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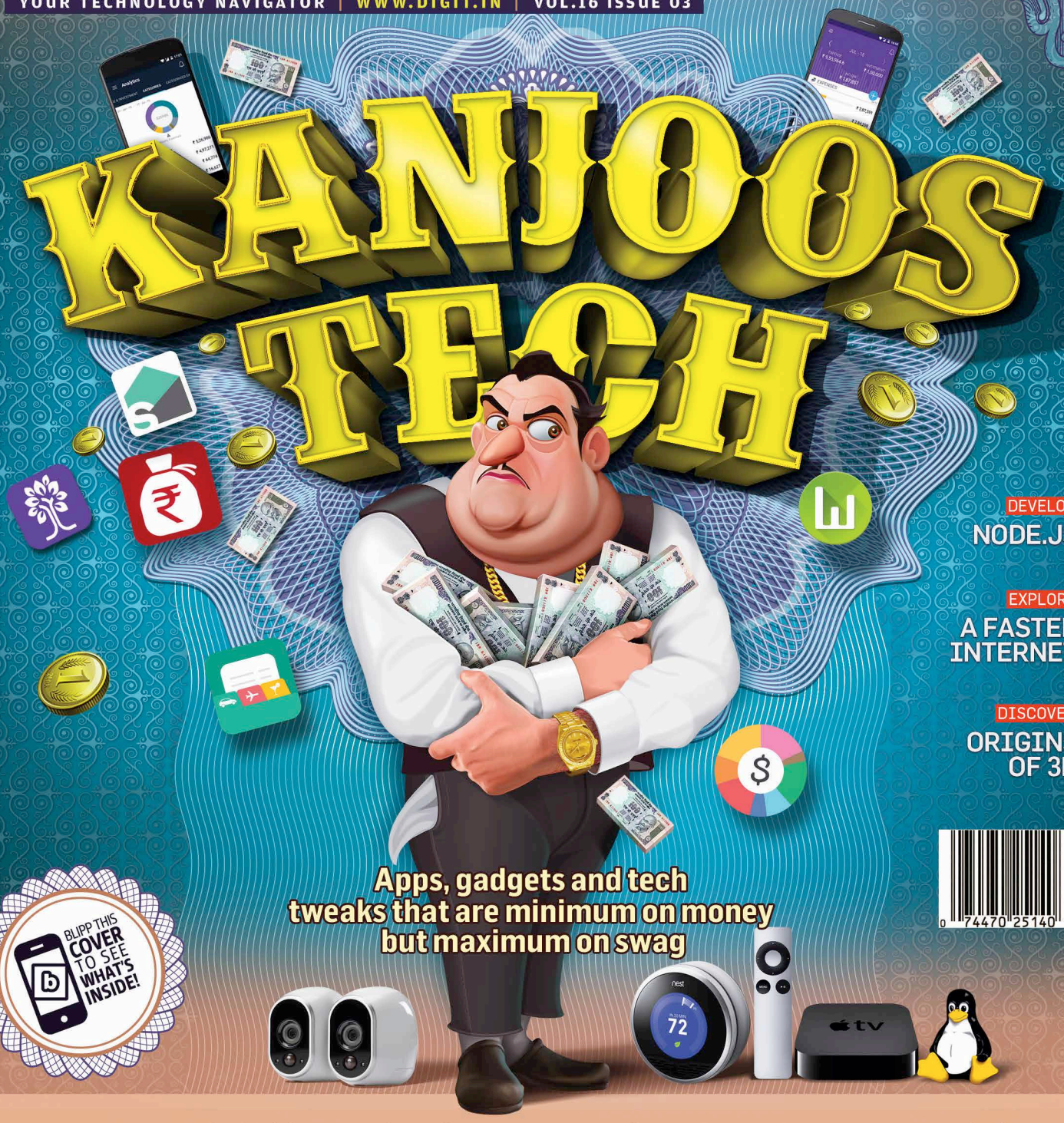
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Apple's doing it right

In the wake of the Nov 2008 Mumbai terror attacks, most people, in a knee-jerk reaction, were willing to make sweeping compromises to their digital privacy. "Let Big Brother watch" was the overarching sentiment during those tumultuous times. In fact, you might've read that very line in these pages.

