, flip again to the editorials and then, the rest of the magazine. That's when I realised that there were more typos in this edition that ever. The kid in me likes to think you did that for fun and on purpose, just to get under the skin of the grammar nazis. The 28-year-old me hopes you did that for fun. Jokes aside, it still had great content and I loved it.



On to the serious topic: SKOAR! Firstly, What?!! You guys got your hands on Dragon Age Inquisition? How? Where? When? I thought the developers decided that Indian government, and by extension, Indians, would find some of the game content to be sensitive (read: intolerable). Or did I miss something?

Secondly, let me tell you I'm a huge fan of the Witcher games and books (I can't believe there are people who've played the games and not read the original, albeit translated, versions), not just because of the gameplay and story, but also because the company that develops them is just awesome. CD Projekt has earned my complete respect for how it treats its customers and fans and consequently reinstated my faith in game companies (CDPr exclusively). The problem is that I can't seem to get a physical copy of the game where I live – not just my city, but the entire state, it seems (Kerala, if you were wondering). Any help on that matter would be greatly appreciated. And please don't direct me to Steam. I won't be able to download such a huge file over the net.

Thirdly and finally, I find it quite ingenious on your part to sneak in a second poster on the inside cover of the Skoar magazine.

Keep up the awesome job.

PS. Really loved the RSS Feed this time. Especially the fact about Soundhound. That sounds like something I really need, because I rarely remember names of the songs or artists I like and all I'm left with is that little tune in my head. I didn't even know there was something like that. Cool.

Regards from

– A fan, Nazeef Abdul Karim

I wish I could tell you that the errors you spotted were deliberately introduced for a bit of "fun", as you put it. Alas that wouldn't be true. Last month's issue was (hopefully) an exception as we were terribly short-staffed for the month. The copy didn't go through the usual rounds of proofing. You'll see the quality bounce back in the coming months.

Your appreciation for SKOAR! is much appreciated. Yes, due to a bit of overzealousness on the part of the studio, Dragon Age didn't see an India release. I have no clue how Nikhil managed to get a copy though; feel free to ask him yourself on Twitter @postwar. Also glad to meet another Witcher fan! CD Projekt has done a great job developing the lore of Witcher's universe as information related to it isn't just divulged in notes, letters and other things you encounter in your travels, but also through eavesdropping on passers-by, doing side missions and just exploring the vast landscape. I'm having a terrible time trying to put down the game controller on weekends, because it just sucks you in. Similar to Dragon Age, its lore is uniquely appealing for an RPG fan.

I've been playing the game on PS4 over the past month or so, and I just checked with http://www.expressgames.in (they officially distribute the game in India) and they confirmed availability of a PC copy of the game (here in Mumbai). I recommend calling them up, giving Digit/SKOAR!'s reference and finding out how best you could get your hands on the PC copy of the game. However, be warned – despite installing the game from the discs, you'll still have to download a patch and update the game before starting to play it, and this will cost you over a GB of download. Bummer, sorry about that, but at least it's better than having to download the entire game through Steam, right?

Happy gaming to you!

– Jayesh

reproduce colour a little better, as they're manufactured in a way that does so. If you compare the quality of, say, Fast Track to the main Digit magazine, you'll see that although text is a lot easier to read in the Fast Track, the images in Digit look a lot better. Thus for text-heavy books such as Fast Track and dmystify we use less glossy paper, and for image-heavy content such as in Digit we use glossy paper.

2. Ads are just a way of life, and neither we nor anyone else is going to get rid of them anytime soon. If you're all willing to pay ₹400 per issue of Digit, we can safely get rid of all ads. It's also an optical illusion, because all advertisers want their ads placed in the beginning of the magazine. Thus, you think that there are too many ads, but when you go through the magazine you'll find that barely 10 or 15 per cent are ads.
3. The definition of middle class itself is so vast now that everyone with a budget-range of 30k to 1.5 lakh consider themselves to be middle class. You're going to have to tell us your budget, and drop a mail to *agent001@digit.in* for all specific buying related queries. We'll do a gaming special sometime soon though, so keep an eye open for that.

As for the article you want to contribute, what aspect of extraterrestrial life? Send us the article and we'll have a look at it. Write to *editor@digit.in*.



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Uber continues to focus on expanding its operations in Asia and has announced that it will expand into seven new cities in India **http://dgit.in/uberindexp**

P.S. We 'lobe' you too, keep reading, and writing in!

– Siddharth

✉ Please explain what a Microsoft phone is doing in the 'Top 10 Android Smartphones' list on your website? With such glaring errors, how would you expect users to trust the content you put on your website?

I know Digit has been around for as long as I can remember and I find this utterly disappointing.

– Pradeep Pai

Whoops! How did that get in there? Our apologies, and thanks for pointing out this glaring error. We've updated the list immediately, and hope the error hasn't broken your trust on our site.

– Soham

✉ Is there any way in which I could find out what were the contents of your previous DVDs? I've missed a few previous editions and was hoping that you could guide me.

– Harsh Khajuria

We've created a Google Doc especially for readers. It's a monthly break up of everything we've given in our DVDs for 2015. Here's the link: http://dgit.in/DigitDVD2015 You can use [CTRL] + [F] to find exactly what you're looking for.

– Abhijit

✉ Hope you all have a refreshing time after a month of hard work. Also thank you for giving me a refreshing week. This time, my month began with a unit test (and yes, I was swamped with studies, studies and more studies.) and after my unit test, Digit came as a welcome relief and helped me to get out of the clutches of my monotonous study routine. Thanks again for your enjoyable magazine.

My last letter was about your plus points and flaws (nothing in the world is without flaws), so forget about your flaws and do your best to come up with the best. The reason I'm writing this letter is to let you know how important you are in my daily life. In just a few months I'm recognised as the most renowned geek (in the field of tech) in my class (and this is because of you, Digit). Last year, I knew nothing about tech but after you came into my life and I started reading your mag I became a geek. The truth is that you're the most inspiring thing (after my parents) that I've come across. In one phrase, you've changed my life.

You've inspired me in many ways. Now see, when I read Sid and Jayesh and Robert's humorous (or serious) yet knowledgeable columns, it inspires me to write well. When I see the magazine and realise the your hard work behind it, it inspires me to work hard. When I see the cool pics of all the latest gadgets in your mag, it inspires me to save money to buy one. When I see your team's photo, it inspires me to be handsome (You all are really handsome). Now, if I start writing everything about you that inspires me, I really will end up writing Ramayana 2.0! So you can understand why you guys are my sole tech guide, teacher and best friend all put together!

Do you know, Team Digit, many people become tech geeks because of you, many consult you or your mag before buying products and many show off their knowledge on tech among their friends like me because of you. You're heroes to millions of people like me. I'm speaking the truth, Team Digit. If I had to choose between you and Iron Man, I would choose you.

Now coming to your latest magazine (July 2015 edition). It's awesome. I can't understand how you could gather and print so much of information in just 2-3 mags. Please, let me know how you managed to do that. If I start writing about my feelings towards you, I'm sure I'll definitely end up writing Mahabharata 2.0 (enlarged edition)!

Last query to you: In reply to my previous letter, you asked if I could write for you as your gaming staff. I'm definitely in. Nobody leaves golden opportunities like these, so I won't either. If I could be of help in any way to you, then I'm there with you!

Long live Team Digit! Keep digitising millions of minds in India and abroad!

Shovan Bairi

You bet nothing comes without flaws, and we're a constant reminder of that. However, it's important that we improve, and improve we will, thanks to the help of readers such as yourself who take the time to sit and write us a letter.

As for handsome, well, it's really true that beauty lies in the eyes of the beholder... May we suggest you have your eyesight tested? Don't drive any heavy machinery until you do. Really! Yes, we do fancy ourselves as writers, but in the looks department, perhaps Sid is cute (he's even had a stalker or three!), the rest of us are just glad we can string words together.

As for Iron Man, no dude, no. Iron man always. He's the king of cool... the geek to rule all geeks. We are cooler than Aquaman though. Then again, everyone is!

Now stop wasting time writing us letters and get started on those SKOAR! articles. Chop, chop.

– Robert

✉ Your take on String Theory was exceptionally good! I liked it very much. Though I need to read it several times to fully grasp the concept (obviously), I found it exciting and endearing. Kudos to you guys for taking such a difficult topic and handling it so well. I guess many guys with doctorates helped you to write it. Thanks a lot for your efforts and keep dmystifyng!

– Neeraj Lagwankar

Thanks for the feedback, Neeraj. However we have to apologise to you and all other readers for some major formatting errors that crept in. In every place where numbers were supposed to go as a superscript, due to lack of proofing, these went as normal numbers. We'll correct all those errors and put up the corrected PDF for download to the public. My sincere apologies for this oversight. And no, there are no people with doctorates to be blamed for this, just us!

– Robert

✉ I received your July issue that I was eagerly waiting for thinking that it would contain some E3 footage of all major studios as covered every year by you. But,

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http://dgit.in/appannvrsry

what do I get instead? Four gameplay trailers, of which two are of an already released game.

This isn't a complaint, guys. It's just an avid reader of your magazine who's completely disappointed. How hard can it be to include 6-7 videos when you do that every year.

Seriously, I'm so disappointed in you.

– *Harsh Mandan*

As you already know, this year's E3 conference was scheduled right in the middle of the month, so we couldn't risk delaying the mastering of our DVDs. Game publishers and studios took around 2-3 days to upload their keynotes and press conferences, which further delayed our plan of adding the E3 content.

We understand how much you want to watch the gameplay for Doom or get to know about all the announcements from Xbox, so don't worry, we've covered all the important highlights from the event in this month's DVD. Happy watching!

– *Abhijit*

✉ I've been reading Digit for a year and a half. I still remember that day when I accidentally came across this tech mag (January 2013 issue) at my cousin's house. That was the day I found my hard printed tech companion and continued to buy it each and every month since then.

This is my first letter to you guys. I couldn't resist writing in this time, especially after reading the July 2015 issue's cover story – 'Be your Own Boss', with which I could personally connect. Siddharth Sir, your story of an attempted startup particularly awakened the feeling inside me to do something interesting. Maybe, this is one of the crucial reasons for which I'm sending this letter. The thing is, I personally love the kind of work you guys do – i.e. reviewing and testing the latest gadgets, writing articles on them and overall finding and sharing info on the latest technological advancements – and it interests me. Let me inform you, I've become a tech adviser in my locality. Anyone wanting to buy a new gadget related to anything comes to me for advice and a large part of the credit for this goes to Digit. Many times, I've researched smartphones to find the best one to buy within a price category and the same smartphones have appeared in your next issue as best performer smartphones! And that just makes me feel like saying "Yes! I predicted correctly."

Looking at the kind of amazing work you guys do, it makes me feel as if I too belong to your community, and I'd quite love to work for Digit. Actually, I just mentioned one of the deepest wishes of my life i.e. to work for Digit! I'm a member of your Writer's Club and have even sent you an article, namely 'Technology vs Imagination' and would be rather grateful to see this topic as the theme in one of your future issues. Now that I've expressed my wish to work for you guys, I should inform you about my qualifications. I'm at present in IT Engineering, Second Year and to be truthful, I messed up this year of engineering due to some of the first year subjects that weren't cleared. Now, after knowing this, one may think that my failure in this year has led me to send this letter requesting to work with you. However, that's not true, since the main reason for this letter is my interest and passion for the technology-related stuff you do. I wouldn't describe myself in this letter anymore. Rather, I'd just say give me a shot, I won't let you down.

– *Nikhil Nagvekar*

I feel quite humbled that my little attempt (and consequent failure) at setting up my own little startup inspired you in some way. The one piece of advice I'd like to give you is to not get bogged down by failure. As long as you get up, dust yourself off and carry on, you'll surely be a success in the long run. From the way you've described yourself, you'd be a good fit here at Digit. Let's put you through our gruelling interview process ASAP. I'm sure you'll want to finish your Engineering, but till then you could intern with us during your semester breaks.

– *Siddharth*

✉ Hello. I am a 16 year old guy and I'm a real tech geek. I have deep interest in technology and I feel that studying is just a waste of my time as it's something which doesn't relate to my passion at all and because of which I'm not able to devote time to my passion - Technology . I always keep on trying new stuff on my pc. And failing has never demotivated me. Starting from simple computer tricks to hacking and editing. I have experienced all fields. Even in my school I just spend my whole day in our Computer Sci. Lab and have become a part of our school Tech fest – Silico Battles . I was thinking if Digit can be a platform for me by maybe having me on as an intern? People say studying makes them successful, for me it's seems to be a waste for my career. So if I could get my tech stuff (internship) with my college which I'll be joining next year, I'll be pretty happy. Though I was aiming for Google to be honest, but Digit isn't any lesser and somehow due to lack of contact with Google I lost my motivation years back. But I'm confident again. I may not be good in the begining but I assure you that I have the potential to be the best when it comes to technology.

– *Mayank Jain*

It seems like you're definitely having a dilemma and you're not alone. Many of us have gone through something similar back when we were studying and have gotten to where we are after having worked through them.

This feeling that your studies are hampering your progress in life might be misplaced. Either ways you need to seek help and work through this phase to resolve these feelings. A professional degree isn't just about having a few letters after your name, the entire experience helps you in myriad of ways and the friendships that you'll form will stay with you for the rest of your life. In short, it moulds your character. Moreover, our society is still biased towards those that have a few letters after their name as compared to those who don't. So the importance of completing your professional course is something that you shouldn't take lightly. However, you should never let go of your dreams. To be honest, we're quite taken back by your intrest in interning with Digit and we're always looking towards having new faces around so do write in to us once you've worked it all out.

– *Mithun*

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THIS MONTH: Fii0 X3 SECOND GENERATION, THE NEXPAQ, MUKU SHUTTER, THE MOMENT, THE droPRINTER and more...

TEMPTATION

If you're wondering what to do with yourself or how to spend some time getting cultured, this section is for you...

THIS MONTH: TIME LAPSE, KILLJOYS, DARK MATTER, A REMIX OF FREE FALLIN' LIKE YOU'VE NEVER HEARD BEFORE and more...



SanDisk Connect Wireless Stick

SanDisk has announced a really useful flash drive that will let you store your files and access them over from your smartphone, tablet and computer. The SanDisk Connect Wireless Stick can be accessed wirelessly through the dedicated Android and iOS app. You will also be able to stream videos and music from the wireless stick to up to three devices at a time.

DESIRE

Latitude 12 Rugged Tablet

The tablet to use behind enemy lines

If you're planning your next trekking or mountain climbing expedition, Dell has a new gadget that you can take along. Pitched as an extreme tablet, the Latitude 12 Rugged Tablet will be capable of handling spills, dust, and temperatures between the extreme range of roughly -28 and 62 degrees, Celsius. The tablet already sounds like it is all set to hit the war front and should find its application in military, industries, emergency and rescue operations, and – as expected – adventure!

The specs of this mean little machine doesn't fall short anywhere, running on an 5th Gen Intel Core processor giving 12 hours of battery life and up to 512 GB of Solid State Drive storage options. The 11.6-inch screen can used with working gloves. It can withstand falls from more than four feet and even boasts of having 'quad-cooling' thermal management.



The price of the Latitude 12 Rugged Tablet isn't available now but we expect it to be really heavy on our wallets.

SPECIFICATIONS

Display Size: 11.6 inch | **Display Resolution:** 1366x768 | **Processor:** 5th Gen Intel Octo-Core | **Battery:** Up to 12 hours | **Storage:** 512 GB SSD

Enter: GT350

As the much-awaited Ford Shelby GT350 makes its way



into the market in the coming months, the car's specifications make their way into the news, one little detail at a time. Here's a new one: http://dgit.in/1Ko49UU

Legal, butt nosey

Listening in on butt dials (also called 'pocket dials' for the sake of political correctness) have officially received a precedent in the court of law – and it's allowed! Be careful when you accidentally call friends. Suing them is a lot harder, now. http://dgit.in/legalbuttnosey

Rise of Croft

The new Tomb Raider game seems to be an origin story for Croft. Rise of the Tomb Raider is scheduled to launch on November 10th on Playstation 4 and PC, alike. Fams await with bated breath and empty their schedules for the occassion. http://dgit.in/RotCroft

Twin story

Earth's distant cousin surfaces in the distant constellation of Cygnus. The Keplar-452b has longer years and a sun that's been around a million years or so longer than ours. Pack your bags, people! It's almost time to get out of here! http://dgit.in/keplar452

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iPod Touch

An iPhone that only plays music

After almost three years since its previous version was launched, Apple has upgraded the iPod Touch. Now the new iPod Touch has a faster processor, better camera and is available in six colour variants – gold, silver, space grey, blue, pink and red. The iPod Touch took a huge leap with its processor, jumping from an A5 chip to an A8 processor – the same chip running the iPhone 6 and iPhone 6 Plus. Being an Apple product, you would have expected the device to have a Touch ID but Apple decided to not add one (they'll probably add it later and double the price). The camera has really improved along with Bluetooth and WiFi upgrades. The iPod Touch will come in a 128 GB variant available as well that sells for $399 while the 16 GB, 32 GB and 64 GB versions are priced at $199, $249 and $ 299 respectively.



SPECIFICATIONS

Display Size: 4-inch (1136x640) | **CPU:** Apple A8 (1.1 GHz) | **OS:** iOS 8.4 | **RAM:** 1 GB | **Camera:** 8MP rear camera, 1.2MP front camera | **Battery:** 1043 mAh

Moov Now

New wearable in town



In a market flooded with wearables it might not be a good business decision to launch your own wearable device. Moov Now, however seems to think it has something new. This wearable pairs with an app and trains users in running, cycling, swimming, cardio boxing, and bodyweight workout. A voice instructs you throughout, giving suggestions for better results. It also tracks sleep cycle and steps using its accelerometer, gyroscope and magnetometer.

Axon Mini



Before Apple could bank on the force touch after launching it on their new Macbook, ZTE has already incorporated a force touch display on their latest smartphone – the ZTE Axon Mini. A force touch display not only senses your touch but also senses the pressure that you apply on the screen. The phone will have a 5.2-inch Super AMOLED display. Nothing else is known, for now.

SECURITY WATCH

Hacking Team gets breached

]HackingTeam[

Well known providers of spyware and malware to governments across the world, Hacking Team has been apparently hacked. Yes, the irony is obvious. Hacking Team is an Italian company that provides surveillance software to governments and law enforcement agencies. The hack involved the leak of 500 GB of data that include client files, contracts, financial documents and more, all of them being dumped all over the Internet. The company's Twitter account was also hacked and a tweet was posted that gave the link to the 500 GB of data, revealing client names including several countries like Australia, Iraq, Mexico, Russia, South Korea and USA.

Almost 1 Million Android Users' Facebook credentials compromised



Recently, two games on the Android Play Store have been spotted trying to collect users' Facebook credentials by using a fake login page within the apps. Cowboy Adventure and Jump Chess were responsible for taking the login credentials from the users and sending them to the attacker's server. Google has taken down both the apps and is working on improving their security to avoid such malicious attacks in the future. Before downloading new apps from the store, make sure you read the reviews and if you want to go the extra mile, you can install malware scanning tools on your phone.

Google Photos starts misbehaving



If you're an Android user, you might have downloaded and installed the new Google Photos app when it launched. Giving you unlimited storage, it automatically syncs all the photos on your phone rto the Google servers. The unusual behaviour of the application is that even after you uninstall the app, it continues to back up your images to your Google account. There is nothing to worry about, though. This debacle is caused due to Google Photos' settings being interconnected to the phone's Google Play Services. If you want to prevent this from happening, simply disable the sync option in the Google Settings app after uninstalling Google Photos.

Mi TV 2S

Xiaomi's latest TV is only 9.9 mm thick



When smartphones are allowed to slim down, why should televisions - the original commercial screens stay lagging behind? Televisions have been thinning out over the past decade and a half, ever since the Cathode Ray became a thing of the past. But who would have thought that Xiaomi would be a company to break the visual record? The next Mi TV (to be launched globally) would just be a mere 9.9 mm thick. Said to be the company's thinnest TV ever built, the Mi TV 2S is a 48-inch TV that supports 4K playback. The thickness or the thinness of the TV is so much that it is as slim as their Mi Pad and Mi 4i device.

The Mi TV 2S runs on the latest version of MIUI (Android 5.0) running on 2 GB of DDR3 RAM with a storage of 8 GB. The TV has WiFi and Bluetooth connectivity. The screen has a Bluetooth LE remote instead of the old infrared version, and if you decide to lose it, you can even tap the bottom of the TV to make the remote beep. Alternatively, you can also install the remote app on your phone and use gestures and voice to control the TV, as well as read up on IMDB-fed info about the show you're watching. With respect to the way it looks, the newest MiTV has an all-metal body and is available in five colour variants that differ in the aluminium frames. Available in gold, silver, pink, blue and green, the TV is set to be priced at around Rs. 30,000 for the standard edition. The other theatre edition costs at around Rs. 42,000 which will an include an independent sound system equipped with Dolby sound technology.

SPECIFICATIONS

Display Size: 48-inch | **Display Resolution:** 4K | **OS:** MIUI (Android 5.0) | **CPU:** MStar 6A928
Price: RMB 2999 to RMB 3999 (₹30,000 to ₹42,000)



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Lumos Helmet

Road safety is something that should see a lot of innovation coming in and the new player is the Lumos helmet. The helmet gives turn signal indicators which can be controlled wirelessly through a dual-button attachment on the handlebar. The helmet also has a brake light that goes red when you slow down. It can be charged conveniently using a micro-USB cable and will last up to a week in a single charge.



Sensory Percussion

Drum solos sound great but what if you could have more than just the acoustic sound of the drum and have different types of digital sounds as you beat the drum? Sunhouse has built Sensory Percussion that attaches to the drum and using a sensor and signal technology, expands the potential of an acoustic drum. The sensor can be connected to your computer using standard audio cables and XLR cables.

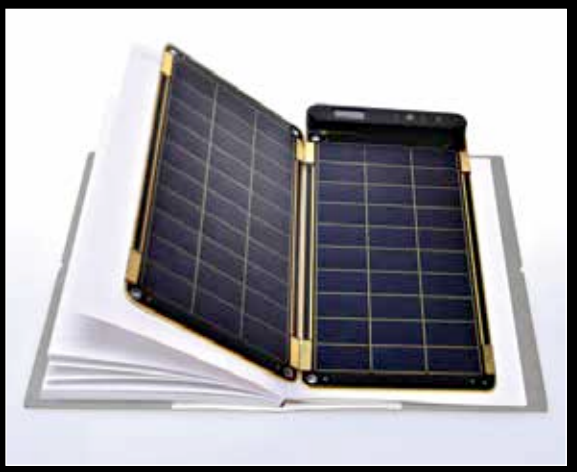




Sphericam 2

Over the past few months, a lot of VR content has been making an appearance recently. However, there aren't too many products available that are good enough to create 360-degree Virtual Reality videos. Until now.

The Sphericam 2 lets you capture 360-degree videos in 4K at 60 fps using its six built-in lenses. Though this one is the second version of the previous camera, the only notable difference between the two is its 4K capturing capability.



Solar Paper

Claiming to be the world's thinnest and lightest solar charger, Solar Paper is capable of charging your smartphone in about 2.5 hours (provided, of course, that the sun is shining in all its glory). The device is water resistant and measures about 190x190 mm and is only 1.1 cm at its thickest point, weighing in at around 113 g.

A convenient device, over all, the Solar paper could be the next big thing in consumer-based eco power.

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HERO4 Session

GoPro's smallest and lightest

A new GoPro has been launched called the HERO4 Session and it is 50% smaller and 40% lighter than their flagship camera, the HERO4. The HERO4 Session is quite durable and waterproof up to 33 feet (10 metres) of water, and clicking pictures and capturing videos has been made easier with a single button on the camera.

The HERO4 Session is capable of shooting videos in 1080p at 60 fps, 720p at 100 fps and 1440p at 30 fps. The camera will also be able to capture 8MP photos in single, burst and time-lapse modes. It will also be retro-compatible with the existing screws and mounts.



The HERO4 Session has dual microphones that helps in reducing wind noise and apparently due to its waterproof design, the audio performance has also been improved. The HERO4 Session will be selling at $399.99 (approx ₹25,500).

GenZe 2.0

An electric scooter from Mahindra



Mahindra has built an electric scooter in Michigan called the GenZe 2.0 that lets you get around the town in an efficient way. The electric scooter has a maximum speed of 30 mph and a maximum range of 30 miles. It has a 7-inch touchscreen display at the front, showing you the speed, range and charge level, and the energy consumption along with the CO_2 reduction. It takes about 3.5 hours to fully charge the scooter which weighs about 125 kg. The GenZe 2.0 has an introductory price of $2,999 (approx ₹2 lakhs).

UO Smart Beam Laser Projector



The UO Smart Beam Laser Projector steps up with an advanced laser diode and LCOS tech to project content up to 150 inches in size. It offers 720p resolution and 60 lumens of brightness with a dimension of just 2.2 inches for the cube. The projector can accept connections wirelessly as well as through HDMI, and offers a battery life of about two hours.

WEB WATCH

Incredibox



Incredibox recently updated to version 4. It is a web application that lets you create music tracks using beatboxing samples. The interface and design makes it really fun and easy to compose tracks by a simple drag and drop action on the wide range of beatboxing samples ranging from percussions to vocals. If you think that you have created a really good track, you can instantly share it over your social networks, and if you're good enough you'll be featured on the Top 50 tracks in the website.

http://www.incredibox.com/

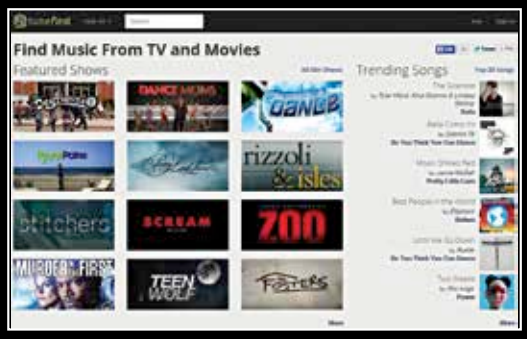
How Big is Space?



The introduction to the book, The Hitchhiker's Guide to the Galaxy says that space is big. It really is. And to add to Adams' statement and bring this into perspective, this link presents you with an interactive way to explore and visualise the distances between different celestial bodies within our solar system. All you need to do is keep scrolling as you come across data pinned to the relative distance you have covered.

http://dgit.in/BBCSpace

TuneFind



While watching a movie or a TV show, you must have surely heard a really good track playing in the background and might have had a hard time searching for that song, even with SoundHound and Shazam. TuneFind lists out all the music from popular TV shows and movies, all recognised and submitted by users. Although you might come across the wrong track sometimes, you can always suggest changes to the original entry.

http://www.tunefind.com/

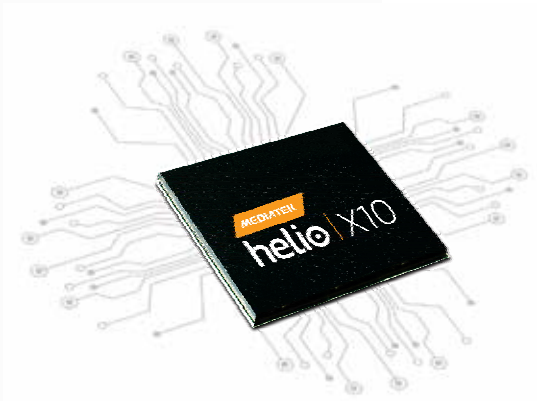
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Networking

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- Support Wi-Fi 11ac/BT/FM/GPS/Glonass/Beidou/ANT+

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MOBILE WATCH

While the MWC was exciting, there were some other even more exciting developments in the Indian mobile market. Read on...

Turing Phone

The Turing is probably one of the weirdest phones you'll ever see, with features that are bound to raise eyebrows. For starters, it doesn't have a USB connector and not even a headphone jack. The phone incorporates a new type of material called liquidmorphium or liquid metal for the device's body, claimed to be stronger than steel and titanium which means it won't bend. Built by Turing Robotic Industries, the Turing phone based on Android boasts of a unique feature called the Turing Imitation Key that offers its own end-to-end encryption and decentralised authentication scheme. The phone is waterproof as well, as expected, capable of being completely submerged under water. The specs aren't as impressive as other flagship devices, powered by an old Snapdragon 801 processor with 3 GB of RAM. The phone has a 5.5-inch, 1080p display and a 13MP camera at the back and 8MP camera in the front. It will be up for pre-orders from July 31 in three different colour schemes. The phone will have three storage variants available costing around $610 for the 16 GB version, $740 for 64 GB and $870 for the 128 GB version. Initially, only 10,000 units will be made.





Marshall London

Amp-manufacturer Marshall announced a smartphone packed with the brand, design and feel of the company. It does have a really good design but falls short on the internals. It has a dedicated music button and a gold-plated audio controller to complement its Wolfson WM8281 Audio Hub and Marshall Mode in-ears. In comparison, the 4.7-inch 720p LCD screen running on a 1.2 GHz Snapdragon 410 processor with 2 GB of RAM seem like a horrible trade-off. We have already seen cheaper budget phones with similar specs. The London is basically a music player with a phone attached.



Ubik Uno

Crowdfunded smartphones haven't really had a successful run – yet. Ubik attempts to hit the right spot by offering great specs at an attractive price. The Ubik Uno features an Octo-core 2.2 GHz Mediatek MT6795 processor running 3 GB of RAM (DDR2) with 16 GB storage with expandable memory. With a 20MP camera sensor it shoots 4K videos (30 fps). Except for the very thin bezel there's nothing too imressive about the design. Its Kickstarter campaign has priced it at $345 on meeting its goal.



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Sealander

Bringing the luxury to boating



Rather than spending weekends and relaxing aboard expensive yachts, how about doing the same on a floating caravan? Yes, you heard it right. Being a world's first, the Sealander was conceptualised and built by German designer Daniel Straub. The new vehicle is capable of cruising at speeds of up to 5.6 mph, weighing in at 380 kg. The Sealander can be towed at the back of a car to locations where you would want to spend some time boating.

The floating caravan has benches and tables, so you can head out on lakes or rivers and have your own picnic. You can convert the seats into a bed and also open up the roof if you wish to soak up the sun, or just feel like gazing over the waters around you.

The Sealander is handmade from a single piece of glass-fibre reinforced plastic. Daniel has been building the floating caravan for a long time and has already sold around 30 of them. The basic model costs around $16,550 (₹10.5 lakhs) and the amount goes up for additional accessories.

Eclipse Bed

Glamourous bedtime



As we see almost everything jumping on the smart bandwagon, why not stuff up our beds with the latest technologies and gadgets? Isbir Bedding has already done that in their latest product called the Eclipse Bed. This new funky bed falls under their Style Series line of bed sets and is loaded up with high-tech entertainment capabilities.

There are provisions to mount a TV, housing a fully functional music system that takes care of a wonderful experience of watching TV and listening to music. The Eclipse Bed comes in a double bed size in various mattress sizes, completely furnished with different choices of upholstery. The bed completely looks something right out of a sci-fi movie, enough to make you desperate to get one for your bedroom.

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An audiophile's mandatory luggage



A product that could probably stir up an audiophile, the Master & Dynamic Zero Halliburton Kit is for the ones who are always on the move but really, really need their music. The kit comes in a limited quantity of just 200 units after a long-term partnership of Master & Dynamic with Zero Halliburton. The kit includes a pair of MH40 over-ear or the MH30 on-ear headphones in any of their colour schemes. Also included is a matching Boom microphone and matching Stand, everything packaged securely in a shiny Zero Halliburton aluminium travel case.

You can buy the Master & Dynamic Zero Halliburton Kit on their official website, available at a price of $750. The MH40 headphones are available in five colour choices while the MH30 headphones are available in three colour choices.

FiiO X3 (2nd Gen)

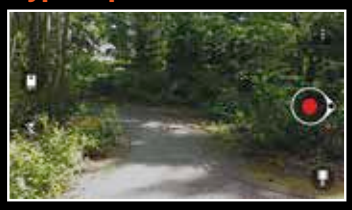
Usually there's a void between your headphones and the source of the music. You may either have really good headphones but not the best media player or you may have a high-grade media player but a regular headphone. The FiiO X3K is the 2nd generation version of the discontinued older version of a high-resolution lossless Digital Audio Player. It supports 6 major lossless audio formats – AIFF, APE, FLAC, ALAC, WMA and WAV in the 192 kHz/24-bit format.

The FiiO X3K has a 2600 mAh Li-polymer battery that apparently gives around 11 hours of playback time and takes about 3 hours to charge fully. The all-metal chassis body design has a titanium brushed finish which looks quite stylish. To provide protection to the hardware elements inside, a strong and durable shield is offered by the aluminium alloy shell material. It has an internal memory of 8 GB which can be expanded using a microSD card up to the largest capacity available, 128 GB currently. The FiiO X3K is available for ₹14,599.



APP WATCH

Hyperlapse Mobile



After being in beta for a few months, Microsoft's Hyperlapse Mobile app for Android(for taking time-lapse videos from your mobile device) now has a final version out. The app lets you capture as well as upload regular videos and speed them up to thirty-two times the normal speed. The app apparently takes out the shakes from the video also, steadying the shot. Hyperlapse Mobile can be a great way to capture time-lapse videos on an Android device, as an alternative to Instagram's Hyperlapse app on iOS.

Play Store: http://dgit.in/HyperlapseMob

SuperProfs



Preparing for entrance exams can be time consuming and also expensive if you are appearing for multiple exams. SuperProfs lets you learn through video lectures, taught by professors who apparently teach at big coaching institutes from different cities. The app lets you prepare for several entrance exams that include IIT-JEE, GMAT, GATE, CA, UPSC, etc. Some of the courses are yet to be made available and not all the lectures are free. The pricing plan is flexible to an extent since you will have access to the video lectures (downloadable), ebooks and live doubt-clearing sessions soon.

Play Store: http://dgit.in/SuperProfs

Daily Laws



Daily Laws tries to bring in all the data about the laws of the country, written under the Indian Penal Code, Code of Criminal Procedure, Code of Civil Procedure, Evidence Act and also the Constitution of India. The app focuses on three sections including FIR, Women and Consumer that lists out the related laws, formats and procedures for complaints. It also lets you search specific section numbers but doesn't accept text inputs, something that would have been really useful to those unaware of the section numbers.

Play Store: http://dgit.in/DailyLaws

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GREED

DROOL MAAL

This time we venture out to look for droolworthy smartphone accessories. What's your pick?



Nexpaq

Nexpaq is a case that isn't just a case but much more. It can be a battery pack, an amplified speaker, an SD reader or even a thermometer. Taking the cue from the concept of a modular phone like Google's Project Ara, Nexpaq is a modular mobile phone case that wants to increase the functions of the phones and even enhance the existing features.

The case has a 1000 mAh battery pack and compartments to fit the different modules. The case can accommodate up to 6 modules ranging from a wide variety including a battery module, LED flashlight, breathalyzer, air quality module, temperature and humidity module, laser pointer module and more. The different modules can be clipped on the case, which then will be detected by an app.

Started as a Kickstarter campaign, the project was able to reach its goal and now is selling its modular case for $65 without any modules while the starter pack with four modules can be bought for $115. Another product called the batpaq which is essentially a modular battery pack with provisions to insert extra modules. The Batpaq sells at $65.



Tile

Admit it, you keep losing pesky little things like keys and wallets around your house and end up going on an expedition while searching for them. To ensure you don't have to face such an issue frequently in your busy lives, Tile will help you in finding your lost items. All you need to do is attach the square device to the items that you keep losing or want to keep an eye on and track that item using their companion on an Android or iOS device. Tile connects through the app using Bluetooth and registers the Tile unit.

You can assign names to up to 8 different Tile units accompanied by a photo. Once the setup is done, you can open up the app to to see where the item is located on a map. If you lose that item tagged with a Tile unit, you can tap the Find button in the app that will trigger a melody to play from the Tile unit, and give you visual feedback in the app whether the item is closer or far away.

Tile is available, now and you can get one at the fairly reasonable starting price of $25.



droPrinter

It would be really helpful if you could carry a printer around with you that could print just anything showing up on your smartphone screen. Thanks to droPrinter, you can print anything from emails, messages, webpages and even images on the go. The printer is small and portable, using standard rolls of thermal paper, the same ones you get at ATMs. droPrinter has its own Android and iOS app, and you can take out prints once you have paired your phone with the printer. The battery of the device lasts for 120 hours and the device is priced at $60.

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Muku Shuttr

If you're serious when it comes to taking photos from your smartphone, and don't want to compromise on shakes and out of focus images, Muku's Shuttr is something that might interest you. It is nothing more than a remote control to click photos from your Android or iOS device.

Shuttr replicates the mapping of the volume up key or the equivalent hardware button that clicks an image on the device. It connects to your phone through Bluetooth and is functional at a maximum range of 10 m (30 ft). Shuttr comes in two colours – black and white – and is priced at $39.99.

Moky

Carrying a portable keyboard sometimes can be quite handy to type while connected to your phone or tablet. Moky not only serves as a small and ultra-portable keyboard but it also can be used as touchpad. The touchpad is present right over the keys and requires you to only press the left or right button on the keyboard that enables the touchpad. The invisible touchpad supports scrolling and pinch to zoom gestures also.

The technology behind the Moky is infrared laser sensors embedded at the corners of the keyboard that can track the position of the fingers on the keyboard, translating the gestures and swipes accordingly. The device is said to support Windows, Mac and Android but not on iOS since it doesn't support mouse input. Moky supports a maximum of 2-point multi-touches and has about 8 keyboard layouts available to choose from.

Moky was a project on Indiegogo by a Korean team that successfully met their goal and are currently selling their keyboards. You can get one for yourself at just $74 and if you want a pouch along with the Moky keyboard, it will cost you $84.





Moment

You might be limited to your smartphone's camera lens when it comes to taking photos but you can always change that using add-on lenses including fisheye, telephoto and macro lenses. Moment is a gadget that lets you do exactly that. The Moment can allow you to attach three kinds of add-on lenses to your smartphone. Specifically, the Wide lens, Tele lens and Macro lens. The Moment lenses are compatible with iPhones (4 and later), Samsung Galaxy S4, S5, Note 3, Note 4 and Nexus 5, for now. The lenses are mounted to the smartphone using the given mounting plate. Mounting plates are of differnt sizes, according to the size of the phone while there's a completely different Moment case for the iPhone 6.

It's not really the most convenient gadget to own, specifically if you intend to use the same lenses across all the phones in your house, but it is an option.

Eargasm

Matoma & Nelsaan - Free Fallin Tropical Mojito Remix



Covers are usually a far cry from the originals – this is something we all know. But sometimes (just sometimes) you come across a version that manages a refreshing new take on an old favourite. While some the purists in the team would disagree *(read: Robert)* this Tropical Mojito Remix of Tom Petty's classic covered by John Mayer manages to do just that. If you found that sentence confusing we wouldn't blame you. It's a remix of a song that's a cover of another song. Matoma & Nelsaan have managed to add a nice caribbean feel. You instantly get transported to a beach side shack, a pina colada in your hand, cool breeze blowing... you get the drift.

http://dgit.in/yamaan

Steven Wilson - Luminol

This is as much a visual delight as it is a genuine sensory extravaganza. Filmed in Mexico City, the entire set is a spectacularly arranged. Besides, the time changes, the incredible instrumental harmonies and the precision with which these guys perform is impressive to say the least. And in case you're already a fan of Wilson's solo works: that's not Gavin on the guitar.



http://dgit.in/luminolz

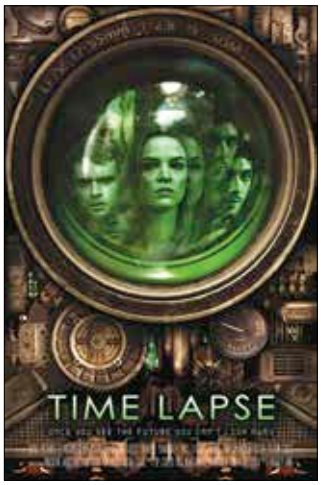
MOVIE

Time Lapse

Time paradox done right

Sci-fi films for most people constitute big budget productions that spend hundreds of millions of dollars on CGI. The kind of films that are backed by Herculean marketing campaigns and marked by house full screening across all theatres. This kind of films guarantee big spectacles, but it's arguable if they can be considered good cinema. Plonking in excess of hundreds of millions of dollars on a movie project, you see, doesn't play well with the sort of risk appetite required by a daring and path-breaking script. That's why a large number of compelling sci-fi flicks generally belong to the low-budget niche. Primer, Coherence, Triangle, and Timecrimes are some of the best examples of this niche focusing on metaphysics. These movies depend on a great script and sharp moviemaking skills to make up for the lack of CGI extravagance and obscene production budgets.

Time Lapse is another great addition to this list of terrific low-budget sci-fi flicks. The film is the epitome of low-budget minimalism with a primary cast of three supported by another couple of characters. However, the script is terrific enough to achieve a



level of engagement that just beggars belief. Time Lapse follows three friends who find a weird camera-like contraption hidden away in the apartment of their reclusive scientist neighbor. The imposingly large machine shoots out a Polaroid photo once every day, with the Hitchcockian twist being that the oversized camera itself is pointed squarely at the trio's living room. Further inspection reveals the time paradox angle underpinning the film. The contraption apparently takes a snap 24 hours into the future. The enterprising trio soon finds a way to tip off their past selves using the Polaroids by leaving clues in their living room.