I don't blame the extreme reactions. A lot of people in the world are willing to forego their civil liberties in the wake of such calamities. The ripples of such compromises can be felt even today, long after the 9/11 attacks in the US; and I'm not even talking about the infamous Patriot Act. I'm talking about the more recent absurd FBI directive calling upon Apple to put in an encryption backdoor on its iPhones.

Being readers of Digit you most likely already know about the tough stance that Apple CEO Tim Cook has taken on the matter, so I'll just skim through the important bits for the benefit of those who came in late.

The FBI wants Apple to build a tool that'll be used to access a locked iPhone, which belonged to one of the San Bernardino shooters. Ostensibly, the tool will only be used to gain access to just that phone. Yeah right! Do they really expect us to believe that? What's more unbelievable is that the mighty US Government with all its billions in resources can't get access to a measly little iPhone. There's obviously more to it than meets the eye.

Apple on its part contends that it's a slippery slope both from the point of view of setting up a disastrous legal precedent and also from the perspective of deliberately devolving security protocols that took them years to develop. By building something that allows authorised access to an encrypted system, Apple will literally open the door to cyber criminals.

Brilliant nut job and self proclaimed "cybersecurity legend" John McAfee has also weighed in on the debate. In his inimitable style, he's offered to break the encryption on the iPhone in question for free. Of course, he goes on to cite various reasons for why the FBI doesn't have the technical chops to get into the iPhone. I think he's just half joking because even he knows it's not really about this particular phone. There's a very interesting Reddit thread where people who presumably know their shit are talking about methods at the chip level that could circumvent the cryptoprocessor by installing custom hardware that'll power off the device after each failed attempt. After that, it's a simple matter of brute forcing (http://dgit.in/rddithack). Now I don't claim to know hacking nearly enough to verify the claim but I know enough to know that there are some really smart people out there.

When I said earlier that there's more at play here than meets the eye, this is precisely what I meant - it's not about this one San Bernardino iPhone at all! Instead it's about the US government's attempt at getting its tentacles into encrypted systems. It wants to make a norm out of what should be an exception. It wants to make hacking into "a process" – something any halfwit with a terminal would be able to do eventually, if this backdoor tool is actually made.

Apple and Tim Cook certainly deserve all the kudos for sticking it to the feds. But this does raise some important questions: If Apple is only standing up now, what have they and other tech companies been agreeing to before this? Apart from valid warrants requesting simpler things such as call records as evidence for example.

Also when we Indians use products of big American companies, what are our rights as non US citizens? Do we even have any? What about similar deals between intelligence/investigation agencies within our borders? Could the Indian govt too have struck backroom deals for installing such backdoors into hardware that we use here? Afterall, our market is large enough to make any tech giant bend over backwards in order to get entry to it.

These might seem like first world problems right now, but if history is anything to go by, they'll become real problems here soon enough. If you have any doubts about the consequences this can lead to, here's a picture that says it better than a thousand words: http://dgit.in/bkdoorconsq. For copyright reasons I couldn't print it but do have a look and let me know your thoughts. You know how to reach me.



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"The FBI wants Apple to build a tool that'll be used to access a locked iPhone, which belonged to one of the San Bernardino shooters."

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Are girl geeks doomed?



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"How can we get more Indian women to reach for the stars by dreaming big through technology?"

Exactly a year ago, in March 2015, I wrote about the lack of girl geeks in technology. From lacking access to technology, all the way up to hitting a glass ceiling when climbing up the professional ladder, women have really had to overcome insurmountable odds, just to be on par in this male-dominated world of ours. I can't understand how girls are always in the majority when it comes to passing percentages per batch in the various state and national level board examinations (Class 10 and 12), but then don't go on to outperform their male counterparts in professional scenarios? Why aren't there enough female technologists and entrepreneurs in our country? Let's revisit the topic again in this Women's Month.

It turns out that there is no easy or quick fix to increase the participation of women in technology. Years of conditioning can't be wished away in the blink of an eye, unfortunately.

I've come across a startling statistic as far as female representation in tech is concerned, something that I missed delving into earlier. Forget trying to get more women in tech, whatever few end up becoming engineers and joining the tech industry in a variety of roles are leaving in record numbers – at least in the US. This doesn't make any sense. Why would women leave jobs that have the most demand, offering among the highest starting salaries (http://dgit.in/HighstSal)?

Two different studies on this topic all but confirm my fears – the workforce of women in tech face overwhelming challenges. Conclusions drawn from responses of 716 women who left tech-related professions after an average tenure of 7 years blame the discriminatory climate at workplaces as their single biggest reason for leaving – the work, by itself, wasn't the problem. Another survey focusing on 5,300 women with engineering degrees earned in the last 50 years found that 38% of them are no longer working as engineers, tech or otherwise, because of the traditional work culture at tech companies. Tech's dominated by men who behave like boys largely oblivious to women's sensitivities at the workplace.

When it came to evaluating identical job applications or entrepreneurial pitches by men and women, researchers from Harvard (http://dgit.in/HrvrdTest), Wharton, MIT and Yale (http://dgit.in/EntrprnrlPitchMen) found that both the sexes exhibited inherent biases which occur naturally, unconsciously and without any malice. Men were always perceived to have better entrepreneurial pitches, and applications with male names were always preferred for a tech role, etc. This is a startling revelation. What this suggests is that simply more women learning to code isn't going to solve the problem of them always being perceived second to their male counterparts.

A few months ago, I came across the stories of two young women outliers. Sabrina Pasterski and Olga Malinkiewicz. At 22, the former is expected to be the next Einstein, poised to unlock the greatest mysteries of the universe, while the latter is attempting to revolutionize renewable energy by developing solar cells with photovoltaic perovskite (instead of silicon) to trap more energy at significantly lesser cost than existing solutions.

How can we get more Indian women to reach for the stars (like Olga and Sabrina) by dreaming big through technology?

If the workplace can't adjust to accommodate girl geeks, then more of them need to start becoming entrepreneurs, start their own companies, correct the workplace imbalance and nurture the professional culture they want by leading with example. Devoid of prejudice, anchored on equality and meritocracy. Restore balance to the force. Easier said than done, no doubt. At the same time, leaders (irrespective of gender) should aim to foster a more open, fair and sensitive tech work culture. I have certainly encountered a growing number of startups with female founders that are leading this wave of change. Through the Startup India initiative, the government has done its bit to unlock the entrepreneurial spirit of women. But clearly more needs to be done.

We are trying to do our bit here at Digit, too. Last year, for the first time since our student internship program began, we accepted two girls studying to be engineers simultaneously for a joint internship – not because they were female, but because they were the best choices. Every year before that, we've had at least one female student intern with us for a month. Progress. We invite more women to apply to work here at Digit. We're never going to give you any special treatment, but we do promise to treat you as equals.



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





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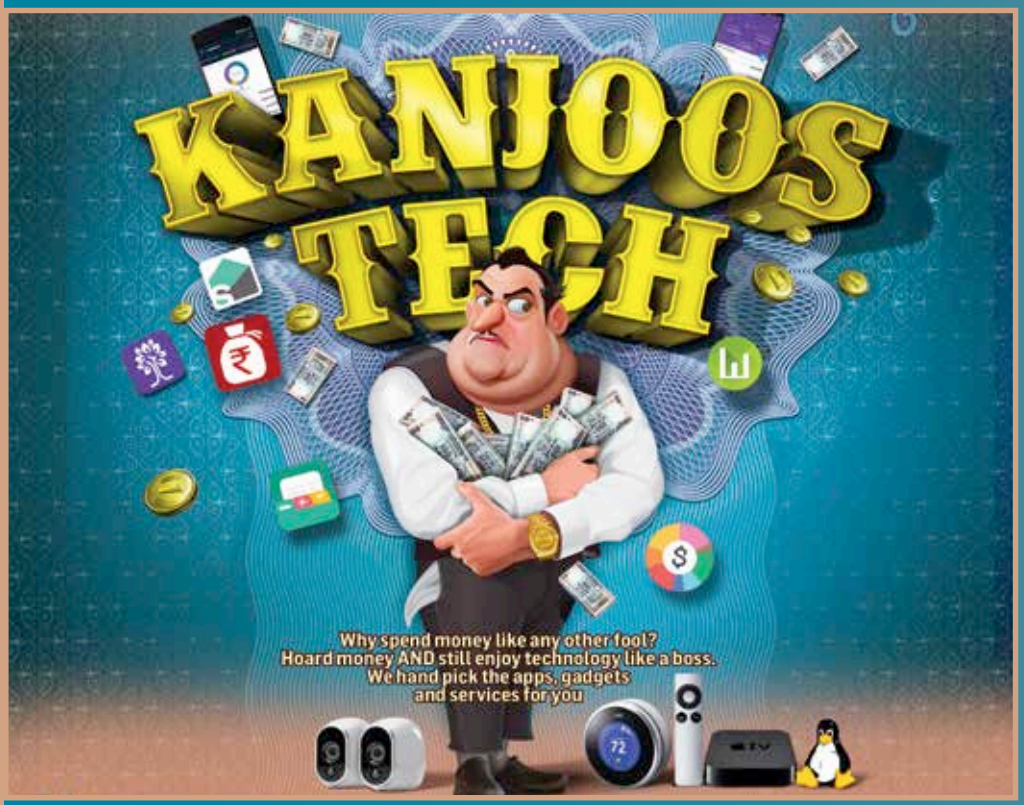
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- Yves Morieux - How Too Many Rules at Work Keep You from Getting Things Done