Made on a shoestring budget with Danielle Panabaker (from Mr Brooks, Piranha 3DD, and Friday The 13th) being the only recognizable face, what the film lacks in special effects it more than makes up with sharp screenplay, clever script and some great performances from the small cast. The film soon delves into one of the most gripping takes on the time paradox trope, as the friends find themselves trying to profit off their new find. However, as with anything involving conspicuous success and large sums of money, things soon get out of hand and more unsavoury elements get involved. It doesn't take long for greed rears its ugly head and friendships get strained, even as poop hits the ceiling pretty quick in the third act. However, no matter how perceptive or jaded you are with the staple suspense tropes, you most likely won't see the final twist coming.

Time Lapse lives up to the legacy of temporal sci-fi thrillers such as Coherence and Primer by being meticulously faithful to the time paradox theme. The pacing is spot on with nary a moment wasted in padding. The plot slowly but steadily unravels even as tension builds up to the crescendo until the sublime third act. Time Lapse is thoroughly entertaining even if you aren't a sci-fi buff.

- Nachiket Mhatre



The Whispers
The whispers is an American TV series dealing with paranormal activities. The series shows an invisible entity using little children to commit crimes by being their imaginary friend.



Mr. Robot
An American thriller drama that shows a young professional cyber-security engineer, Elliot Alderson, taking up the role of a vigilante hacker at night. Elliot is recruited by a social-anarchist, to his team of hackers known as the 'fsociety'.



Superstore
Superstore is all about the pandemonium and humour that ensues in a super-sized mega store. From the employees to the interns to their supervisors, the series showcases all the chaos as they tackle with customers everyday.

TV SHOW

Dark Matter

The fall of sci-fi



Science fiction has always been a touchy genre ontelevision. It's a genre that stayed a niche for several decades of its existence. But with the recent blockbuster chain of superheroes, science fiction has entered a new age of stardom. A peak from which the road can only go higher.

And yet: How hard is it to get a show right? Dark Matter has the perfect entré. A great pilot, a decent cast who can (surprisingly) act and great source material to draw from. After the first few episodes, however, the story starts showing an obvious lack of originality.

Dark Matter has potential. It can either be the next big thing in Sci Fi, or it may crash and burn in its mediocrity. Or it may go the way of popular Tween Drama/Sci Fi and get renewed for a lifetime (yes, I'm talking about The 100).

- Prakrit Dhondiyal

TV SHOW

Killjoys

Quad-core brilliance



Okay, first off: disregard the lack of faith in Sci-Fi shown in the Dark Matter review.

Killjoys is the space cowboy opera that should have been made a few years ago. With a brilliant cast, great story writing and a world that keeps you interested in more with each episode, the show is the next big thing in Action/Sci-Fi.

Okay, it's not the next Battlestar Galactica, but it definitely comes close to being the next Firefly meshed with Guardians of the Galaxy and a touch of Star Trek: Enterprise. Killjoys plays the winning formula for all-round entertainment. The three protagonists play space cop bounty hunters with a penchant for finishing their missions successfully, with style. A good story, great dialogue, admittedly passable visual effects and a malleable cast makes Killjoys a very watchable show. Definitely a winner.

- Prakrit Dhondiyal

Things To Do

Back to school

With holidays finally over for almost all of us, we must prepare and adapt ourselves to the life we left behind a few months ago. We know – it's not easy. Pulling yourself out of your comfortable warm beds and going out into the world full of problems. But there are things that you can use to make your life just a little bit easier.



Droplet

Droplet is a button that can stick to the place of your task. It will remind you of the task by setting the alarm off at the required time. But to turn the alarm off you need to press the button on the droplet device. It is a device for eliminating forgetfulness as well as laziness. Think of it as a guard in a prison. Well, minus the lethal automatic.



Hismart

Hismart might look like a normal bag but what makes it special are the features that allow it to sync with your phone. It will vibrate when we get a call, can even record your voice, do general mapping and also play music. It will also tell you if you move too far away from your phone. And if the tech isn't enough, the waterproof body and 17 pockets, this bag may also help you get through the worst of rain.



Rocketbook

Rocketbook is a notebook that sends your writing directly to the cloud using a device using Android or iOS. If you use the accompanying FriXion Pilot pen, you can erase all the 'ink' and reuse the notebook. The tags on the bottom of the page allows you to directly send the data of that page to the specified folder. This one notebook can save you a lot of data and time.

You know what's even cooler? You can microwave the book, we kid you not! In fact, you ***have*** to microwave it to erase your previous notes! Parental Guidance is recommended.


digit
The friendly guide for your smart phone
55% 2:38
TECH TIPS
Powered By: digit
I can also talk to you in Hindi, Tamil, Telugu, Malayalam & Kannada
Coming Soon!
www.digit.in/techtips

Apple Music for India: First Look

Apple Music has finally been introduced with the iOS 8.4 updates for Apple devices and PCs. Does India finally get a world-class music service?

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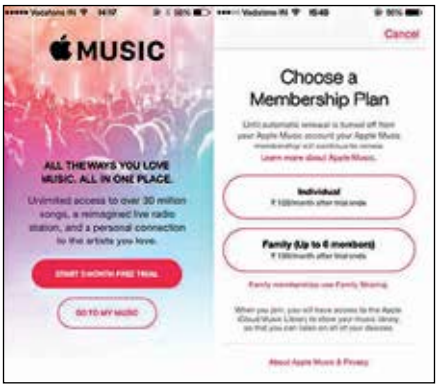
Apple Music has been endlessly spoken about and discussed, ever since rumours sparked off by Apple's acquisition of Beats. Apple Music has finally been launched across 100 nations. The initial offering from Apple Music is a three-month trial duration, in which users can access all features of the music streaming service. Post-trial, you can continue using Apple Music on a subscription model.

Meanwhile, India has seen a growing number of music streaming services enter the country. Apps like Saavn and Gaana provide free ad-based streaming, along with a subscription model which allows users to access music offline. With increasing demand for curated playlists and unending music libraries, we take a look into Apple Music to find how well it fares when it comes to Indian music.

Setup and payment procedure

After updating to iOS 8.4, the biggest notable difference is the Music app. The theme of the icon has changed and opening it leads directly to the Apple Music welcome screen. Your three-month trial begins here, wherein the first step involves choosing a subscription plan for post-trial usage. Thereafter, you are required to sign in through your Apple ID and enter your card details.

It is here that Apple has made it slightly confusing. To begin your three-month trial, you will have to select either of the two subscription plans: the Individual plan for Rs. 120 per month or the Family plan for Rs. 190 per month. Although, the first three months are free, choosing a subscription



Setting up payment procedure

scheme for the future has been made mandatory by Apple and auto-pay is enabled by default. However, you can deactivate auto-pay once you log in and setup Apple Music. All you need to do is access your profile settings, view your Apple ID and verify your payment status under 'Subscription'.

Moreover, Apple charges Rs. 60 for iTunes registration to those setting up an Apple ID for the first time. The company also requires a Credit Card on file to set up your Apple Music account. That means, you will not be able to start the free trial unless you provide valid credit card details.



Selecting music preferences

Selecting music preferences

Apple Music has five tabs: For You, New, Radio, Connect, and My Music. You will be prompted to choose your favourite genres, which appear as floating red bubbles. Indian music on Apple Music includes genres such as Bollywood, Indian Pop, Indian Classical Fusion, Indian Classical, Ghazals, and Sufi. The regional music categories available rivals those offered by Saavn, which is impressive.

Choosing your favourite artists among the genres is simple is a simple process involving a few taps. Apple Music shows up a number of Indian musicians, including bands and music ventures such as Advaita, Tabla Beat Science, Raghu Dixit, and Paradigm Shift, along with Indian singers from the classic era such Kishore Kumar and Ghulam Ali. Once you're done selecting, tap on 'Done', and a curated feed will open on the 'For You' tab. The list has tiled windows, displaying a cover image and a brief on each playlist. Tap on one to see the playlist.

Automated playlists feed

Apart from curated playlists, you get artist-specific and album-specific playlists. In our curated feed, we got a 22-track A-list of Bollywood, a 16-track Best of Indian Pop.

You can search for artists of your choice from the search button on the top-right of the screen, that appears on each tab. To check how good it is at finding Indian artists, we searched for Nucleya, Mohammed Rafi, Parikrama, Neha Kakkar among others. Each of these artists returned relevant results.

All that's trending, and mood-curated playlists

Moving to the New tab, it features a dropdown list from which you can

select a genre of your choice, or search for all genres. The curated feed displays a long, categorised list, which includes 13 categories such as New Music, Hot Tracks, Recent Releases, and more.

Then there's an entire list of recent music



Automated playlists feed

trends curated according to recent tracks played by you. The Apple Music Editors features 15 sections of hand-selected playlists, for all the genres that you've selected while setting up Apple Music. In the Bollywood section, we found three tabs, Featured, Playlists, and Connect. There's also a feed by Apple's curators, "We're loving these". Connect will give you feeds from Indian artists: we had Sunidhi Chauhan and Amit Trivedi's choices listed when we checked in.

The Curators tab gives you a list of all that Apple's music curators are listening to, where you are least likely to come across Indian tracks. Apple Music's Activities include BBQing, Breaking Up, Running, Working Out, and 15 other activities. Select each activity, and the music feed for each of them will have a balance of various tracks among the genres you have chosen. Activities will also have genre-based sub-playlists. For instance, Working Out had a playlist to work out with Bollywood.

Radio: live music and pre-curated lists

The radio tab's first and largest tile is reserved for Beats. Other featured channels are All-City, Pop Hits, On the Floor, The Mixtape, Soundsystem, and Charting Now. Bollywood and Tamil fans have entire stations to themselves. There is a large variety of tracks from which Apple chooses the mix, although we noticed more of the recent Bollywood tracks on radio, than the older ones.

In radio, you can see the next track while playing one. There is, however, no playlist shown. While playing, you can share the station or song. You can also start a station based on a playing track, which will curate itself based on the type of track you were playing. You can also download the track to your device to hear it offline, or see it on the iTunes store. We did find a large number of repetitions, though, strewn across an extensive number of playlists created by the platform for Indian music. The curation, however, is good, with a seamless flow evident across all tracks.

Connect: stream through your favourite artist's day at work

Apple Music's "Connect" feature has a Twitter-esque timeline, with various artists posting work-in-progress photographs annotated with captions, which can either be liked or commented upon. We found the Salim-Sulaiman duo sharing a photograph from their Saturday night concert, Anoushka Shankar sharing a snippet of an upcoming live home studio performance, and Arijit Singh sharing his rehearsal photograph. It's a nice, intuitive feature that may interest a lot of devoted Indian music listeners. Internationally, we found the Red Hot Chilli Peppers gearing up in the studio, and their bassist with a smiling face and a broken arm.

Connect is a great place for fans to get an inside view into the world of music. It is a stream of stories by musicians.

A few things we didn't like

First, the entire confusion about having to sign up with a credit card on file. While it does make sense if you're planning to subscribe in future anyway, not all might have such a long-term plan. Although you can disable auto-pay to ensure that no money is deducted from your account, this doesn't aid functionality. Additionally, most of the young crowd in India uses Debit cards for their payments, and Apple Music doesn't accept anything except Credit cards. This might detract a lot of people right at the onset: something clearly not favourable.

Secondly, search options within Apple Music seem slightly impaired. Quite often, we found it rather difficult to spot artists, or specific albums. Apple Music had problems, and often took time, to find prominent albums and tracks. Although navigation and interface are fairly smooth, there are times where Apple Music felt a bit too full of options: so much that you might even get a bit confused with what to find and where. This, however, is not a problem, per se. It would be dependant on personal usage.

Summing up the first experience

Apple Music has not only arrived in India, it has provided India with an extensive selection of music across a number of regions and timespan. We found Mohammed Rafi and R.D. Burman's collections that go



Radio - Live music and pre-curated lists

more than four decades back, and current generation's Arijit Singh and Ankit Tiwari, who also post updates via Connect. You can download and listen to tracks offline: an important feature in India owing to slower connection speeds. Apple has synced the local music library that you have with Apple Music, so all the tracks and albums you download can be instantly synced and organised once you open the 'My Music' tab.

To sum it all up, Apple has provided an extensive base of Indian tracks on Apple Music, and even focused on regional Indian music. With a large number of playlists curated by listening choice, and pre-programmed ones for different times and moods, Apple Music has every capability to strike the right chord among Indian listeners. We wait for Apple Music's Android version, and hope that most of the features, clutter-free interface and smooth functionality will be carried over to it too.

Everything Apple Announced
This includes new streaming music service, iOS 9, OS X El Capitan, and watchOS 2. To know it all, read it here: **http://dgit.in/apple15wwdc**

Google's smart lock
Google introduces Smart Lock that can store passwords and log into accounts across devices. Read more: **http://dgit.in/gsmartlock**

8 emerging maker devices that deserve your attention

Maker tech is exploding all around you. The next generation of Teslas and Wozniaks are being created as we speak.

Purusharth Sharma
readers letters@digit.in

You see it melting. Your shaky hands bringing it closer to the sweet spot. Slowly you touch it. You feel the rush through your body. Ecstasy. Pure bliss. Just like heroin through an addict's vein, electrons flow through the wires in the soldering gun in your hand. And BAM, the last wire in your DIY home automation project that you have been working on for the past three months is soldered in place.

Making something on your own, using your hands, soldering wires in places is an experience like no other that leaves you craving for more. And it was never as easy as it is today. All thanks to the rise in the maker tech available in the market. It's not just the hardcore geeks and engineers who are tinkering with electronics and creating amazing things. The lines that divide the geekdom from the less tech-savvy population are blurring. The number of hobbyists, students and people in general who are tinkering and making stuff is on the rise.

The DIY culture has become very popular with maker tech becoming simpler and easy to use. It all began in a bar near Interaction Design Institute Ivrea in Italy, named Arduino. If you are still wondering which famous maker tech was conceived in a bar called Arduino, then the answer is Arduino. The cheap open source microcontroller ushered the entry of DIY culture into the mainstream. Raspberry Pi was another trendsetter, which is basically a credit-card sized computer. Even though these devices have contributed significantly to the rise of maker tech, they still require a certain level of technical know-how.



Maker tech has made it easy for anyone to get into the fascinating world of electronics

There are a number of DIY electronics kits in the market currently that are not only easy to learn and use but also powerful enough for complicated projects. These kits act as "gateway drugs"; slowly sucking you into the highly addictive but mostly harmless world of DIY electronics. Here's a list of eight emerging maker devices that deserve your attention.

1 ARTIK

– Unlike other examples on this list, which are either startups or Kickstarter projects, ARTIK is a platform launched by the South Korean electronics giant Samsung. It consists of three different sized circuit boards named ARTIK 1, ARTIK 5 and ARTIK 10, along with development tools and API. With prices ranging from $10 to $100, each of the three modules possess varying capabilities and cater to audiences of differing technical proficiency.

At only 12mm by 12mm in size, the smallest and cheapest ARTIK 1 comes equipped with a 9-axis motion sensor, gyroscope, accelerometer and magnetometer. It has enough juice to power hand held devices for weeks with a single charge. The bigger and faster ARTIK 5 includes two ARM A7 CPU cores running at a clock speed of 1GHz, 512MB of RAM paired with a Mali 400 MP2 GPU. These specs are good enough for it to run 720p videos at 30fps. ARTIK 10 comes with



The ARTIK comes in 3 different sizes

specs comparable to a high-end smartphone. Meant as an Internet of Things platform, the ARTIK 1 is powered by a new and real time OS called Nucleus. The SDK supports C/C++ development while its elder siblings run on custom Linux distribution featuring added support for development in Java and Groovy. Don't get your hopes too high because currently the device is only available to Samsung's partners and a select few developers. It will be a while before it hits retail.

2 **Modulo** – The 'Lego' amongst the maker tech listed here, Modulo aims to bridge the gap between the not-so-powerful educational electronic kits in the market and advanced maker tech. Just like Lego blocks, there are different interconnected modules, each with its own microcontroller, without the need of any breadboard or soldering. Started off as a Kickstarter project, the Northern California based startup has already raised around $50,000, five times its original target of $10,000, and is aptly described as "a simple, modular solution for building powerful electronic devices".

The device is not only Arduino compatible, thereby letting you expand Modulo's capabilities, but it also comes with a number of modules. The company is initially offering a colour OLED display, push-button illuminated knob, motor driver, thumb joystick and a temperature probe, with more modules promised to come. All modules can be connected to your computer through USB and can be reprogrammed using the Arduino IDE. The device, expected to be ready for shipping by November can be used to create a number of DIY projects ranging from a simple automatic light switch to more complicated ones by pairing it with Arduino or Raspberry Pi.

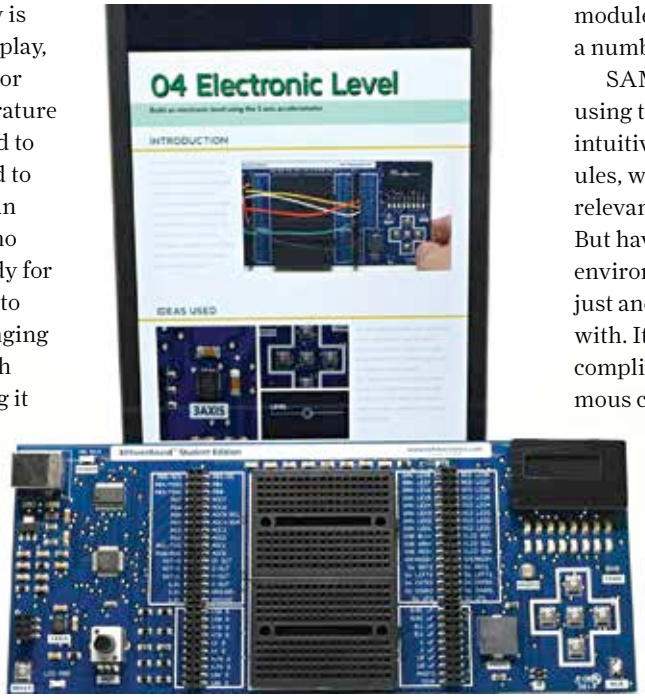
3 **BBC Micro Bit** – The Micro Bit by BBC is aimed primarily at school students and aims to get them hooked on to programming and electronics. Developed with support from a number of tech giants including



BBC aims to deliver it to a million school children by the end of this year

Samsung, Microsoft and ARM Holdings, Micro Bit is basically an embedded software platform which will be fully compatible with Raspberry Pi. The light-weight device will sport a 5x5 LED display, motion detection, built-in compass, Bluetooth capabilities and can be attached to clothing too. The device features five input output rings that can be connected to a number of sensors and devices using crocodile clips.

It supports software development in a variety of languages including Python, C++ and Blockly. It presents kids with two options: either use a GUI code editor called the Microsoft Block editor, or the web-based TouchDevelop platform. Micro Bit is supposed to be an 'initiation device' of sorts that can be paired



The kickstarter campaign has raised $16,000

with all the other big players in the game like Arduino, Kano and Raspberry Pi. Still in the prototype phase, BBC plans to deliver it to a million school children in the UK by late October of this year.

4 **XPlorerBoard** – Another Kickstarter project, the XPlorerBoard aims to help students learn electronics quickly by doing things instead of just reading up about them. The Kickstarter campaign reads "for ages 8 to 80" and has crossed its target of $10,000 on the crowdfunding website. XplorerBoard is supposed to be a 'Self-contained Arduino development environment', which comes with all necessary sensors. The device's official app comes with 50 experiments that feature detailed videos explaining each and every step alongside the required Arduino programming code.

5 **SAM** – Another Lego-essque device, the SAM is a complete electronics kit that consists of a number of wireless-connection capable modules. Developed by a 23 year old mechanical engineer named Joachim Horn, SAM doesn't require prior coding knowledge. But this doesn't mean that SAM is solely aimed at curious kids. The modules can be effectively used to create a number of IoT devices.

SAM modules can be programmed using the companion app which lets you intuitively drag and drop software modules, which automatically generate the relevant code making it easier for kids. But having a drag and drop programming environment doesn't mean that SAM is just another electronic kit for kids to play with. It can be used to build a number of complicated projects including autonomous cars, talking glasses and much more. SAM kits come in all sizes, starting with the basic kit that will cost you around $70 and include three wireless modules. The family kit costs $650 and comes with a number of other sophisticated modules such as temperature and light sensors for building fairly complicated projects. It's definitely worth



iOS Mail gesture
Need a peak at your inbox while composing an E-mail? Know how to do it here: **http://dgit.in/imailgesture**



Windows 10: Compatibility Check
Are you all ready to upgrade to Windows 10? Is your PC and apps on it ready to? Check it here: **http://dgit.in/win10cmptbl**

checking out if you want to get started with the mystical world of electronics but aren't too well versed with coding.

6 **Crumble** – Crumble is another programmable controller that comes with four connections that can be used either as Inputs or Outputs, and it can be easily connected with the help of crocodile clips. The starter kit comes with a Crumble board, croc leads, USB cable and two LEDs which can be programmed to any colour you want. The Crumble software is easy to use, especially if you have used Scratch before. All you have to do is arrange blocks together on the screen, connect your Crumble controller and Voila! Your program is transferred instantaneously to the controller. The LEDs that come with the Crumble starter kit are called sparkles and can be daisy chained together allowing you to come up with a number of interesting and pretty looking DIY projects. The more expensive crumble kits (super and ultimate) come with DC motors that can be used to create a number of more advanced projects.

7 **MakerBloks –** Aimed specifically for children, the MakerBloks is intended to teach kids, specifically aged six and above, to build and create electric circuits starting at a young age. The maker tech aims to build upon the idea that kids are already well used to playing with blocks. The kit comes with four different games meant to introduce kids the world of basic electronics. The bundle consists of coloured blocks that connect to each other magnetically. Each block represents an electronic component and features its symbol.

A guide explains each of the electronic symbols to kids and comes with instructions on how to use them, along with troubleshooting advice. The app bundled with it uses digital image processing and the front camera to figure out if the child has assembled the blocks correctly. MakerBloks is the ideal way to get your kid hooked on to the world of electronics and let him explore his creativity at an early age.

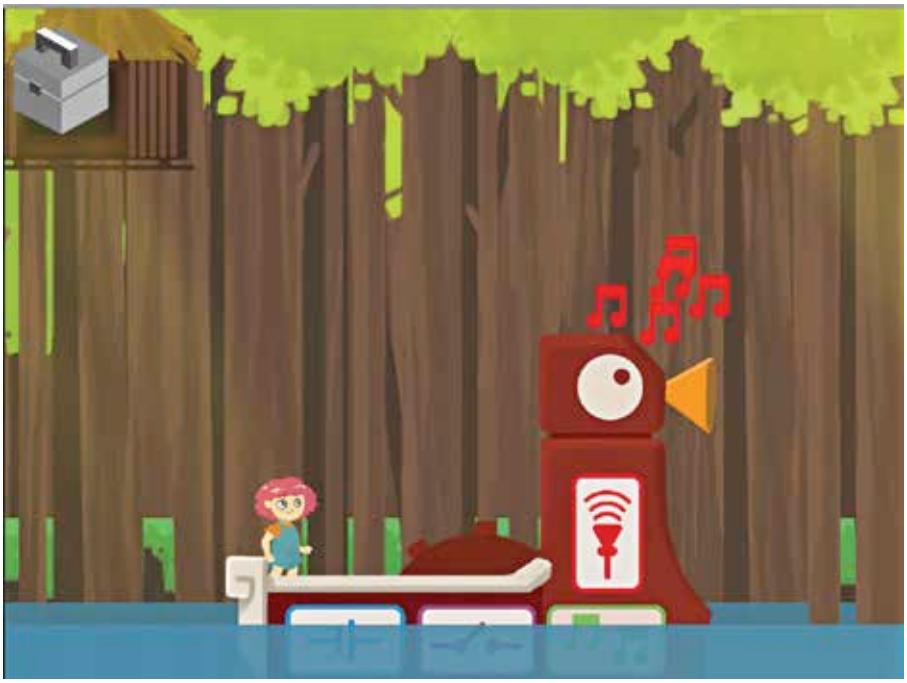
8 **Pirates Electronics** – The Pirates electronic's site says that their mission is "to teach the world electronics and empower hobbyists". The kit is a complete starter pack which can be used to build anything and almost everything ranging from a simple alarm to an autopilot system for drones. Starting off as another Kickstarter project, Pirates electronic has received pledges worth more than $35,000, thereby doubling the initial target. What sets it apart from the others on the list is that it comes with more than 300 pages of explanation detailing how each and every component of its kit works. Accessible online, this comprehensive manual of sorts covers the basics of electronics. Not only this but also each lesson has its own forum where you discuss your problem with the fellow "pirates" and experts in case you get stuck somewhere. The Kit comes with more than 500 components which include LEDs, a breadboard, light sensor, sound sensor and also a 7-segment LED, giving you a complete hands-on experience of working on and making circuits. The kit is expected to be delivered by September this year.

Behold the future

This list of emerging maker devices merely scratches the surface. There are many more similar DIY kits that can be used by anyone including beginners, experts and everyone in between the wide spectrum of electronics enthusiasts. 3D printing was just a Sci-Fi fantasy a decade ago. Now people are buying 3D printers for their home offices.

Gone is the time when kids used to play with Lego blocks building houses and cars. Today kids as young as 6-7 years of age are building smoke detectors and burglar alarms using DIY kits. People without any background in programming are learning and coding their own Arduino boards, making automated cars and talking robots.

You don't need expensive tools and equipment anymore, nor do you need an electrical engineering degree. All you need is a cheap microcontroller, a zeal to learn, some free time and then your imagination is the limit. 'Do It Yourself' is the word of the day and maker tech culture is here to grow and stay. So what are you waiting for? Get up and make a burglar alarm or the talking robot butler you always wanted.



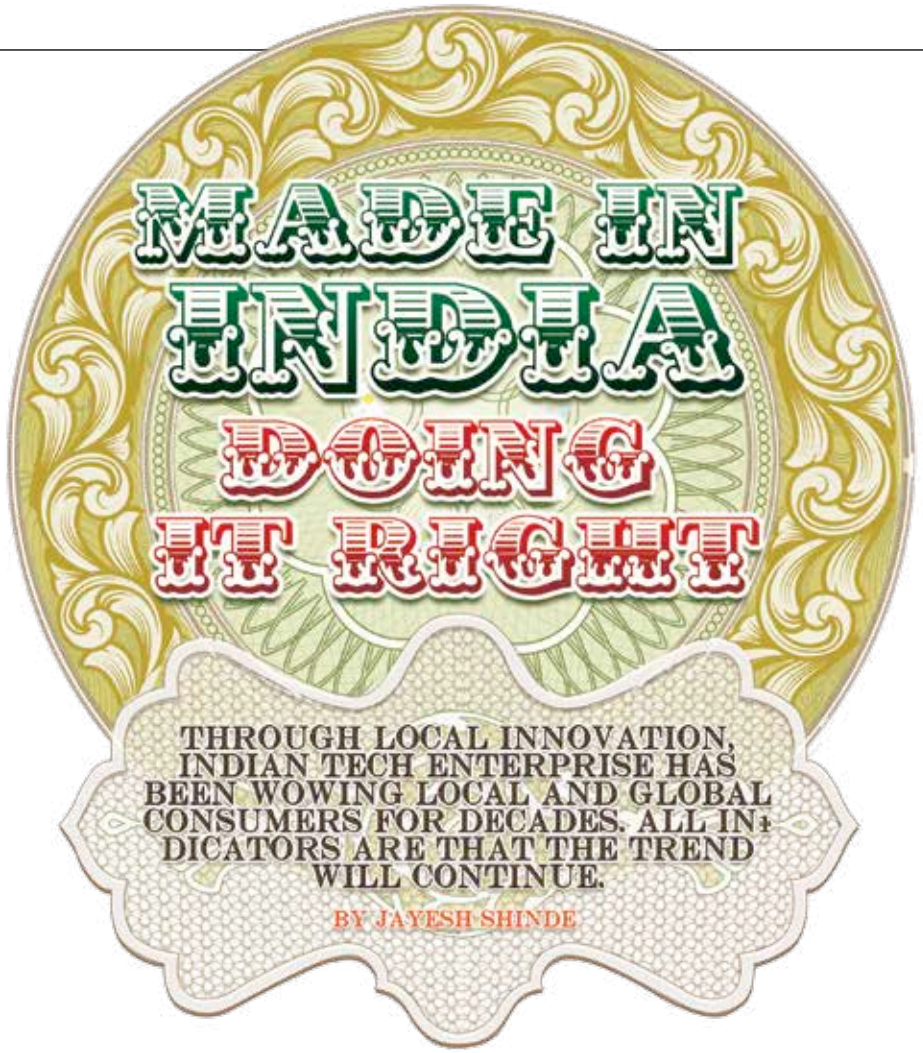
The MakerBloks app provides an intuitive platform for children to learn.

MAKE IN INDIA... MAKE MONEY

HOW TECHNOLOGY WILL HELP YOU CONNECT THE DOTS

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THROUGH LOCAL INNOVATION, INDIAN TECH ENTERPRISE HAS BEEN WOWING LOCAL AND GLOBAL CONSUMERS FOR DECADES. ALL INDICATORS ARE THAT THE TREND WILL CONTINUE.

BY JAYESH SHINDE

India always had a semblance of local manufacturing serving local consumers. Sure, it was never a world beater in manufacturing, but it wasn't embarrassingly bad either. Things changed in the mid-90s after India opened its markets for the world to sell its goods in, leading to increased competition between local and foreign brands. We, the consumers, benefited.

Headquartered in Amsterdam, Philips incorporated its local presence as Philips India as far back as 1930. Almost 50 years later, when almost every other MNC exited the country, Philips India bit the bullet and stuck on. They quickly realised that to be successful in India they had to set up local manufacturing units.

Philips adapted to India's needs and quickly became a force to be reckoned with. With its sodium vapor lights, Philips first transformed India's streetlights; then it was colour TVs and CFL bulbs. The result? More than 60 percent of its revenue comes from locally manufactured products, according to Priyank Agarwal, Head, Strategy & Business Development, Philips India.

It doesn't just stop there. Restricting ourselves just to the technology vertical, companies such as Godrej, Videocon, NIIT, Justdial, TCS, Wipro, Infosys, InMobi, Snapdeal, Karbonn Mobiles, Celkon, and a few others, are important and inspirational success stories.

Surely we must be doing something right for so many to have Made in India long before it was a political slogan? Without further ado, let's celebrate some Made in India success stories.

CELEBRATING INDIAN MAKE

At the height of the dotcom boom, when the first few Indians started enjoying dial-up Internet through VSNL, Bhavin Turakhia started Directi in 1998 with the help of his brother – Directi provides domain name registration and online web hosting.

When asked about the importance of technology in all the companies he founded, Bhavin said, "Technology played a major part in the development of Directi as a company, and in turn in our fortunes. Because we hire some of the smartest people in the technology space, we were able to leverage the collective acumen to build on existing technologies, to create platforms and systems that would set up each of our business units for success. Even today, technology drives our success at Directi."

Headquartered in Mumbai and more than three decades old, Videocon is a leading consumer electronics and home appliances brand in the country with over 180 million customers.

"From inspiration to purchase, technology plays an integral role in crafting not only the product but also the consumer experience. After the launch and encouraging response for our feature packed 4K TV series last year, and the revolutionary Videocon Wi-Fi AC and Quantum Edge Technology AC this year, it's obvious that technology is the prior focus for Videocon customers," says Akshay Dhoot, Videocon's Chief of Technology and Innovation.

NEW KIDS ON THE BLOCK

Even in the fast-paced smartphone market, Indian companies who manufacture their handsets in India have found a lot of success, proving to be a fine example of why

WHAT EARLY CHALLENGES DID YOUR COMPANY FACE?



When we started Karbonn, our main objective was to offer value for money for our customers. India is a dynamic market and we wanted to understand the mindset of the Indian population to offer the right product to the right set of target audience. We spent a lot of time in understanding the needs of the Indian mobile user, especially those in the Tier-II and Tier-III cities. That's why we started with the Dual SIM phones. This was probably our USP over the others (at the time) especially as none of the other so called global brands offered it and we took off from there. Since inception, Karbonn has grown well. From an annual revenue of ₹1,500 crore in 2011, the company closed FY14 at ₹4,500 crore, of which around 8 per cent came from the export market!

SUDHIR HASIJA
THE CHAIRMAN OF UTL AND KARBONN MOBILES

it's only a matter of time before foreign imports of devices will reduce greatly.

Started in 2011, Celkon Mobiles began by importing handsets from Taiwan, but now manufacture them fully out of their Telangana plant, churning out over two lakh handsets every month – they aim to boost productivity to over 10 lakh handsets per month very soon. A joint venture between Delhi-based Jaina Group and Bangalore-based UTL Group, Karbonn Mobiles had its inception in 2009 and offers a comprehensive portfolio of mobile phones with an array of innovative features, rivalling that of its competitors Micromax and LAVA.

All these four mobile manufacturers constitute majority of the homegrown Indian smartphone companies, and with the exception of Celkon, all other major players (Karbonn, Micromax and LAVA) are slated to start smartphone manufacturing in India itself from later this year.

MIGRANTS RETURN, LOCAL IS KING

For many years, the cream of Indian talent has gone abroad. While Silicon Valley continues to be the crown of the tech entrepreneurship kingdom, it's saturated and overcrowded, giving India the perfect opportunity to fight back and attract its talent back.

Snapdeal was one such invention which seemed destined for birth in the Silicon Valley, but because its founders couldn't get work permit (or so the legend goes), they had no choice but to return to India and start their venture here – and now aren't they glad they did so? Snapdeal.com is fast becoming the best online destination for gadget deals in India. There are many such success stories, and the trend is unquestionable – starting a company in India is a sought after bullet point on any serious entrepreneur's resume in the 21st century. But is the audience here ready for a technology avalanche?

On that question, Shashank ND, Founder & CEO, Practo, perhaps leaves us with the right thoughts to chew on. "Indian consumers have been in the interesting position of skipping several technology generations a few times now," he says. "For example, we entirely skipped wireline telephony and moved straight to mobile phones, we skipped wired broadband and skipped to wireless as well as pretty much missing the entire 'computer' revolution and moving straight to smartphone era. We believe that whether or not consumers understand technology, they have an innate sense of 'experience'. They sense if a product has been done with care or with carelessness."

Here's hoping that a lot of Indian innovators, entrepreneurs keep that advice in mind while creating the next wave of world-class tech enterprises right here in India.



DIGITAL INDIA WHY IT'S IMPORTANT

THE INDIAN DIGITAL REVOLUTION ISN'T COMPLETE UNTIL COMPUTER AND INTERNET LITERACY REACHES THE REAL INDIA - THE HINTERLAND

BY JAYESH SHINDE

There is no doubt that when future humans look back upon this era, they will regard the 21st century as the first true Digital Century in the history of mankind. For all our efforts of mechanisation and digitisation, the personal computer revolution that began in the 1970s and '80s was the true catalyst to an explosion of digital initiatives that spanned from the Internet to thumb PCs and everything in between. Needless to say, we have been busy, us humans trying to outdo and outinnovate each other in this great digital rat race. And the mad rush refuses to slow down, as future economies will be decided by a nation's digital innovation and prowess. This is where an effort like Digital India becomes extremely critical both for Make in India's and your own personal success.

Technology is the great leveller of our times, and its transformative power needs to be felt by each and every citizen of this country. This is crucial if it's going to have any chance of progressing to a radical new level and keep pace with other fast-advancing nations of the world. The government can't just flag-off the race and be a mute spectator in this endeavour. It needs to show more than mere intent. Steps must be taken to cultivate favourable conditions to ensure the Digital India dream is well and truly realized. Here's what needs to happen, and happen quickly, as far as removing roadblocks is concerned:

TRUE BROADBAND

If there's one resounding fact about our country's Internet connection that makes us pull our hair out in frustration, it's the disappointingly slow data speeds. Upgrading from the 56.6 Kbps dial up era in the late '90s / early 2000s to 128 & 256 Kbps "broadband" cable Internet in mid-2000s felt amazing; and taking the leap to 1 or 2 "Mbps" in the 2010s almost had us in throes of digital orgasm! We felt we had arrived on the big stage, harboured dreams of finally being able to download the whole Internet even. Oh the naivety of it all!

According to Ookla Speedtest's Net Index (http://www.netindex.com/download/allcountries), India ranks at 129 out of 198 countries in the world. Where the global download and upload average stands at 24.4Mbps and 11.2Mbps, respectively, the same for India averages at 7.6Mbps and 5.3Mbps, respectively. Not a pretty picture that, is it? It gets worse.

Akamai's State of the Internet report (http://www.stateoftheinternet.com) released earlier this year claims the average Indian Internet speed to be at a paltry 2.3Mbps, which is less than half of the global average Internet speed of 5Mbps. Clearly, the status quo needs to change drastically if there's going to be any hope towards dragging India's fortunes from the dark age of digital infancy and transforming it into a digital powerhouse. The first step towards correcting this disparity starts at the government's door.

We've said this before and we'll say this again. TRAI needs to redefine what qualifies as "broadband" Internet speeds in the country, if we are to have any chance

NINE PILLARS OF DIGITAL INDIA

1. Broadband Highways
2. Universal Access to Phones
3. Public Internet Access Programme
4. E-Governance – Reforming government through Technology
5. eKranti – Electronic delivery of services
6. Information for All
7. Electronics Manufacturing – Target NET ZERO Imports
8. IT for Jobs
9. Early Harvest Programmes

of becoming a self-sustained digitally connected nation. Right now TRAI defines broadband to be a minimum of 512Kbps, which is quite frankly grossly inadequate.

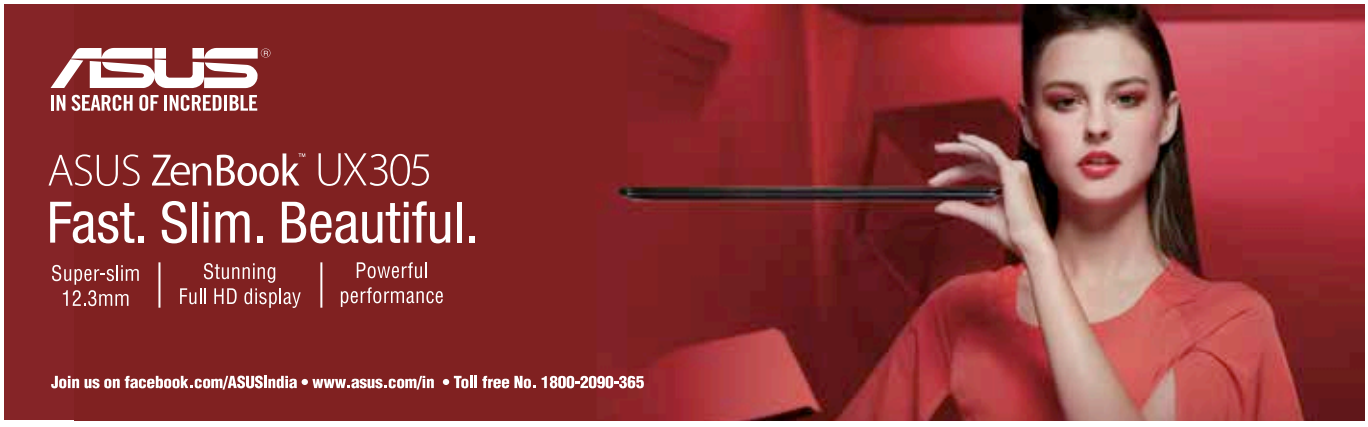
To TRAI's credit, they are working on recommendations on broadband and raising the minimum acceptable broadband speed from 512Kbps to up to 2 Mbps. Not only that, but Right of Way (RoW) will undertake laying down the optical fibre network at the level of FTTH (Fibre To The Home), which promises to usher in a new dawn in terms of connectivity.

We think a minimum bandwidth of 2Mbps to be the lowest possible steady speed to be qualified as "broadband" experienced in India. This will then force the ISPs (and telecom operators) to ramp up their services and ensure the public at large get better, steadier Internet broadband connection speeds. This will definitely help accelerate the realization of the Digital India dream.

LACK OF SPECTRUM

In wireless telephony, spectrum is everything. For communication to take place between two devices (TV, phone, radio, satellite, etc) signals are transmitted over radio waves at set frequency. When you tune your radio's frequency to 98.3 MHz within Mumbai, that will take you to the Radio Mirchi station. When you change it to 104.0 MHz you switch over to Fever 104 FM. This happens because both these radio stations are set to broadcast on different frequencies, a section of the spectrum that's allocated to them and them alone. It's the same for telecom operators like Airtel, IDEA, Reliance, Vodafone and others. No two broadcasters can transmit their communication signal on the same frequency, as that would lead to interference – an undesirable situation at all cost.

However, due to the rampant rise of smartphone telephony in India, we have around 300 million smartphone users in the country as of now, and that alone is



bringing down cellular providers down to their knees. Call drops and data packet loss is an unavoidable consequence of spectrum congestion adding to the country's bandwidth woes. On top of this, the government has plans to open over 1 million public Wi-Fi hotspots, especially at tourist places, to promote its digital cities initiatives. All of these milestones will be left unrealised if more spectrum isn't freed up for Internet service providers.



BARRIER TO INTERNET ACCESS NEEDS TO GO

One of the biggest enablers of our times is undoubtedly the Internet, which has democratized access to information and knowledge, bringing down socio-economic, racial and cultural barriers by connecting all of humanity unlike any other phenomenon before it. Through the Internet, far-reaching impact is just a click away. But without the Internet, the promise of a bright new tomorrow vanishes into thin air just as quickly.