Let Big Brother watch – Part 2

Assuming you've already read Siddharth's column or last month's cover story, it will become obvious to you that we at Team Digit often disagree on many issues. At Digit, debate is always encouraged – especially when the topics are sensitive. For example, last month's Free Basics debate continues even today, much after the rest of the world stopped caring.

In January 2009, I wrote part 1 of this editorial (not knowing at the time that it was a part 1). It was in the aftermath of the 26/11 Mumbai Terror Attacks that was perpetrated by gun-toting cowards from Pakistan, and yes, I'll admit to being very angry when writing it. However, I don't think I've changed my mind, even after I've had time to think about it. I still believe that my personal privacy isn't more important than someone else's life.

I just cannot fathom what the average person has to hide. No one really cares if you're having an affair, sending naked pictures, surfing porn, pirating movies, hacking your neighbour's Wi-Fi... Sorry to burst another bubble, but no matter how important you think you are, you're a nobody in the grand scheme of things.

I also really don't get the indignation over the evil government agency reading my emails, hacking my phone, tracking my movements or any of that. In a First World country, people are always under surveillance. There are CCTVs everywhere – some government set-up and some privately owned – and everyone happily shares CCTV footage or information with the authorities in case of an accident or crime. Does this mean that there's more "privacy" for people in India from the government or law enforcement authorities, as opposed to, say, the US or Australia? Yes. Now ask yourself if that privacy has resulted in anything other than corruption, lawlessness and in some cases, mob justice.

In this whole Apple vs. FBI debate that's happening as I write this opinion piece, I don't trust Apple any more than I trust the FBI. I am a proud skeptic. Yes, Edward Snowden gave us a peek into the dark underbelly of certain government agencies, but are you really gullible enough to believe that it's any better within greedy corporate companies? Since we're so quick to accept conspiracy theories (especially when it involves a government), here are a few more:

Could this not be another publicity opportunity being exploited to the fullest by the world's second-most valuable company? Does it strike no one else as just a tad fishy that this is happening immediately after Apple lost the top spot to Google (technically Alphabet)? Can you think of a better way of publicising the security of your products? Basically, Apple is telling the world that its products are so impenetrable that even the mighty US government cannot get into one. It's win-win: It gets to play the good guy, receive a pat on its back by all and sundry for standing up to the evil government, and forever put to bed the memories of its security lapses in the past. Plus, have you considered that this is also Tim Cook's moment in the sun, and an opportunity for someone other than the late Steve Jobs to be Apple's rock star?

I don't know about you, but I'm not ready just yet to jump up and down, scream in joy and throw my undergarments at Tim Cook when he appears on a stage.

Is it possible that Apple is indeed standing up for what's right? Yes. And is it possible that the opposite is true? Yes, equally so. At least to me.

FBI Director, James Comey is certainly hinting at that. In a letter put out on February 21, 2016, Comey basically referred to Apple as a greedy corporation. You can read the full letter at: http://1.usa.gov/1oCQnYU

So, am I saying we should just let the FBI do whatever it pleases? Of course not. Everything needs checks and balances in place, including technology, and especially government agencies. However, I do think we need to grow up and realise that technology is just technology, but it can be used for both bad and good. Just as you may not want your competitors spying on your employees through backdoors built into Apple's technology, you don't want terrorists being able to use the same security to plan an attack that could kill your loved ones. There is no black or white in such situations – grey is where most of our lives are lived.

Also, remember, Apple and other technology companies are already monitoring your devices and your usage of their services like Big Brother. They're doing this in order to get you to spend more money, whilst the government's motive is to control you (and stop you from getting blown up now and then). Bottomline? You have no choice other than to let Big Brother watch... it's just a question of which Big Brother, and why.



Robert Sovereign-Smith
Executive Editor
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"In this whole Apple vs. FBI debate that's happening as I write this opinion piece, I don't trust Apple any more than I trust the FBI."

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TX-800P



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Feedback for the February 2016 issue of Digit



✉ This is with regard to the cover story "Angel or Demon".

While reading the cover story, I was reminded when (in 10+2) my college principal asked me to prepare for a debate where the topic was SWADESHI vs. VIDESHI (Made in India v/s Made Abroad). I was asked to talk in favor of items made abroad. It was so difficult and painful to get content and ideas. While delivering my argument I noticed that the chief guest had a Reynolds pen in his pocket. That time Reynolds pens were new and expensive. I pointed out in my discussion that even chief guest of this function is using items made abroad because they are of good quality. Everyone was silent for a minute.

When I read the statement "some internet is better than no internet" it reminded me of the elections where some politicians were offering free food, clothes, liquor and money. And the poor are ready to accept this because they have no choice. We need to remember that nothing comes for free, as always *conditions apply.

Why can't our government start this free basic scheme (unbiased not like Facebook). In past one year we all heard about Digital India. The BSNL network is available in the most remote places in India. Government can introduce a scheme which say, if you have a BSNL sim and Aadhar card you can access to internet free up to, say, 100 MB per week or so. Why do we need Mark Z? We want everyone to be connected and aware of what is happening in this world, and the government has to do the right thing.

–Asheesh Saxena

All valid points Asheesh. You've rightly pointed out that we should always view foreign entities bearing gifts with suspicion. Colonialism was perhaps the biggest example of why. It's rightly said there are no free lunches.

Why do you trust the government so willingly? Even in our country we tried our hand at progress via the whole PSU route but failed miserably, didn't we?

I totally agree with you that we need everyone to be connected and aware what is happening in this world. But an internet that is being controlled / rationed out by the government also has its pitfalls. For example a Free Basics like service started (or subsidised) by X government may not allow news from a publisher that routinely writes stories about corruption within this X government.

I think every economy needs a balance between free market forces and regulation. And because we are still a democracy there is hope. Thanks for writing in with your comments though. Looking forward to hear more from you.

–Siddharth

✉ I am constrained to bring to your notice that your website contains mostly outdated data. Most of the models (under any category) are no longer available and the price quoted of the available ones are totally laughable! Research seems to have been taken out of the loop by your team. Please stop wasting our time & money (data usage for you) by making us chase shadows! You must either clean up your act or get off the air. A huge disappointment, unexpected of such a reputable organisation as yours.

–Rajan

Sincere apologies for the disappointment. We have been facing issues in terms of our DB management and price feeds. Could you please mail us a couple of links for us to look into the issue (as a starting point). We assure we will fix the issue and get back to you with accurate and updated data.

–Soham

✉ *shhh* Minion 007 calling in *shhh*

Through my experience of reading Digit I framed up an equation: 1g * D = 1gG | Where, g = Gender of the human | D = Digit | G = Geek

This mail is gonna be a serious one with lots of queries and suggestions...

So, here we begin with queries:

- I have many dual audio movies which I want to watch on my LED. The problem is that I can't find the option to change the audio. Is there any way to do so or can the movies be converted from dual audio to single audio with freedom to select the audio to be deleted.
- I am thinking about getting a PC on stick. Are they worth the price and what requirements should my LED fulfil for using them? Also suggest some ideal PC sticks under 20k.
- Which is the best broadband available in Delhi (high speed, low price)?
- What are the requirements to be a minion?
- Are there Digitians present on

Quizup? If so what is their name?

- How to get Digit to sponsor an IT festival?
- Who is the youngest one at Digit and his age?

Now some suggestions:

Please provide at least one page of tech quiz and jokes in Digit. (I may give write ups).

- Startups is a trending topic nowadays. Why don't you provide an issue on it?
- Batch scripting is a good programming language and there are many batch scriptors (me) on earth. So why don't you provide an FT on it?
- Pls pls pls PDFs of Encyclopedia Technica.

I'll conclude with a fact: Most of the population (me) wasn't even born when Digit started! That's all BOSE.