And the brutal reality of it all is that India still remains a vastly underpenetrated country when it comes to access to Internet. Why is that?

According to McKinsey's "Barriers to Internet Adoption" report (http://goo.gl/Qji5AE), 60 percent of the world's population still remains unaware and untouched by the Internet phenomenon – that's about four billion people. India's contribution to this global Internet illiteracy is about 25 percent. That's a huge number in itself. And the major challenges preventing people from accessing the Internet are synonymous with those affecting our country's poor – illiteracy, poverty, and lack of basic necessities.

Even by the global ICT Index, a report published by International Telecommunications Union last year, India's preparedness to propel the Digital India initiative is at an embarrassingly low level. The report rates the tech-savviness of a nation and the quality of its efforts to reduce the digital divide, besides assessing other parameters like network infrastructure and access to technology products. Not surprisingly, the report's contents paint

AKAMAIS STATE OF THE INTERNET

ASIA PACIFIC HIGHLIGHTS (Q1 2015)

INTERNET & BROADBAND ADOPTION

5 Mbps
Global Average Connection Speed

29.1 Mbps
Global Average Peak Connection Speed

Across the first quarter of 2015, Akamai observed strong, positive connectivity growth. From a global perspective, the average connection speed increased 10% quarter-over-quarter (QoQ) and 30% year-over-year (YoY) to 5 Mbps, while the global average peak connection speed increased 8.2% QoQ and 37% YoY to 29.1 Mbps. In the Asia-Pacific region, South Korea had the highest average connection speed at 23.6 Mbps, while Indonesia had the lowest at 2.2 Mbps. Singapore had the highest peak connection speed at 98.5 Mbps, while India had the lowest at 17.4 Mbps

Country/Region	Q1 2015 Avg. Mbps	Q1 2015 Peak Mbps
South Korea	23.6	79.0
Hong Kong	16.7	92.6
Japan	15.2	70.1
Singapore	12.9	98.5
Taiwan	10.5	71.5
New Zealand	8.4	36.7
Australia	7.6	40.8
Thailand	7.4	50.6
Sri Lanka	4.8	30.8
Malaysia	4.3	31.5
China	3.7	19.4
Vietnam	3.2	21.3
Philippines	2.8	20.3
India	2.3	17.4
Indonesia	2.2	17.5

a bleak picture of our country, where we are ranked at 129 amongst 166 countries, and faring worse than countries such as Fiji, Maldives, Mongolia, Kazakhstan, and Kenya, among others. As far as Asian countries go, India's Internet penetration is only better than countries like Pakistan, Afghanistan, Iran, Laos, Nepal, and Bangladesh, which is again quite abysmal to say the least.

A lot of grass root level efforts are needed to ensure India's digital fortunes swing rapidly towards the better. This is something that the government will have to look at very seriously indeed, and sooner rather than later.

DEVICES

One of the biggest challenges that India faces is not just on the infrastructure side (challenges such as broadband network, cellular data coverage, etc) but also on the commodities side. In a digital economy, devices are pretty much the commodities, and we don't seem to have enough of them. Not only does India suffer from a scarcity of devices (wait, what?) but we also have a shortage of the right devices for the right people.

According to an Intel report on "Devices to Data Centres," India remains an underpenetrated country from a hardware perspective, too. Only 17 percent of the country has access to a PC, while the access to smartphone and tablet devices are pathetic down to less than 10 percent and 1 percent, respectively. Clearly, for a country of over a billion people, there's plenty of opportunity for hardware manufacturers to grow and make money. But they need to learn to marry the right devices with the right demographics.

Digital India can succeed only if Make in India propels manufacturers to make smartphones, PCs, and other interactive electronic gadgets that are relevant for local people. Because most of the things that we buy currently, when it comes to consumer electronics, gadgets and devices are manufactured and built according to global norms – not specifically to Indian norms. This is where a big change needs to take place if Digital India is to succeed, allowing manufacturers an opportunity to uniquely tailor a device's look, feel, and contents, depending on whether it's going to be sold and used in Uttar Pradesh or Tamil Nadu.

DIGITAL LITERACY

It's safe to say that India isn't a proud PC-literate country, far from it. But experts agree that we are a mobile literate country, due to the telecom boom of the last decade. However, being a mobile literate populace doesn't necessarily mean everyone knows the ins and outs of operating a smartphone and how to use Internet services off it. Let me explain.

In the same way that India missed the gaming console wave due to gross practicality (they were just too expensive over here and piracy was a great inexpensive substitute), we remain a poorly connected nation in terms of wired broadband. However, our wireless broadband infrastructure is certainly a lot better (despite being inadequate) than our wired connections. This obviously means that people have working knowledge of how to operate a phone and use it to make calls or send



messages – we see this behaviour across socio-economic stratas, right from our illiterate household to homeless people. Almost everyone is mobile phone savvy in our country. But does that mean they're at home to accessing the Internet with aplomb off a smartphone? Not quite.

This is where a major push is needed in improving the country's digital literacy efforts. And these need to be centred around the smartphone. Ensuring people who need access to Internet – villagers who need crop related update, or business folk who need on-the-second updates – get it in a way that they understand. At the same time, the push should be towards making the citizen Internet and tech-savvy.

DATA SECURITY

Let's be honest, the government of India's vision for Digital India is a massive one. We mean access to E-Healthcare portal which would not only cover online medical consultation but also hold online medical records of patients for convenient access. Similarly, E-Locker initiative to allow people to store all their sensitive government related documents securely online and share it across state and central agencies at the click of a button sounds like a great way to get out of bureaucratic quagmires going forward. The envisioned E-Sign capability to allow citizens to digitally sign documents by virtue of their AADHAR information is another great aspiration. Furthermore, there's also a road-map to integrate different government services and platforms, e.g. UIDAI, Payment Gateway, Mobile Platform, Electronic Data, and others.

All this will result in the government holding a lot of our sensitive data in the cloud. And if there's one thing we know about the cloud is that it's anything but secure.

Data security will be top priority as all these services are rolled out and integrated within each other on the back-end. This isn't an easy feat for any third-party vendor (such as Kaspersky, Quickheal or Symantec, for e.g.) without a doubt. In security parlance, a chain is only as strong as its weakest link, so this is one facet of Digital India which is pretty much the foundation on which the entire network sort of stands strong. There is absolutely no margin for error as far as data security is concerned.

LAST THOUGHTS

Whether it's education, healthcare, manufacturing, tourism, e-commerce or any other industry vertical, all of them can be made more efficient, optimum, far reaching and more profitable through the effective use of digital tools. We honestly believe that Digital India is a great initiative that has real transformative potential as far as India's fortunes are concerned. However, to realize the dream, a lot of work needs to be done and some key challenges need to be overcome. If we negotiate the road bumps smoothly and quickly, it will be only a matter of time before the dream of Digital India will be a reality that every Indian can savour.



A lot has been written about the government's vision of putting India at the centre stage of global manufacturing. However, we feel innovations in not just manufacturing but also technology, and its myriad applications to help solve real-world problems, are what will govern future success stories.

SOLVE A REAL PROBLEM

Justdial started with a seed capital of ₹50,000 back in 1996 at a small rented apartment in Mumbai's suburbs. It currently employs over 7,500 employees, generating hundreds of crores of revenue. It has Amitabh Bachchan as its brand ambassador and sponsors several IPL teams. Not bad for a company that at one time couldn't even afford its popular (022) 8888888 number's ₹15,000 monthly phone bill? At a time when people didn't have access to Google (which is still a large part of India), Justdial offered people a phone-based search engine, since almost everyone had a phone

Sabeer Bhatia did something similar back when he launched Hotmail.com in July 1996. Not only did it become wildly popular as a free email service at the time, it still continues to have the second largest email subscriber base in the world at 369 million after Google's Gmail.

The Bansals at Flipkart did something similar when they founded their e-commerce portal back in 2007, which proved to be a pivotal moment that catalysed the entire online shopping phenomenon in India. Its launch led to an avalanche of e-commerce websites launching in the country, transforming the e-shopping landscape permanently.

Why do you think these companies succeeded? Because all of them solved real problems that people cared about and appreciated. We don't need jugaad, we need true innovation, like Justdial, Hotmail and Flipkart delivered. That's the quickest way to success and, of course, making money.

Through Make in India, everyone who solves an existing problem better than anyone else, stands to empower the citizens of our country, and in that process stands to make a killing!

EMPOWER PEOPLE THROUGH TECHNOLOGY

India's social divide, the gap between the rich and the poor, can be effectively bridged if we try to bridge the digital divide. Here are a few examples of companies trying to empower people by exposing them to technology tools:

Tata Trusts and Google India recently announced the launch of a special program called "Internet Saathi" to empower women and deprived communities in rural India by enabling them to use the Internet and benefit from it in their daily lives. The joint initiative is aimed at bridging the technology gender divide, which currently puts women in rural India at further risk of getting marginalised in society. The initiative will provide basic training on the usage and benefits of Internet for women through specially designed Internet cycle carts which will not only be used for locomotion but allow women easy access to Internet.

The operator, or the "Internet Saathi", who will train the women, will be akin to the village postman – who was the single

PROBLEMS OR OPPORTUNITIES?



"The important thing is to recognize that this country has no shortage of problems to be solved urgently. We have the largest number of children with malnutrition. We have the poorest public health service in the world. We have the dirtiest rivers in the world. Our vehicles produce the highest carbon per vehicle in the world. We have the lowest per-capita usable water in the world. Our primary education is one of the lowest quality in the world. I can go on and on. Any worthwhile contribution to the nation is only possible if you combine your competence with professionalism. Elders of our society – academicians, politicians, bureaucrats, corporate leaders and corporate leaders – must debate deeply (about the quality of research in India), and act urgently if we have to leave a better world for our children and grandchildren.

NARAYANA MURTHY
CO-FOUNDER, INFOSYS, SPEAKING AT IISC 2015

point contact for the village with the outside world both in terms of information as well as communication. Tata Trusts, with its vast field based ecosystem, will manage the on-ground rollout with its partners, whereas Google will invest in providing the Internet-enabled Carts and the training content.

Similarly, efforts are underway in the southern Indian state of Karnataka to integrate the Public Distribution System to reduce and finally eliminate corruption and pilferage through the system. Through various pilot projects, Intel India in partnership with Karnataka state government, is rolling out electronic meters equipped with fingerprint sensors that are connected to the central AADHAR database for authenticating identity of individuals when they come to claim subsidised food made available through their local ration store. Even if a poor, illiterate person who couldn't sign their name can now with just their thumb imprint can rightfully claim the food that they're entitled to, and traders can be held more accountable than ever, reducing damage of goods and pilferage to a great extent.

Both these initiatives are great examples of empowering people through technology and enriching their lives like never before. Technology is this conduit through which far-reaching change is possible. All we need to do is imagine the possibilities.

BUILD LOCAL PRODUCTS

Don't just stop importing products. Think of making them right here. So what if big companies have a head start? Think digital services. Think how to get things done better, more efficiently than anyone else. Companies such as Celkon, Karbonn Mobiles have already been manufacturing smartphones in the country, and recently Huawei has received the government's nod to setup a local manufacturing plant to serve the Indian market. One of China's and the world's biggest gadget manufacturer, Foxconn, is expected to set up a plant in Andhra Pradesh or Maharashtra to manufacture iPhones and other products right here in India. A tectonic shift

HOW CAN INDIAN COMPANIES MAKE WORLD CLASS TECH PRODUCTS?



"A beginning has been made with govt initiatives, in consultation with the private sector, with correct steps in the right direction. Ecosystem will develop i.e. starting with component manufacturing, to chipset and industrial design and finally finished goods, which has to be supported by simplified tax & government compliance. The success stories of companies that Make in China or USA is in large part thanks to their strength in the domestic market with either implicit or explicit support of local governments in both benefits for manufacturing (like tax breaks) as well as large purchase orders by the government for their own consumption from local companies. If a level playing field is available then the result would be world class products from local companies that any Indian would be proud of.

JAYESH KOTAK
VP, PRODUCT MANAGEMENT AND MARKETING, SMARTLINK NETWORK SYSTEMS LTD

GREATEST OPPORTUNITIES OF SOLVING A PROBLEM AND BEING SUCCESSFUL IN INDIA?



"The consumer services space is always an ideal place to begin. Identifying a problem that the consumer market is facing and then leveraging technology and the tools available to solve that problem constitutes the best opportunity in this space. For example, take Mobile Internet Services. For most of the Indian population who are now getting used to life online, a good percentage will always be restricted to mobile-only net usage. That is why we are seeing a lot of shift in the focus of companies towards harnessing the potential of mobile more and more. That constitutes an ideal opportunity and services such as the payment space can be served by this opportunity, by enabling digitization, which is what Ringo as a business unit has been working on extensively. Our goal is to make communications inexpensive and completely reliable for end customers in the long run.

BHAVIN TURAKHIA
FOUNDER - DIRECTI, AND CEO - RINGO



"I think opportunities are everywhere, but people should start companies to solve a problem and not just for the sake of starting a company. Mostly, this will come from something they have themselves faced. Once they do start, they should continue to focus on solving that problem incredibly well – that will lead to success. Obviously, at Practo, we're very focused on building a single health app that gives a consumer solutions to all their health and wellness needs. This started with my own poor experience with healthcare and I decided to fix it.

SHASHANK ND
FOUNDER & CEO, PRACTO



"The huge and burgeoning population of India poses a significant opportunity to Indian startups. The environment is conducive to help any startup that works in any one of the fields of Education, Healthcare, Cloud, Social Media or E-commerce using the power of internet and mobile.

SHANTANU ROOJ
CEO, SCHOOLGURU EDUSERVE

is taking place in India's manufacturing sector, and technology is a big driving force of this phenomenon.

According to M N Vidyashankar, President or Indian Electronics and Semiconductor Association, an industry body that aims to promote and facilitate local tech-related manufacturing, India doesn't face a talent problem, but our focus should be sharper. He says, "India's focus should not only be just manufacturing, but high importance should also be given to manufacturing in terms of design. India is a feasible destination for manufacturing high volume electronic products. The availability of high quality skilled labour coupled with conducive Government policies makes India an attractive destination for manufacturing. We strongly believe India has all the potential to be tomorrow's global manufacturing powerhouse. The 'Make in India' initiative will act as a catalyst to translate the great Indian dream into a reality".

OPPORTUNITIES ABOUND

Through our conversations from a diverse group of industry experts, startup founders, angel investors, we feel the following opportunities are ready to be

attacked by tech entrepreneurs looking to solve a real-world problem:

- **Digital payments** – Even though India's e-commerce industry has been a rousing success story, the digital payment segment still faces enormous challenges. Firstly, the total number of credit cards in the country is still pretty low – just under 20 crore credit cards issued in total till October 2014. Secondly, Gen X and Gen Y, not so much millennials, still aren't comfortable divulging their payment details to an online shopping portal. Whoever cracks the digital payments riddle will stand to earn a large fortune for themselves, of that there's no doubt.
- **E-Education** – It's no secret that the once holy and pious education sector is now one of the most lucrative avenues of business. You don't think so? Just take a look at the cost of kindergarten all the way up to graduate school, and you'll see how the fees just keep skyrocketing every year. Not to mention the private tuition business is also booming. It's only a matter of time before an opportunistic entrepreneur connects the dots and helps deliver an end-to-end e-classroom environment to educators and parents alike. Of course, apart from improving the standards of education through carefully tailored electronic courses, imagine how much moolah can be made here?
- **E-Healthcare** – Last year we spoke about uChek, highly sophisticated mobile diagnostic units that are powered by the Android OS, and are capable of doing more than 14 parameter testing on urine and blood. These are powering diagnostic labs, doctor's clinics and government centers across India, at a fraction of the cost of existing equipment, but at the same accuracy and reliability levels. This is just one example. The world of healthcare and medicare in India is itching for digital solutions to some fundamental real-world problems that can truly revolutionize the industry and leave innovators with ringing cash registers.
- **Technology demystification** – Eventually this problem will disappear but it persists for now and a solution for this should be devised. Even though India's a young nation, our elders aren't necessarily as tech savvy as we would like them to be. Therefore, there's a huge opportunity for anyone who tries to demystify day-to-day tech for our elders, create solutions that work, and make money. Imagine installing an app on your grandmother's phone that tells her everything she'd want to know about how to use her phone in her preferred language? Eureka!

HOW MAKE IN INDIA IS GOING TO CHANGE INDIA IN NEXT 5-10 YEARS?



"Make in India is a key turning point in our dream of making India an ESDM (Electronic System Design and Manufacturing) powerhouse. The government's initiative towards making India a preferred manufacturing destination encompassing 25 sectors that includes ESDM and several other sectors that rely heavily on electronics paves great hopes for the sector. There is a billion dollar opportunity and Make in India will act as the vehicle that brings the investments here. The opportunities available in Make-in-India are such that the job potential in the sector can be close to 28 million, with its contribution to GDP close to 12 percent."

M N VIDYASHANKAR
PRESIDENT, IESA

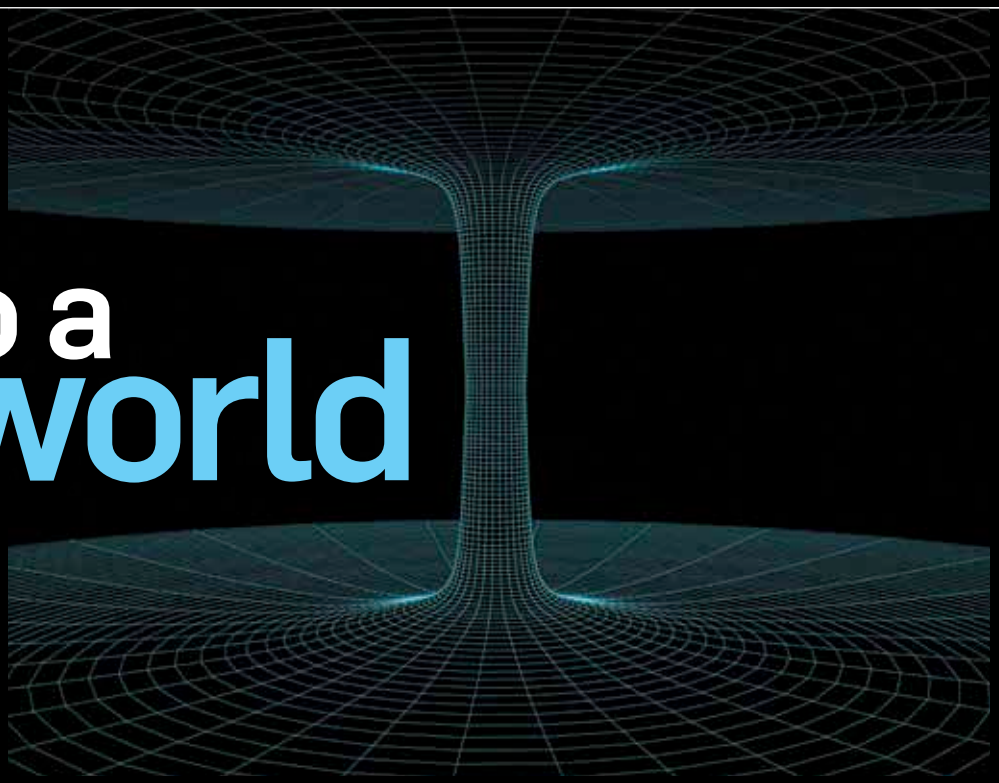


"Make in India Campaign will turn India into a manufacturing hub, thus attracting the investors from all across the world as India is a huge market and one that's growing rapidly. The initiative will fuel the dynamic growth in consumer electronics industry in the country. Manufacturing domestically will create manufacturing capacity which will reduce cost of production and also encourage high end product manufacturing which at present being imported. The consumer electronic industry is expected to witness 20% growth year on year. The industry holds potential to grow manifold if government focuses strategically on Make in India. Besides, the overall growth will also open up more job opportunities in the country.

ANIRUDH DHOOT
DIRECTOR, VIDEOCON

We can go on and on. Simple fact of the matter is that if you ever wanted to make a difference in not only your life but affect plenty of others by solving a pressing issue that a lot of people are grappling with, chances are through technology you can help solve the problem; and get rich doing so! The government climate has never been more favourable. All that's needed is an idea and strong will. So what are you waiting for?





Ticket to a new world

You don't need to travel to deep space to find a wormhole. They may be closer than you think

Lavleen Bhati
readersletters@digit.in

Thanks to Interstellar, we all now know what wormholes are. The idea of portals helping us travel in space-time sounds fascinating and intriguing, but do these wormholes actually exist? On paper they certainly do. What's even more fascinating is that unlike the movie where the intrepid astronauts had to travel all the way to Saturn to find one, there's a possibility that wormholes could be discovered much closer to home. A group of NASA scientists are planning to prove the existence of such portals by looking for one around our very own planet Earth.

But first...

For those who came in late, you're probably wondering what wormholes are. Here's a quick lesson before we speak about the mission. "Einstein-Rosen bridges" are, as the name suggests, bridges that connect two different points in space and time. While studying the mathematical solution for black holes, Albert Einstein and American-Israeli physicist Nathan Rosen discovered that the solution extended itself to give another solution that described two black holes connected by a throat. This throat that acts as a bridge between two wormholes is called the "Einstein-Rosen bridge" or simply a "wormhole". They also found that these wormholes are extremely unstable and will collapse really quickly.

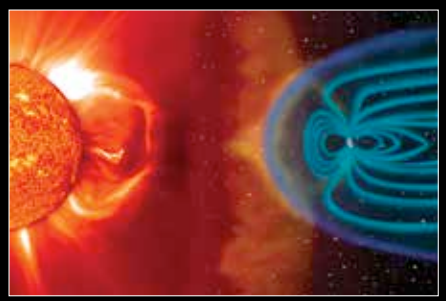
Later though it was found that wormholes can, in fact, be stable and even exist for long durations if the conditions are right – specifically if a large amount of energy called "exotic matter" is present. This exotic matter will have negative energy and negative mass, which give it anti-gravity properties. This exotic matter will prevent a wormhole from collapsing.

How it all started

Before we move on to explain what this mission is all about, let's look at the phenomenon that forms the basis of this undertaking.

CMEs

The sun, as quiet as it seems, can get really restless and can start throwing tantrums.



CMEs striking earth's magnetosphere

This outburst can be as nonchalant as a burp or as dangerous as a million hydrogen bombs. These explosions are commonly known as "coronal mass ejections" or simply "CMEs".

During a CME, enormous bubbles of superheated gas – called plasma – are ejected from the sun. Over the course of several hours, one billion tons of material are lifted off the sun's surface and accelerated to speeds of one million miles per hour. The frequency of these emissions can vary from five times a day to once every five days.

These ejections can travel upto several million miles per hour and the high energy charged particles carried with it can prove to be very lethal. But, if these bursts are so dangerous and are striking our planet every second of every day, how are we still alive?

Magnetosphere

Due to its molten iron-nickel core, earth acts as a huge dipole magnet. It has helped us navigate our way around the planet for centuries now. But it has a much bigger role than that. "Magnetosphere" is the area in space that's controlled by a planet's magnetic field. The boundary where a planet's magnetic field stops dominating and the sun's magnetic field starts taking over is called the "magnetopause".



ISS habitability
2,750Kg of food, fuel and other supplies are on their way to the ISS abourd a Soyuz rocket
http://dgit.in/foodsyz

This page is INTERACTIVE
DOWNLOAD THE BLIPPAR APP AND WATCH A VIDEO

As long as you're inside the protective shield of our magnetosphere, you don't need to worry about the dangerous CMEs. Earth's magnetosphere channels these CMEs around the planet, so that they don't impact us. Without the magnetic field, the solar wind would strip away our atmosphere, like it did to Mars (according to some theories).

The shape of our magnetosphere would be the same as that of a bar magnet's if only the magnetic field of sun was not constantly hitting it. The pressure of solar winds compresses the magnetic fields of the day side of the planet and extends it on the night side giving our magnetosphere the shape of a comet.

Magnetic reconnection

"Magnetic reconnection" is the fundamental process by which magnetic energy is transferred through space. Magnetic reconnection is a process of disconnection and recombination of magnetic field lines. When two loops of magnetic field, with fields of opposite orientation come very close to each other, then it's possible for the lines to break free from their loop and reconnect with the other loop converting the energy stored in the magnetic field to heat and kinetic energy in the form of charged particle acceleration and large-scale flows of matter.

This phenomenon is often seen when the CMEs strike earth's magnetosphere. When the orientation of field lines of plasma is in the opposite direction to that of our magnetosphere, they split and recombine to form complete loops again.This is seen as a great explosion in space, which manifests as spectacular space weather phenomenon such as the Aurora.

NASA's hypothesis

Scientists at NASA believe that the points where the magnetic reconnection occurs may act as our paths into the next world. But they don't call them portals. They call these points "X-points", "boom tubes" or "electron-diffusion points". NASA believes that the sudden joining of magnetic fields can propel jolts of charged particles from the X points creating an "electron diffusion region".

They're also convinced that these points help in transporting many of the high energy charged particles away from earth.

But, how do they prove that these portals actually exist around earth? The answer is quite simple: by looking at them.

Mission MMS

Launched in March 2015, the Magnetospheric Multiscale (MMS) mission is a Solar Terrestrial Probes Program mission within NASA's Heliophysics Division. MMS investigates how the sun and earth's magnetic fields connect and disconnect, explosively transferring energy from one to the other in magnetic reconnection.

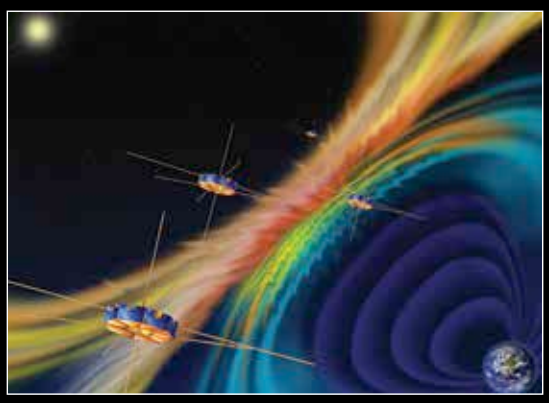
The mission consists of four spacecrafts orbiting the planet in tetrahedron formation. The spacecrats cover two special places in earth's orbit: one upstream towards the sun and one downstream away from it – both of which places experience magnetic reconnection. The spacecrafts catch the explosions from magnetic reconnection in action by taking high speed snapshots.

The final step after taking the snapshots is to compare the observations to the simulations of the magnetosphere as it is influenced by the incoming solar wind.

Design and logistics of the mission

The science payload for MMS is all mounted on a single deck plate, but it consists of 25 boxes per spacecraft. These boxes are categorised into three general groups of instruments: one for measuring fields, one for measuring plasmas and the last for measuring energetic particles. Each spacecraft, along with its detectors, spins around its axis once every 20 seconds. The spacecrafts consist of plasma analysers, energetic particle detectors, magnetometers and electric field instruments as well as a device to prevent spacecraft charging from interfering with the highly sensitive measurements.

The four spacecrafts were launched together on an Atlas V-421 launch vehicle and were successfully inserted sequentially – at five-minute intervals – into earth's orbit. The spacecrafts are separated by a very small distance of 10 kilometers orbiting earth at a height of 76,000 kilometers.



The four MMS spacecrafts orbiting Earth in a tetrahedral pattern

They are to orbit our planet for two years and six months. Scientists are still waiting for some valuable data to come back from these orbital explorers. The wormholes that they seek, if found, will bring us one step closer to our way into a new unseen universe. Hopefully, we'll find our way around all the paradoxes once we take our first leap of faith through these portals.

To infinity and beyond!

WHITE HOLES?

Certain solutions of the general theory of relativity suggests the presence of a black hole at the mouth of each wormhole. The other end of a wormhole is believed to act in an opposite manner as the black hole (that is, matter and light can escape from it, but can't enter it) and is named the "White Hole".

ARE BLACK HOLES NOT REAL?

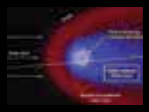
After introducing the world to the concept of event horizon and black holes, Stephen Hawking now suggests that the black holes aren't actually real (at least the way we've been thinking of them). He now proposes that there are"apparent horizons" that temporarily suck matter and energy in and eventually releases them out again.

BADLY BEHAVED MAGNETIC FIELD

Neptune, the outermost planet in our solar system, displays some really bizarre behavior which includes hosting a spidery, swirly magnetic field. It's 27 times stronger than the field of earth, sits on an angle with its axis of rotation and is quite asymmetric. After years of study, the nature of this magnetic field is still poorly understood.



A complete guide to Pluto
New Horizons has given so much information about Pluto, Charon and more. Head here to know everything: http://dgit.in/1Jjah2d



Pluto's losing it
According to NASA, it seems that Pluto's nitrogen atmosphere is escaping into space. http://dgit.in/1em4PP4

New Horizons

My very efficient mother just served us nine...

Robert Sovereign-Smith
robert@digit.in

Damn you Neil deGrasse Tyson, Mike Brown and the others who killed Pluto as a planet! The beloved Planetary Mnemonic (whichever one you learnt as a kid) will never be the same when we stop at Neptune!

Thankfully, NASA didn't really listen, and sent out a probe called 'New Horizons' towards Pluto. Planet or not, Pluto needed to be explored, and it's kind of fitting, given all that we've learnt over the past few weeks, that Pluto was left for last – we really did save the best for last.

OK, we're kidding. We don't really want Pluto to be made a planet again. We're just glad it's the first trans-Neptunian object seen at close range.

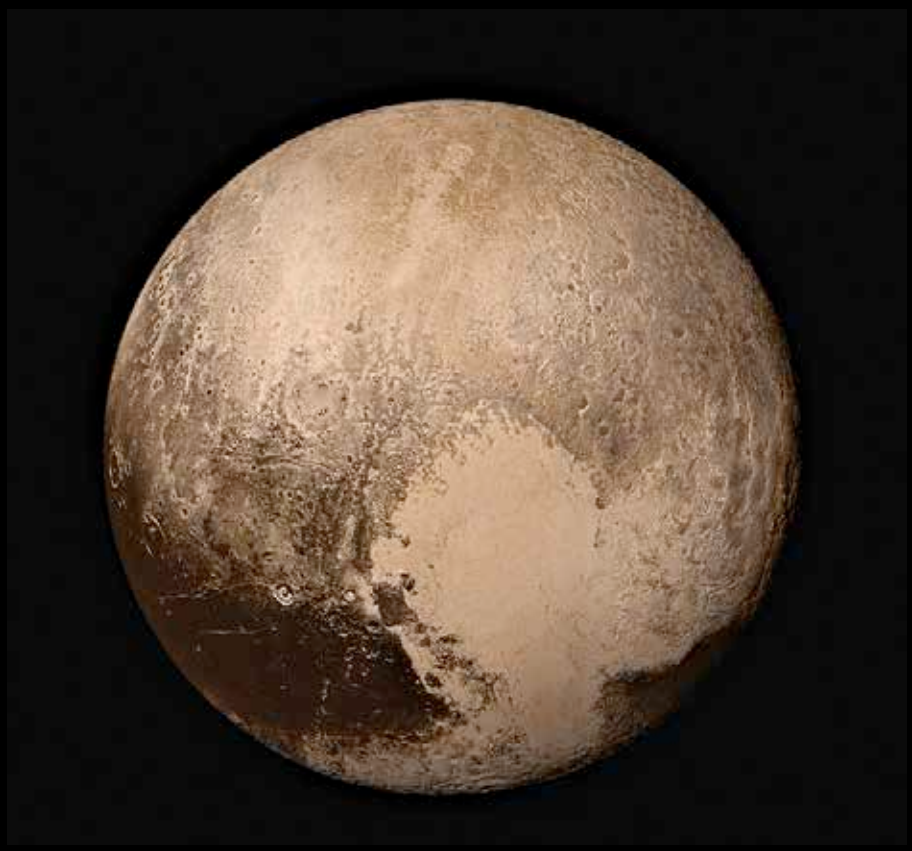
The New Horizons craft was launched in 2006 towards Pluto, and only made its closest approach to the dwarf planet in mid-July 2015. The discoveries it has already made, but which we haven't yet got all the data for, are already mind boggling! And this is just the beginning. The next few months are going to be very exciting indeed.

Pluto

Pluto is (now confirmed as) the largest trans-Neptunian object (that we know of). It has a wildly eccentric orbit around the sun (compared to the planets), and its orbit is at an odd angle to orbital planes of the other planets as well.

It's tiny compared to our planet. In fact, it's a lot smaller than our moon as well, but has a legacy of being called a planet, which allows it to grab our attention and stoke our imaginations.

The first few images and data released by NASA and the New Horizons team are already challenging pre-existing notions we may have had, based on all our observations of Pluto within the orbit of Neptune.



The latest true-colour image of Pluto is breathtaking! Although as of writing, only 5 per cent of the total data that has been collected has reached Earth, we think this image alone is enough of a reason to encourage not just NASA, but also our government to pursue space exploration.
Image Credit: NASA/JHUAPL/SwR



Illustrative image to show the size difference between Earth and Pluto and its moon Charon (Image Credit: NASA)



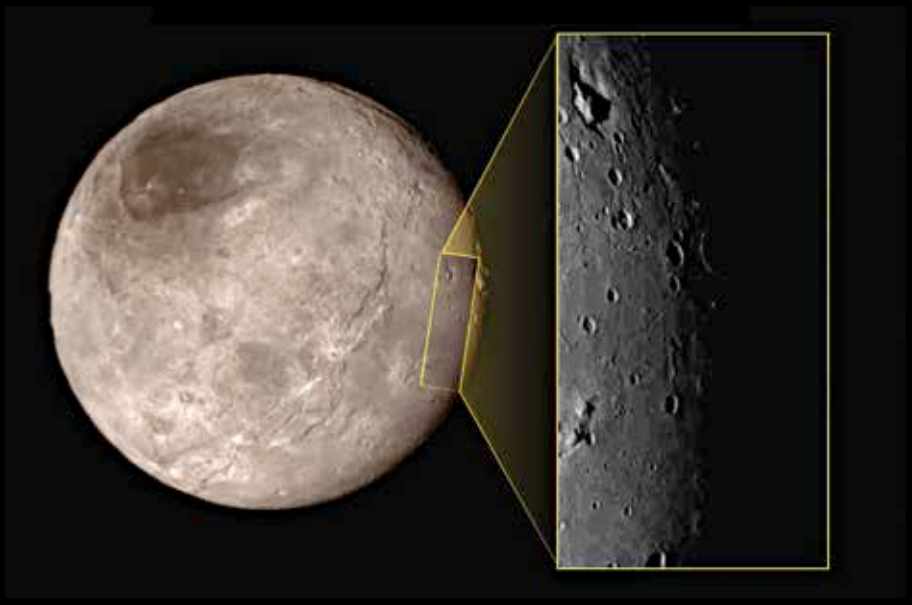
The image drawn on the moon at the end of the movie Hancock. Does Pluto have a superhero living on it? (Image: Hancock, 2008)



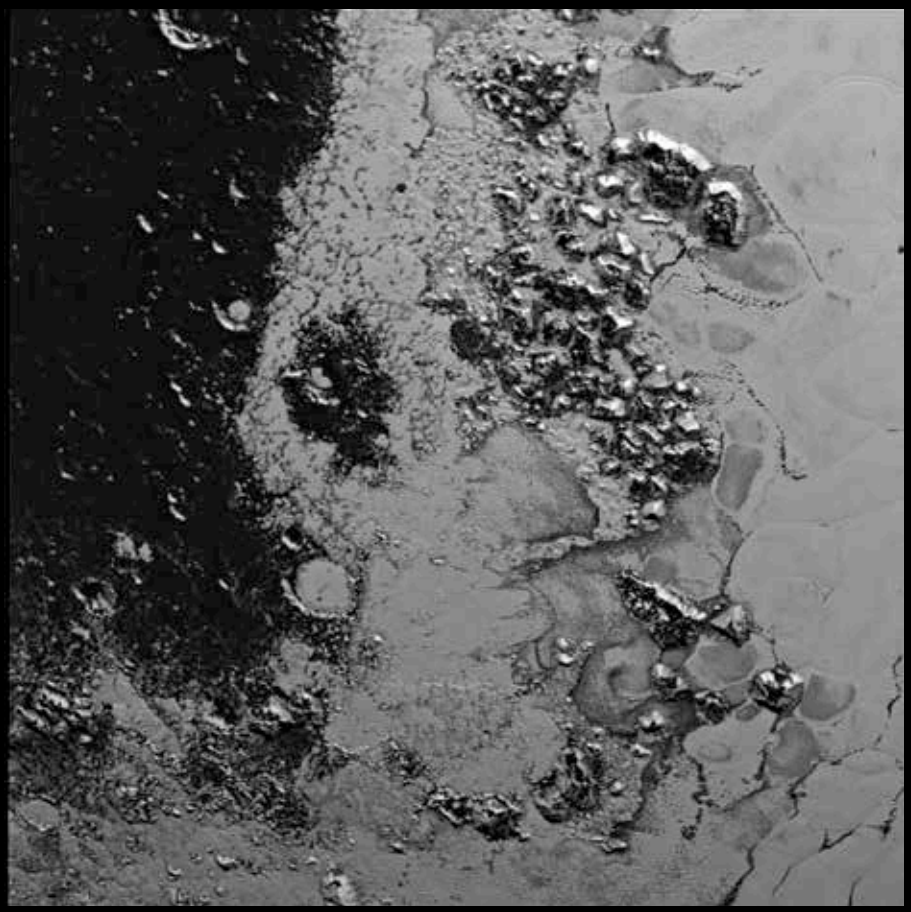
Hail Hydra!
See the first glimpse of Pluto's outermost moon - Hydra captured from a distance of 645,000km. http://dgit.in/1MrRy6o



Pluto on Pluto?
Yes, we're talking about how a huge portion of Pluto's surface look's like Walt Disney's Pluto the cartoon character. http://dgit.in/1OCpknE



This is Pluto's moon Charon, which has also being studied closely by New Horizons. While we wait for data to be downloaded, there's a very interesting feature that has geologists scratching their heads! What is that mountain inside a moat on the top left of the zoomed in image? Wow!
Image Credit: NASA/JHUAPL/SWRI



NASA's Deep Space Web receives data from New Horizons at just 1 or 2 Kbps, because it's 3 billion miles away (ever increasing). Imagine how slowly this breathtaking image of mountain ranges on Pluto was downloaded. Now you know why there are only updates once a week or less from NASA.
Image Credit: NASA/JHUAPL/SWRI

It's active!

Traditionally, we've thought of cold icy bodies that orbit beyond Neptune as too far away from the Sun to have any significant warmth, and also no big gravitational influencers to cause surface disturbances such as the type we see on Io (Jupiter's moon).

The very first images of Pluto have shown that there are flat plains on the surface, with no visible craters, suggesting that the surface has been re-formed (in some way). Bodies like our own Moon are covered with craters because they're geologically dead, and thus there's nothing changing the surface. For Pluto to have crater-less plains, we have to believe that the surface itself is "new". We put new in quotes because on the time scale of the solar system, it probably means that the craterless bits of Pluto were re-surfaced in the last 100 million years!

We love you too!

The first compressed images we got of Pluto as the spacecraft approached the dwarf planet showed a very distinct plain, that was oddly shaped a lot like a Valentine heart! It's almost as if Pluto was saying, "Welcome! I love you!" And obviously the world replied, "We love you too Pluto!"

Mountains?

Yes, Pluto has mountains! They're large enough to be considered mountains back here on Earth! Nothing like the Himalayas or anything (yet), but they're comparable to the Rocky mountains in the US. As more data is gathered over the coming months, NASA will release more and more information that will show us more and more of Pluto's surface.

What's interesting, however, is that none of the icy compounds we've suspected that make up Pluto can be stable mountains, even with the low gravity on Pluto. Well, except water ice. So early predictions are that these are water ice mountains, and we can't wait for the artists' renditions of Pluto's surface that are sure to begin surfacing over the next few months. Whatever the case, Pluto has captured our imagination and made us look into outer space once again. Along with the recent news of the discovery of an Earth-like planet (Kepler-452b), these are exciting times for us space enthusiasts!

A tale of multiple beeps, battery drain, spyware infestations and more...

For all the times you're stuck between a rock and a hard place as far as technology is concerned, we're here to help you troubleshoot it all. Just follow our trail of breadcrumbs and you'll be sorted

Q It's draining too damn quick!

I have the Asus ZenFone 2 with 2GB RAM, 16GB storage and Intel Atom 2.30GHz processor. Although the battery is mentioned as 3000 mAh, it drains extremely quickly. Could you please provide the solution.

–Pranav Singh

A According to quite a lot of posts seen online on XDA Developers, it seems that the Asus ZenFone 2 had a battery drain issue which the company tried to fix by releasing an update. Make sure you've updated your phone's software to the latest version as this may or may not address that issue, considering the fact that sometimes new updates can also be the culprit behind battery drain (which was witnessed by quite a few users of the same device). However, if you're still seeing an unreasonable drop in battery life even after updating the software, try to find out whether there are any misbehaving apps unnecesarily running in the background and feasting on your RAM. If nothing works, back up your phone data and perform a factory reset to check whether this fixes the problem. The next course of action is to go to the Auto-Start Manager app that comes preinstalled on the phone and then deny auto-start for apps that you don't find necessary. You can also go to the app manager in your phone settings and disable some of the preinstalled bloatware. Also, follow a few threads here: http://dgit.in/BatDrain to understand and try out battery drain fixes that other ZenFone 2 users are using. If nothing works for you, pay a visit to the Asus service centre.