–Alpha 007

Greetings Minion,

- Use https://mkvtoolnix.download/ to strip away unwanted audio tracks from the MKV container.
- If you aren't going to purchase the stick PC any time soon, you might want to wait for the second generation of Intel's Compute Stick. The STK-2mv64CC shows promise.
- It's best to enquire around your neighbourhood since an ISP's performance involves a lot of variables. You could also check some topic specific forums like these: https://broadbandforum.co/, http://www.indiabroadband.net/
- An unwavering passion for games and tech supplemented by the will power to slog it out.
- We used to play a lot. Don't any more.
- We're always interested in associations with college festivals. Drop an email mentioning all details to editor@digit.in with sourabha@9dot9.in on CC.
- Nikhil - 21
- Write away!
- Didn't we already? Maybe a new section would do better justice. Stay tuned.
- We've done an FT on Python, maybe you should give that a read.
- We've given out all the PDFs of everything ever written in Digit in the June 2015 anniversary issue, including all the Encyclopaedia Technica booklets.

LETTER OF THE MONTH

✉ Hi Digitians! I'm a great fan of you guys! I'm 18, and I've been buying this magazine since January this year, because I love computers and other gadgets a lot. You guys work hard to keep customers like me updated.

I would like to thank the Team for all the info included in last month's issue. "The sweet satisfaction of 'Sangharsh'" by Sid is a great start for the magazine, I just loved that note! It actually seemed to reflect the type of madness I usually do with my Notebook, the stuff I do is "never straight out of the box"!



The Bitcoin article, the music streaming article, the 5G article, and especially the in-depth analysis of "Free Basics" by Jayesh Shinde was too cool! The Fast Track about virtual reality is indeed a serious book though, I actually got scared at times while I was reading. I don't need such a world!

The most favourite of all was the Remix OS. Awesome! Awesome! Awesome! I had this notebook of mine since January 2015, awarded by the government for my excellent performance in exams, and it came with Ubuntu 14.04. I hated the interface, and replaced it with Peppermint 5. That's until you guys included the awesome Remix OS! I manually installed it on my hard disk with a little bit of 'sangharsh'!

The USB install utility which was actually an edit of UNetbootin does not work with Linux, so I created a 16GB FAT32 partition in my HDD (using GParted) and uncompressed all the files of that Remix OS .img file in the root of the partition. Had to rename that folder named "efi" to "efi_backup" else my UEFI (or whatever) used to boot Remix OS at first, and I wanted my GRUB v0.9 to be booted first. I had to manually edit the menu. lst of GRUB to be able to select between Peppermint 5 and Remix OS during Startup.

Now I use Remix OS a lot, and the video included in the video folder of the OS was funny! Not all Android apps are supported, but still I love the UI! Thanks for that guys!

Do include more free OSes in your future DVDs. On a scale of one to ten, I give you 9.5!

P.S. Love the hairstyle of Robert. I wish I had hairs like him (literally), for the sole purpose of saving my saloon charge every month!

–Jay Sarma

Thanks for your letter. Looks like you indeed went through a lot of sangharsh to get Remix OS going. Keep a look out for more distros coming your way on the DVD and do keep writing in.

–Siddharth

How I wish it was a "style" Jay, because that would imply that I actually had a choice in the matter..."

–Robert

You'll also find the above FT to Python in the same DVDs.

–Mithun

✉ I guess this is my first mail to Digit in 3 years. It was good that you sent out the Digit Archives on the DVD but I have a nice collection with myself as I like to keep the Magazine intact as it came (A pic of all the issues will be followed up soon).

I never bought this magazine for the DVD, and when I do use the DVD I always go to the data folder, (So no need to change the UI for me). I am a techie and like to read up tech stuff. I fell in love with this magazine at first sight. Now being 17 yr old (Soon to be adult) I will always strive to be worthy of it. Coming to SKOAR!, I would really like you to add some more about games, review the latest DLCs, upcoming games of the month etc. (Being in 12th I do not get to play much, but I like to read about them). Whenever I am in Mumbai I would like to visit the test center, as I would love to experience the new tech which money can't buy.



Will.i.am, not again!
After the terrible Puls smartwatch, Will.i.am is back with the second edition called Dial, and it is no better **http://dgit.in/DialSW**



The 'cloud' phone reviewed
Can a refresh design and seamless cloud connectivity make Nextbit Robin a hero? Here's the review. **http://dgit.in/NBRRevw**

I like to solve people's PC problems, do you guys know some website where I can put in my expertise and earn some respect? PS- I have not yet received the January issue.