Q What the *beep5 *?

Here are the specifications of my PC:

- **CPU:** Intel Core i5 2500K
- **Motherboard:** ASRock P67 Pro3
- **RAM:** G.Skill Ripjaws 4GB x 2 DIMMs
- **Graphics Card:** HIS Radeon HD 7850 IceQ X
- **PSU:** Corsair 600 watts

My PC was working fine until recently when I tried to wake it up from sleep and the display didn't respond at all. Since I got no response, I had to hard reset the system, after which it gave five short beeps. There was no POST as well. I tried again many times, but my monitor didn't detect any signal coming from the PC. Which is why I disconnected and reconnected all the cables tightly to check whether that would fix the issue but nothing seemed to work. This PC is about four years old. Do you think that some component inside may have gone kaput?

–Parth Mehta

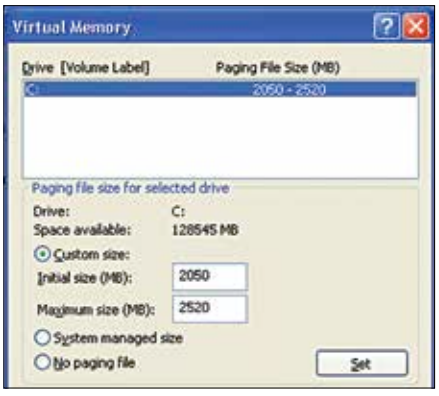
A Five beeps and no POST can mean a number of things based on your BIOS manufacturer since various manufacturers may use certain beep codes differently. In your case, however, based on the motherboard you're using, this mostly seems to be because your system cannot detect the connected video card. In order to fix this issue, follow these steps:

1. Clear CMOS first and then restart your PC to check whether that did the trick;
2. If it didn't, remove and reinstall your graphics card and try again.
3. If that didn't work, install the video card on another PCIe slot and try.
4. And if none of these steps work for you, just take your video card and try it out in someone else's system or borrow a friends video card and install it in your system to see whether it was in fact an issue with the GPU.

If your graphics card fails to work in someone else's system as well, it means that it's definitely messed up. If the card is still under warranty, contact the manufacturer for RMA. If it isn't, you'll unfortunately have to buy a new one. But hey, at least you can go for a better and more powerful card this time.

Q Virtual Memory too low

I'm still using Windows XP on one of my old work systems at home and it has worked absolutely fine all these years. A few days ago when I was working on it, the system just froze and I got an error message on the screen that said: "Virtual Memory Minimum Too Low". After that, I saw this error come up quite a few times while using this PC. Can you please guide me about how to go about



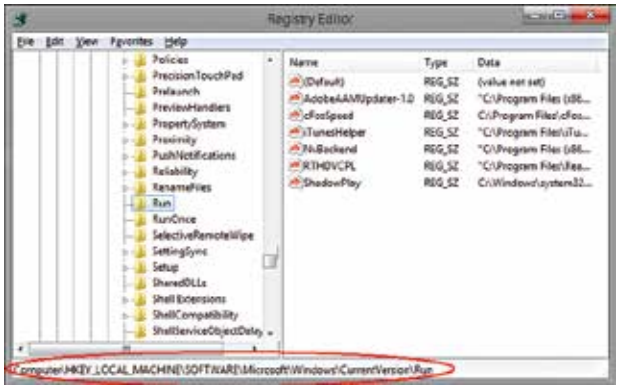
You can change the page file size from here

fixing this issue? Your help will be much appreciated.

–Naresh Shetty

A Hi Naresh, the error you're seeing frequently was actually quite common in Windows XP. In order to troubleshoot this, you'll just have to increase virtual memory or page file size. This is how you can go about doing it on your system:

1. Right-click on My Computer > Properties > Advanced > Settings > Advanced
2. Under the Virtual Memory option, click on 'Change'.
3. Click on the OS installation drive (C: Drive, in most cases).
4. Once you've selected the drive, under the drive space available option, click and select the radio button labelled as 'Custom Size'.
5. Now you'll have to set the initial and maximum size by typing into the dialogue boxes. But ensure you have some free memory on your system before doing this. If you don't, just clear some space or get a larger HDD. The rule of thumb is that your page file size should be at least twice or around 1.5 times your RAM (physical memory). Since you said that you're using an old system, we're guessing that you have around 2 GB of RAM installed. In that case, set it to around 3.5 GB or 4 GB (4096 MB). Though this might seem like a lot, having a larger page file size is better and wouldn't impact PC performance in any negative way. Also, it wouldn't take up much additional disk space.
6. Once you're done, click 'Set' > OK > OK > OK.
7. Now restart your computer.



Locate the entry with maskrider2001.vbs in the registry here

Q Can't open drive(s)

I'm facing a weird problem with my PC. Every time I try to double-click and open any drive from My Computer, the drive doesn't open. Instead, I'm greeted with a system error message that says: "script maskrider2001.vbs not found". I tried to find the root cause of this error, but didn't get too far since I saw a registry entry of this file but didn't know whether I should get rid of it. I need to access my drives as I have important data on them. Please help me gain access to those drives without losing any of the data inside and get my PC working normally again. Thanks.

–Ayush Rathi

A This problem is usually caused by a known spyware. Firstly, start by looking at your Windows startup items. To do this, you'll have to open Run > Type "msconfig" (without the quotations)> Press [Enter]. Once the MSConfig window opens up, click on the Startup tab. Here, see if you find any entry related to 'maskrider2001.vbs'. If you do find something, just uncheck the box in front of the entry and close the window. Doing this would prevent it from running when you start your PC.

Now, since you said that you found an entry of the file in question inside Windows Registry, you should open the registry again by typing "regedit" (without the quotations) in Run. Then locate and delete maskrider2001.vbs within this key: "HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Run\maskrider2001.vbs".

Once you're done deleting the registry entry, do a thorough search of your system for maskrider2001.vbs and delete it if you find it anywhere. It may also be hidden, so make sure you set Windows Explorer to show hidden files. You can also use a good anti-virus utility like Kaspersky or Avast to get rid of this issue.



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Compelation allows you to negotiate a price on your selected product. Read more: **http://dgit.in/priceset**



One step closer to being a superhero
Capcom's light-up 'Mega Man' helmet wont grant you superhero powers. But atleast now you'll look like one. Read more: **http://dgit.in/pwrhlmt**

Material Design Lite: Materialise your Web Pages

There's a new CSS framework for Material Design in town and this time it's by Google itself.

Kshitij Sobti
readersletters@digit.in

CSS frameworks implementing Material Design have been cropping up regularly ever since it was first announced. Some come as extensions to existing CSS frameworks, like the many plugins available for Bootstrap, and others are fully featured frameworks based on material design, for example Materialize CSS.

Finally, we have an official Google-developed CSS framework for material design called Material Design Lite – why



'lite' find out soon! With this, Google aims to plug in any design gaps left in the specification; gaps that other frameworks have had to fill in without Google's guidance and not always to their satisfaction.

What is Material Design?

Material Design is Google's new design language that forms the basis of their Android 5.0 version and most of their current mobile applications.

If you've used Google's new email application Inbox – you have already seen Material Design in action. Most popular Android applications today have adapted their UIs to use this new design language.

Google unhelpfully describes the goal of Material Design as:

'Create a visual language that synthesizes classic principles of good design with the innovation and possibility of technology and science.'

'Develop a single underlying system that allows for a unified experience across platforms and device sizes. Mobile precepts are fundamental, but touch, voice, mouse, and keyboard are all first-class input methods.'

Material Design, similar to Microsoft's 'Modern UI' style focuses on a clean visual with minimal chrome. Google's design specification goes into details about how visual elements should be layered and presented, what to do, what not to do, all complete with images and videos.

How it Relates to Polymer

Polymer is another web framework by Google that implements the Material Design as part of its Paper elements component set. To use these elements though you had to make a somewhat large commitment to using the web components model that Polymer uses.

Polymer is an entire web framework designed for building applications, and as such it's not easy to adopt its Material Design without needing to rewrite parts of an existing application. Additionally, if what you wanted to apply the Material Design to your blog, or website, Polymer was a bit too heavy for something that simple where you don't need an entire application framework.

That is where the 'Lite' comes in. Material Design Lite (MDL) doesn't need you to use web components, or Polymer and doesn't prescribe any other framework either. All you need to do is include a CSS file for MDL, a CSS file for the font, and a single JavaScript file, and you are set. It will work with your current application framework, or even without a framework at all if you have a blog or plain site rather than an app. MDL can still be used in conjunction with Polymer though.

Using MDL with your Website

Using MDL is similar to using something like Bootstrap. You simply include the CSS and JavaScript code for the framework and then use the appropriate CSS classes to get visual styling that you want.

There is also an online customisation tool available for MDL that allows you to select a primary and accent colour for your theme. Merely select the two colours from a wheel available on their customisation page, and you will get the MDL CSS file for that theme.

While MDL covers some of the same ground as Bootstrap, it is certainly not a complete replacement. It does not have as broad a feature-set, rather it focuses on basic styling for web pages and components. For one, MDL does not include any form of grid for layout. You will need

to use an additional framework that supports grids (like Bootstrap) if you want that.

MDL also uses a CSS class naming methodology called BEM that makes it easy to understand how to use a class just by the way it's named. Let's see how this works with something as simple as a button before we go into what BEM is.

Let's say we want to recreate that 'SEND' button from the email compose windows in Inbox. We'll first need to start with a plain old button:

```
<button>Send</button>
```

To which we add the 'mdl-button' class:

```
<button class="mdl-button">Send</button>
```

SEND

Now this looks more like something we'd see as a button in an MD app, but our button needs to be raised so we add a class for that:

```
<button class="mdl-button mdl-button--raised">Send</button>
```

Better but our needs to be coloured blue:

```
<button class="mdl-button mdl-button--raised mdl-button--colored">Send</button>
```

Note that this colouring will only appear if it is the primary theme colour. Otherwise the button will be of the primary theme colour. Now if we also wanted this to show that ripple animation when tapped, we would just need to add the appropriate classes ('mdl-js-button' and 'mdl-js-ripple-effect').

You must have noticed some kind of pattern with these CSS classes, especially with the use of double hyphens. That is because, as previously mentioned, MDL uses a naming methodology called BEM, which we'll look into next.

BEM in MDL Through Examples

As layouts become increasingly complex with layers of HTML tags each with different CSS classes coming together, to give a single effect or make a single component, it can be confusing to know how those classes relate to each other. Which is the class for the main parent component? Which is for the sub component? Wait, where do you add what class to make the header blue?

BEM which stands for Block, Element, Modifier, is a style of naming CSS classes that tried to reduce that confusion by making the purpose and use of a class clear from its name.

In the previous example, `mdl-button` represents a block, i.e. a high-level component within our code, in this case a button. The 'mdl' preceding the button ensures that MDL buttons don't clash with some other framework that also happens to use a class called 'button'.

In 'mdl-button--raised' we have a modifier applied to 'mdl-button'. Anywhere you see something like `xyz-block--modifier` you will know that the class is modifying the base block / component in some way.

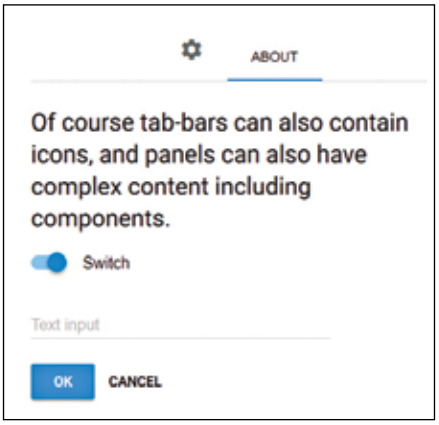
The 'Elements' bit of BML is something we didn't see in the button example since it is a rather simple one. However, imagine a more complex component with many subparts, where each of them requires us to set a class in order for the component to work as a whole.

A good example of this is the MDL tabs layout. While the major component / layout is a tab panel, it is composed of elements such as tab buttons and content panels that are linked to the different tabs. There is where the Element syntax of BEM comes in.

The structure of the tab component is as follows:

```
<div class="mdl-tabs mdl-js-tabs">
    <div class="mdl-tabs__tab-bar">
        <a href="#tab1-panel" class="mdl-tabs__tab is-active">Tab 1</a>
        <a href="#tab2-panel" class="mdl-tabs__tab">Tab 2</a>
    </div>

    <div class="mdl-tabs__panel is-active" id="tab1-panel">
        Tab 1 contents
    </div>
    <div class="mdl-tabs__panel" id="tab2-panel">
        Tab 2 contents
    </div>
</div>
```



We have expanded the contents within these tabs to make them more clear for print.

Here, the main component is `mdl-tabs` (the `mdl-js-tabs` is required in addition to make it function). The `div` with the `mdl-tabs__tab-bar` class is an element of the tabbed panel component. As you can see the CSS class for this tab bar is the CSS class name of the main component followed by two underscores and then the name of the element of that component. Further within the `tab-bar` element are the `tab` elements that represent the actual tabs on top of the screen. The tabs component also has two additional child elements that are both panel components of tabs.

With a clear naming pattern like this you know in advance where a particular CSS class is applicable. For instance, while a `panel` class might apply in many cases and could cause confusion, here it is quite clear the `mdl-tabs__panel` is only a CSS class that would be used inside an `mdl-tabs` component.

MDL likewise has other layouts and components that are composed of elements.

Conclusion

MDL is the latest entry in list of web design frameworks; there seems to be a new one every other week. However, Material Design is quite an important consideration now if you want your app or website to fit in on Android devices.

Google has also made available a couple of templates that use MDL in a blog, dashboard or article. Also included is a skin for Android.com using MDL.

Send Directions
Send directions to your Android device directly from your desktop using Google Maps. **http://dgit.in/snddirectns**

Facebook Music?
Facebook is rumoured to go a step ahead and launch its music streaming service to users soon in future. Read more here: **http://dgit.in/fbmusicsoon**

10 things YOU can do to improve gaming performance immediately

Enhance your experience by checking out these tips, tricks and upgrade options.

Hardik Singh
hardik.singh@9dot9.in



1

'Patch'work

With graphics in video games improving by the day, major game publishers are working with either Nvidia or AMD to offer specialized graphic patches to users. These specialised driver patches offer better graphics while also boosting game performance. So, keep your respective game drivers up to date. For example, the Witcher 3 GeForce Game Ready Driver from Nvidia.



3

Memory game (cheapest and easiest way for PCs, even laptops)...

If you are running 4GB or less RAM on your PC or laptop, upgrade now. Currently, RAM prices are the lowest they have been in recent years. This means it's the right time to upgrade to a 8GB or a 16GB RAM. Do check your motherboard compatibility before buying.

Taming the GPU



2

GPU overclocking was once considered a risky affair, but gone are the days when slightly overclock a GPU required you to go into the BIOS and cross your fingers hoping to get it right. Today, most modern GPU's can be tweaked easily and come with headroom to allow overclocking. Currently, the most popular GPU overclocking software is MSI Afterburner, since it works with most graphic cards, even from different manufacturers. You can also try similar software from Asus, Gigabyte or Sapphire.



4

Solid not hard

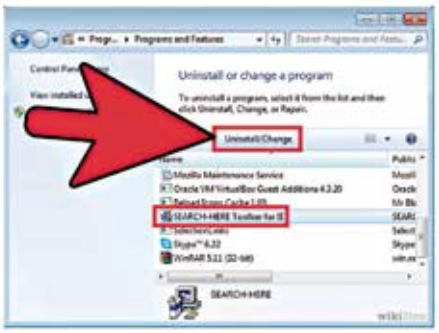
If you're a gamer, SSDs are your best friends. While these drives won't increase framerates etc, but they'll largely reduce game load times. Solid State Drives will take about a third of the loading time taken by regular HDDs.

5



If you can't take the heat...

If you're reading this, you were probably waiting for us to mention cooling. Heating is inevitable, but it's not like you can't do anything about it. If you're gaming on a PC, invest in cabinet fans and aftermarket coolers for processors to get the best out of your processors. If you're a laptop gamer, invest in laptop coolers for the same. Also, keep cleaning your system from time to time as dust hinders performance.



6

Keep it lean, keep it mean..

Ensure you Windows/OS installation is lean and stripped off any unnecessary extras that might be hogging space and adding overhead to registry, cache, etc. Repeat after us, 'No Bloat!'

7



Find hacks, don't be one..

In the large catalogue of PC games, you'll often come across those that don't allow you to tweak the settings. But where there is will, there is a way. Most often, you'll find hacks and tweaks available online that will allow you to change the mouse, keyboard, gamepad settings and more. Never, ever, forget to keep a backup though. Tweaking your OS for gaming is also a good option to improve performance. Head over to our forums to get answers for specific questions related to gaming performance: http://goo.gl/cWeizL

8

Tuned to perfection..

Dive deep into GPU driver tools to tweak specific settings. Nvidia's GeForce Experience and AMD's Gaming Evolved applications allow you to fine tune settings, allowing you to troubleshoot and improve performance related to AA modes, filtering, textures, etc. These can go a long way in improving image quality or squeezing out more frames without any substantial hit to the overall experience.



9

Tools of the trade

Gaming mouse, keyboards and mouse mats may cost more than regular PC peripherals, but once you start using them, you will know the difference. It may not make you a better gamer overnight, but hey, practice makes perfect, and good hardware helps. If that's not enough, when it comes to showing off in front of friends, there's nothing better than gaming hardware.





10

Multiplayer gaming and QoS

Wired connections are always better for gaming, because you don't have to worry about someone else hogging your bandwidth while you're on a gaming marathon. If you're using a router though, configuring the QoS settings is a good idea. This ensures that even if someone else connects to the router when you're gaming, they don't eat up all the bandwidth. Sometimes you can reduce ping to a remote gaming server by using a VPN which might route your packets via a shorter path to the server. Try out multiple services to figure out which one's the best for a certain game.

Digit is hiring.
If you think you have what it takes to put words onto this page, write to us at editor@digit.in

ROUTERS

Routers are often bought, set up and configured with the most basic settings asked for during the automated manual setup. However, they have a lot more to offer, which involves more than just letting you share your internet connection. Routers are devices powerful enough to enable wireless communication between all your devices. So why not take full advantage of their abilities and tweak them to get the most out of them.



Routers 27

Google Now 29

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

Power up a router using a CAT5

Powering up a router over Ethernet works for wall mounted routers that don't have a plug point nearby for power supply. First of all, be ready to cut a DC power adapter plug compatible with your router.

Next, find the wires that are not in use on your CAT5 Ethernet cable. This cable has eight wires inside it, of which only four wires are used, while the other four are spare. These spare wires are generally connected to pins 4, 5, 7 and 8. Cut off the spare cables from the connector end and get rid of the insulation. Repeat this step at the other end of the ethernet cable as well. At one end of the ethernet cable, hook up the ends (4th with 5th and 7th with 8th) and join them to the connector's wires accordingly. Do the same with the other end of the cable with the power adapter's wires. Keep a check on the polarity and the connections you're making. Secure the open ends of the wires. This method works with approximately five meters of ethernet wire. Also, a Gigabit ethernet works on eight wires, so this trick might slow down the transfer speeds on that ethernet CAT5. If you need to use longer ethernet cables, you'd need to use a higher voltage power adapter, say, of 9V or 12V to power up a 5V router.



Try this trick to place your router where you want but can't due to lack of a plug!

Keep malware away from your network

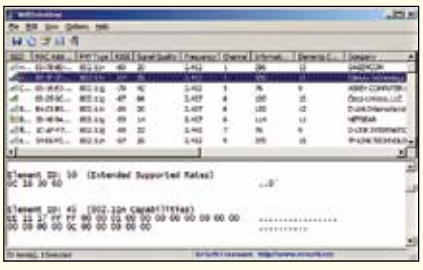
Routers and their network can get infected by malicious code if they have unsecured or exposed ports, which generally happens while using UPnP, remote management and other authentication tricks that cause the router to think it's dealing with a trusted code, when it's actually not! Infections often cause DNS and page redirections. 'History has it', 'The Moon', 'Moose', 'Chameleon' and other such worms and malware have been effectively evading your security protocols and infecting your router networks. It's difficult to get rid of them once they take over your network, so it's always a good idea to update the firmware, keep a check on all the security features and factory reset the router if it's been acting unusual. A very important security function involves turning off remote administration and limiting access to specific trusted IP addresses. Doing this can reduce the potential attack surface. Additionally, now and then check your Program Files folder for any unknown folders which may have been inserted by the malware. We recommend using network security essentials and anti-malware to safeguard your network from such attacks.

Let the 30-30-30 rule save your day!

Network fanatics have always been following the 30-30-30 rule, also called as the 'Hard Reset'. As the jargon implies, this is done by resetting any home used router to its default settings at any time.To perform a hard reset, hold down the device's reset button for 30 seconds while it's powered on. While still holding down the reset button, unplug the power cord from the router and hold for another 30 seconds. Holding down the reset button, power on the router again and hold for 30 more seconds. After this 30-30-30 second process is complete, your router should be restored to its factory default state. This is most efficient way to reset your router, however, never try it while your router firmware is upgrading or it might brick the router. Reserve this method for extreme cases; a soft reset should work in most other cases.

Choose your channel

Wi-Fi radio waves operate on channels that continuously interfere with other signals. This could be due to frequencies emitted by cordless phones, microwaves, other routers in vicinity, etc. Fortunately, channels 1, 6 and 11 are spaced far enough apart not to overlap or interfere with each other. So, on a non-MIMO setup (i.e. 802.11 a, b or g), you should always try to use channel 1, 6 or 11. If you want maximum throughput and minimal interference, channels 1, 6 and 11 are your best choice, however, depending on other wireless networks in your vicinity, one of these channels might be a much better choice than the others. There are tools that can help you find the clearest channel, such as 'Vistumbler', 'Xirrus Wi-Fi Inspector', 'Wifi-



Don't let your router operate on the most crowded channel!

InfoView', etc. It's probably easier, however, to just switch between channels 1, 6 and 11 until you find one that works well. (If you have two laptops, you can copy a file between them to test the throughput of each channel.) The great thing about 5GHz (802.11n and 802.11ac) – because there's much more free space at the higher frequencies – is that it offers 23 non-overlapping 20MHz channels!

Give it a third-party taste

Third-party custom made firmware for a router can provide you with tons of additional features and other utility benefits, however, they're more complex than vanilla firmware. From 'OpenWrt' and 'DD-WRT' to 'Tomato' and 'Chillifire', you have the freedom to choose the firmware that best suits you. Each package has its own pros and cons and special features besides the regular stuff, so it's definitely an option to consider if you want to turn your standard home router into an enterprise one! Before loading either of these third-party solutions, however, check out their compatibility with your router.



Install a firmware which offers you more than the stock to access additional features!

Your preference matters

Quality of Service (QoS) is a mechanism on the network that provides certain traffic higher priority over other traffic that is less time-sensitive. If you're a gamer, frequent user of VoIP or a heavy video streamer, you can configure your router to allow these packets to be given priority over other packets such as that of email. This ensures that the prioritised packets are delivered and received faster. If a person has QoS configured for, say, VoIP, and a VoIP packet is in the network, the IP packets carrying VoIP are marked as priority packets. All networking equipment would then be configured to honor this marking and provide priority to these packets to ensure their smooth flow.

To set up your QoS, go to your router settings, locate the QoS menu and enter the category, bandwidth limits, applications and its priority, and you're all set to go!

Many people set up QoS hoping that it will do a world of good, only to report later that it doesn't didn't help. This happens because QoS only works when the bottleneck is in the right place and the key settings are your bandwidth declarations.

Go an extra mile to cover up the dead zones

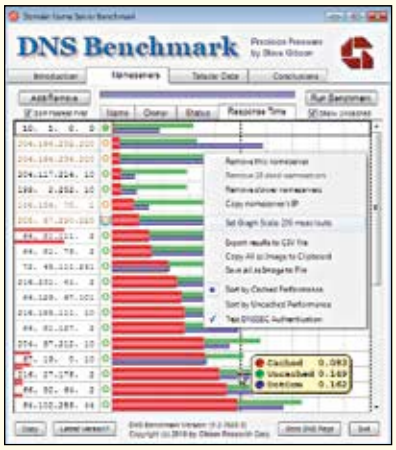
People tend to look for newer model wireless routers in hopes of wiping out the dead spots that exist in most homes. To cover up these dead zones, there are two options: increase antenna gain or boost transmitting power, but at both ends. It's very important to upgrade antennas on both interfaces, so that they operate on higher gains for you to see the speed differences. An added advantage would be support to the 5GHz band.

If your router has detachable antennas, it makes sense to upgrade to higher gain antennas with dual-band support (if it's compatible) to show you the true capacity of the router. Higher power transmission will also increase the range of the router signal's cover.

Nonetheless, if you can't upgrade the antennas right away, position your antennas correctly to cover better range. Antennas transmit signals perpendicularly, so to increase the range horizontally, keep the antennas vertical and vice versa.

Take charge of the DNS

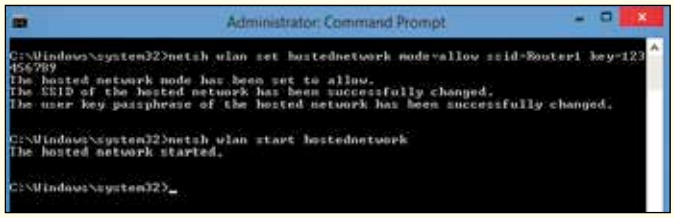
Facing long response times, connection timeouts and corrupt caches is quite common for some while browsing the internet. The DNS Name Resolution request isn't of much help in solving these issues. If not configured, we use the DNS provided by our ISPs, so why not go ahead and benchmark different public DNS servers to find the best one for you? Download the DNS Benchmark from https://www.grc.com/dns/benchmark.htm and let it scan all the DNS servers around you to show you the best options to select from. 'Google DNS', 'OpenDNS', 'ScrubIT' and 'UltraDNS' provide public DNS servers as well as additional features such as adblock, firewall, parental website controls etc. If your ISP doesn't provide a speedy DNS server, ditch its server and choose one for yourself!



Check out the closest DNS server around you to access websites faster

Create your own virtual router

Is your router giving issues? If you need to connect multiple devices over a network and your router isn't co-operating, go ahead and create your own router. A virtual router, that is. You can temporarily create a hotspot by using command prompt on Windows to turn your PC/laptop into a virtual router with its own Wi-Fi network. Connect the internet cable



Follow these simple commands to make your laptop act as a hotspot at any time!

to your ethernet port and connect to the internet. Now, open command prompt with administrator privileges and type the following command:

`netsh wlan set hostednetwork mode=allow ssid="routername" key="password"`

where "routername" (without quotes) is your network name and "password" (without quotes) is your security key.

Then, insert:

`netsh wlan start hostednetwork` in cmd to start your network.

Go to Control Panel and open up Network and Sharing Center. You should see your new virtual adapter listed there. `Click "Local Area Connection" > Properties > Navigate to "Sharing" tab > Check "Allow other network users to connect through this computer's Internet connection"`. Use the dropdown menu to select the virtual network adaptor you created earlier. Click "OK". And you're all set!

You can also type in the "netsh wlan start hostednetwork" command in Notepad and save it as a .bat file (i.e. a batch file) for further use. So next time you want to connect to this Wi-Fi network, simply right-click and select "Run as Administrator" and your virtual router will start instantly. To stop your virtual router, you can use the command "netsh wlan stop hostednetwork"

Note: First run "netsh wlan show drivers" command and check the output containing "Hosted network supported". If it says "Yes", only then will you be able to create a virtual router.

Measure your data consumption

If you're curious to know your data consumption, or you end up exceeding the cap given by your ISP and want to know which app/device is hogging the most bandwidth, there are a few recommendations. Just for a simple check, you can install 'NetWorx'. Once you set its preferences to monitor your data, it will show you a descriptive graphical representation of the data consumed. If you want advanced bandwidth monitoring and control, you might want to go ahead and flash your router. To do this, install 'Gargoyle' firmware, which should suffice. It lets you set limits, quotas and throttling speeds, thereby shining in the department of bandwidth control and monitoring.



Apply quotas on data consumption using this firmware to never surpass your intended limit!

GOOGLE NOW

Google Now, the virtual personal assistant that made its appearance back in 2012, is one of the most powerful virtual assistants today. Its improved functionaly over the years has helped users manage, search and organise everything neatly and easily on their phones. Everything from your morning alarm to your late night flight can be controlled from here. It's quite powerful if you know how to make the most out of it. Let us show you how to do this. Here's a curtailed list of the lesser known Google Now commands to optimise your productivity and ensure entertainment.

Open Google Now (Ok Google) from anywhere

Google Now isn't restricted to your homescreen alone. You can use it from anywhere within the OS. To do this, you'll need Google Now on your device. `Go to Google Settings located in your app drawer > Search & Now > Voice > "OK Google" detection > Enable "From any screen"`.

Make use of Google Now's memory

Google Now, unlike Apple Siri, keeps a record of previously searched for topics so you don't have to recall them every time you make a query. So instead of asking "Who is Larry Page?" and "What is Larry Page's birth date?", you can ask "Who is Larry Page?" and "What is his birth date?". It works flawlessly with subsequent searches, but won't work if you change the subject.



Enabling "From any screen" will open Google Now quickly

Get TV show reminders

When you ask Google Now about a TV show, you'll be presented with the relevant information along with a button that says "Remind you about new episodes?" at the bottom of the search card. Enabling this will automatically keep you posted about newly released episodes (if there are any). This also works for music artists, whose new tracks will be made known to you by Google if you choose that option.

Use more than just "OK Google"

All along you've been thinking that the only way to start Google Now is by saying "OK Google", but did you know it also responds to "OK Google Now", "Hey Google", "Listen Google" or "Google"? To enable this, you need to activate hotword detection from `Google Now menu > Settings > Voice`. We also managed to use "OK Jarvis" on Moto X.

Synchronise Google Cards with Google Now

Google Now's sophisticated algorithm can pull up each of

your Google cards on the days you have events scheduled. In addition, if you have a connecting flight via some city, the smart virtual assistant's machine learning algorithm will show you the weather in the connecting city as well.

To enable this feature, navigate to `Google Now menu > Settings > Google Now > Gmail Cards and check all the card categories that you want to synchronise.`



"Listen for a TV show" will only work if Google Now finds a TV on the same Wi-Fi network

Make Google Now your TV companion

Google Now can be used with your smart TV to tell you about what's on, find show-related information and suggest shows. To use it, your TV and your phone should be connected to the same Wi-Fi network. Google Now will automatically detect the TV that can be acknowledged by the "Listen for a TV show" button.

That being done, just say "OK Google, listen to TV". It will listen for a few seconds and launch a card with the program's basic information. It might also present you with some additional relevant information about the show, such as the key actors, star players or stadium venue.

Google Now Easter Eggs

Now for a bit of fun, try saying these to Google:
"Do a barrel roll"
"Tilt"
"Askew"
"Make me a sandwich"
"Who are you"
"Beam me up Scotty"
"What does the fox say"
"How can entropy be reversed"
"Blink HTML"

Convert units

The Google Now search engine can convert any unit you throw at it with a voice command. You can convert everything from currency and weight to distance. To do this, you can ask "Convert one dollar to rupees" or "Convert one foot to inches". Currency conversion follows the present day's exchange rates.

Use relations instead of names

Instead of names, you can designate relationships such as mom, dad, cousin and girlfriend to your contacts. If you want to place a call to your girlfriend from Google Now, just say "call my girlfriend", and Google Now will prompt you to label an existing contact as your girlfriend. After that, every time you ask to call your girlfriend Google Now will automatically call this contact.

Get sports schedules and information

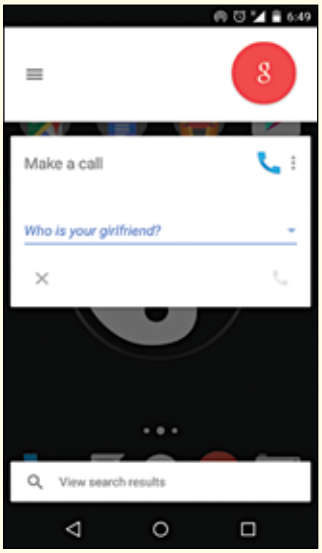
If you're a sports fanatic, keeping a record of the next match in the season doesn't necessitate installing another app. Google Now can fetch the information right from the web when you ask for it. You can ask "How have the [Nuggets] being doing?" or "When is the next [Liverpool] game?" or "Show me [Premier League] timetable", etc.

Get flight information and schedule

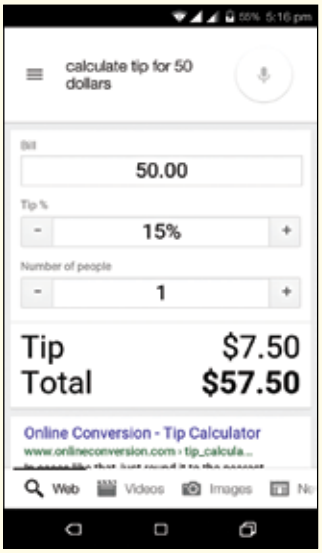
You can also get real-time flight information from Google Now. Ask "Flight [number]", "Flight status [number]", "Has Flight [number] landed?", "When will Flight [number] depart?", etc.

Calculate tips

Google Now is capable of calculating the tip to pay for your bill and brings the result up within seconds. To use this feature, ask Google Now "What is the tip for [10 dollars]?" and it will present you with a tip calculator that provides the options to set the tip percentage and number of people splitting the bill. Handy, isn't it?



Assign contact as your girlfriend.Don't worry you can change it later as well



Tips are only calculated in dollars, not rupees

Make it your map assistant

Google Now can search the maps to provide you with places and directions on the go. If you want to know about nearby places, order "Show me nearby [restaurants/hotels/hospitals]". Similarly, if you want to get directions to a place from the current location say, "Directions to [place]" or "Direct me to [the International Airport]". The distance between two places can be known within seconds by querying "How far is [place] from [place]?"

Take a selfie with Google Now

Google Now recognises "Take a selfie" command and launches the camera. However, this feature isn't burnished yet. All it does is launch the camera app. It won't take a picture on its own. Also, the camera app doesn't switch to the front-facing camera automatically. It's just another variant of the "Open camera" command.

Open any app

Google Now isn't restricted to search alone. In addition to quickly finding out things for you, it can also launch any of the apps installed on your phone. To do it, just command "Open [app name]" and the app will be opened. Example: "Open Whatsapp" will launch WhatsApp messenger.

worldview

OUR PICK OF THE BEST TECH ARTICLES FROM AROUND THE GLOBE

(MUST READS)



DESIGNER DNA

We now have the power to quickly and easily alter DNA. It could eliminate disease, solve world hunger and provide unlimited clean energy. However, remaking the world could get out of hand. This brilliant but long read from Wired is worth checking out:

http://dgit.in/dnayikes

PULLING AN ALL-NIGHTER?

Digit guys do it all the time. But removing the option of escaping the office entirely – that's what makes it heroic in Silicon Valley. Read this story involving 13 months of working, eating and sleeping at the Googleplex!

http://dgit.in/sellurcrib

HACKERS KILL A JEEP REMOTELY

At the time of writing, chances are most of you already heard about this. If you haven't a clue what we're talking about, find out how two hackers found an exploit in a car's entertainment system and remotely cut off its transmission mid highway.

http://dgit.in/jeephaxor

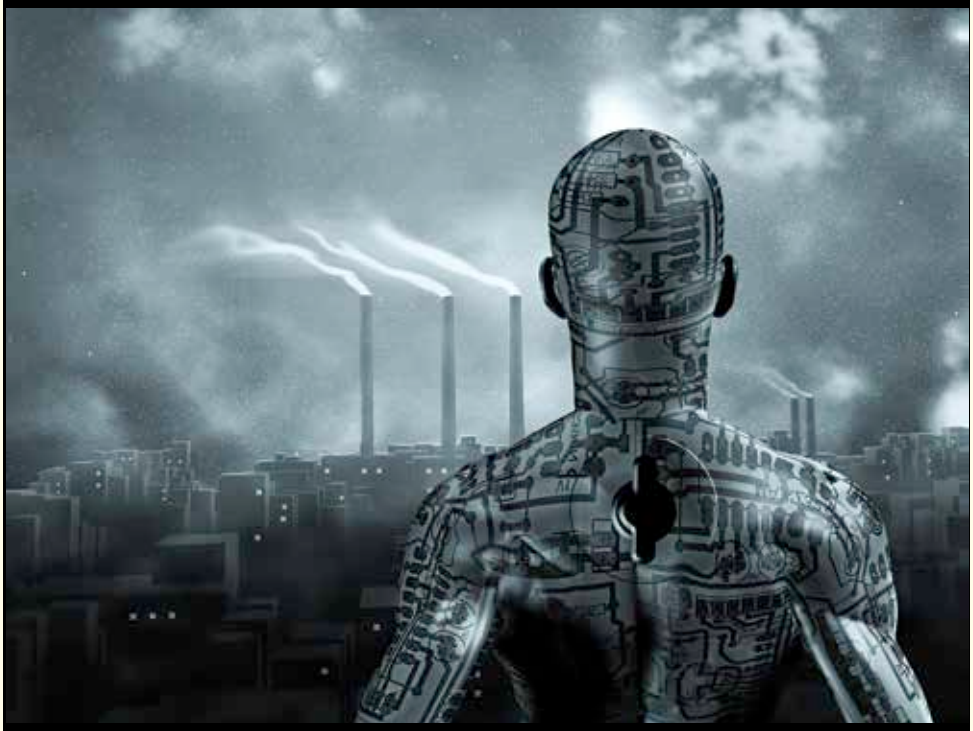
THE BIOCHEMISTRY OF A BREAKUP

When a relationship you're in ends, you're going to go a little nuts. But it's a very specific form of crazy: there are actually conflicting neural systems active inside your brain. It's like you're falling in love all over again, only in reverse. Here's how neuroscience explains it:

http://dgit.in/brianbup

[Popular Mechanics Corner]

24 SCI-FI NOVELS YOU CAN READ FOR FREE



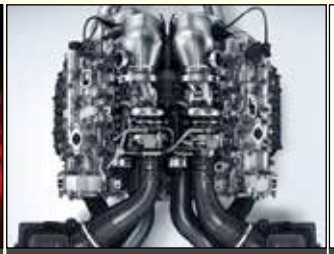
Science fiction has been around as a genre for more than 200 years. That's such a long time that many of the greatest works have fallen into the public domain. **http://dgit.in/freesci**

Interactive page



Light-Up Lexus

Meet the Lexus RC-F coupe, the world's first car that counts your pulse rate, and shows it on the door panels for the world to see. Before you point your noses up declaring "totally useless", you must know we agree but it's so effing cool! Talk about swag!
http://dgit.in/havahrt



The 10 best car engines

A car is only as good as the engine that propels it. Here are 10 purring (or roaring) beauties for you to feast your eyes on. Go ahead, marvel at the torque on these beasts, the superchargers they sport and the power they produce!
http://dgit.in/enginz



Assemble the perfect toolbox

We're geeks and like to build stuff. And to build great stuff, you need great tools. Here are 30 must have tools in your toolbox. And of course, no one wants to feel inadequate when a buddy or father-in-law asks to borrow a tool.
http://dgit.in/toolsoftrd

Interactive page

SHORTS

ALIEN HUNTERS 2.0

Russian billionaire Yuri Milner just gave the hunt for alien life a huge cash infusion of $100 million. Over the next 10 years, the new 'Breakthrough Listen' initiative will vastly expand the scope and reach of SETI (Search for Extraterrestrial Intelligence). Here's where they're planning to spend that money: http://dgit.in/wedoomed

THE WORLD'S MOST ELITE ESCAPE KEY



Around 2012, there was a certain type of Escape key that one group of people cared very much about – enough to spend hundreds of dollars to acquire one. At the height of its bubble, two of these Cherry Red Doubleshot Esc Keys were sold on GeekHack for $250 each. http://dgit.in/geekescp

DRONE SHOOTING RANGE

With so many drones buzzing around invading people's privacy it was only a matter of time before people started shooting them down. But is it legal? Strangely damaging any flying robot is a federal crime. It doesn't matter if it's crashing your pool party or watching you in your skivvies through the skylight in your master bath. http://dgit.in/droneseason

TECH AGAINST CAPITAL PUNISHMENT



Instead of killing a criminal who has committed a terrible crime, should we instead alter their brain and the way it functions to make them a better person? Here's how brain implants (and other technology) could make the death penalty obsolete. http://dgit.in/nodth

10 apps to try on your Google Cardboard

You've probably got the OnePlus Cardboard by now, or some other form of the affordable Google Cardboard. Now try these cool apps on it!

– By Team Digit

1. Google Cardboard

This is the first app you should download on your phone to experience VR. The app has demos of all aspects of virtual reality that you can experience via the cardboard. With this app you can fly out to fancy places using Google Earth and watch your videos on a big screen as if you're in a cinema hall. Try the animated *Windy Day* story, it's a must watch.

2. Vrse

'Vrse' features 360 degree stories told via VR. These videos also feature binaural sounds, making it a much more realistic experience than anything available for the Cardboard right now.

3. Orbulus

If you want to check out the world beyond the boundaries of your country, 'Orbulus' lets you look at various places in the world.

4. Fulldive

'Fulldive' is an all-in-one app for VR. It gives you access to VR videos on YouTube,





lets you use your phone's camera to take pictures and videos in VR, and the app even lets you browse the web in VR for a truly eye-popping experience, we kid you not. Just give it a try.

5. Jurrasic VR

If you always wanted to see dinosaurs up close, here's a good way of doing that. The 'Jurrasic VR' app is currently as close as you can get to the big lizards that roamed the planet millions of years ago.

6. The North Face: Climb

Another great app to experience on the Cardboard is this rock-climbing and base jumping videos app. You'll see yourself climbing the mountain in Moab, Utah alongside premier outdoor sports athletes. Quite the view from up there, trust us.

7. Roller Coaster VR

Roller coasters are fun for both, kids and adults alike, and this virtual roller coaster ride tries to bring that experience to your living room. It might not give you the exact thrill you feel while rolling down a sloped rail, but it comes close.

8. Zombie Shooter

No new gaming platform is complete without a zombie shooting game on it and so, here we are. You shoot zombies in this VR game, need we say more?

9. House of Terror VR

If you like the horror games genre, you should try it out in VR. 'House of Terror' is a good starting point. You're investigating an empty house with a back story and you can't leave without solving the mystery. Intriguing, right?

10. Sisters

'Sisters' is an immersive horror game that unfolds right in front of you. The game's binaural audio is likely to give you the chills, especially if you're someone who gets easily spooked by horror games. Try it out, and you'll have a tale to tell. Guaranteed.

Bonus: YouTube #360

And if you're still asking the question "What else?" YouTube has you covered. Just type in #360 in the search bar and you'll have hundreds of videos to watch on your Google or OnePlus Cardboard. We hope you have lots of fun with these revelations. We surely did.

Interactive page

NO MORE NEEDLES



The worst part about getting vaccinated is the shot. No matter how much of a badass you are, it's still painful and annoying. Worry no more. A group of researchers in Japan have tested a new "dissolving needle" that's basically a painless patch that you stick to your arm. And it works.
http://dgit.in/cryNomore

THE MOBILE WEB SUCKS

The Verge believes that web browsers on phones are terrible. They're an amalgamation of bad user experience, poor performance and overall disdain for the open web that kicked off the modern tech revolution. And we can't really disagree. The trouble is it's going to get worse before it gets better.
http://dgit.in/websukie

MANPOWER

If just a fraction of the caloric energy we burn every day could be siphoned, our bodies could, in theory, run any number of electronic devices – from medical implants to electronic contact lenses – all without a battery in sight. Staying alive guzzles energy, so could this be the untapped potential we've missed out on?
http://dgit.in/mbatryy

0 TO 60 IN 2.8 SECONDS



Tesla CEO, Elon Musk introduced a new "Ludicrous Mode" for the dual-motor version of the Model S in July. The upgrade costs $10,000 for new buyers and results in a 10 percent acceleration improvement from the previous model.
http://dgit.in/ludicrus

Best racing games for Android and iOS

Who doesn't love an adrenaline-driven race to the finishing line? We take a look at some of the best racing games out there today!

– By Souvik Das

SBK15

The official game of the Superbike World Championships, *SBK 15* brings you the joy of bike racing with a number of control methods, real-world characters that can be emulated and a number of racing tracks. The graphics are beautiful, and gameplay is a sheer delight. There's a paid premium version too, in which you can unlock new tracks and other add-ons.



CSR Racing

CSR brings the thrill of drag racing to your phone with over 85 licensed cars, amazing graphics and an online multiplayer mode to choose from.

Riptide GP 2

Move over asphalt-laden tracks, *Riptide GP2* will have you ripping through water in uber-cool speed jets. Perform tricks and stunts, upgrade your hydro jets to boost speed and see the water behind you form realistic ripples – an amazing treat is in store for cellphone racing gamers!

Beach Buggy Blitz

Beach Buggy Blitz brings the fantasy world into a dynamic destructive reality within cellphone racing games. Fire up your hot rod buggy and set off across beaches, secret caves and ancient temple ruins!

Real Racing 3

Real Racing 3 features a host of official licensed tracks and car models. Expect a wonderful gaming experience thanks to the number of camera views and smooth gameplay. You should, however, ensure you have ample free space on your device, because the game is graphic-intensive.

GT Racing 2

GT Racing 2 will leave you stunned with its awesome graphics! The deeply authentic reality simulation makes this game, with its large number of cars and tracks, one of the best racing games you can play!

Furious Racing

Themed on the movie *Fast & Furious 7*, *Furious Racing* gives you 'Classic', 'Countdown', 'Knockdown' and 'Drift' racing modes. Shift your gears up and transform your car into a powerhouse to get the best drift out of the neatly laid out tracks in Furious Racing.



Need For Speed: Most Wanted

There's no need for an introduction to the Need For Speed franchise. It has been one of the most played racing game series ever, and the mobile version does well to keep up with its reputation. You know how it works.

Angry Birds Go

Rovio's latest in the Angry Birds saga involves slinging the birds downhill in Piggy Island to make them race each other and cross the finishing line anyhow. *Angry Birds Go* is one of the more unconventional and thrilling racing games around.

Raging Thunder 2

Raging Thunder 2 doesn't try to impress you with stunning graphics or a close-to-reality gameplay. Instead, it takes you back to the Road Rash days with the heavy piston cars. Just try controlling a car without bumping into the sides of the track.

Motosport Manager

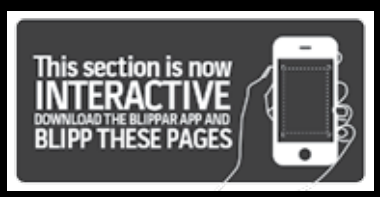
This is a novelty here. You're at the helm of your racing team, able to control everything from pit stops to selecting tyres. *Motosport Manager* gives you a complete simulation of real-world racing, with you leading the way.

STARTALK RADIO

Science meets Pop Culture on 'StarTalk' as astro-physicist and Hayden Planetarium director Neil deGrasse Tyson, his comic



co-hosts, guest celebrities and other scientists discuss astronomy, physics and everything else about life in the universe.
http://dgit.in/startalkr



To get all these links in one easy to read page, make sure you blip these pages from your smartphone.

(PRODUCT LAUNCHES)

LG G4 STYLUS



LG launched the G4 Stylus in India featuring a 5.7-inch (1280x720) IPS screen and 13MP rear camera that consists of laser auto-focus. The dual-SIM phone has 1 GB of RAM and 16 GB of internal storage.
Price: ₹24,990

MI HEADPHONES



Xiaomi has launched its Mi headphones in India as part of its anniversary celebrations. It features a 50mm diaphragm with Kevlar fibres and a Knowles MEMS microphone. The Mi headphone weighs in at only 220 grams.
Price: ₹5,499

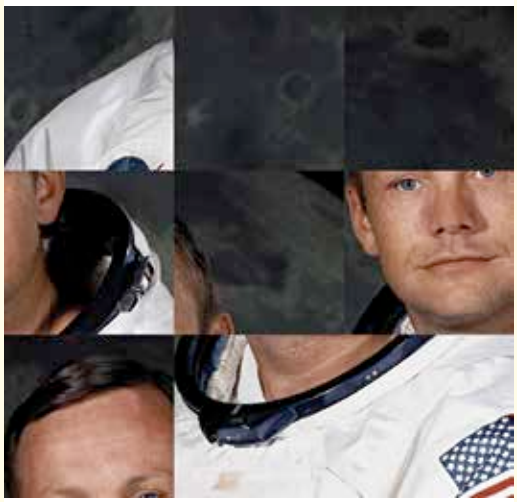
YU YUREKA PLUS



The next iteration of Yu Yureka has been launched. It comes with a 5.5-inch full-HD display and runs on Cyanogen 12 OS. It bundles a Snapdragon 615 chip with a 13MP rear and 5MP front camera.
Price: ₹9,999

PICTURE PUZZLE

ABSOLUTE TIMEPASS





Top 3 YouTube Picks

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



Aliens through the ages
Duration: 3 mins 18 seconds
Our conception of life beyond Earth has changed to reflect our hopes, fears and the technology we've mastered.
http://dgit.in/aliencinema



Unreal biking
Duration: 4 mins 01 seconds
Watching a biker careen down the side of a mountain shouldn't be relaxing, but this single-take ride is.
http://dgit.in/bikevidd



No WWW?
Duration: 6 mins 55 seconds
Ever imagined the world without the web? Stephen Fry narrates in his inimitable style:
http://dgit.in/stephfryvid

What's new in Windows 10 for developers

>>What isn't new in Windows 10 would probably make for a shorter article, but that isn't the title is it? > by Kshitij Sobti

With Windows 10, some of the biggest changes coming to Windows don't even have to do with its features and functionality, but on how those are delivered. Windows is moving towards Windows-as-a-Service, and this might just have a huge impact on how software targeting Windows is developed and delivered in the future.

The first impact is that Windows once installed on a device will continue to update to the latest version of Windows for the rest of the life of that device. For those running Home versions of Windows 10, these updates are even automatic and mandatory. Even for 'Pro' users the only control they have is to switch to a slower release cycle and even that should update every 8 months or so.

Combine that with a free upgrade to Windows 10 for any computer running Windows 7 and above – which is any computer from the past five years. For a software developer this means that targeting the latest version of Windows (and only the latest version of Windows) is now a whole lot more feasible. Currently targeting Windows can be somewhat of a mess. If you want to reach all Windows users, you need to target Windows XP, Windows 7 and Windows 8.1. However, these three operating systems couldn't differ more in their design sensibilities. Windows XP with its blue bubbly UI, Windows 7 and its glassy aero look and Windows 8.x's 'Modern' UI.

With Windows constantly updated with new features, and no major releases every few years for users to pay for and install, developers can more reasonably expect the majority market share to be at the release. Will things really work out as well? Only time will tell, but there is more reason to expect this then there was before.

The changes under the hood are as no less massive. There are sweeping changes to Windows as a platform that can really simplify developing Windows apps and that is the new Windows Core.

Windows Core

Windows Core is Microsoft essentially realising that they own the most popular operating system in the world, and that they should probably use it in more places. In the past Microsoft's different platforms have had rather different APIs and even different kernels.

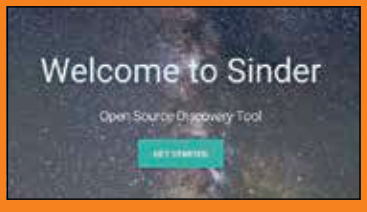
*Open Source



***IBM open sources 30 projects, plans 50**

>>The open source projects cover a vast domain over Analytics, Cloud IoT, Mobile, Security, Social, Watson and others.

http://dgit.in/IBMOpenSrc



***Open source project discovery using Sinder**

>>Sinder is a simple open source project discovery tool that links to your Github account, so that you can choose the right project.

http://dgit.in/SinderApp



***NSA released its Linux-based InfoSec tool**

>>Releasing one of their cyber security tools, the NSA wants government departments and private sector to beef up their security.

http://dgit.in/NSAInfoSec



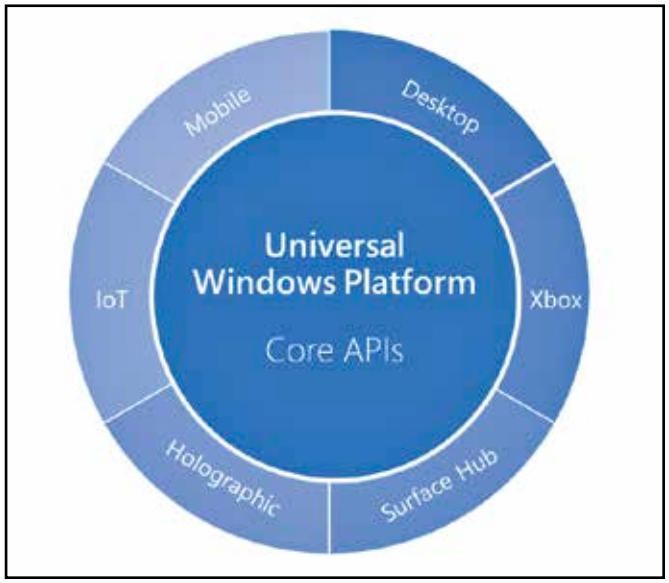
Universal Windows Apps can run on any Windows platform and use techniques such as adaptive UIs to run on different form factors and with different kinds of interactions patterns.

Before Windows 8, the mobile, desktop and the Xbox's OS stacks were very different. Windows for desktops used the Windows NT kernel, phones used the CE kernel and the Xbox used its own special kernel. Windows Phone 8 finally switched to the NT kernel making it a lot similar to Windows for desktops. Xbox One further converged these platforms by switching to the same kernel as Windows 8.

The application platforms and APIs above the kernel level were of course still quite different across platforms. While converging these kernels might have made things easier for Microsoft, it didn't benefit other developers as much.

With Windows 10 comes a true convergence of all devices to the same Windows kernel, 'universal hardware drivers', and 'standard network and I/O'. This in essence is what Windows Core is.

Not only has Windows Core expanded to all devices that already supported Windows, but the breadth of devices that support Windows has also expanded. For instance, other than PCs, tablets, and phones, the Xbox One will also soon update to use the Window 10 core, it is already available for the Raspberry Pi 2, and of course Microsoft's new HoloLens also runs Windows 10 core.



The new model for Windows APIs tries to as many APIs in common as possible. The only APIs missing should be those that are of no value on other platforms.

Consolidation and convergence are huge themes with Windows 10. After unifying the Windows core across platforms Microsoft has also unified the development SDKs across platforms into what they call the Universal Windows Platform (UWP).

Universal Windows Platform

UWP is a layer of APIs that are guaranteed by Microsoft to be available on any device that is running Windows, whether it be a mobile phone, a PC, the Xbox, an embedded device like the Raspberry Pi or even a device that hasn't been released yet.

There are still platform-specific features, that can be layered on top of the UWP via extension SDKs. These SDKs extend the feature set of Windows for a particular family of devices. For example, the mobile family of Windows might power phones and phablets, while the desktop family on Windows will power tablets, laptops and desktops. They both have their own extension SDKs that can be used to implement platform-specific features. Microsoft estimates though that over 85% of Windows APIs are available universally.

The same application can now support multiple device families more easily, not just by using only the common UWP APIs, but by detecting and using only the features available on that platform. There is now an API to check for the presence / absence of platform-specific features and APIs.

This is different from earlier versions when such checks could only be performed at compile time in order to build different binaries for different platforms. Now runtime checks allow developers to have the same application code adapt to mobile or desktop.

Consider that Windows 10 now makes it possible to have a phone power a full desktop experience if docked to a station that has a larger screen, a keyboard and mouse. Of course this will need a very powerful phone, and might not be feasible today, but the possibility of such a thing is eminent. Microsoft's new modular approach means that the OS for such a phone could simply be a composition of the

Universal Windows Platform with Mobile and Desktop extensions.

With such future devices it will be important for applications to adapt at runtime from a mobile form factor, to a desktop form factor, to even a television form factor. For this Microsoft has provided new adaptive UI elements that can work across form factors. Developers can also embrace the principles of responsive design for desktop applications – already a popular approach for web apps.

Universal Windows Platform Bridges

It's quite a mouthful, but these bridges – as we will refer to them as for brevity – are toolkits designed to make it easier for developers to bring their existing Android, iOS, Web, and even old Windows apps and development experience to Windows 10 and to sell such apps on the Windows store.

These bridging technologies are: Project Astoria for Android, Project Islandwood for iOS, Project Westminster for web applications, and Project Centennial for 'Classic Windows apps'.

Microsoft has yet to fully explain how these work, however they claim at least for Android that existing applications will need few code changes. For cases where your application uses Google services Microsoft has an interoperability layer that can map those functions to Microsoft's technologies. For instance, it has API mappings for Ads, Analytics, In-app purchases and Notifications. With minimal code changes it can make your code automatically use Bing Maps on Windows while using Google Maps on Android.

These bridges also give developers access to Windows features such as Live tiles while still being able to target competing platforms. In fact, you can even target Windows Phone using your IDE on an OS X system.

Essentially this means Android developers can continue to code in Java, iOS developers can continue to code in Objective-C (they plan to support Swift as well), web developers can continue to code in web technologies and Windows developers used to older technologies can still continue to use them. And they can still have their application running on Windows platforms and sold on the Windows store.

It's already possible to start using their compatibility layer for web applications, which allows you to have websites present as native apps in native windows. Developers can sign up for access to the other compatibility layers while they are still in development.

A Consolidated and Enriched Store

Gone are the platform-specific stores, with Windows 10 there is a single store for all platforms running Windows, from the Raspberry Pi to the Xbox. The same store now also offers other kinds of media such as music, and videos. For developers this also means there is now a single place to submit apps to, and the possibility of submitting a single package that can run on all platforms. The Windows store is also no longer restricted in the way it was in Windows 8. It can now support traditional Win32 applications through the compatibility layer mentioned above.

To keep users secure, apps installed from the Windows store, are sandboxed from each other and can only talk to each other though APIs designed for the purpose. One app cannot interact with another apps' settings or private data, and in fact gets its own private virtual registry. This makes it harder for malware to do anything too damaging while also making it possible to quickly and consistently uninstall apps in a way that gets rid of all their data.

The features of this unified app store have also been enhanced with the ability to offer apps on a subscription model, and to have per-market pricing. The platform is now smart enough to share libraries between different applications if they use the same version, thus reducing disk space and download sizes.

There are also interesting implications of the new constantly updating model of Windows. New updates to Windows 10 can bring new platform features and APIs, however any updates to these APIs are versioned. So when developing an application, you can specify the range of versions of Windows that your application supports and the device families it supports (desktop, mobile, holographic, IoT etc.). If your app runs on the oldest version of the API and uses only UWP it should run on all platforms and devices; although in practicality such apps will be few.

This is quite similar to Android's way of doing things where you can select the oldest version of Android you want to target, and that will lock you to the subset of APIs that that device supports. Another similarity with Android is the support for universal binaries. Just like it's possible to have a single Android apk that runs on any Android device be it a mobile, tablet or TV, it is now possible to have single Windows binary that that can run on any platform that supports Windows, even if that platform didn't even exist when you compiled it!

Another treat for those developing for the Windows store is the ability to hide apps pushed to the store so they can only be accessed if you know the URL. Windows Store will also soon be available as a website that people can browse and buy apps from.

Other Bits and Bobs

.NET Native: For performance conscious .NET application developers, there is some good news,

*pointers

>>Interesting developer news



*Visual Studio 2015 Keynote

>>Watch an overview on how to get started with using Visual Studio 2015, .NET 4.6 and Visual Studio Online.

http://dgit.in/VisStudio2015



*Intel's IoT Developer Kit

>>This video gives you an introduction to Intel's IoT Developer Kit for Intel Galileo and Intel Edison boards.

http://dgit.in/IoTDevKit



*Working on Chrome Developer Tools

>>Watch this short video series on using the Chrome Developer Tools by phpacademy.

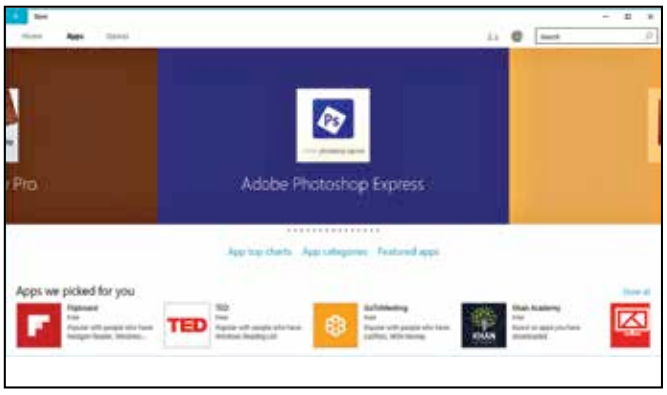
http://dgit.in/ChrmDevTools



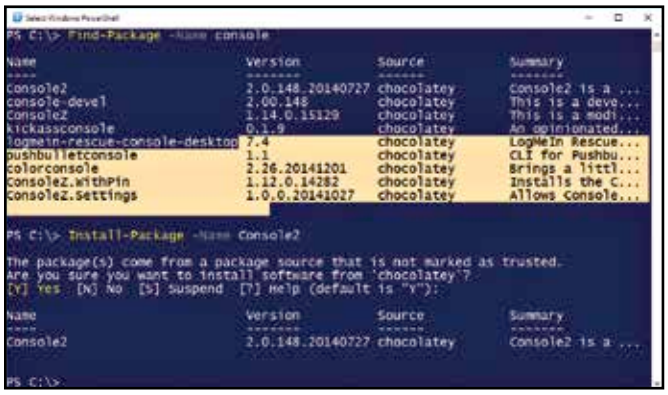
*Google's Deep Dream Project

>>This video tells you what Google's Deep Dream is all about and how it works.

http://dgit.in/DeepDream



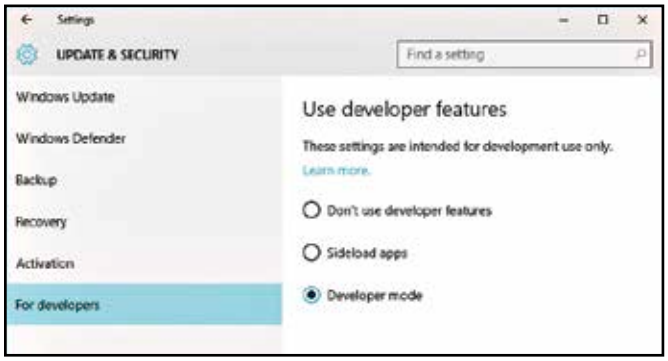
The Windows 10 store now offers Apps, Music and Videos though a single storefront. Of course we wouldn't know because only Apps are available in India.



Here you can see the new Find-Package and Install-Package commands in action in the new Windows 10 console. Also you can see the new line-by-line selection feature in action. How efficient of us.



Microsoft is dreaming big, and aiming to reach a billion devices over the next 2-3 years. Cross-platform brides are one of their efforts to enable that.



No need for obscure registry hacks or shady patcher, Windows 10 can sideload apps or be put in to developer mode though the control panel.

now .NET applications can be compiled to native machine code. Performance isn't even the only advantage of .NET Native, unlike previous .NET applications that needed to have the .NET Framework used by the app installed on the end-user's machine, compiled applications are self-contained and can ship with the bits of .NET that they need to run. This means you can use the latest version of .NET without worrying about packaging the huge .NET installer with your app.

OneGet: If you've used Linux you'll notice that the ease of getting and installing applications on it is unparalleled. If you want a package available for your OS, installing it is just an 'apt-get', 'zypper', 'yum', or 'pacman' command away. Windows 10 ships with a similar tool called OneGet (which can be installed on previous Windows versions as well). With OneGet you get PowerShell commands such as 'Find-Package' for searching for packages to install, and 'Install-Package' to install them. It automatically downloads the package and extracts / installs it while creating a convenient launch script. It uses the popular community-run Chocolatey service and package in for most of the work and acts as a sort for meta-package-manager that can be extended with support for other installers / package managers.

Console Improvements: Microsoft's cmd.exe command shell is quite, quite bad, and hasn't improved much in a long time.

Finally, with Windows 10 Microsoft has put in some work to make the experience of using 'cmd.exe' better.

First of all, finally you can resize the console window just like any other window by dragging the edges. What's more this will automatically cause text to wrap if possible. Another great addition is the ability to easily select text in a console window without needing to access a submenu of the window menu to go into mark mode. Selecting text in the console window now works like every other window that lists text, i.e. text is selected line-by-line rather that whatever comes inside the rectangle you draw on screen. You can also do this with usual keyboard shortcuts, just press the shift and cursor keys to extend your selection and use Ctrl-C to copy and Ctrl-V to paste.

The console is now also HiDPI aware and as such won't need a magnifying glass to view on such screens. Also, you can now make the console window semi-transparent just like them people do on their Linuxes!

Conclusion

The road to a converged Windows hasn't been without its bumps –with one of those major bumps being the massively ill-thought Windows 8 – and Windows 10 is still fresh. There are surely bumps yet to come as Microsoft seems to be trying everything new all at once. It is unlikely that the Windows 10 launch will be without niggles, but Microsoft does seem to have at least some measures in place to alleviate those issues.

We have peer-to-peer downloading of updates to reduce the burden and increase performance of frequent update downloads; the promise of frequent updates in the first place to get not only fixes, but also new features out quicker. Of course there is Windows Insider, Microsoft's constant pool of beta-testers using the future versions of their OS and giving feedback. With such massive changes to the Windows ecosystem, how the chips fall will only become clear perhaps a decade from now when we can compare where Windows 10 is (or whatever it's called by then) compared to now, and compared to 10 years ago when Windows XP was still the latest Microsoft OS. >

Bazaar

THE LATEST PRODUCTS REVIEWED FOR YOU

The Digit Test Centre receives hundreds of products every month. Each of these products is put through a series of tests and is finally given a score. The final score is arrived at after considering a number of factors and evaluating them in terms of features, performance, value for money, build quality, and, in the case of software, even ease of use.

For better understanding of our ratings, here's a quick guide to our overall score

- 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!



INSIDE


Page **82** ▶ Gigabyte BRIX GB-BXBT-2807


◀ Page **84** Lenovo IdeaPad YOGA 500


Page **85** ▶ Intel Compute Stick


▲ Page **87** D-Link DIR-890L AC3200


▲ Page **88** ZOTAC GeForce GTX 980 Ti AMP! Extreme


▲ Page **91** Canon SX400IS

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Gigabyte BRIX GB-BXBT-2807

An economical barebones mini-PC



SFF computers are getting really popular these days and Gigabyte has had their BRIX series selling in the International markets for quite some time. They've only recently decided to do the same in the Indian markets. So the BRIX series has by now matured quite a lot and there are an umpteen number of SKUs to choose from. The Gigabyte GB-BXBT-2807 is one of the entry-level SKUs with an Intel Celeron N2807 powering it. Also, it doesn't come with a RAM module or HDD installed.

The Gigabyte BRIX GB-BXBT-2807 features a fanless design since the Celeron N2807 only has a TDP of 4.3 W.

The body is mostly made of metal and plastic with the internal chassis also being constructed out of metal. The device isn't that big but it towers over the Liva X and this can be attributed to the fact that the GB-BXBT-2807 allows you to install a 2.5-inch HDD and not an M.2 slot like the Liva. There is, however, a mini-PCIe slot which comes pre-installed with a Wi-Fi/Bluetooth 4.0 expansion card. Gigabyte includes a VESA mounting kit with the BRIX so you can hook it up to your monitor if it has 75mm or 100mm VESA mounts.

The N2807 isn't a beefy processor and given the fact that it has to run in a fanless environment they are designed to keep temperatures in check. It can easily handle day-to-day browsing and light gaming though it wasn't designed to cater to gamers in the first place.

At the end of the day, the Gigabyte BRIX GB-BXBT-2807 is an economical mini-PC ideal for office productivity suites, basic home use and everyday browsing.

Mithun Mohandas



Performance.....73
Features.....70
Build.....77

Specifications

CPU: Intel Celeron N2807 up to 2.17GHz; **Memory support:** 1x1333MHz DDRL upto 8GB; **LAN:** Intel Gigabit Ethernet; **Audio:** ALC283; **Display Ports:** VGA, HDMI, I/O - 1x USB 3.0, 2x USB 2.0, 3.5 mm I/O; **Dimensions (LxWxD):** 56.1 mm x 107.6 mm x 114.4 mm; **Warranty:** 3 years.

Contact

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Cubetek AirMobi iPlay2

A byproduct of convergence with room for improvement



Given that devices are slowly encompassing functions that they ordinarily don't or if you'd like to use the buzzword, "convergence" is happening and the AirMobi iPlay2 is the byproduct of this movement. At its core, it happens to be a wireless router with WDS bridging support so it can act as a repeater as well. The AirMobi iPlay2 would have made for a good accompaniment for when you're travelling had it supported 3G USB dongles as well.

The device is built well and happens to be lightweight. Routers are known to heat up and this AirMobi iPlay2 has ventilation holes all along the sides so heating isn't an issue if you have a well regulated power supply. AirMobi does come out with plenty of apps on the Android Play Store for the music streaming feature but the apps ask for way too many permissions given the type of services rendered through the app. Moreover, the app was crashing on opening, so testing out the music streaming feature wasn't possible. To add to your woes there are multiple apps which look the same and even are named in a similar fashion so mistakenly using an incompatible app with the device is quite probable.

When it comes to features that one would expect from a household router, the AirMobi does fall short and shouldn't be considered as a full time replacement. Setting the device up is quite simple and switching between different modes is also a breeze making this ideal for environments like hotel rooms and convention halls to setup a personal access point provided you have access to the internet via Ethernet.

Mithun Mohandas



Performance.....53
Features.....66
Build.....70

Specifications

Wi-Fi: 802.11n 300 Mbps; **I/O:** USB 2.0; **Ethernet:** 10/100 Mbit, 3.5 mm Audio jack, WDS Briding; **Dimensions (LxWxD):** 38.5 mm x 90 mm x 78 mm; **Warranty:** 1 year

Contact

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NVIDIA GeForce GTX 980 Ti

Better value than the TITAN X

With news of AMD's latest GPU offerings nearing launch, NVIDIA was quick to slip the GeForce GTX 980 Ti past the finish line. A worthy addition to the Maxwell family, the GTX 980 Ti sits comfortably between the GTX TITAN X on one side and the GTX 980 on the other. Priced at ₹54,000, the GTX 980 Ti seems to be a lot more expensive than the 980 and a lot cheaper than the TITAN X which launched with a price tag of ₹85,099.



What's new?

This behemoth is based on the GM200 GPU, the same that powers the TITAN X with a few sections of the die being lasered out. So instead of 24 Maxwell Streaming Multiprocessors, the 980 Ti gets 22 which is still way greater than the 16 SMMs that the GTX 980 gets to play with. So compared to the TITAN X, it loses out on a few TMUs and CUDA cores while retaining the same amount of ROPs. Also, another benefit that the 980 Ti has since it's made using GM200 is that it gets the same amount of memory bandwidth, a full 384-bit wide bus. The GTX 980 Ti has access to 6 GB of VRAM which is clocked at 1753 MHz. We've seen board-partners come up with SKUs that crank this up all the way to 1805 MHz to squeeze a lot more performance from these cards. NVIDIA did not do anything else to the GM200 other than knocking down the two SMMs, so the 980 Ti is similar to the TITAN X across a lot of parameters. So you might as well expect performance numbers to drop by a small margin but whether the price difference would be worth this meagre drop is the actual question.

Build

There isn't much to say about the GTX 980 Ti in terms of build when looking at a stock card. For starters, it needs a little more power so there's one 8-pin socket clubbed with a 6-pin PCIe power socket. This arrangement is the same as the GTX TITAN X while the GTX 980 has two 6-pin power connectors. The TDP of the GTX 980 Ti is 250W and it retains the same build as the TITAN X, so at peak load the card should generate a little less heat than the GTX TITAN X. One change that was seen with the TITAN X props up again and that's the missing backplate. It was a nice addition to the GTX 980 but we can see why a reference card might want to do away with all the fancy additions.

Performance

This time around we couldn't manage to snag a 4K monitor in time for the review so all benchmarks were run at Full HD and 2K resolutions and then were repeated after a round of overclocking on air. Needless to say, being a reference card that gets sent out to reviewers, this one was a wonderful overclocker. We managed to take it all the way up to 1239 MHz which is quite an impressive feat given that some board-partners charge a hefty premium for doing the same and slapping on a better cooler. The overclock remained stable even at 2K resolution, though we wonder if it would stand its ground at 4K since we'd already started seeing temperatures of 87 degrees celsius at peak loads. It is quite likely that we might have to crank it down quite a bit to avoid triggering the card's thermal throttling mechanism.

The card managed to churn out 140 FPS at 2K resolution in Bioshock Infinite and post overclock, this rose to 160 which is a 14% improvement. The same can be said for OpenCL benchmarks which indicated similar levels of improvement. AMD's R9 290X is the fastest single-GPU card from the competition that we've tested and the GTX 980 Ti simply blows it out of the water. The R9 295X2, however, continues to maintain its lead but it's a dual-GPU card and a lot more expensive than the GTX 980 Ti.

It's quite evident from the numbers that the 980 Ti's performance is remarkably close to that of the TITAN X and that brings to mind the question we'd posed earlier, about the 980 Ti and TITAN X in terms of performance. We'd say that it makes little sense to go in for a GTX TITAN X given the extra ₹20,000 doesn't translate well in terms of performance. Rather, you might want to spend a lot less and get a slightly overclocked GTX 980 Ti from any of the board partners.

Mithun Mohandas



Performance..... 84
Value 75
Build 60

Specifications

Chipset: GM200; **Base clock:** 1000MHz; **Memory clock: 1753MHz; Stream processors: 2816; Texture Units:** 176; **ROPs:** 96; **Manufacturing process:** 28nm, PCIe 3.0, 5120 x 3200 digital resolution support, 6 GB Memory; **DirectX support:** 12; **OpenGL support:** 4.5; **Power Connectors:** 8Pin + 6Pin; **TDP:** 250W; **Warranty:** 3 years

Contact

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Touch to transact
Axis Bank account holders can now make transactions using Apple's Touch ID using the Axis Bank iOS app on the iPhone 5s and above

iMobile updated
ICICI Bank's mobile banking app iMobile now has over 100 services, claiming to offer more services from any other Indian bank.

Lenovo IdeaPad YOGA 500

A hit and miss hybrid story



61

Features 51
Performance..... 62
Design 63
Value 68

Specifications

Screen: 14-inch glossy LED, 1366x768 res; **CPU:** 2.2 GHz Intel Core i5-5200U; **RAM:** 4GB; **HDD:** 500GB; **OS:** 64-bit Windows 8.1; **Connectivity:** USB 2.0 x 1, USB 3.0 x 2, HDMI, Gigabit Ethernet, SD Card slot; **Webcam:** Yes; **Touchscreen:** Yes; **Wireless:** Wi-Fi 802.11ac, Bluetooth 4.0; **Weight:** 2 kg

Contact

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The hybrid era is well and truly underway. In the latest chapter of the convergence story of laptops and tablets, we find brands experimenting with form factors. The Lenovo YOGA 500 is one such experiment.

Lenovo's YOGA line of hybrid notebooks needs no introduction to be honest. Right from the inaugural YOGA 13 launched in 2012 to every iteration since, every single YOGA laptop has gone through our grinder. And when Lenovo sent us this 14-inch YOGA 500, we raised more than one eyebrow.

Straight-out-of-the-box, the Lenovo YOGA hybrid notebook looks pleasing to the eye and feels tightly packed together. The notebook feels more playful than premium, aimed at consumers of all kinds. The two parts of this hybrid laptop are held together by a solid metal hinge, which lets the screen lid and bottom panel rotate up to 360 degrees without feeling anxious or fearful – the build quality exudes a lot of confidence. However, its design – especially the frame – poses some challenges while handling the notebook in tablet mode. Where 10-11 inch tablets are convenient, 12-13 inch onwards you start feeling the intimidating size, and past 13-inches the hybrid in tablet mode just starts feeling too big to operate on comfortably – which is exactly what happens with the Lenovo YOGA 500. Having said that, it weighs just about 2 kg, which is pretty good as far as portability goes.



The unit's touch response is great, its viewing angles are good, too. At 185.1 cd/m2, the YOGA 500's screen brightness is mediocre at best, but its contrast ratio at 420:1 is definitely very good – the best we've seen in notebooks at this price point. However, in terms of performance, it's not very good – its CPU score is good, but its battery life of 201 minutes is lesser than many budget notebooks that are a lot more inexpensive than the YOGA 500. Both in tablet and notebook mode, the YOGA 500 performs well in terms of multimedia – whether it's watching a movie or listening to music, where its onboard speakers don't disappoint. Temperature-wise, it doesn't get uncomfortably hot on the YOGA 500's bottom panel while you use it in anyone of its several usage modes.

As far as the YOGA 500's features go, it's all pretty much a standard fare here. You get what you'd expect any self-respecting laptop to have, apart from one thing: just a paltry 500GB hard drive doesn't really cut it for a hybrid notebook selling over 60k. The lack of a discrete GPU also affects the YOGA's graphics performance, another inexcusable sin at this price. But as ever, no complaints from the YOGA 500's keyboard or touchpad – two aspects of a notebook that are Lenovo's traditional strengths. The keyboard is great to type on, and the touchpad is fine to use, too.

As a notebook, the YOGA 500 offers great usability and build quality, but inadequate hardware which contributes to its low performance. As a tablet, it offers a large touchscreen panel to use and play with, but one that's difficult to use practically with one hand for too long. Overall, the combination isn't readily palatable given its 60k price tag, and therefore difficult to recommend. Buy the YOGA 500 with better specs (which Lenovo offers) or buy the smaller YOGA 300 if you want a nice hybrid notebook. But not this.

Jayesh Shinde

Canon IXUS 170IS

A competent compact camera



Performance..... 75
Features..... 70
Build..... 65
Value for money..... 80

Specifications

Sensor: 20MP; **Image processor:** DIGIC 4+; **Lens:** 25-300mm (35mm equivalent) @ f/3.6 = f/7.0; **Shutter speed:** 1/2000 – 15sec; **ISO:** 100-800; **IS:** Lens-shift IS

Contact

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Featuring 12x optical zoom and a 20MP sensor and harnessing the processing power of DIGIC 4+, the IXUS 170 IS from Canon seems to offer a lot on paper. But does it deliver? We think it does.



Price ₹10,000

The image quality is, as expected of a cheap P-n-S camera, it's only decent in good light and anything above ISO 100 starts to get noticeably noisy. That said, most images that you do capture are quite decent with good colour rendition and tonality. A problem with most P-n-S cameras is the slow focusing, but thankfully, that doesn't seem to be an issue with the 170IS.

The camera is a little light on features with only a limited assortment of scene modes (quite useful when you use a camera with limited or nonexistent manual control), but the 2.2fps burst mode and 12x optical zoom, coupled with a very capable IS system more than make up for that shortcoming. Speaking of IS, it's quite effective even when shooting at full zoom and as with the SX400IS, handheld videos at full zoom are quite stable and usable. In fact, videos that we shot while walking continuously turned out to be remarkably stable.

The biggest disappointment with this camera has to be the LCD display. The 2,30,000 dot screen just doesn't cut it when it comes to reviewing images and the pixel density is so low that it's even hard to make out whether the image is in focus or not, let alone trying to check for colour accuracy and dynamic range (a light blue sky looks white on the LCD). All said and done, this is a nice point-n-shoot camera that will serve as a worthy alternative to your smartphone.

Anirudh Regidi

Intel Compute Stick

Just a proof of concept. For now...



Features..... 55
Build Quality..... 75
Performance..... 63
Value for money..... 70

Specifications

Model: STCK1A32WFC; **OS:** Windows 8.1 32-bit (Win 10 upgradeable after release); **Processor:** Intel Atom Z3735F @1.33GHz; **RAM:** 2GB DDR3L @1333 MHz; **Storage:** Built-in 32GB eMMC, Expandable using the Micro SDXC v3.0 slot; **Graphics:** Intel HD Graphics; **Connectivity:** 1 x HDMI 1.4a, 1 x USB 2.0, Bluetooth 4.0, 802.11bgn

Contact

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Launched at CES 2015, Intel's idea of a HDMI based plastic stick not much larger than a flash drive featuring a quad core Atom processor with 2GB RAM and built-in Windows 8.1 is quite innovative. Everything that you need from a small PC at a mere price of 10k? Ideally, a PC this size can be used to do loads of stuff like web browsing, regular office work, HD video playback, playing casual games on a big screen and more. At least that's what they were gunning for. But, here is the hard truth about it, when you look at it closely, you'll notice that not everything is as rosy as it seems. First up, the lone USB port that too v2.0 is a major shortcoming, in this day and age not including a v3.0 port isn't a wise decision. Also, the stick needs to be powered separately which is a necessity in this case. One good thing is that Windows 8.1 works well but you need patience to use most of your daily software as it takes some time to load stuff. Open a few more tabs on the browser or more than two to three applications and you'll see it crawl. Storage space perennially runs low.



Price ₹9,999

It scored 6393 in 3D Mark Ice Storm Extreme, while we saw a PC Mark 8 conventional work score of 1689 which is nothing exceptional. We sometimes even saw it stutter when playing 1080p videos on Youtube or even locally. Conclusively, we're all in for the idea since it puts a PC in someone's pocket for under 10k and there is space for improvement. The cooling fan is quite audible and a thicker heatsink might have been sufficient. We wonder what the next version will bring.

Siddhant Sharma



Keep your stuff locked up
Here's a reason why you should protect even your most unimportant data:
http://dgit.in/bsafer



More power, more money
US plans on providing its people more solar power and more employment in solar industry. **http://dgit.in/solarUS**

Sony Xperia Z3+

Always runs hot, falls quite short of expectations



Price ₹55,990

When the processor that is the Snapdragon 810 is just one of the issues with your smartphone, you've got problems. The heating issues on the Sony Xperia Z3+ are apparent even when you're just dialing numbers. The best example of this is Sony's camera app, which keeps crashing because the phone is too hot. This becomes even more apparent when you try shooting videos in 4K. On a regular day's usage, the phone starts heating up even when it is kept idle but with somewhat heavy background activity.

The state of the processor also affects the battery life of the smartphone. While Sony claimed that the phone has "best in class" battery life, it really isn't anywhere close to its competitors. If you try hard enough, you may be able to get this phone to last for about 10 hours, but that's about it. If you don't use the power saver modes and prevent gaming completely, the battery on the Sony Xperia Z3+ lasts for at best six hours, which for a flagship, is really bad.

Apart from the performance, the camera is usually one of the main features of Sony's flagships. While the 20.7 MP shooter on the Xperia Z3+ is good, it is still largely the same as it was before. Sony has made some changes in terms of the algorithm behind the camera, but these changes don't amount to much of a visible difference in quality. Heck, there is no visible difference here when you compare it to the likes of the Xperia Z3 or even LG's new flagship – the LG G4 as the camera on the Z3+ fails to even surpass the other two behemoths. The camera is also really slow by today's standards as it takes a longer time than the competition to snap. Of course, none of these really matter since every time you try to use the camera for extended periods, the camera app will crash suddenly when you need it the most leaving you scratchin your head in frustration.

The Xperia Z3+ also looks the same as its predecessor. Don't get us wrong, if you liked Sony's older flagship designs, you'll most likely love this one too. And the Xperia Z3+ is a good looking and premium device, with its glass back and metal frame, but none of that changes the fact that there is barely any difference in how it looks. The only visible difference in the looks here is that the Xperia Z3 had a slightly flattened frame, while the Xperia Z3+ has a rounded metal frame on its side. Other than that, everything else in the overall design department is ditto like the Xperia Z3.

There's also the new capless USB that Sony had first showcased in the Xperia M4 Aqua smartphone. While the company has to be commended for the achievement, it really makes no difference since there is still a flap for the SD card etc. Yes, there's one less broken flap to deal with potentially, but you still may have to deal with that.

To give credit where it's due, props to Sony for the beautiful display on the Xperia Z3+. On paper, a FullHD 5.2 inch display sounds nothing against the QHD monsters in the market today, but in a display comparison against its flagship competitors, in the Samsung Galaxy S6, HTC One M9+ and LG G4, we found the Xperia Z3+ to be one of the best. The display shows a wider colour gamut than both the Samsung Galaxy S6 and HTC One M9+, coming up only slightly behind the LG G4 in that respect.

The display alone is not enough to recommend this smartphone though. While the Sony Xperia Z3 was snagged our Zero1 Awards last year, the Xperia Z3+ is arguably the worst out of the flagship smartphones launched this year. Sony now needs to rethink how it plans to go about launching flagships. They have done so well with that respect in the past that they can follow the same idea of releasing an all-rounded product that just works. If you have a Xperia Z3, stick to it, because this is no upgrade. If you absolutely want a flagship phone, you can pick anything but this one.

Prasid Banerjee



Features 80
Performance 60
Design 80
Value 51

Specifications

Display: 5.2inch 1080p; **Processor:** Qualcomm Snapdragon 810 octa-core 64-bit; **Battery:** 2930 mAh; **Camera:** 20.7MP rear, 5.1MP front; **Storage:** 32GB, expandable to 128GB; **RAM:** 3GB

Contact

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Canon IXUS 160

Built to a price

64

Performance..... 65
Features..... 65
Build..... 65
Value for money..... 60

Specifications

Sensor: 20MP; **Image processor:** DIGIC 4+; **Lens:** 28-224mm (35mm equivalent); **Shutter speed:** 1/2000 – 15sec; **IS:** Digital

Contact

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A toned down version of the IXUS 170 IS, the IXUS 160 offers the same 20MP sensor and DIGIC 4+ processor as the 170, but drops the 12x zoom lens and optical image stabilisation in favour of an 8x lens and digital IS in the name of price.



Price ₹7000

The image quality is at par with IXUS 170 IS, meaning that this is a camera that's only meant for use in well-lit environments. Similar to the IXUS 170, despite the 20MP sensor, the camera isn't really capable of capturing enough detail to enable you to crop the images by much.

Low-light performance is quite terrible and ISOs above 100 start to show noise in any light. Though we will add that there is a low light mode present which restricts image sizes to 5MP, that claims to minimise noise at high-ISOs and in our testing, there was a marginal improvement in quality at high ISOs.

The lack of optical IS really hurts the camera here because not only does IS stabilise a shot at long zoom and minimize shake, it also helps lengthen the exposure time and thus, image quality. Digital IS really is a poor substitute for the real thing.

The IXUS 160's performance is, sadly, very typical of a camera in this price range and while it does offer slightly faster focusing than its rivals, a camera like Nikon's S3700 offers much more at the same price range (optical IS, Wi-Fi, NFC, etc.), it's very hard to recommend this camera over the latter.

Anirudh Regidi

D-Link DIR-890L AC3200 Wi-Fi Router

The aliens have landed

82

Performance..... 90
Value..... 70
Build..... 85

Specifications

Wireless LAN Chip: Broadcom BCM43602; **Memory:** 128 MB; **Protocols:** 802.11ac; **Bandwidth:** 3200(1300@5GHz+1300@5GHz+600@2.4GHz) Mbps; **Ethernet:** 4x LAN, 1x WAN, GbE Ports; **Warranty:** 3 years

Contact

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High bandwidth routers may be a niche market but when you're going to be spending tens of thousands of rupees for a router you might as well get one that has all the bells and whistles. The DIR-890L is D-Link's flagship router and has three bands instead of two that you'd normally find with flagships. This is achieved by having two 5 GHz bands of 1300 Mbps bandwidth and the third band on the trusty old 2.4 GHz band with 600 Mbps bandwidth. While a home might not end up being a common use case scenario for such a beast of a router, there are a few who might disagree. The router truly looks premium as if it were from out of this world. The six antennae can easily be oriented to accomodate a lot of clients with ease.



Price ₹19,500 (+Tax)

The user interface of the router has been dumbed down to the extent that anyone can easily make heads and tails of it. It really feels a lot more convenient with each option page having a brief description about what all the options do. There have been some reports of issues with the firmware though, for example, uploading an old configuration file will still leave out the password from being updated. We see this to be more of a feature than a drawback since you might be resetting the router for that very reason. The router performs wonderfully and as of now is the only AC3200 router that we've had the pleasure of testing. The Smart Connect feature is a much needed addition given that it handles clients properly so as to avoid cramping the entire band's performance for other clients.

Mithun Mohandas



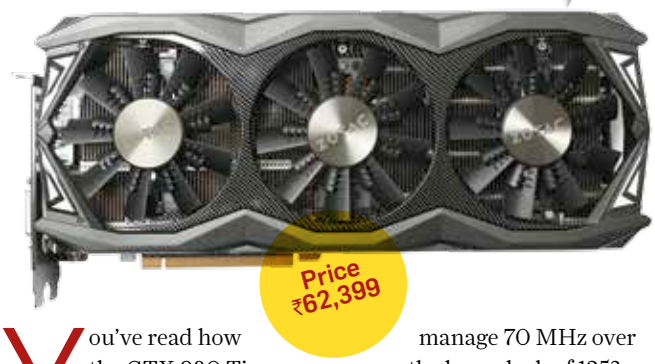
Strawberry tongue
Know more about the mystery that is Kawasaki disease. Read about it here **http://dgit.in/kawasakimyst**



Logitech makeover
Logitech has decided to get a makeover and add more colour to its devices to please the younger crowd. Read more: **http://dgit.in/logtchmkovr**

ZOTAC GeForce GTX 980 Ti AMP! Extreme

The fastest GTX 980 Ti that you can buy

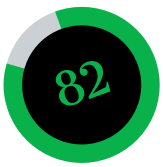


You've read how the GTX 980 Ti makes for a far better choice compared to the TITAN X so here's a better card that's clocked 253 MHz higher than the stock card. So we decided to see if we could push the envelope a little further and we could only manage 70 MHz over the base clock of 1253 MHz but we couldn't push the memory clock by a significant amount and thus we weren't able to gain more FPS.

When it comes to build quality, the AMP! Extreme does have a few changes, for starters Light.Id has been taken out but there are light accents on the sides and the cooling fans now have twice the number of fins. This was achieved by elevating segments at the base of each fin to channel additional flow towards the aluminium fins. The 980 AMP! Extreme was designed for a lower TDP of 165 W and the 980 Ti is designed for 250 W but the temperatures for both are within the same range. Which means the newer cooling mechanism is indeed better.

For a price of ₹62,399, the ZOTAC GeForce GTX 980 Ti makes for a much better SKU than most of the competition owing to the fact that it is not only faster than the rest but also has a much better body design than the stock card.

Mithun Mohandas



Performance.....90
Value.....75
Build.....82

Specifications

Chipset: GM200; **Base clock:** 1000MHz; **Memory clock:** 1753MHz; **Stream processors:** 2816; **Texture Units:** 176; **ROPs:** 96; **Manufacturing process:** 28nm, PCIe 3.0, 5120 x 3200 digital resolution support, 6 GB Memory; **DirectX support:** 12; **OpenGL support:** 4.5; **Power Connectors:** 8Pin + 6Pin; **TDP:** 250W; **Warranty:** 3 years

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Netgear Arlo Smart Home Security System

Convenience at a price



Home security systems that are well-rounded don't come for cheap so between making compromises, you need a system that can tick most of the boxes without breaking through the ceiling in terms of cost. The Netgear Arlo VMS3230 is one such system where you get a base station and two cameras with different subscription plans mandating the number of additional cameras that you can hook up to the base station. Setting up is quite simple and the cameras are completely wireless with a battery life of about 6 months based on their testing conditions.

We found that the time period between motion detection kicking in and the actual video recording commencing was too high. Moreover, there aren't different levels of subscriptions for the Indian market so you're stuck with just 1 GB of cloud storage. Also, we noticed a significant lag between an action happening and the same being displayed on your screen which lead us to believe that the servers storing the data might be quite far off. The transition between daylight recording and night time recording using the inbuilt IR LED array is quite seamless. Arlo uploads directly to its servers so having an always on internet connection is a must and that makes the system vulnerable to outages. The cameras are weather sealed and have a decent range, moreover they can record 720p video. Each additional camera will set you back for ₹9,900 and you'll need to get a better subscription plan since your 1 GB of storage will no longer be sufficient. Just eight hours of operation would eat up 45 MB or so per day per camera set at 80 percent sensitivity.

Mithun Mohandas



Performance.....61
Value.....70
Build.....84

Specifications

Model: VMS3230; **Cameras included:** 2; **Wi-Fi:** 802.11n; **Range:** 300 ft; **IR LED Wavelength:** 850 nm; **Field of View:** 135 degrees; **Batteries:** 4x CR123

Contact

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Website: www.in.netgear.com



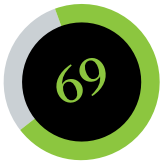
True messenger
Love True Caller? Here's an app by the same makers that does the same thing except with SMSs
http://dgit.in/truesmsid



Floating torch
Barzil presents it's olympics torch, pieces of which seems to float when it is lit and creates patterns to represent Brazil's natural wonders. Read more: **http://dgit.in/olmpc2016**

InFocus M530

Smooth Operator



Features 72
Performance..... 85
Design 59
Value 64

Specifications

Display: 5.5-inch HD; **Processor:** 2 GHz MediaTek MT6595; **RAM:** 2 GB; **Storage:** 16 GB, expandable to 32 GB; **Camera:** 13 MP rear, 13 MP front; **Battery:** 3100 mAh

Contact

INFOCUS INDIA
Phone: 0124 4066055
Email: NA
Website: www.infocusphone.com/in/

At its launch, InFocus claimed that the M530 had enough firepower to outperform smartphones of higher price brackets, and rightfully so. It features a MediaTek MT6595 octa-core processor running at 2 GHz, with 2 GB RAM and PowerVR 6200 GPU.

At 176 gm, the InFocus M530 is a bulky device that contributes little to ergonomics. The 9.1 mm frame houses a 5.5-inch 720p display, which lacks sharpness and the colours are rather dull. The brushed metal band around the sides along with the matte plastic back fails to give a premium feel to it. The device, however, is sturdy.

Performance-wise, the M530 ran games like Real Racing 3 and Call of Duty: Heroes without a stutter, and multitasking was a breeze. Regular messaging, calling and browsing face no glitches. The 13 MP primary camera with HDR and OIS produces intricately-detailed photographs, which is the USP of this phone. The shutter response, however, is sluggish in HDR mode. The front camera, too, has a 13 MP sensor, and both the cameras perform fairly well in low light.



Price ₹10,999

It comes loaded with Android v4.4 underneath InLife UI, which requires much refinement. Additionally, there is 16 GB ROM and an expandable memory slot, so storage isn't really an issue. The 3100 mAh battery easily lasts an entire day.

If you like large displays, and want a phone that performs really well along with a stellar camera, the InFocus M530 is possibly one of the best buys in its segment.

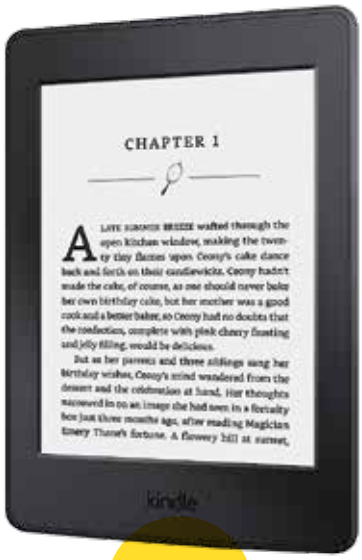
Souvik Das

Amazon New Kindle Paperwhite (2015)

The best Kindle to buy

You could say upgrading a Kindle doesn't make sense, but the New Kindle Paperwhite might be an exception. What Amazon has done here is that it has brought the features of the Kindle Voyage (it's highest end Kindle) to the more affordable Paperwhite. The display is sharper and the device is more responsive. Like the Kindle Voyage, the paperwhite's keyboard responds fast too.

With a sharper and denser display, you get better readability, even if it's just a slight improvement. Amazon has introduced some new typefaces, which you may or may not like, but that's a matter of personal opinion. If you do then you'd be glad to know that a lot of books are already compatible with the device.

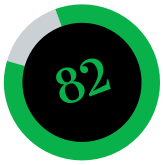


Price ₹10,999

All of this though, affects the battery life. The device, which earlier used to easily go on for a month, can last for about three weeks at best now, with light reading. With heavier usage, the device runs for two weeks on a single charge. In addition, the New Paperwhite is still unwieldy compared to the Voyage.

Planning to buy a Kindle? This one is definitely the best choice right now, especially considering that Amazon kept the price same as before. If you have the older Paperwhite though, it would be a good idea to hold on to it for now. In fact, we wonder if it'll cannibalise the sales of the Kindle Voyage.

Prasid Banerjee



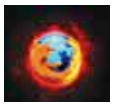
Design 70
Readability 90
Battery..... 80
Value 88

Specifications

Display: 6-inch Paperwhite; **Resolution:** 300ppi; **Size:** 169x117x9.1 mm; **Weight:** 205 gram; **Cloud Storage:** Free cloud storage for all Amazon content; **WiFi:** Yes (3G version also available); **Backlight:** Yes

Contact

Amazon India
Website: www.amazon.in



Fox on fire. Back in the game.
In an attempt to gain back its lost users and developers, great changes are being made in Firefox. **http://dgit.in/chngedfox**



These kids
What will make teenagers less impatient? Brain connectivity **http://dgit.in/tngdrama**

Gigabyte GA-Z97X-UD3H-BK

A well-rounded Z97 motherboard



Price ₹16,000

Motherboards are often given the least priority when it comes to coming up with a new configuration but if your work depends on your rig then you might want to give motherboards a little extra thought. And with reliability being a concern you'd be better off with boards like the Gigabyte GA-Z97X-UD3H-BK which boasts of 168-hour sever level durability test coupled with a 5-year warranty period.

It's been awhile since we saw PCI slots make an appearance on motherboards and the GA-Z97X-UD3H-BK is one of those boards. Like many ATX boards now-a-days even this board makes use of the Realtek ALC 1150 for sound along with separate layers for left and right channels. However, there isn't any EMI shielding for the chip itself. The heatsinks are not high and cover the VRM chips while providing ample amount of clearance for the chokes and subsequently makes way for large CPU coolers.

This isn't a full-ATX board in terms of physical dimensions. Ordinarily, ATX boards are 305 x 244 mm but the GA-Z97X-UD3H-BK is 305 x 225 mm. This two centimetre reduction isn't much when you think of all the real estate that goes to waste on motherboards. However, the fallout of this reduction is that the mounting screws on the right edge of the board are no longer present. This does affect the rigidity of the motherboard overall and you might need to be a little careful while yanking out the 24-pin ATX power cable from the board.

Overall, the Gigabyte GA-Z97X-UD3H-BK makes for a good choice if you want all the features of the Z97 chipset along with server level durability.

Mithun Mohandas



Features 65
Build 80

Specifications

Chipset: Intel Z97; **Memory support:** 4x3100(OC) MHz upto 32GB; **LAN:** Intel Gigabit Ethernet; **Audio:** ALC1150 7.1; **SATA:** 6x SATA III; **Expansion:** 3x PCIe X16(x16+x8+x4); **Dimensions (LxWxD):** 305 mm x 225 mm; **Warranty:** 5 years

Contact

Gigabyte Technology Pvt. Ltd.
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Email: sales@gigabyte.in,
Website: http://www.gigabyte.in

Seagate Seven

The iPhone of portable hard drives



Price ₹9,500

It's been quite a while since we've seen a hard drive ever come in packaging like the Seagate Seven. If it weren't for the full-sized images emblazoned across the packaging, you'd be forgiven for assuming that the packaging belonged to some premium smartphone. Well, it isn't a phone but it certainly does look and feel premium. The Seagate Seven is the slimmest portable hard drive that we've come across. Prior to this device, the slimmest we'd seen was the ADATA HE720 which in itself was 8.9mm thick. The drive comes ensconced in thick foam along with the USB 3.0 cable, which again is enclosed by a thick cardboard box.

The drive itself maintains a very clean look with no elements that look out of place. The body seems to be constructed out of fairly thick stainless steel which is a necessity in this case since the body hugs the internal drive very closely and having an rigid internal chassis isn't feasible.

The Seagate Seven houses a Seagate Laptop Ultrathin HDD which is 5 mm thick. Speaking of which, the Laptop Ultrathin HDD has performance figures which are comparable to most 5400 RPM drives out there. So on the performance front there isn't a compromise on speed in lieu for the really slim form factor. In our tests, we saw sequential read speeds averaging out at 112.5 MBps and sequential write speeds of 110.3 MBps and with smaller file sizes having a long queue depth the transfer speeds dropped down to about 40 MBps.

The Seagate Seven comes loaded with Seagate Dashboard which brings most of the features that the drive sports. And as of June 2015, Seagate Dashboard gives the user 200 GB of Cloud Storage which is a lot more than the paltry amount that used to ship with every other drive till now. And for the premium look and feel you do end up shelling out a lot more than you'd normally have to for a 500 GB portable hard drive, a good ₹9,500.

Mithun Mohandas



Performance 59
Features 85

Specifications

Model: STDZ500400; **Capacity:** 500 GB; **Interface:** USB 3.0; **Colour:** Nude Metal; **RPM:** 5400; **Dimensions:** 122.5 x 82 x 7 mm; **Weight:** 198 gm; **Warranty:** 3 Years

Contact

Fortune Marketing
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Email: sales@fortune-it.com,
Website: www.seagate.com

Canon SX400IS

A decent superzoom



Performance..... 70
Features..... 75
Build..... 70
Value for money..... 85

Specifications

Sensor: 16 MP; **Image processor:** DIGIC 4+; **Lens:** 24-720 mm (35 mm equivalent) @ f/3.4 = f/8.0; **Shutter speed:** 1/1600 – 15 sec; **ISO:** 100-1600

Contact

Canon India Pvt. Ltd.
Phone: 1-800-180-3366
Email: dgit.in/19plzCn
Website: www.canon.co.in

As an entry-level ultrazoom camera, the Canon SX400IS is surprisingly effective for its price. For a sub-15k camera, the SX400 IS, offering 30x zoom, a 16 MP sensor and 720p video recording. We've used and tested a great many superzooms over the years, but most are usually rendered useless by the excessive amount of camera shake that comes through, owing to the very zoom that sets those cameras apart. Thankfully, the SX400IS takes care of that issue with a very capable lens-shift IS system that allowed us to even handheld video out to 30x zoom, which is quite a feat for a camera at this price range.



Price ₹11000

The image quality from this camera was also quite good, in bright lighting and the camera did showcase a decent amount of dynamic range, capturing details in the sky and shade quite well. At full zoom, some of the images did tend to look a little bit washed out, but not too much.

One major problem with the camera is the 3" LCD which does a terrible job of displaying colours and contrast and it was so bad, that when initially reviewing images on that display, we thought the camera itself was awful. The rest of the camera isn't so bad.

In terms of features, you get the standard slew of scene modes and assorted white balance, macro, timer, etc. options; nothing to write home about.

All things considered, this is a very decent superzoom camera at this price and you'll be hard-pressed to find a more suitable alternative.

Anirudh Regidi

LG G4

A worthy upgrade to the G3 with a few kinks



Features..... 84
Design..... 74
Performance..... 72
Value..... 53

Specifications

Display: 5.5 inch QHD; **Processor:** 1.7GHz Qualcomm Snapdragon 808 hexa-core; **Camera:** 16MP laser autofocus on the back, 8MP on the front; **Internal Storage:** 32GB; **RAM:** 3GB; **Battery:** 3,000 mAh

Contact

LG India
Phone: 1800-180-9999
Email: Contact Us Form
Website: www.lg/com/in

On the face of it, the LG G4 seems like a formidable flagship, but in reality, it is nowhere close to what we've come to expect from LG. Let's start with the build and design, an area where LG has excelled up until now. The leather back on the LG G4 scratches too easily and our unit was already blackened at the edges when we got it. Moreover, the back feels plasticky, as does the rest of the smartphone, making it far less premium as compared to its competitors. The device is also big and unwieldy, which is really surprising after the near perfect design of the LG G3.

The good part about the G4 are its display and camera. The 16 MP laser autofocus camera is amongst the fastest and it takes really accurate images. It's better than the Samsung Galaxy S6 in terms of white balance and colour compensation under various light conditions. The same can also be said about the display.



Price ₹51,000

In terms of performance, the fact remains that the Snapdragon 808 is closer in terms of performance to the Snapdragon 805 than Samsung's new Exynos 7 Octa processor. While the G4 will work fine for regular activities, if you're a gamer, you'll be disappointed by this flagship device.

The same can also be said about the battery, which lasts about half a day with the screen on full brightness and regular usage.

Prasid Banerjee



No way to stop
Uninstalling Google Photos wont stop your phone from uploading your pictures to your account. Read more: **http://dgit.in/gglphotos**



Mail a tree, and get a reply
Melbourne gave email addresses to trees in 2013. But where are the conversations heading these days? Read more: **http://dgit.in/mailatree**



HITTING THE RIGHT NOTES

Everyone's spoilt for choice when it comes to online music streaming destinations. We take a look at the major players and figure out what makes them tick.

Prasid Banerjee
prasid.banerjee@digit.in

Have you seen the number of streaming services have been popping up recently? Apps like Gaana, Saavn, Guvera and many others have been boasting of user base numbering in the millions. And Apple's entry into the world of music streaming has of course, drawn a lot of attention. You could argue that DRM is a deal breaker, but there's no denying that music streaming services are here to stay.

If you're a regular Digit reader, chances are, you're already subscribed to one or more services. A lot of you fall under the 'early adopters' tag, getting in on the ground floor with music streaming services.

If you are one of those people though, you're probably wondering which streaming service you should go for. And as always, we're here to help. Here's a month of work with the best known streaming services crammed into four measly pages.

Apple Music

Let's start with what every cool kid in town is talking about. Apple Music is frankly the reason why this article is being published when it is. It is also the reason why many of us have suddenly taken an interest in learning about streaming services. It has what Uncle Ben

would call 'great power' and with it comes 'great responsibility'.

Apple Music in a lot of ways is living up to the hype too. Its Beats 1 Radio is a feature that no other streaming service in this list has. Of course, most of them wouldn't have the budget to pull off something like this either. That said, Beats 1 is anything but tailored to India. In addition, even if you listen to a lot of western music, Beats 1 in our experience, seemed fixated on certain genres, especially hip-hop.

What Apple must really be commended for is its library of both Indian and international music. While it has almost every western track that you can search for, its Indian library is not as big as iTunes' is.

Another strength that Apple Music has is its curation engine. It has stations based on moods, activities and what you listen to. And they're all really well done. The real problem though is the app itself. For one, Apple isn't ready with its Android app yet, which means a major portion of the Indian population can't use it on their phones. In addition, iTunes on Windows (which is where you can get Apple Music on Windows) is arguably one of the worst ways to play music that we've ever encountered.

Even the iOS app has its share of issues. While it's a good looking app



Beats 1, not yet out on Android

and runs smooth, the Apple Music app also has too much happening at once. Discovery isn't the easiest here, while it is even more difficult on Windows. Moreover, the social @connect part of the app, though it is another Apple Music-only feature, doesn't really accomplish much. Yes you can follow your favourite artists, but is that really a big incentive for a music app? We don't think so.

Apple Music allows streaming and downloading at 256 kbps though, which means there is no questioning the audio quality that you'll be listening to. You may have a problem with the fact that Apple doesn't allow free streaming. After the initial trial period of three months, you'll have to pay ₹120 per month for the individual plan, or ₹190 per month for the family plan (six accounts).

Rdio

Rdio is one of Apple Music's biggest international competitors. It is also one of the veterans in the streaming industry. Rdio realised last year that it has to tap the huge market that India presents and proceeded to take over Indian streaming service Dhingaana. As a result, Rdio has a commendable collection of Indian music. Commendable mind you, while Rdio has visibly made the effort to add as many Indian songs to its collection as it can, it still doesn't match up to the India-first streaming services that come ahead.

Rdio's strength though is in its western collection. Like Apple Music, the collection of western music that Rdio presents is vast, making it really difficult to find songs that it doesn't have. Some international tracks that Rdio doesn't have, are hard to find in most other streaming services as well.

Rdio also has a social element to it, which the company has always maintained is the differentiating factor for it. It allows you to follow your friends within the app, and uses data from yours and your friends' playlists to improve curation. This gives Rdio a real edge in terms of curation and it is really good at what it does. This element though is a double edged sword, since you wouldn't be able to take full advantage of Rdio's algorithms if your friends don't have the app.

How We Listened

Since we've been using these streaming services for a while now, we were fairly familiar with most of them. So to compare them, we tried out the same music on every streaming service, checking for who has what and how big their own playlists are.

Another aspect of the collection that is really important is the quality of curation. Remember, all these apps call themselves 'Internet radios', which means they want you to listen to the songs that their algorithms find for you. If that is the case, then their algorithm should be good enough to recognise your tastes and suggest the right tracks for you shouldn't it? The same also applies to discovery, because the algorithm is also meant to help you discover new music.
We also examined the music quality on each of the apps, which is another area that they just can't take lightly. Yes, 320 kbps is not what you always need, but a minimum threshold of 192 kbps should be maintained, while 256 kbps should be enough, even for the audiophiles amongst us.

That automatically brings to light another question though. There's no getting over the fact that 3G connectivity in India is still not what it should be. So, is it really possible to stream 192 kbps all the time? The answer is a resounding no, but what we can confirm is that the situation isn't as bad as most people think it is. So, we tried streaming on these apps, on 3G, WiFi and as a pressure test, even on 2G connections. The goal was to find out who can stream longer over these connections and who dropped the ball the fastest.

The availability of the app is of course something that's important. You wouldn't like it if your friend is using an app on his Android phone, while your iPhone doesn't have it would you? More importantly though, the quality of the app was taken into consideration. How easy or difficult is it to manoeuvre your way around it and find music. After all, UI can either make or break a service.

The apps taken into consideration in this comparison were – Apple Music, Rdio, Gaana, Saavn, Wynk, Hungama and Guvera Music. Together, they make for the most popular and best known streaming services today. While some of them will see their way through to the future, some may find themselves down in the dumps. Wouldn't you want to be on the one that doesn't keel over?



High hopes
ISRO plans on 30 launches in the next three years. Read more about its reusable launch vehicle here:
http://dgit.in/30launchesisro

Facebook goes feminist
After the logo, Facebook redesigns its icons to be with the times. Read more:
http://dgit.in/fbnewupdt



Rdio

The biggest problem with Rdio is with its Android app. For one, the app seems designed for the more powerful phones, overlooking phones with weaker SoCs. Although the company says it is working on this aspect, for now, Rdio's app has issues. The app tends to crash often, but the bigger problem is some of Rdio's enforced restrictions that you can do nothing about. While it allows streaming at upto 320 kbps over both mobile data and WiFi, Rdio stops playing at the first sign of signal troubles. In addition, if you've run over your FUP and your WiFi is slow, Rdio will also have trouble downloading tracks, sometimes just skipping the process of its own accord. Rdio even has skips from time to time, especially when you lock your phone.

The good thing about the Rdio app is that it's simple. It doesn't try to do too much, focussing on what is important, that is, a good looking app that is simple to navigate. It also allows gapless playback, where it caches the next song while the first one finishes.

With a price tag of ₹120 per month for Rdio Unlimited, which allows unlimited streaming and downloads, it's competitive. In addition, Rdio also has Rdio Select, which costs ₹60 and allows unlimited ad-free streaming on mobile and 25 downloads, which can be refreshed every day. In its free subscription, Rdio plays ads after every track.

Gaana

The Indian music streaming service Gaana has possibly been spending the most money amongst all of these on marketing itself. The name Gaana is very well known amongst Indian music listeners, and with the backing from Times Music, the service has come out all guns blazing. Gaana has a modern and very good looking UI, with almost all the sections of the app being accessible right on the home screen. In addition, the 'Now Playing' bar is almost exactly the same as Rdio, and looks very good. In addition, while Gaana also has a social connect with Facebook, it doesn't seem to use this for curation.

Incidentally, curation and a western library are where Gaana fails. While its Indian library is simply amazing, with not many songs missing, it's western library seems limited to popular or classic tracks.

Gaana can also be subscribed to at ₹99 per month through operator payments which makes it cheaper than both Rdio and Apple Music.



Gaana

Saavn

Gaana's chief competitor in India is Saavn, which, like its compatriot, gets the app right. Saavn is a good looking app like Gaana, but it has two main pitfalls. One, the quality of curation in Saavn is not great, compared to any other app on the list. In addition, the highest quality that the service gives you is of 128 kbps, which is nothing compared to the 320/256 kbps limits that Gaana, Rdio and Apple Music have. Saavn is also more expensive, costing ₹220 per month for 5 devices and unlimited downloads and ₹110 per month for a single device, with download limits of 3 GB. For us, the real deal breaker here is that Saavn puts a download limit even after charging for a Pro subscription that is almost as much as its competitors.

Saavn's western library though seems to be a tad better than what Gaana presents, but it's not big enough to really make a difference. Both Gaana and Saavn seem to be tailored to Indian music.



Saavn

Guvera Music

When you first open the Android app for Guvera Music, you may very well be put off by the number of ads that it has. If you keep to it though, it really is quite good. The app seems to be telling users not to subscribe to it, but listen for free with ads playing in between. Why do we say so? Well, for one, subscription to Guvera is

Name	Cost	Availability	Max. Music Quality
Apple Music	₹120/month individual subscription, ₹190/month family plan with 6 accounts.	iOS and Desktop	256 kbps
Rdio	₹119/month individual subscription, ₹178/month family plan with 4 accounts, ₹60/month Rdio Select	Android, iOS, Windows Phone and Desktop	320 kbps
Gaana	₹123.99/month, operator and PayTM Wallet plans also available	Android, iOS, Windows Phone and Desktop	320/256 kbps
Saavn	₹110/month for 1 device with 3GB downloads, ₹220/month for 5 devices with unlimited downloads	Android, iOS and Desktop	128 kbps
Guvera Music	₹199/month unlimited downloads and streaming	Android, iOS and Desktop	64 kbps
Wynk	₹99/month for non-Airtel users, ₹29/month for Airtel users.	Android and iOS	320/256 kbps
Hungama	Rs. 110/month for unlimited downloads, operator and a-la-carte plans also available	Android, iOS and Desktop	320/256 kbps

the most expensive, costing Rs. 199 per month. More importantly though, it's the way the app works.

The Guvera Music app is designed in a way that it caches music when you play it. This means that playing a track for the second time will not need data. Essentially, Guvera is allowing you to download tracks even when you're on the free plan. See what we mean? The app is targeted at users who will stream for free, with the message being the same as it is when you're watching television – 'deal with the ads if you want to save money'.

The reason we found Guvera to be a pleasant surprise though is its collection. Not only does the app look nice on the web, Guvera's collection is really formidable, for both Indian and international music. Comparing our collection from Rdio on Guvera, we found one song by Peete Seeger that was missing on Guvera.

The deal breaker for us with Guvera was that it doesn't allow streaming over 64kbps, irrespective of the kind of connection you have.



Guvera

Wynk

Airtel's Wynk music could easily have been one of the top contenders if it wasn't designed primarily for the telecom service provider's own huge user base. On a different service provider, Wynk Music will allow you to stream only 100 songs per month, while costing ₹99 per month for downloading. Airtel users on the other hand can download for ₹29 per month and listen to unlimited free songs.

It's a major bummer, since Wynk's collection of both Indian and western is actually quite good, but if you're an avid music listener, you'll probably blast through 100 tracks in a day or two. Remember though, that Wynk is completely ad free, so the limits are somewhat more justified than Saavn's 3GB after paying ₹110. Wynk's app may not be the best looking amongst all of these, but its still simple enough. Airtel has put almost everything you need on the home screen itself, to ensure that you start listening the minute you enter the app. The Indian collection gives Gaana and Saavn a run for their money, while the western collection isn't up there with Rdio and the gang.

What you need to know about streaming services

- Streaming music services pay artists on a 'per stream' basis, meaning, each time you play a song by a particular artist, they're paid based on the duration you played for. Especially in India, most of the rights are held by record labels, meaning a streaming service pays the label or aggregator, which then pays the artist. In many cases, there is a payment pool that is created, and payouts are based on the percentage of share a record label has in that pool.
- All of these streaming services, except Apple Music and Wynk, are ad supported, which means that unless you're subscribing to them, their means of revenues are through the ads that play between songs. In a country like India, where Internet connections are unstable, these ads inhibit the streaming experience to an extent, but it isn't crippling.
- Streaming music does incur data charges, but the data usage also isn't as significant as many think. Having used streaming services as our main source of music for almost a month, with over an hour of streaming almost every day, at 192 kbps or above, we have noted that about 1.5 GB of data is used per month. While this is a fairly large number for many, if you're on Wi-Fi for most of your day, you can easily stream music.
- Many or most streaming services don't allow songs to be saved on the SD card. The reason for this is that internal storage is faster, but more importantly, because the apps are not given permission to access the SD card. Amongst the ones mentioned here, Rdio allows saving to SD card, but it can be a difficult endeavour.



Wynk

Hungama

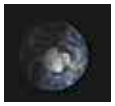
If you had used Hungama last year, you would know how serious the company is about streaming music. The app recently received a total UI overhaul, looking much better than before. It is still not at par with any of the other apps on this list though. The app still seems sloppy and just doesn't look inviting compared to its competitors. It got stuck at loading a few times and crashed unexpectedly too. Hungama also needs to work on its web app and give it a good UI overhaul as well.

In addition, Hungama's focus is on Indian music, with a seriously limited collection of international tracks. If you listen to a lot of western music, then you should definitely stay away from this one.

Hungama's ₹110 per month subscription is competitively priced. There are also daily operator billing plans at starting at ₹5, while weekly billing can be opted for at ₹30 as well. Hungama also gives a-la-carte options for downloading. The app's main strength though is in the fact that it is available in multiple languages, apart from Hindi and English.

And the best service is?

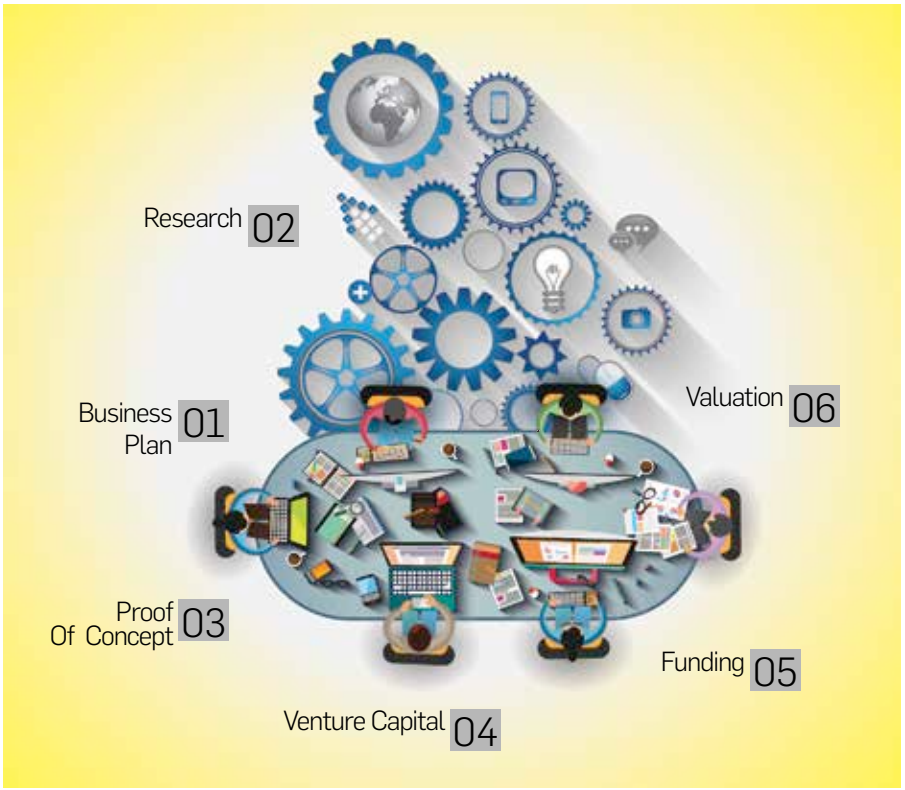
None of these streaming apps, including Apple Music, are perfect right now. Still, considering the fact that Apple Music isn't on Android, we'd recommend **Rdio** to users who listen to a lot of international music and want a really good looking, simple and easy to use app. However, if you're looking for more Indian music, with a decent collection of western tracks, Gaana seems to be the right choice.



Every asteroid isn't a threat
Relax. Asteroid 2015 HM10 WILL NOT destroy earth. You have nothing to worry about.
http://dgit.in/safe2015HM10

From idea to implementation

We tell you about everything from business plans and vision statements to pitching and VCs, from market research to valuations. Basically, all that you'll ever need to know about taking your startup from the mere seed of an idea to stellar success



By Sanket Nikte
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We're pretty sure last month's cover story inspired you like Leonidas inspired his 300 to defy all odds and charge through the hills. While you didn't slay any Persians (we hope), you probably put on your thinking cap last month and came up with that one startup idea to rule them all. An idea that will dramatically alter the world as we know it. An idea so big even Zuckerberg will sit up and take notice!

But hold on, let's not book that Ferrari just yet. An idea is just the starting point. Strap in...the ride has just begun.

Create a stellar business plan

Formulate a sound strategy and vision statement

As Sam Altman of Y Combinator says, "Good execution is 100 times more important than a good idea and more difficult". The first step to good execution is a well documented business plan. Most founders, however, especially the geeks, spend more time on product development than on a strategy. Unless you've designed a product like the Tesla car or Twitter, you'll need to have a sound strategy in place (no disrespect to Elon Musk and Tesla, they do have a great strategy).

Since a business plan is considered as a blueprint to your success, it can be a daunting task. A mind map tool like 'Mindmeister.com' can help you get your thoughts in order and eventually hash them out into a cohesive plan. An important point to note is that there will be several iterations of the plan as you progress.

There are several components of a good business plan. A good vision statement is crucial. Everybody – your investor, employee and consumer – gets behind something that's larger than life, something that includes and inspires them. It should encompass a dream, a solution. Chew on Amazon's mission statement: "Our vision is to be earth's most customer centric company; to build a place where people can come to find and discover anything they might want to buy online."

Coming back to formulating a strategy, you need to remember that the devil is in the details. Talk about your product in depth. As you hash it out, you'll discover some of the important points you missed and redundancies that are present. The next step is to do a thorough competitive analysis. Know thy enemy is the mantra given to us by Sun Tzu in the now immortal Art of War. It one of the cornerstones of victory in any battle.

Advertise your product, because it won't sell itself

Marketing strategy is another commonly ignored aspect. Say, you're a tech guy – the coder who's built this revolutionary app,

and you believe in your product. Although we don't know yet whether your product is indeed great, we'll consider for the moment that it is. There's a misguided belief that a great product will market itself. Don't fall for it. A consumer will buy only what he knows. Unless you have a plan to bring your product or service to the consumer's notice, it's not going to be sold. You also need to be able to convince them why they need it.

In the course of researching this article, we had the opportunity to speak to Vinay Rao, CTO of Venture Factory. His company does something quite interesting – it can be thought of as a production line for creating ventures with factory-like quality processes that aim to eliminate flaws in startups at a very early stage. Vinay has himself invested close to $10 million as an angel investor in various startups. He aptly says, "Entrepreneurs shouldn't forget fundamentals. It's super important to find a product that sells and a product that makes money rather than just customer acquisition".

Form your core team

Last but not the least, we need to consider the core team. A startup is driven by its founders and employees. Their skills, expertise, determination and commitment is directly proportional to the startup's success. Be sure to find a Watson to your Holmes. You may be a deadshot like the Sundance Kid, but you need a Butch to lead the team. If you're looking for a co-founder and technology is your niche, you don't necessarily need to look for someone with non-technical skills only. They can maybe complement your skills or knowledge areas like Wozniak and Jobs or Larry and Sergey. Form a team, whose calibre covers all the major aspects of your business. An ideal composition would be a strong leader, a technical expert, sales and marketing guy and a number cruncher. While building your team think of an HR strategy, the culture you want to develop and the attributes you're looking for in an employee. Be careful with selecting team members. Look for someone who will stick with you through the bumpy parts, not abandon ship at the first sign of trouble.

THE GEEK WAY TO MASTER BUSINESS PLANS

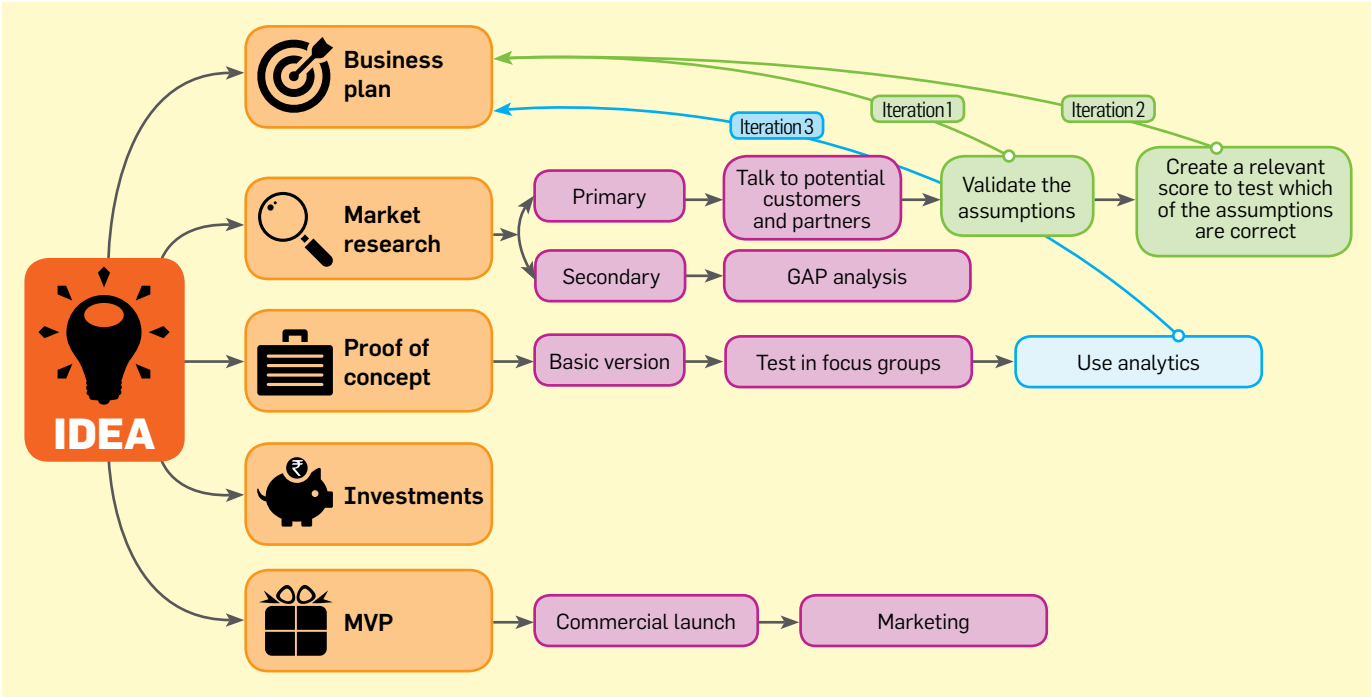
We're geeks. We're Google wizards. And we're pro-convenience (not lazy). As it turns out, there are several online repositories available with tons of readymade business plans across verticals that you can tailor to your needs. Follow this shortlink for one such site: http://dgit.in/bplan4all

You can also download templates here: *http://goo.gl/UMzVPt* and *https://goo.gl/YIEuxk*.

Research – Do your homework

Learn about the competition

Do a Google News search on your industry and read every article you can lay your hands on. It's the most effective way to hack secondary research. Slowly, you'll have a bird's eye view of the market and be able to better understand how it works. The main part of your industry research will be studying your competitors. Even if you've created a unique product, you're most likely providing a substitute to another product/service. E.g. personal computers were unique, but they were a substitute to typewriters, calculators and a host of other devices. Or look at the 'Hövding' helmet (http://dgit.in/hovwtchvid) – despite how extraordinary the idea is, it replaces the traditional helmet. In the words of marketing guru Al Ries, you're creating a new category or using



The iterative process of making a perfect business plan

Uber courier?
The ride-hailing service will soon deliver Xiaomi phones to impatient customers in Malaysia and Singapore.
http://dgit.in/UberCourier



A legend passes away
Nintendo's president Satoru Iwata passed away at the age of 55 due to Bile Duct Tumor. The entire gaming community mourns his loss.

the "power of divergence", as he calls it. So, your current competitors are the products you're hoping will go obsolete as a result of your invention. Indirect, but still competition. Use their services, enter into a dialog with them. Through their website or sales contact person, they'll inadvertently divulge information on the market. A caveat: take this advice with a pinch of salt.

Interact with potential consumers and partners

Then, speak to potential consumers and possible alliances as well. Say you're launching a platform for the medical community that brings together all medical practitioners on a single page or connects patients to medical services, like Practo. You'll talk to patients who'd be interested in using your services. You'd also talk to doctors and pathology labs, among others, to understand their support for such a program and sign them up. While having this conversation, you'll not only understand what its selling features are, but also derive a growth hack. These partners in turn become your POS (point of sales).

Do your primary research

Social media is a great tool for primary research. Tools such as Facebook, Twitter and Whatsapp allow you to connect with many people from all demographics across the country. Running a Facebook ad for a few weeks will prove to be cheap and insightful. Doing this will allow you to talk to your potential customers in their comfort zone where they'll be more open. The earlier stage when you have personal interactions acts as a good starting point and the start of a partnership. However, asking people for their opinions and feedback in real time puts them on the spot and most people don't like to be exceptionally rude and discouraging. So you might walk away with a hunky dory impression. Always, take findings from personal interactions with a grain of salt. As Vinay says, "What people say is not what people do". Create a benchmark score to understand which product components the users like and which they don't. Facebook rates the effectiveness of your ad campaign on a scale of 1 to 10. The closer to 10 you are, the better the ad was received by your target audience. So you can create multiple ads highlighting the different features of your product and run them across your target demographic. The one that attracts the most consumers is the feature that you should ideally focus on. Primary research is mainly used to validate your assumptions of the consumer's needs and product value propositions.

Now go back to your original plan and incorporate these findings.

PROTIP: GET 20-20 VISION

To inspire your potential stakeholders, you need a perfect vision statement. Forbes has done a fantastic job of explaining why most company vision statements aren't effective. Read it here: *http://dgit.in/uncomplicate*

Now you know what NOT to do. But you still need to know how to get it right. For a better understanding on formulating a vision statement, go here: *http://dgit.in/gdvision*

Proof of Concept (POC)

By this stage, you should be able to create a basic version of the product. This will include only a couple of the value propositions that have been validated. This is your "proof of concept" or "POC". To know whether your concept has real-world application, it must be tested. To test this beta version, form a focus group, usually consisting some of your potential customers and the partners you spoke to during the research phase – they'll most likely agree to do this. Generate plenty of feedback in the beta testing stage. Some of the key questions you should seek to answer are: "Where's the consumer coming from?", "Where are they spending time?" and "What's their next step?" To answer these questions, assuming you have a website-driven product, use Google Analytics to analyse the pattern and flow of visitors. If not, create custom surveys and ask your customers to fill them out. This should give you the final iterations to your business plan.

Once you've developed a POC, you're good to approach Angel investors to move to the next stage.

Who are these Angel investors?

An angel investor is a high net worth individual (HNI) who's willing to place a bet on you and your idea. Basically guys with a lot of money to throw around. Of course we kid, they're shrewd as hell, which is why they have all that money in the first place! Most of these angel investors are entrepreneurs or tycoons themselves like the Bansals of 'Flipkart' or Bhavish Aggarwal of 'Ola Cabs' or Aprameya Radhakrishna and Raghunandan G of 'Taxi For Sure' fame. Remember, any entrepreneur who has made it big can be a potential angel investor – be it your very own rolling in money landlord or hero worshipped cricketers such as Yuvraj Singh (who has created the 'YouWeCan Ventures'). Even industry stalwarts such as Ratan Tata and Narayan Murthy, who set up 'Catamaran Investment', are known for their angel investing on the side. There are also crowdfunding initiatives such as 'Kickstarter.com'. Online platforms such as 'Paisaconnect.com' host a portfolio of investors to view and approach. Indian Angel Network (http://indianangelnetwork.com/) provides a platform for the angel investors to come together and create a bigger fund. Fund houses such as 'Sequoia Fund' are also beginning to ride the angel investment wave.

Venture Capitalists (in the years to follow)

A few years later, you'll want to grow further, maybe by expanding geographically, adding more product lines or beefing up your development/engineering and marketing team. This is where the venture capitalist steps in. Venture Capital (VC) firms are always professional funds that raise money from HNIs. They're always on the lookout for a company to invest in and generate returns for their clients. Funds from such firms are injected in three rounds called Series A, B and C funding rounds.

According to 'YourStory', India's media platform for entrepreneurs, $3.5 billion was injected into 380 disclosed deals in the first of half of 2015. Also check out http://dgit.in/vcdealss and http://dgit.in/dealszz for a deal by deal account compiled by trak.in.

Minimum Viable Product (MVP)

Next, you move to the commercial launch with the "minimum viable product" or "MVP" (since techies just love acronyms). To ensure users are aware about your product, you must start marketing your product through the channels identified during the earlier stages. By this time, you've gone through several product iterations, incorporating the suggestions gleaned from the market research, beta testing and your own ideas. Now the product is ready to be released to the public. This is the acid test. Now the horrid waiting period starts as you wait for your first non-focus group consumer.

Remember, there still might be some flaws in the product so continue testing it. It is called minimum viable product for a reason. Vinay Rao suggests, "Once the people are onto your platform, it's super important to keep measuring". Keep running analytics, understand the consumer's needs – they're always dynamic. Keep improving it. At no point in time throughout the life of the product can you say "That's it. It's done!". "No more developments, no more changes". That's a death knell. You need to keep innovating and evolving. Don't be anchored to your original idea, be prepared to cut down on features. Be brutally honest with yourself about the product. Emotional attachment to the company is good but it shouldn't translate to blind faith of the product. When Kevin Systrom and Mike Krieger were developing Instagram, they reduced more features than they added. In fact, their original idea included check-ins to locations and future check-ins (make plans), among other things – all of which were scrapped till they were left with a neat photo-sharing app.

How funding works

Apart from the fact that it's currently the cool thing to do, the reason for funding is more primeval – to earn a profit. Before any funds are invested into it, your company is assigned a valuation called "Pre-money valuation". "Post money" is a simple addition of pre-money valuation and funds invested.

As you can see in the table, at the end of Year Five, when the VC steps in, the angel investor's equity stake has gone down to 15%, however its value has increased to Rs.6 crore.

Various stages of the funding process

The funding process/lifecycle is pretty straightforward: pitch, discussions, term sheet, final agreements and eventual exit. The pitch is where you initially present the idea to the investors. If they're interested, you discuss the business in greater detail. Once they're onboard, they'll give you a term sheet. A term sheet is a non-binding (i.e. non-enforceable document) that outlines the terms under which the funding will take place, the amount, equity, corporate governance etc. This document provides a broad overview of the basic points of the deal without going into its nitty gritties. As such, it's the most important document before the actual agreement. You can check out a term sheet generator here: https://goo.gl/tuuggW (Didn't we say we were pro-convenience?) Although it's more US-centric, you'll still understand the various points you'll need to think about. Post this, you enter into the final negotiations and eventually sign the final agreement.

Year	Stage	Valuation (in Crores [INR])	Stake
Year 0	Pre-money	4.00	
Year 0	Angel Funding	1.00	
Year 0	Post money - 400+100	5.00	
Year 0	Angel stake - 100/500		20%
Year 5	Pre-money -	30.00	
Year 5	VC Funding	10.00	
Year 5	Post money - 30+10	40.00	
Year 5	VC stake - 10/40		25%
Year 5	Revised Angel equity - 40*20%	6.00	
Year 5	Revised Angel stake - 6/40		15%

In case of exit...

Be careful while choosing the investor. You don't jump in with your eyes closed into a marriage; this is no different. The last thing you want to do is work with an investor who doesn't share your vision, is too controlling and isn't in it for the long haul. It's a good idea to have a buyback clause in the agreement. This essentially means that after a certain agreed upon period known as the "lock-in period", you can buy back the investor's stake.

Of course, this isn't the only exit strategy that the investor has in place. Another one of the three ways in which this can be done is for the investor to wait for someone else to come in and buy them out. For example, 'Taxi for Sure' was acquired by 'Ola Cabs'. Other methods include an IPO or a VC. The surest and fastest way is by buyout by a VC, however, this doesn't usually happen at the Series A funding stage (the first round of VC funding). A new investor coming in would obviously not want the money to go out of the company to line somebody else's pockets, they'd want it to be used for growth. Plus, it gives them assurance of quality if the previous investor stays put. Of course, there would be a dilution of everyone's stake.

Safeguarding your company

On the subject of stake, one burning question you'd have by now is "How much stake should I, as the promoter, keep?" To some extent, it depends on your product and market, and to a large extent on the industry norms. An angel investor typically takes around 15% - 25% stake in the company and a VC around 30% - 40%. At the time of VC funding, the promoters should hold around 50% - 60% stake in the company. Thankfully, due to the upsell requirements, there's little risk of the angel investor trying to undercut the promoters.

To benefit from returns, VCs need to invest, so they'll invest only if there's a great story. So, what makes a story great? A ginormous factor that determines this is the promoter's continued interest in the welfare of the business, which happens only if (yes you got it) they have a substantial piece of the pie. Another factor is an option pool, usually of around 10%. These are employee stock options that you provide to your early employees as an

Twitch ditches Flash
The popular streaming service has begun the transition from Flash to HTML5 **http://dgit.in/TwitchHTML5**

ARM starts flying Kite
ARM announced its first v8-R processor core targeted for real-time embedded apps. **http://dgit.in/ARMv8-R**

incentive to stick their necks out for you. This is also an important part of the "story" as it means that you have a committed core team that will stick with you till the end. These ESOP's (employee stock ownership plans), as they're called (Yes, finance geeks also love their acronyms), come with a lock-in period so no one can just jump ship.

Now that we have all that out of the way, let's see how to get the ball rolling.

Pitching to investors

If you think you're smarter than the investor and can just dazzle or laud him with platitudes and pontification, think again. They're extremely smart. Irrespective of what Rahul Yadav says, don't take them lightly.

Before entering the meeting, you should be ready with thorough research on your industry, its history, growth prospects (as shown by leading market research companies) and competition. Presenting to investors without hard market data to back you up is like no-scoping in Counter Strike world league without ever firing a Deagle at your local cyber cafe. No matter how great you think you are, you're going to get shot down. In the first few seconds. Now the time spent on the tedious business plan seems worth it, doesn't it?

When pitching, honesty eventually turns out to be the best policy. Expect to be grilled like a well done steak. Starting with why your product or service is needed. The investors love to play the devil's advocate. This is where you use your finely honed weapon of research.

Typically, they're looking for answers to questions like "What is the idea?", "What's the gap you're addressing?", "Does this idea represent a need-at-any-cost solution to the consumer or is it a latent demand?", "What is the market size and growth rate?" and "What are the chances and methods of future monetisation?"

A word of caution here: Most entrepreneurs in their unbounded enthusiasm consider the entire 6 billion population or a huge chunk of it as their potential market. Then they derive that only a miniscule size of this is required to achieve a billion-dollar company. Nothing will send investors running to the door faster. Be realistic of your market niche and talk about a specific segment. If you want it straight from the horse's mouth, take a look at http://indianangelnetwork.com/guidelines.

NEVER DESPAIR

'Kaaryah', the now popular online apparel store for women was rejected by 113 investors before securing funding from Ratan Tata, Chairman Emeritus, Tata Group. On the 365th day of sending the first mail, she finally hit paydirt. That, my friend, is perseverance.

How to value your business

So you've managed to interest the investors and are discussing how much investment you'll need. This raises a very important and sticky question: What is the valuation of your company? Although seemingly innocuous, this would be the most important question your startup has faced. Undervalue and you'll have a cascading effect all your life. Apart from getting less than what you're worth, you'll always be hampered by this in all subsequent funding rounds. Over valuation, although attractive, will drive away future investors.

'Discounted Cash Flow' model is a traditional approach involving a lot of projections and forecasting of revenues and profits for the next 5-7 years to arrive at a number. For this reason, it isn't a preferred method for valuing startups.

'Comparables', as the name suggests, takes a metric core to that industry and multiplies it by a revenue number. This number is arrived at by looking at other deals in the same space with the same dynamics. The comparable metric is different for different industries. In the hotel industry, the revenue per room is taken as the metric core and this is multiplied by revenue per room. Comparables played a big role in the valuation of Whatsapp and Instagram. Revenue (in dollars) was multiplied by number of users. There are several more schools of thought on this, but the crux of it lies elsewhere.

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Does all this sound a bit too hocus pocus? Like staring into a crystal ball, rolling your eyes and spouting a number in a deep, enchanting voice? Pardon the histrionics, but valuation is generally considered more an art than a science.

Since at this stage, there's a dearth of hard data, emphasis is on qualitative factors. The idea is at the top of the list of any investor. It should have identified a gap and be providing a solution to fill that gap. They want to see your vision, strategy, how you'll acquire customers and how you'll convince them that they need your product.

They'll look at your team and your commitment. "We want to see the burning desire of the promoters to their business", says Praveen, an entrepreneur turned angel investor.

'Cayenne Consulting', a financial consulting firm specialising in high tech startup valuations has a form questionnaire to get a sense of the expected valuations. Although not accurate, this will serve as a good starting point for the uninitiated: http://www.caycon.com/valuation.php.

Perseverance is the name of the game

So are you ready to jump in with both feet and win over those customers and investors? Unlike what TV shows like Silicon Valley would have you believe, there's no histrionics involved (Well, not much at least. We're looking at you, Housing.com). The investors don't like to burn their bridges. It's easy to quickly know whether they're interested or not – Look at your hands. If they aren't holding a term sheet, move on. Try again. The fight isn't lost when you fall, it's lost when you fail to get up. We all know the story of how Yahoo! rejected the sale of Google at its early stage; it turned out to be the best rejection the dynamic duo could have ever gotten. You'll encounter naysayers. Smile, nod your head and go about your business.

Half-Life on a watch!
You can boot up and play the classic Valve game on an Android Wear watch
http://dgit.in/HLonWatch

YouTube's historical videos
More than a million minutes of historical videos have been added to YouTube
http://dgit.in/1OplYUy

Data recovery for the next generation

We speak to Sunil Chandna of Stellar Information Technology about consumer data protection, specialised software and the recovery industry at large.

Interactive page



Sunil Chandna, Co-founder & CEO at Stellar Information Technology Pvt. Ltd

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What kind of services do you offer?

Sunil: We actually give our customers two choices. One, to choose a downloadable tool to recover or repair a situation you are in. There are about 80-90 different tools, for consumers or enterprise. All work on the similar model for free trial edition – you go to the website, download the trial and do a free scan. You can see everything that's recoverable but to actually extract those files you buy a licence. We have about 2 million users worldwide and we have language variants localised in German, french, Italian and Spanish. We even have an iPhone recovery tools that let you recover deleted WhatApp chats as well. Other than these software we have professional data recovery lab services wherein the consumer brings in the devices.

Can you talk about consumer data protection as an emerging concern?

Sunil: Absolutely. We have software that does secure wipes since businesses have their own needs in terms of very critical confidential information. Sometimes when they are handling customer data it is very important for them to secure it. In fact later this year we have a privacy bill coming in this country. It was tabled twice but didn't happen during UPA regime and now we're expecting it post GST and the Land Acquisition Bills which will mean that the companies will have a more regulatory and statutory obligation to protect their customer's data and if there's a breach there can be severe penalties. Technically even with the current IT Act consumers can sue say a bank or insurance company or a telecom company if personal info was compromised but there's no upper limit for compensation.

Nowadays off location backups to the cloud are prevalent for enterprises as well as individual users on their cell phones. Don't you think your services, going forward, are going to be redundant?

Sunil: When the cloud started, we thought so too, when more hard drives started being adopted we thought the same again. But maybe if you do a survey with ten of your friends, you'll see that most of them use the cloud, to the extent that is available for free which is say 20 to 30 gigs. And data is no longer the same today. The cameras are 64 gigs, so in one short holiday, you consume two cards sometimes, so there is no way you can handle that.

Yes only consumers that are extremely conscious keep wiping and organising...

Sunil: ... And cleaning it up yes. Usually they pile up pictures and often it can reach 700 gigabytes plus which they can't put it on the cloud. Most users don't actually use external hard drives very well. Once in a while as a dump and that too only for a collection of movies or old stuff but not as a backup but an archive. That is kind of creating a challenge. So in theory if everybody had one cloud backup along with an external hard drive, we should be out of business!

In a practical situation, in an enterprise, the servers are backed up very well. But the users, who have desktops have been given a method – there is ample space on the network but say I'm traveling, and I'm not allowed to access the corporate server over the hotel Wi-Fi. Then when I'm back there is too much to do and I'm not using the backup application as prescribed. There's this gap in this case. Data as a resource and in terms of importance to an organisation, is tremendous. It can result in hard losses in several hundred crores sometimes.

How much data do you recover annually?

Sunil: Last year we received on average 30,000 drives for data recovery with a success rate of about 70-75%. Strangely many people experiment with local unskilled guys before coming to us.

For the full interview blip this page or follow this link: **dgit.in/stellariNtrvw**



Protect your pendrive
Losing a pendrive with important info is no longer a problem as long as it is password protected: **http://dgit.in/pendrvprtct**

Reporting live from pluto
NASA to hold a live webcast of the New Horizons probo finially reaching the ex-planet pluto after about 9 years of journey. Read more: **http://dgit.in/plutoprobe**

Videocon's smart quotient

One of India's oldest consumer technology and appliances brand, Videocon is on the cusp of launching a variety of smart gadgets into the market. Mr. Akshay Dhoot, Head of Technology and Innovation, Videocon, spoke to us about all this and more. Excerpts from our interview:



Akshay Dhoot, Head of Technology and Innovation, Videocon

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Do you think the Indian market is really ready for smart appliances?

Akshay Dhoot: When we made our Wi-Fi air conditioner, specifically, that was the result of a consumer research not because we wanted to do some new product, just like that. We realized that ACs consume a lot of power and it was the most, the heaviest power consuming appliance in any household. So one overwhelming feedback was a lot of people keep forgetting to switch off their AC or how they manage it. So the Wi-Fi AC was a result of this particular research and hence we also saw very good traction on it. We have sold some 10,000 pieces of this particular model of Wi-Fi AC. I know 10,000 is not a big number, but it's significant for this kind of category.

What sort of R&D has gone into the Wi-Fi AC?

Akshay: As far as R&D is concerned, we basically took a current standard PCB (printed circuit board), components and everything, studied what all we can do, what all info can be picked up from the AC and what all info can be thrown back into it. What we can pick up is errors and service issues that come up, and we can directly send the serviceman to the customers. In terms of usability we can put in things like change the temperature and other basic things in the AC. All in all we had to add a complete Wi-Fi circuit to it. Also instead of an infrared remote, we added another module to bypass it.

Do you guys do remote diagnostics, maintenance, etc, for appliances?

Akshay: We have incorporated this feature, but not in all models. We have certain models which do remote diagnostics. But first to identify errors and recognize them uniquely, you need to have connectivity to all part of AC. We are working on integrating this technology now, and there's definitely as a product in the future, we will have a much more integrated AC in which we can get complete diagnostics of the each and every component of the AC.

Lastly, what are your thoughts on Internet of Things?

Akshay: Right now what's happened is a lot of people in India and worldwide, everyone's switched to smartphones, and they have become parts of the body. So the best feature of smartphone is its connectivity, it offers various ways of connecting. So what I am coming to is that smartphones are now complementing all other consumer electronics, appliances and all. If legacy devices can talk to smartphone, and the same can be used to communicate with these devices, stream movie or control an AC, etc. It boils down to how people think, how they can use their smartphone to make their devices intelligent and smart. Basically, what we need are intelligent products, which actually understand context – like Google Now, which scans email for flight ticket bookings, different addresses and times of appointments, and automatically gives you relevant cards, at the right time. More such smart services are coming and a lot of them have come out and future is about these intelligent devices. Smart is already there, and as far as the next big thing it's about intelligent devices.

Don't u feel that this throw up very serious security threats?

Akshay: See I mean, there are always risks with new technology, always new challenges, for that we will work on the systems. When we really thought about getting these features out, when we got some features out in the AC or TV, we made sure that no customer info goes out, etc. Take Android phones, for e.g., the entire software is controlled by Google, and these phones are connected to Internet. If some software gets mishandled, anyone can activate a phone's mic, camera, even GPS location. Despite this potentially catastrophic scenario, people don't stop using these devices now, do they?

Cabinet conundrum

After having postponed getting cabinets for quite some time, members of Team Digit finally go on a PC case shopping spree

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Optimal Airflow in a case

Here at Digit, most of us are constantly experimenting with something or the other which is why many of us don't use a cabinet for our rigs. It's not as if we don't like them, rather not having one helps with swapping components on a regular basis.

It all started when Mithun came to the office with a sullen look on his face. And when Siddharth probed him with his favourite question – "What ails you?" He replied saying that when he went home the previous night from work, he found that he couldn't access one of the internal hard drives connected to his PC. He'd kept one of the drives outside the cabinet for want of space and a little accident with an open bottle of water led to 500 GB of data going up in smoke, literally.

This is why, we all – at least the ones who didn't have a cabinet or had one but it wasn't good enough (including myself), decided that we should join him and go and buy new one. Siddharth, Siddhant, Mithun and I decided that we should pay Lamington Road a visit for new cases.

After we reached the place, we went inside a couple of known shops and started looking for available options. Since Mithun was using a pretty beefy system at home with an ATX board, a full-size GPU, an AIO liquid cooler and multiple hard drives, he wanted to go for a full-tower case under ₹15K which would provide him more space for future upgrades. Siddharth wanted a replacement for his ageing Zebronics Bijli so he wanted to buy something that's feature-rich, looks good and is a mid-tower between ₹6k to 7k. Siddhant wanted a mid-tower and I needed a mini-ITX case for my HTPC. We decided on a budget of not more than ₹2.5K for the HTPC case and about 4K for the mid-tower.

What YOU should look for when buying a PC case

The stuff that anyone should consider before buying a PC cabinet are the kind of components that they're going to install, primarily the dimensions of these components. You should then consider whether you want a case for a mini-ITX, micro-ATX, ATX or an E-ATX board and also keep in mind the number of components that it should be able to house. This isn't a hard and fast rule given that you can even buy a full-tower case for a micro-ATX based system, like if you're planning to mod this case into a beautiful piece of art.

Airflow is of prime importance when you're buying a new cabinet. It is often overlooked by quite a lot of system builders and it is a terrible thing to do. Components inside a system need cool air so that they can run without hiccups and starving parts like CPU and GPU of air, results in them running at high temperatures which in turn decreases their overall life-span. A good case should take cool air from the front and bottom and expel warm air from the rear and top. To do this, a case should have enough number of intake and exhaust fans. It's often better to have more exhaust fans than intake fans as this would result in negative air pressure inside the case and there would be less stagnant warm air inside the case. Although negative pressure provides the best level of cooling, there is a higher chance of dust settling inside the case. Which is why dust filters are always a welcome feature. Also, if the case has tall feet then it helps by decreasing the amount of dust that can be sucked in from beneath the case.

Other important stuff that you should look for when buying a case are:

- Selecting the right size of the case depending upon your components, especially tall air coolers or even a liquid cooler with a big radiator;
- Whether the particular case in question has enough drive bays;



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- Does the case provide tool-free installation of components;
- Does it have all the front panel ports that you need. Most new cases these days have USB 3.0 ports on the front;
- Are there enough expansion slots for PCI/PCIe components that you plan on installing. For example, if you are going to install multiple video cards in SLI or CrossFire-X;
- If the particular case that you're looking at has tons of fans and you're someone who is a stickler for silent computing, then it's absolutely necessary that you take a look at a few reviews online so that you know how much noise the fans make. Depending on whether the case checks out according to you in terms of the noise that it emits, you can make an informed decision;
- Cable management is another aspect that buyers forget to take into consideration. You should check whether the selected case has cable routing holes around the motherboard tray, rubber grommets covering these routing holes, cable tying hooks at the back of the tray, and enough clearance at the back of the motherboard tray so that it's easy to close the side panel.
- Aesthetics is another important factor for quite a lot of buyers as they make their decision solely based on the looks of a case. We understand that looks are necessary, but overlooking everything else about the case in favour of looks is the worst mistake anyone can make. This is why, you should look for a case that offers the best of both world's i.e., temperature performance and features coupled with good looks.

What were the options available to us

All three of us stood inside a shop which was already jam packed and quite loud. Since our requirements were varied, the shopkeeper had to dial a few different numbers on his phone to provide us with options that were available along with their different asking prices. The first few full-tower options that he suggested were all about three-to-four year old models. This didn't necessarily mean that they were bad, but since Mithun was willing to pay around ₹15K, he wanted something new and better. The shopkeeper then suggested three really good options: Cooler Master HAF Stacker 935, NZXT Phantom 820 and the Corsair Graphite 780T available for ₹14,950, ₹17,500 and ₹15,450 respectively. The Cooler Master HAF Stacker 935 was an interesting option as it provided an extra removable section which could be used separately for a mini-ITX based system or in tandem with a radiator box or even for mounting extra hard drives. The other two cases were designed brilliantly as they both looked different from most cases in that price range. After weighing out his options carefully, Mithun decided to go for the Corsair Graphite 780T (black version) for ₹15,450 because not only did it look good, but it was also really well made and had all the features that he wanted. If not for that, the costlier NZXT Phantom 820 was his next preferred option.

It was Siddharth's turn next and the Ant had a few options for him in mind since we had tested quite a lot of mid-tower cases around the ₹7K price bracket in the past year. We asked the shopkeeper to show us the NZXT Source 530 (which was marketed as a full-tower) and the Cooler Master 690 III. The NZXT was priced at ₹6,750 while the Cooler Master one came with a tag of ₹7,100. A direct comparison between the two showed that the Source 530 was more modular internally, had slightly more clearance for air coolers and graphics cards and was also cheaper than the 690 III. Which is why, Siddharth happily selected more spacious NZXT Source 530 for ₹6,750. A really good choice in that price bracket. Finally, it was the Ant's turn and he wanted to buy a mid-tower. He had already narrowed down on a couple of mid-tower options in his budget like the good old Corsair Carbide 400R, the Corsair Carbide SPEC 03 and the slightly costlier Antec GX900. The Antec GX900 with the camo paint job caught his fancy as it was built really well and was of the right size that he was looking for and performed really well in our tests. It also featured an in-built fan-controller. He immediately went for it and paid ₹4,400 for it after a short bargaining session. The shopkeeper also showed us the new NZXT H230 Silent which was priced around ₹5K and I must say that it's an excellent and feature-rich option for people who are looking for a case primed for silence as their primary requirement.

As for my requirement of an HTPC case, although there were plenty of options available, it was surprising to see that these small mini-ITX cases had a price tag which was higher than their mid-tower counterparts. I asked the shopkeeper to show me the Silverstone Sugo Series SST-SG02B-F-USB3.0 and the old favourite Cooler Master Elite 130. Both these cases had similar designs but the all-black finish of the Elite 130 looked better. The Silverstone case was priced similarly but it was the overall build quality of the Cooler Master Elite 130 that prompted me to go for it for ₹3,600. Although, it meant that I had to extend my budget by more than one grand.

All in all, we were happy with our purchases as we also managed to bargain a bit and shave off around ₹1.5K in total. Since Mithun's case was the biggest, he had some trouble getting it home but it was nothing a pricey cab ride couldn't take care of.

Gaming is a priority

This would probably be my first ever e-mail to you or the Digit team and I just want to make clear of my intention is to buy a new laptop. I know you guys a lot of such questions but I still need your help here! My piggy bank budget is ₹50k to 55k.

- Priority 1: Gaming. For playing games like GTA 5 even at low or mid graphics without any lag;
- Priority 2: Decent battery backup at normal usage;
- Priority 3: Photoshopping and video editing;
- Priority 4 : Good display. All the new features including USB 3;

I'm having a hard time stating the specs so it would be much appreciated if you



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Agent 001

could help me with model numbers or with the required specs within the budget.

– Johith Ommen Iype

A Hi Johith, Seems like you want to have the best of both worlds – great gaming performance alongside long battery life. Unfortunately, these two requirements don't go hand in hand. A performance-heavy machine will directly impact the battery-life of a laptop, therefore very rarely do "gaming or entertainment" laptops with a Core i5 processor, 4 GB RAM and 2 GB discrete graphics have batteries that last more than a few hours of non-stop gaming. However, taking all of your needs into account, in ascending order of recommendations, here's what we think you should buy:

HP Pavilion 15-P210tx – packs in quite the performance at the price. All the latest internal hardware that you'd want is also present. Acer E1-572G – comes with 8 GB of RAM and AMD graphics (slightly slower than what the HP packs). There are a few offerings from Dell, Lenovo and ASUS but those are slightly out of your budget, and don't offer great value for money compared to the above two recommendations at this point of time.

Q Need an upgrade

Hi Team Digit, the super awesome tech magazine. I am Pranav (15 yrs old) and I've been reading Digit for the past few months and now it's seriously difficult to imagine technology awareness without it. I have some suggestions and also some questions to ask and I would be very pleased if you could answer them.

I want to know if I can run Assassin's Creed Unity and GTA V on my Dell Inspiron 15 laptop. Specs are as follows:

- Processor: Intel Core i5 @ 2.2 GHz;
- RAM: 8 GB;
- Storage: 1 TB;
- Graphics Card: Nvidia GeForce 820M 2 GB;

Please tell me if I'll be able to run these games smoothly or whether some amount of lag and stuttering will be experienced. If you think that they'll be not playable altogether, then please do provide some budget friendly solutions.

– Pranav Singh

A Hi Pranav, The Dell Inspiron 15 that you're using won't be able to cut it when it comes to playing the current crop of games. You might be able to run them at the lowest settings but your gameplay experience won't be that great (obviously). It's better if you invest in a new laptop or assemble a PC for yourself. Since you didn't give information on the exact budget that you have in mind for an upgrade, we'll suggest that you buy a new laptop like the Lenovo Y50-70 which although isn't cheap (₹77,800), it'll be enough for playing the games that you want to. A better budget friendly alternative would be to build a PC which would provide more performance per rupee and the flexibility to upgrade easily later on. Take a look at the mid-range rig in our Killer Rigs section and select the best configuration depending upon your budget.

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COMMUNICATING THROUGH SKETCHES

Nowadays the game designer's role in the industry is multiple. The job requires a large variety of knowledge about software, tools, and technics to provide all which is needed in a game: rules, mechanisms, scoring, difficulty curve, balancing, scripting, prototyping...

But above all of this, the game designer has to be efficient when (s)he proposes an idea. Sketching is one of the skill which is often a necessity now. A good sketch is better than a long speech. It can be done everywhere, including meetings. It takes only few minutes to be done, and then the debate about evaluation or feasibility can start. The idea can be improved, modified or thrown away, without writing an important technical documentation.



Keep in mind that drawing is an international language, sketches can be easily understood by all members of the team, not only artists but also programmers, producers, and can apply to all game design topics: rules, gameplay sequences and puzzles.

Many times, game designers claim they are not 'artists', this is true and they don't have to compete with real artists. GD sketching is not 'Art' in the sense of good drawing, good colour choices or perfect camera angle. In fact we don't need to care as much about these! Also avoid thinking if people are not going to mock the awkward style of your drawing, don't be mentally blocked by this point. Draw! And the more you do this exercise the better your drawing skill is going to be, so feel free to do it the way that suits you.

GD Sketching, at its core, is about presenting, communicating an idea. To do so, you have to define your idea then to write it as a sequence of 3 to 5 steps (or all in one scene). Draw a common frame size for each step then sketch this and here is the action!

In conclusion the Game designer's work is mostly based on a good communication with team members coming from different departments using their own languages. So learn to communicate, use sketches. Et voila!

By Philippe Tesson, Game Design Trainer
For more visit www.dsk.digit.in.

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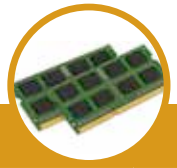
SPEND SMART

Not only mid-ranged smartphones, we also bring to you some component updates – RAM – along with Bluetooth speaker prices



SMARTPHONES BETWEEN 15K-25K

Brand	Model	Operating System	Screen size (inches)	Primary Camera (in MP)	Processor Clock (in MHz)	RAM (in GB)	Internal memory	Battery	Price (in ₹)
ASUS	Zenfone 2 ZE551ML	Android 5.0	5.5	13 MP	1800 MHz	2GB	16GB	3000 mAh	15,000
ASUS	Zenfone 2 ZE551ML	Android 5.0	5.5	13 MP	1800 MHz	4GB	16GB	3000 mAh	22,999
Microsoft	Lumia 640 XL	Windows Phone 8.1	5.7	5 MP	1200 MHz	1GB	8GB	3000 mAh	15,000
Huawei	Honor 6	Android 4.4	5	13 MP	1700 MHz	3GB	16GB	3000 mAh	16,999
Samsung	Galaxy S4	Android 5.0	5	13 MP	1600 MHz	2GB	16GB	2600 mAh	15,999
Samsung	Galaxy S5	Android 5.0	5.5	13 MP	1700 MHz	2GB	16GB	2600 mAh	24,900
Samsung	Galaxy Alpha	Android 4.4	4.7	12 MP	1800 MHz	2GB	32GB	1860 mAh	23,199
Samsung	Galaxy E7	Android 4.4	5.5	13 MP	1200 MHz	2GB	16GB	2950 mAh	17,219
Lenovo	X2-AP	Android 4.4	5	13 MP	2000 MHz	2GB	32GB	2300 mAh	16,735
HTC	Desire 826	Android 5.0	5.5	13 MP	1700 MHz	2GB	16GB	2600 mAh	24,900
Motorola	Moto X (2nd Gen)	Android 5.0	5.2	13 MP	2500 MHz	2GB	16GB	2300 mAh	21,999
LG	Nexus 5	Android 5.0	4.95	8 MP	2300 MHz	2GB	16GB	2300 mAh	21,649
Sony	Xperia C4 Dual	Android 5.0	5.5	13 MP	1700 MHz	2GB	16GB	2600 mAh	23,285
OnePlus	One (64GB)	Android 5.0	5.5	13 MP	2500 MHz	3GB	64GB	3100 mAh	21,998



LAPTOP RAM

Brand	Series	Model ID	Data Rate	Capacity	Frequency	Channel (Kit)	Price (in ₹)
Adata	Premier	AD3S1333C2G9-R	DDR3	2 GB	1333 MHz	1x2GB	1,590
Adata	Premier	AD3S1333C4G9-R	DDR3	4 GB	1333 MHz	1x4GB	2,950
Adata	Premier	ADDS1600W8G11-B	DDR3	8 GB	1600 MHz	1x8GB	4,510
Corsair	Vengeance	CMSX8GX3M1A1600C10	DDR3	8 GB	1600 MHz	1x8GB	6,725
Corsair	Vengeance	CMSX4GX3M1A1600C9	DDR3	4 GB	1600 MHz	1x4GB	3,850
Crucial	NA	CT102464BF160B	DDR3	8 GB	1600 MHz	1x8GB	3,849
Crucial	MAC	CT4G3S1339M	DDR3	4 GB	1333 MHz	1x4GB	2,600
G.Skill	Ripjaws	F3-2133C11S-8GRSL	DDR3	8 GB	2133 MHz	1x8GB	6,550
G.Skill	Ripjaws	F3-1866C10S-4GRSL	DDR3	4 GB	1866 MHz	1x4GB	3,950
Transcend	JetRAM	JM1600KSH-8G	DDR3	8 GB	800 MHz	1x8GB	3,699
Kingston	Value Ram	KVR16LS11/8	DDR3	8 GB	1600 MHz	1x8GB	3,320
Kingston	Value Ram	KVR1333D3S9/ KVR13S9S8/4	DDR3	4 GB	1333 MHz	1x4GB	1,940
Simmtronics	NA	DLSD3SIM0017	DDR3	4 GB	NA	1x4GB	2,040



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Just unbelievable!
Fallout 'Anthology' pack is going to ship in a mini nuke case. No kidding!
http://dgit.in/1CTz9fK



DESKTOP RAM

Brand	Series	Model ID	Data Rate	Capacity	Frequency	Channel (Kit)	Price (in ₹)
Corsair	Dominator Platinum	CMD64GX3M8A2400C11	DDR3	64 GB	2400 MHz	8x8GB	80,850
Corsair	Vengeance Pro	CMY16GX3M2A2400C11A	DDR3	16 GB	2400 MHz	1x16GB	13,568
Corsair	Vengeance	CMZ4GX3M1A1600C9	DDR3	4 GB	1600 MHz	1x4GB	2,275
Corsair	Vengeance Pro	CMY16GX3M2A1600C9	DDR3	16 GB	1600 MHz	2x8GB	11,999
Corsair	Vengeance	CMZ16GX3M2A1866C10	DDR3	16 GB	1866 MHz	1x16GB	13,199
Corsair	Vengeance Pro	CMY8GX3M2A2400C11	DDR3	8 GB	2400 MHz	2x4GB	7,501
Corsair	Vengeance	CMZ4GX3M1A1600C9	DDR3	4 GB	1600 MHz	1x4GB	2,299
Corsair	Vengeance	CMK16GX4M4A2666C16R	DDR4	16 GB	2666 MHz	4x4GB	27,750
Crucial	NA	CT8G4DFD8213	DDR4	8 GB	2133 MHz	1x8GB	9,229
Crucial	NA	CT4G4DFS8213	DDR4	4 GB	2133 MHz	1x4GB	4,999
G.Skill	Ripjaws 4	F4-3000C15Q2	DDR4	32 GB	3000 MHz	8x4GB	25,529
G.Skill	Ripjaws 4	F4-2800C15Q2	DDR4	64 GB	2800 MHz	8x8GB	49,197
G.Skill	Ripjaws 4	F4-2400C15Q-32GRK	DDR4	32 GB	2400 MHz	1x32GB	20,541
G.Skill	Ripjaws 4	F4-2400C15Q	DDR4	16 GB	2400 MHz	1x16GB	11,054
G.Skill	RipjawsX	F3-1600C9Q-32GXM	DDR3	32 GB	1600 MHz	4x8GB	15,894
G.Skill	TridentX	F3-2400C10D-16GTX	DDR3	16 GB	2400 MHz	2x8GB	10,565
G.Skill	RipjawsZ	F3-12800CL9Q-16GBZL	DDR3	16 GB	1600 MHz	4x4GB	7,657
G.Skill	RipjawsX	F3-17000CL11D-8GBXL	DDR3	8 GB	2133 MHz	2x4GB	5,995
G.Skill	RipjawsX	F3-14900CL10S-8GBXL	DDR3	8 GB	1866 MHz	1x8GB	5,900
G.Skill	Sniper	F3-12800CL9D-8GBSR	DDR3	8 GB	1600 MHz	2x4GB	4,900
Kingston	HyperX Predator	HX421C13PBK4/16	DDR4	16 GB	2133 MHz	1x16GB	29,999
Kingston	HyperX Savage	HX321C11SR/8	DDR3	8 GB	2133 MHz	1x8GB	6,700
Transcend	NA	JM1333KLN-4G	DDR3	4 GB	1333 MHz	1x4GB	1,995



PORTABLE SPEAKERS

Brand	Model	Configuration	Battery Type	Max Output (in Watts)	Chassis Material	Frequency Response	Price (in ₹)
Bose	SoundLink Mobile Speaker III	Stereo	Li-ion	NA	Metal + Plastic	NA	22,388
Bose	SoundLink Mini II	Stereo	Li-ion	NA	Plastic	NA	18,000
Bose	Soundlink Color	Stereo	Li-ion	NA	Plastic	NA	11,138
Creative	Muvo 10	Stereo	Li-ion	NA	Metal + Plastic	NA	3,100
Creative	Muvo 20	Stereo	Li-ion	NA	Metal + Plastic	NA	5,499
Divoom	OnBeat 200	Mono	Li-ion	8 W	Plastic + Metal	80-20,000 Hz	2,399
Jabra	Solemate Mini	Stereo	Li-ion		Plastic + Metal	NA	3,599
F&D	Swan	Mono	Li-ion	2 W	Plastic	60-20,000 Hz	3,790
JBL	Micro II	Mono	Li-ion	3 W	Plastic	150-20,000 Hz	1,399
JBL	Flip 2	Stereo	Li-ion	12 W	Plastic	100-20,000 Hz	4,399
JBL	Charge 2	Stereo	Li-ion	7.5 W	Plastic	150Hz-20,000 Hz	7,750
JBL	Pulse	Stereo	Li-ion	12 W	Plastic	100Hz-20,000 Hz	8,499
HMDX	Jam Party	Stereo	Li-ion	NA	Plastic	NA	4,999



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Siddharth Parwatay
siddharth.parwatay.digit.in

Cowon EM1

The EM1 has been our go-to recommendation in the budget space for nearly two years now. A total workhorse, the EM1 can take some rough handling. The audio quality for the price delivers the best proposition you can find. What the headphone lacks in terms of precision it makes



up in comfort and isolation. The fit and isolation is one of the best we've seen. If you can get your hands on one (since they frequently go out of stock everywhere), they're a perfect balance between value and performance.
Price: ₹675 (mic-less version)

Creative EP-630

At one time, the EP-630 had sent Indian forums in a tizzy for the kind of phenomenal price to performance it offered. It was how first time listeners witnessed great audio in the IEM form factor. Sure in today's day and age they don't offer the flat tangle free cables that the likes of the EM1 do, but hey has their aural performance degraded over the years? Of course not! Classics never go out of style. Pick them up for their distinct bass heavy and yet



ultra sharp sound signature (and a hint of nostalgia too).
Price: ₹700

Tekfusion Ecoofers

The budget variant of the Twinwoofers, but surprisingly not too budget-sounding. The set itself looks a little different from the average IEM, owing to the wood finish on the ear buds. We also liked the flat cables that were used, ensuring a rela-



tively tangle-free experience. The Ecoofers are powered by twin 10mm drivers and have a frequency response of 18 - 20,000 Hz but of course as experience teaches us, specifications don't mean squat as much as real-world performance. Go for the Ecoofers if you want to be different from the pack and don't want to go for the ultra-common EP-630 types.
Price: ₹850

Sennheiser CX180 Street II

The CX 180 has one of the most pleasing sound signatures out there. Not too boomy, and not too shrill, it manages to hit the goldilocks spot of "just right" quite well. It's also for those who can't do



without the Sennheiser sound. We particularly like the steel grey variant with it's signature ultra small housing.
Price: ₹948

Xiaomi's Mi (Piston)

There's no denying that at ₹799, the Mi earphones are a fantastic deal. The overall performance, build quality and design make these a very good buy and another successful product from the Mi



stables. You get great build quality, in-line controls, and a signature that's tuned to reproduce great highs. If you like your music with an extra serving of bass, you'd better avoid these. But if you're one of those audiophiles who'd appreciate the ear piercing pinch harmonics from a Stratocaster, these are worth your money.
Price: ₹999

Cowon EK2

The EK2 is your weapon of choice if you have a bit more money to spend and are looking for an upgrade over the old favourite EM1. You'll find that the EK2 differs slightly in terms of its sound signature. The EK2 is sharper and at the same time provides a better seal than the



EM1. It's also more sensitive, so you get more volume per unit of input power. At the end of it the EK2 adheres to a simple formula: throw a little more money, get a little more performance. If the EM1 is ever discontinued, the EK2 is a prime candidate for being our go-to recco for the foreseeable future.
Price: ₹1,099

Creative HITZ MA350

Perhaps one of the most underrated IEMs around, the MA350 seems to have slipped under the amateur audiophile's radar. These earphones sport a flat tangle-free cable just like the Cowon EM1 but gain a few points in the features department thanks to the sliding volume control switch (most likely an in-line pot, thus working with any source). Performance-wise too they're slightly ahead giving you crystal clear mids and highs without the



flatlining bass of the EM1. Recommended for bass-heads who want fidelity in other frequency ranges. The rated frequency response on this pair of IEMs is 6Hz ~ 23kHz. Of course we don't really believe it's going to go as low as 6Hz but it's still an indicator of its tuning.
Price: ₹1,370

Tekfusion Twinwoofers

These are made by an Indian company based out of Bangalore. As far as IEMs go, they're not bad at all. True to their name the Twinwoofers are bass heavy and there is more emphasis on upper mids as well. There's good clarity in the entire range but



cord microphonics is a bit of an issue. The fit and isolation could've been better but the build quality of the housing is decent. The different ear tips provided are a nice touch. If you're a bass head you won't go wrong with these.
Price: ₹1,449

JBL Synchros E10

The Synchros E10 brings in the perfect balance between style, sportiness and great sound. The IEM has the typical JBL sound signature – well represented mids and highs with an over-load on bass. In terms of performance, it's got what you would need – clarity, tonal accuracy and a decent soundstage. In terms of features, it hits the right spots as well with its flat, tangle free cable and a see-through box it comes in that doubles as a carry case. Between this and the Soundmagic E10S that we talk about next, you should go for this one if you prefer bass.



Price: ₹1,999

SoundMAGIC E10S

The E10S has perhaps the best aural performance on this list. At first glance they appear to be an exact replica of the legendary E10 but they're not. There's a small change in headphone's wiring – a switch near the headphone jack that makes it compatible with a number of smartphone variants. And unlike the E10, there's no on-cable volume control, instead there's just a single toggle. The



sound reproduction is crystal clear as expected but is a little warmer than the E10M. The bass is hard-hitting (giving it a broader audience) and the cable is braided unlike the delicate, almost flimsy string of a cable on the E10. All these enhancements and it costs about ₹200 less than the E10 which makes them a good choice.
Price: ₹2,049

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BASIC RIG

Processor	Intel Pentium G3240	3,965
Motherboard	ASUS H81M-CS	3,290
RAM	Kingston ValueRAM 2 GB 1600MHz	1,200
HDD	Hitachi 500GB DT01ACA050	2,695
Graphics Card	None	0
PSU	Corsair VS450	2,190
Speakers (2.1)	Creative SBS A120	1,355
Optical Drive	Samsung SH-224DB/IDDS	975
Mouse	Logitech MK200 (Bundle)	762
Keyboard	Logitech MK200 (Bundle)	0
Sound Card	None	0
Sub-total	(Excluding Monitor and Cabinet)	₹16,432
Monitor	Dell E2014H 19.5 inch LED	5,571
Cabinet	Antec ASK-4000B-U3	2,400
Total		**₹24,403**

HTPC

Processor	Intel Core i3-4150	6,990
Motherboard	MSI B85M-G43	5,700
RAM	G.Skill RipjawsX DDR3 4 GB (2 x 2 GB) PC RAM (F3-12800CL9D-4GBXL)	2,400
HDD	Western Digital WD30EZRX 3TB	8,100
Graphics Card	None (IGP HD4400)	0
PSU	Corsair VS450	2,190
Speakers	None	0
Optical Drive	Samsung SH-224DB/IDDS	975
Mouse	Logitech MK220 Wireless Combo	1,123
Keyboard	Logitech MK220 Wireless Combo	0
Sound Card	None	0
Monitor	None (your TV)	0
Cabinet	Silverstone Sugo Series SST-SG02B-F-USB3.0	3,750
Total		**₹31,228**

ENTRY-LEVEL GAMING

Processor	AMD FX8320	9,990
Motherboard	Gigabyte GA-970A-DS3P	5,450
RAM	ADATA Premier DDR3 4 GB (2 x 2 GB) PC RAM (AD3U1333B2G9-R)	3,100
HDD	Seagate Barracuda 1TB	3,300
Graphics Card	SAPPHIRE R7 265 2GB	12,500
PSU	Cooler Master Thunder 450W	2,995
Speakers	Creative GigaWorks T20 Series II	7,100
Optical Drive	Samsung SH-224DB/IDDS	975
Mouse	Logitech MK200 (Bundle)	762
Keyboard	Logitech MK200 (Bundle)	0
Sound Card	None	0
Sub-total	(Excluding Monitor and Cabinet)	₹46,172
Monitor	Dell S2240L	8,276
Cabinet	Antec X1-T Gaming	2,750
Total		**₹57,198**

MID-RANGE GAMING

Processor	Intel Core i5-4460	11,490
Motherboard	ASUS B85M-G	5,290
RAM	Gskill SNIPER F3-12800CL9D-8GBSR1	4,100
HDD	Toshiba 1TB DT01ACA100	3,450
Graphics Card	HIS R9 270X 2GB	11,990
PSU	Seasonic S12II 620 Watts	5,150
Speakers	Creative GigaWorks T20 Series II	7,100
Optical Drive	Samsung SH-224DB/IDDS	975
Mouse	Cooler Master Devastator (Bundle)	2,945
Keyboard	Cooler Master Devastator (Bundle)	0
Sound Card	None	0
Sub-total	(Excluding Monitor and Cabinet)	₹52,490
Monitor	Dell S2240L	8,276
Cabinet	Antec X1-T Gaming	2,750
Total		**₹63,516**

ULTRA HIGH-END GAMING

Processor	Intel Core i7-4790K	22,371
Motherboard	ASRock Z97 Extreme6	13,762
RAM	Kingston HyperX Predator 2x 8GB KHX21C11T2K2/8X	16,298
HDD	WD WD30EZRX 3TB + Samsung 850 Pro 256GB SSD	18,790
Monitor	ASUS PB279Q 4K UHD	65,900
Graphics Card	ZOTAC NVIDIA GTX 980Ti AMP! Extreme Edition	62,399
Cabinet	Corsair Obsidian Series 750D	11,150
PSU	Antec HCP-1000 Platinum 1000W	15,148
Speakers	Logitech Z906 5.1	20,500
Optical Drive	LG Blu-ray WH16NS40 RW	6,949
Mouse	Razer Death Adder 2013	3,250
Keyboard	Corsair Vengeance K70 RGB	12,637
Sound Card	ASUS Xonar D2X 7.1	8,725
Total		**₹2,77,879**

PRIMARY DIGIT TEST RIG

Processor	Intel Core i7 - 4960X (Extreme Edition)	70,159
Motherboard	ASRock X79 Extreme 9	29,517
RAM	Corsair Dominator 2133MHz (8GB x 4) (CMD32GX3M4A2133C9)	47,650
HDD	Toshiba DT01ABA100V	3,850
SSD	SanDisk Extreme II 240GB (x2 for HDD testing)	24,078
PCIe SSD	Kingston HyperX 480GB	48,000
Graphics Card	NVIDIA GeForce GTX 980Ti	61,299
Cabinet+ Cooler	Cabinet (NA) + Intel RTS2011LC - Stock AIO	NA
PSU	Corsair HX1050	16,291
Monitor	ASUS PB279Q	62,500
Optical Drive	NA	NA
Mouse	Razer Ouroboros Elite	10,890
Keyboard	Tt eSPORTS Meka G1	10,500
Total		**₹3,84,734**

digit RECOMMENDED BUYS

From smartphones to graphics cards, here's what we recommend for your next purchase!



TOP 3 SMARTPHONES

Brand	Model	Price (in ₹)
Samsung	Galaxy S6 Edge	53,600
Motorola	Moto Turbo	41,999
Apple	iPhone 6	53,999



TOP 3 SMARTPHONES UNDER 15K

Brand	Model	Price (in ₹)
Asus	Zenfone 2	15,000
Xiaomi	Mi 4	14,999
Xiaomi	Mi 4i	12,999



TOP 3 GAMING LAPTOPS

Brand	Model	Price (in ₹)
Dell	Alienware 17	1,94,990
ASUS	G750JX-CV069P	1,49,999
MSI	GE60 2PE	1,39,400



TOP 3 ULTRABOOKS

Brand	Model	Price (in ₹)
Acer	Aspire S7-392	95,000
Dell	Inspiron 7437	69,900
Apple	MacBook Air MD711HN/B	54,000



TOP 3 GAMING MICE

Brand	Model	Price (in ₹)
Razer	Ouroboros Elite	10,890
Roccat	Kone Pure Color	5,100
Logitech	Proteus Core G502	4,746



TOP 3 GRAPHICS CARDS

Brand	Model	Price (in ₹)
ZOTAC	Radeon R9 295X2	90,999
NVIDIA	GTX Titan X	83,599
ZOTAC	GTX 980 Ti Amp! Extreme Edition	62,329



TOP 3 TABLETS

Brand	Model	Price (in ₹)
Apple	iPad Air 2 (32GB Cellular)	33,850
HTC	Nexus 9	30,250
Apple	iPad Air (16GB)	28,900



TOP 3 BUDGET TABLETS

Brand	Model	Price (in ₹)
Lenovo	A8-50 (16GB Cellular)	16,850
Apple	iPad Mini (WiFi)	16,700
Xiaomi	MiPad	12,999



TOP 3 GAMING CABINETS

Brand	Model	Price (in ₹)
Corsair	Obsidian 900D	24,292
Cooler Master	HAF Stacker 935	14,950
NZXT	Phantom 820	17,500



TOP 3 GAMING KEYBOARDS

Brand	Model	Price (in ₹)
Corsair	Vengeance K95 RGB	14,999
Razer	BlackWidow Ultimate 2014 Elite	9,900
Cooler Master	Quick Fire Ultimate	10,599

114 **Community**
Read what our spirited readers from the Digit Squad have written. This month, it's all about functions in PHP and MySQL

116 **Feature**
We understand how and why we Indians are the only kind of people who are kind of hack proof because of our interesting ways.

Made in India (Weird Edition)

Not much has been said about the oddities originating from the Indian sub-continent, here's a little lister to get you up to speed.



Chapati Machines

There's a solution for those who just can't go without "Maa ke hath ki Chapati". For a few thousand bucks you can get one of those Chapati Maker machines that put the Phulke in Halke Phulke. Or if you'd like to spread the love then you might want to consider getting an industrial press that can crunch out 2000 chapatis/hour. http://youtu.be/6mBVv5RayJ0

Gold Shirt

We're known the world over for our ridiculous affinity to gold. But one guy took it one step further, or should we say, he leapfrogged over himself several times. Datta Phuge, a wealthy businessman attends to his matters wearing a gold shirt with multiple layers of gold accessories. Last we heard, more businessmen have started taking cues from Mr. Phuge.





Fishy Cures

Our ancient Indian texts hold the cures to some of the maladies that have riddled mankind since the first fire was lit. But sometimes, these cures can go a little awry. This brings us to a little known cure for asthma which involves taking a baby sardine and shoving an herbal mixture down its throat right before shoving the sardine down your throat. *gulp*



Chaprah

From the land of a billion condiments comes yet another masterpiece, one that not many would want sprinkled on their pakodas. Chaprah is made using crushed red ants along with ant larvae with a sprinkle of salt and other spices. So if you were ever worried about hitting your Recommended Daily Allowance then you're covered for salt, sugar and protein.

Life

Wait...what? You read that right! This is courtesy of one study based on the discovery of triploblastic worm fossils dating back 1.1 Billion years in Central India. Published in 1998, the study by Adolf Seilacher, Pradip Bose and Friedrich P. pushed back the date for the earliest fossils of multicellular life ever found by a good 500 million years.





Super Sized Clothing

America might be home to the most obese people on the planet and you'd think they make the largest pants but we Indians outdid uncle Sam on this one. We may not have that many obese people but we do have elephants, and we don't leave a stone unturned for our humble pachyderms which includes getting XXXXXXXX...L designer clothing.

Up to something
Facebook is building its own version of Siri, except with a real human at the other end.
http://dgit.in/moneypennyfb



Listen for life
Watch the Curiosity rover explore Mars. But also listen closely for aliens.
http://dgit.in/spookymartians

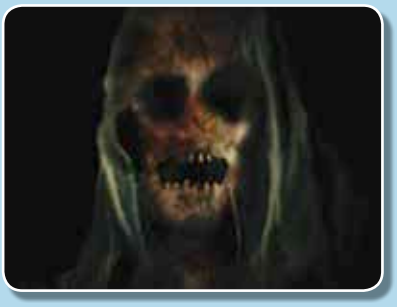
How we unwind



Wimbledon
We don't lose out on opportunities to watch sports on the big screen punctuated with Jayesh's silly comments. And this month it was the Wimbledon final that had to suffer at the hands of Big Daddy's puns. We were really rooting for Federer and it was a sad moment for all of us when the DJoker took the crown from him.

The prodigal son returns
He who shall not be named for all reasons sane and holy missed out on all the action last month as he was backpacking through the misty mountains up north made a guest appearance late this month. And we wasted no time ripping into him. The Ant might not seem to be all that but his presence is like a drug.





Horror Games
Babumoshaye had to go through a bunch of horror games for the DVD and he made Mithun sit and play some of them. That's when it dawned on everyone that he happens to be quite prone to falling for jumps scares. The games that made the cut were thoroughly tested and scored on a number of successful scares.

digit DIARY

After a long long time the Digit office was home to the pitter patter of enthusiastic interns – young, innocent eager beavers full of enthusiasm, a shine in their eyes, and a zest for life. One look at them and we decided "nope, this won't do". Nay! Digit ain't no playground. It's a proving ground. It's a bootcamp that'll make quantico look like a walk in the park. Once you're through the Digit grinder you'd walk straight into any disaster and walk out like a 90s action star with explosions and the whole shebang! How do we do this? We put our interns in the spot by asking them to come up with... wait for it... a poem! That's right, the answer to any problem lies in poetry, and it was high time we added it to our Intern Enrichment Programme, now in version 2.0.1.



Estrogen levels were running quite high this month with two female interns and a new marathi translator being added to the team. While Infancia (our maggi-missing copy-editor) has gotten used to our boisterous ways, these lovely ladies still haven't. The awkwardness of having to self-censor our foul language remained one of the defining features of this month. Ah well, it had to happen sometime or the other. Never too obstinate to see the bright side of things, we look at it as an enforced helping of "culture".

The Babe from Bengal, i.e. Babumoshaye was reduced to an even lankier frame as Dengue drained him of all strength. As if a month's worth of shivers and suffering wasn't enough, he was brought to the brink of tears when the doc said that he can't have any more *mochli* for a further two weeks. We'd support our comrades in anything. We'd run through a minefields, we'd lay down our lives, but the one thing we won't do is show solidarity for a meat ban. We have to draw the line somewhere. So when Ramzaan food came calling we were willing to take a trip down to Mohammad Ali Road in Mumbai to feast on the delectable treats with or without our bongali brother.

The Ant has been at his exaggerating best this month as well. But this time he claims a simple nosebleed put him out of action, or so he tells us. We remain skeptical of his claims though, and if you've been reading the dairy for long then you'd know he's failed to live up to his claims more than once.

We have our creepicheep, but our Delhi guys haven't had an uninvited critter of their own. Not anymore! They finally got their very own unwanted guest - a sly slithering serpentine creature that goes by the name of Sphenomorphous Dussumieri. The scary bit is that it is a delicacy among snakes. No sooner was this fact bought to light that bottles of bleach and industrial grade detergents were dumped over everything until not a speck of organic matter was left untouched.

It might seem that no month at Digit passes without us pulling off another miracle. A little into the month we were torn away from our usual routine of carefully planned disaster into a true catastrophe when our schedule got flipped on its rear end. But persevere we did for This...is...DIGIT!!!!



Wait a little longer
Microsoft's 84-inch 4K collaborative pen display is going to miss it's ship date of 1st september. Read more: **http://dgit.in/wait4windows**



Dangerously fit
These fitness wearables from the 1950s were so dangerous that people were adviced to destroy them. **http://dgit.in/dangerouslyfit**

digit SQUAD

Every month we recognise the best article written by our community members and publish it here. Keep up the good work, Digitians!

Functions in PHP and MySQL worth knowing!

Just started learning PHP or MySQL? Well, here's a consolidated list of some of the important functions in PHP and MySQL which are quite handy:



Praneet Sah

Remember how effortless it was to write your first "Hello World!" program in PHP? Now, it's time to move on to the next level where you can actually build something using MySQL and PHP. Despite how powerful these languages are, they're quite easy to learn and can help turn you into the next web tycoon. So if you're a beginner, then use this article to learn some basic useful functions and if you're an expert, then use this as a cheat sheet. So, let's get started, shall we?

1. Connect to the database

This function is like the "Hello World" program of MySQL and is the most important one if you want to perform any task related to the MySQL database. The code is also pretty simple:

```
<?php
$servername = "localhost";
$username = "root";
$password = "password";
$dbname = "database name";

// Create connection
$conn = new mysqli($servername, $username, $password, $dbname);
// Check connection
if ($conn->connect_error) {
    die("Connection failed: " . $conn->connect_error);
}
?>
```

Here, you'll just need to change the servername, username, password and databasename. You can obtain all these details from your cPanel or from 'phpMyAdmin'. Basically, this code will make a connection to the MySQL database, only after which you can execute any database query. Users generally confuse the username with the database name, so make sure you aren't making this mistake. Another good practice is to put this "connection" in a separate .php file and then use 'include("connection.php");' function of PHP to call it on relevant pages. This is extremely useful if you ever need to change details related to your database, since changes then need to be made in just one file instead of in every file.

2. Fetch data from the database

Now imagine you have a database that has all the records of something important. This would be useless if you can't fetch data from it. And that's why fetching data is another basic function without which your large database would be pointless. The following code will fetch data from DB and then "echo" it to the user.

```
<?php
include("connection.php"); //this file contains the connection details as shown in previous point

$sql = "SELECT * FROM table_name"; //change the table name appropriately
$result = $conn->query($sql); //the $conn variable is defined in connection.php file

while($row = $result->fetch_assoc()) { //it simply fetched the cell data, nothing more fancy here
echo "".$row["column_name"]."<br>"; //and lastly we can use echo or any other function as per our need
}
mysqli_close($conn);
?>
```

Check the first line of the code that has the 'include' function. This function enables connection to the database. In the same folder, there should be a file named "connection.php" that we created earlier. It will have the code as described in the "Connect to the database" point.

3. Update and apply maths to your data

Yet another extremely handy function that lets you update your data and make calculations. Let's look at a situation in which it

```
<?php

include("connection.php"); //connect to DB

$id = mysqli_real_escape_string($conn, $_GET["id"]); //get the id that user entered in your HTML form

$column = mysqli_fetch_object(mysqli_query($conn, "SELECT * FROM table_name WHERE id=".$id."")); //we are using WHERE to identify the row corresponding to the provided id

$updated_points = $column->points+10; //it gets the current value of points and then adds 10 to it

if(mysqli_query($conn, "UPDATE table_name SET points=".$updated_points." WHERE id=".$id."")); //this query is used to update the points and WHERE is again used to identify the correct row.

mysqli_close($conn); //close the connection if you don't need it anymore.

?>
```

can be used. Login to any of your online accounts – say, Facebook for example, and instantly your "last_login_time" is updated in Facebook's database (along with many other things). In layman's terms, without this function, you can't interact with your database. Suppose you have a database with two columns: "id" and "points". You'll accept the id as submitted by the user (using HTML forms and method set as "post" or "get"), use the "id" to identify the correct row and then add 10 points to the current value of the points. And this is how you do it:

You can definitely use other mathematical operations instead of just adding a fixed quantity. You can make it a little more complex by adding a variable instead of a constant value such as "10". Go on and experiment!

Those were the three basic functions that can kickstart your project. When you're a self-taught person, you miss out on some tips taught in coding classes. Let's look at some such tips.

Create links that change based on the user

Suppose a scenario in which there's a link or image that works as a hyperlink. Clicking this link will take you to the login page of a website (www.yoursite.com/login.php). Once you've logged in, you'll be redirected to a page (www.yoursite.com/page.php) that has a button, clicking on which will take you to your own profile

```
<?php
include("connection.php"); //make connection

$sql = "SELECT * FROM table_name WHERE user_id=1"; //use WHERE to filter
the rows
$result = $conn->query($sql);

while($row = $result->fetch_assoc()) {
?>
<a href="http://yoursite.com/<?php echo "".$row["username"]."."; ?>/>
Take me to my profile</a>
<?php
} //close the while condition
?>
```

(www.yoursite.com/username). In this scenario, the button on ".../page.php" is a hyperlink and it is variable in nature. What this means is that it changes as the 'user signed in' changes. So, how do you create such hyperlinks that are variable in nature?

Well, it's easy and can be done keeping the points covered so far in mind. Before reading further, try it on your own and see if you can figure out how to do it. We'll give you a hint: Consider "user_id" to be "1" (In real world, it's also a variable. Try searching for "$_session") and "username" as the column name used to store the corresponding username.

If you figured it out then it's great, else check out the code:

Most of this is very similar to the "Fetch data from the database' point in this article. All you need to do is add the 'where' condition in "$sql" and properly handle the hyperlinking part. Notice how we opened "php" inside an anchor tag and later properly closed the 'while' condition. Make sure to type the 'echo' statement properly and not miss any quote.

Final words of advice

Likewise, there are tons of other uses for these three basic functions. Brainstorm and look around for uses and put these functions into action. The more you put them into practise, the sharper your skills will be. Dig a bit deeper on these three functions and familiarise yourself with "order by rand()" and"limit 0,1" functions (These are typed in the MySQL query – the place where you put the 'where' filter). And if you get stuck anywhere, don't hesitate to use the Stack Overflow forum.

You're now capable enough to make something like http://facemash.praneetsah.com/ or http://irony.praneetsah.com/. And don't stop with these three functions. There's so much more to learn and many mind-boggling programs to create. The only thing left to do now is to work on your ideas.

Disclaimer: The views expressed in this section are of the respective Digit Squad members. Neither Digit nor 9.9 Media takes responsibility of their claims whatsoever.

COMMUNITY CREATIONS:

About the Creation:

AirStream is a service that gives you access to your files, music and photos from your Computer and cloud storage services like Dropbox, OneDrive and Google Drive. You'll be able to stream music and videos from your computer on to your mobile device quite easily. To access the local content on your computer, you need to be on the same WiFi network as your computer. AirStream has a dedicated app for Android and iOS through which you can browse content over your computer and other cloud based services. The app also lets you create playlists from the songs in your PC. This service is supported on Windows, Mac and Linux. Head over to www.airstream.io to discover more.





About the Creators:

AirStream was founded by Jitin Pillai and Nitesh Dulal in April of 2012. Nityaa Labs Team, the company development of AirStream is registered in Canada and has the tech team in Pune. The team consists of four software developers, two UI/UX designers and two marketing executives. The business development and the growth of the company is looked after by Jitin while the technical side of the product is handled by Nitesh. Pictured here from left to right – Nitesh, Pratik, Swapnil, Jeevan, Aniruddha, Piyush. Jitin can be seen in the single image.



No more than required
Akash project was officially shut down earlier this year after reaching their required target.
Read more: **http://dgit.in/akshtblts**



No more cannabis
Check if your driver is under the influence of cannabis by the new handheld "pot breathalyzer".
Read more: **http://dgit.in/potbrthlyzr**

Reasons why Indians are hack proof

In the month when we wear our patriotism on our sleeves, we decided to have a fun look at why we Indians worry less about hackers than any other nation

Agent 001
agent001@digit.in

It's been 68 years since independence, and India has done a lot that we can be proud of. Technology, especially is something we seem to take to like a fish does to water. Mathematics and coding seem to almost come naturally to us, and perhaps that's why most of you reading this are already working or studying in the field of technology. If not working in tech, you're certainly very interested in technology... and if not. Put down this magazine and go watch a saas-bahu serial, or try and figure out your "complex" iPhone!

Still here? Good. While the fatuous fiddle and are flummoxed with their flashy phones or simplistic, soulless and senseless serials, we can get on with business.

What's the business you ask? To chuckle at ourselves, of course. Thus, in no particular order we give you the top reasons why it's just not worth it for a hacker to target Indians.



Poor me!

Let's face it, on average we're not the richest country out there. The per capita income may be dragged a lot lower by the non-technology using poor, but even by global standards we're a poor lot. After rent, food, travel and clothes, we're barely left with anything much anyway. When we're students, it's even worse! Struggling to save enough to get a square meal a day at the college canteen is bad enough. You know, you had to shell out for this copy of Digit, buy a phone, upgrade stuff... all more important things than eating, obviously! Heck, we wouldn't be surprised that if hackers got access to your account information, they might feel sorry for you and make a deposit!

No? Consider yourself rich? Maybe you are, by Indian standards, but by global standards, perhaps not. Is your surname Ambani? Do you drive a super-car? Badly? Well, let's just say you're such a miniscule minority, that the chance of a hacker coming across you is just not worth the effort! Plus your daddy has probably already invested in high level tech security, to prevent you from making an ass of yourself.

Whee... *crash*

You know those potholed-ridden, crowded and messy things the government tells us are roads, or highways? Those aren't just the reality with actual highways, but also what we sarcastically call the "information superhighway".

Internet access in India is improving, steadily. However we're still a long, long way away from being considered part of the information superhighway – we're actually chugging along happily on some dirt road off to the side, which meanders its way through the jungle that is the internet, whilst swerving past potholes, livestock and landslides! Yes, those of us in metros have a prayer of coming close to global averages, and can get to the creamy layer of national bandwidth, however, it's very rare for this bandwidth to be available to those in smaller cities or towns (which is where most of India lives!).

What do slow speeds result in? For one, it makes a remote hacker unlikely to target you, because everything slows down to a crawl. He'd rather get into a system quick, instead of dealing with time lags for each and every command he passes. A hacker also probably doesn't think you have too much important information or money to steal if he can see you've got a sub Mbps connection. Plus, with lost packets and low reliability, you can bet any hacker is going to be frustrated faster than you can load a large Facebook photo album! Next time someone scoffs at your lack of bandwidth, tell them it's a security measure!

Investment junkies

Almost everyone today is an investment guru. Sit down in a group and tell them you have over a lakh in your account, and you can bet you will get at least 20 suggestions for what you can do with the money – including the evergreen "Shove it where the sun don't shine!" *(You already know which one of your friends would say that, don't you?)*

Whether it's gold, the stock market, fixed deposits, mutual funds, PPF, or whatever, chances are your money is safely tucked away earning more than what a savings account can offer you. Unless your name is Siddharth, and you run a popular tech

magazine, in which case, stop reading now and go dunk your head in the toilet! *(Despite our best efforts he's just too lazy to invest in anything, or even save tax in any way!)*

For anyone else though, hacking into your account will not really yield a hacker too much; a burglar, however, can probably make off with much more from the average middle class Indian's home! Perhaps that's why you're more likely to yell "*Chor! Chor!*" in your life than "Hacker! Hacker!"

$7r0|\|g P@$$w0rd$

India is a diverse country, and for almost everyone, English is a foreign language. Well, OK, for those of you insulted by that statement, it's a second language for most... However, most (if not all) services you access are English-based. Taking the most popular first language as an example – Hindi – we often find that people use a lot of 'Hinglish' for their usernames, and thus it stands to reason that we do the same for our passwords. This means that normal dictionary attacks on our accounts are just rendered useless!

Then there's the problem of Hinglish inconsistency. "My dog Tommy" could translate to "MyKuttaTommy" as a password, or, "MeraKuttaTommy" or "TommyMereKutte". And that's just Hindi...if it's a mixture of more languages, that makes it even more complex. This makes it a lot harder for anyone trying to hack you from outside India. Even simple dictionary word passwords in India are way more complicated thanks to the many languages. A person from Chennai, living in Maharashtra, might use a Tamil-Maharashtrian-Hindi mix for his password that would flummox anyone trying to guess it, yet be super simple for the person to remember.

Aplenty

India is the land of aplenty. Well, not bandwidth, but everything else – people, especially! The reason we bring this up is because one way a hacker can get access to your email address, for example, is by trying to answer your security question. You know, those questions that usually involve people, or pets. Stuff like "What was your School Principal's surname?", or "What is your neighbour's pet's name?", etc.

Thanks to our abundance of people, every such question is just more complex to answer. Not so much abroad. For instance, if you looked up Facebook, found someone in the US who listed their email address as public information. You could, theoretically, dig through their public information to try and find ways into their account. say they've listed their address, or checked in "At Home" on some co-ordinates. Now you know where they stay. You can take a leap of faith here and assume they've lived here all their lives (especially if they're under 20 or over 60). If their secret question is something like the ones we mentioned above, you could do a quick search for schools close by (if the school name is not public info already on their Facebook profile), assume the closest public school to be the one they went to, look up who was principal of the school when they might have been in school (usually the school website itself will tell you this as they boast about their history), and you have answer #1.

You could also search for check-ins by others at the same location, maybe find a neighbour, or maybe their Facebook photos themselves will have their neighbours tagged, and then a click through to the neighbour's profile will usually have pictures of their pet. Usually helpfully captioned for a hacker; such as, "Look what *Hercules* did today when we were out!" And they thought no one would find out their neighbour's pet's name was Hercules!

The same applies to silly security questions such as: Mother's maiden name, Name of your first school, Where was your wedding reception held, What is your pet's name, Your father's date of birth, etc. Most of this is easily hackable thanks to the data we share online ourselves!

It's not as easy if you're Indian though. People abroad have two or three neighbours max, whereas depending on what city you live in, here in India, we can have anything from three to 300 neighbours! Although you may have listed your school name in your profile, sometimes even if you have, the school doesn't have a web site still, or some Pakistani hacker has already hacked it and now the site is useless as an information source. You can't use check-ins, because there are too many, or too few. Even something as simple as your mother's maiden name is complex in India because of the sheer amount of names to choose from, and you would never add your mum on Facebook anyway, so no hacker is finding out that way...





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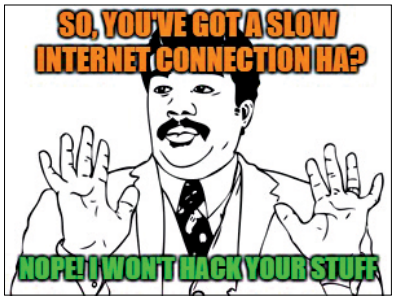
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Brick and mortar

Another important reason is the paranoia we Indians have about our money being spent online. No matter how geeky and modern you think you are, you are always checking and double-checking anything that deals with online transactions. No matter how much we buy online, we're still not oblivious to the risks. Thus, we don't save our card details on even favourite sites. We choose the card with the lowest credit to use online, so in case of a hack the damage will be minimal.

We change our passwords often, and we have better passwords than most. Our banks make sure we do so too. We still opt for cash on delivery as much as possible, and the fact that it's an option on most e-commerce sites is testament to how popular it is. It's also safe. Because no confidential banking information is exchanged when opting for this. This is actually what's made e-commerce such a success in India. Free delivery and cash on delivery have been instrumental in popularising it. The discounts and crazy deals help too, obviously.

Attack Abroad



Most Indian hackers, who could perhaps find ways around all the complexities we've mentioned above would still prefer to hack people in better off countries because the rewards are just that much better. As a hacker, if you are able to hack a first-world citizen, you get Dollars, Pounds or Euros, which obviously are a much higher value given that the standard of living abroad is much higher. Thus more first-worlders have much more cash in their accounts and credit cards than the average Indian.

For example there are many examples of support frauds being run by Indian companies posing as official Microsoft support staff, and conning people into paying them money to fix non-existent problems. Microsoft even sued a few that were doing this, but many fly-by-night operators continue to do this. Most Indians would disconnect a call in fear if they suddenly received a phone call from "Microsoft support staff".

"Oh no! They're on to me, time to format!" (Shame on you if you have to ask why.)

Abroad however, where people actually pay for software, this would be a routine call from a software company. Heck, people might think because of Apple ruling the roost, Microsoft might be trying harder to offer some premium service. Also, people abroad are just used to paying over the phone in general. This makes them an easier target for a scam. Very few indians would volunteer their card information to someone over the phone!

Finally, there's the question of jurisdiction. By the time the scam is discovered, if at all, the scamsters have changed their city of operation in India, and it's like looking for a needle in a haystack. The delay between a foreign agency talking to their government, then that government talking to ours, and then to the cops enables the scamsters to get away. If they targeted Indians, one whistleblower could set the cops after them a lot faster, as it's all a local matter.

An Apple a day

We don't use Apple. Well, some of us do. Most don't. Some don't like it, some don't care, and most can't afford it. We realise that we're going to get flak for this, especially because the Apple fanboys are the most vicious, but the "fappening" is proof that Apple gets stuff wrong, and spectacularly so.

It's not just iCloud that's vulnerable, but apparently there have been known hacks that remain unfixed for months on end. Search for "Apple XARA exploit" – here XARA stands for cross (X) app resource access, or basically an exploit that allows an app to access the data of another app (which could be your App Store, netbanking app, anything!). It's ironic to this writer that, as a thumb-rule, only the rich can afford Apple in India, and the only logical targets for hackers are rich people! You might as well wear a sign that says "Hack me, I'm rich and I have an iPhone!"

If you do have an iPhone, first, stop trying to recharge it in the microwave! Next, if you're worried about XARA, just delete all apps from any developer you don't know, and make sure you only install popular apps. Apple is still working on a fix since this was first reported in October 2014!

Use Linux

If you've been to an engineering college in India, you've probably experienced Linux. If you're reading this, you've probably experienced some Linux distro or the other that we've given away in our DVD. Many of you will still be using a distro, or running dual-boot with Windows.

We even know a few people who only do online transactions from within their Linux installs, or by running a live CD! Although a tad paranoid (even for us), it is a secure way of transacting that you can't argue with. A live CD especially is useful because it doesn't have any added on software, and if someone's been trying to attack your IP with Windows' exploits, suddenly coming on from Linux makes all that effort useless!

As we're used to Linux thanks to college, we'd urge more of you to switch to it. *Viva la Open Source!*

<insert some wise@$$ header here>

This article could theoretically be never ending, given our wonderful diversity as a country. There are so many customs and societal norms that pre-dispose us to being wary of a scam.

For one, our great leaders are always involved in scams, so much so that the word scam itself is now boring. We've been so bombarded with scams and so surrounded with corruption that suspicion is our default mental state. This is the polar opposite of most first world countries where there is more faith in the system, and conspiracy theorists are the exception. It just makes it harder for us to be scammed.

We're sure to have missed a few methods in which Indians are hacker-proof, so make sure to write in to editor@digit.in if you can think of any more. We'll share them in our readers letters section. Meanwhile, enjoy this Independence day knowing that we're more likely to be the hacker in India, and not so much the hackee... *Jai hind!*

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[1] ITIC 2014 - 2015 Global Server Hardware, Server OS Reliability Report, May 2014.
[2] System x Servers ranked #1 in 1Q14 TBR Customer Satisfaction Survey.
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