–Daksh Khorana

You cannot beat a physical magazine, we are with you on that. Books and magazines, when possible, are the way to go for sure.

Yes, a lot of our readers don't bother with the interface, however, many still do, and we are working on making an HTML interface. We welcome help from skilled readers also, if there's interest we will open source it and give each contributor credit in the Digit DVD. Write to editor@digit.in if you want to volunteer your coding skills. We will certainly try and include some of your suggestions regarding SKOAR!, however, 24 pages can only fit so much. You're welcome to drop by the test centre, but give us a call first because there are times when the entire team is out for press events or interviews, and the like, and we wouldn't want you to waste a trip.

The Digit forum (forum.digit.in) is the ideal place for you to go and help people with their problems. You can earn respect amongst other geeks like yourself there.

You should have received your Jan issue a lot earlier. Why didn't you write to help@digit.in as soon as you realised it was even a little delayed? All readers should do this, it's why the helpdesk exists, in order to help you get answers about your purchase or subscription or delivery queries regarding the magazine.

–Robert

✉ Hello Team Digit. I am an avid reader of your esteemed and superb tech mag. I use Thesaurus to try and use big words because it's fun. I am Dhritiraj Kalita, an enthusiastic student studying at kendriya vidyalaya borjhar, azara, guwahati. I am 14 years old and in the 8th standard. I am really impressed by your opulent and unparalleled way of English writing which has become my key to unlock a humongous new world of aesthetic English literature. Your awesome blend of new words is godlike. With your luxurious english, I have won many English composition competitions, and certainly spoken panegyrics by the teachers, friends and the principal. The way you provide information about the latest technology affairs are gorgeous. I like this month's DVD content. Remix OS was mind-blowing.

–Dhritirj Kalita

Thanks for writing to us Dhritirj. We hope that this love of using Thesaurus isn't something we inspired in any way. If anything, our goal at Digit has always been to simplify technology and even language so that there are far fewer barriers between our explanations and your understanding. Of course, as writers some of us do take the occasional liberty of using some fancy language, but I certainly hope it's the exception and not the norm. We're really glad that you have won a lot of awards and praise for your English skills, and you should certainly follow it up if you're passionate about it.

Also, Dhritirj, pardon me for taking the focus away from your letter and using this opportunity to pass on an important lesson to all our readers:

Don't ever look down at someone who doesn't communicate well in English (or any other language) as someone who is of lower intellect. Language is just a tool to convey an idea, respect or disrespect the idea, not the ability to use the tool of language. We urge readers who may not have the best English language skills to also write to us – we promise never to judge your language, and respond only to your ideas.

–Robert

✉ Greetings fellow humans, there be a problem. Let me begin at the beginning. Today I bought The Feb issue of digit and sadly pages 8 to 17 of the gaming supplement are missing.

I guess it happened only to me, I don't think you guys would ship out a whole batch without some sort of check in place. To be honest I get most of the news you guys cover through the mysterious and magical internet and mostly look forward to SKOAR!

The issue I want to raise is why is Nintendo always left out of SKOAR!? I rarely see the Wii and DS mentioned. I mean, in the best FPS games there was no mention of Splatoon which if you guys remember won best multiplayer game at "The Game Awards". I know most people don't own a WiiU and big articles focusing on them may not be justified, but acknowledging/mentioning that it exists would be enough.

Anyway, still enjoy the magazine. Just bought a Raspberry Pi 2, but sadly missed out on the Fast Track. Luckily I bought the December edition.

PPS- Great article on Google Dorks. Quick Question- Is it legal to try them out with non-malicious intent. I remember trying out the security camera one a few years ago, but just out of curiosity.

–Aqdhd Zwty

Well that's just rare! We will share the PDF version with you. Actually we rarely attempt to cover any news. Instead we look to tell you what why you should care about certain events or trends amongst all the rest of the cacophony. Perhaps you should restart reading our features and send us feedback about those as well. Nintendo's low on our gaming radar, we admit, but not for too long. It's similar to the criticism we get on being too Android and iOS focused and not doing too much for Windows Phone. We'll fix it.

–Jayesh

✉ I am a digit subscriber, and the January edition was very good, but I was actually floored to have read the "Human Brain" dmystify. One of my close friends is an MSc in Psychology, he saw this small book, was glued to it, and now I don't have the dmystify anymore!!

If possible, could you please help me get another copy of the dmystify, I am ready to pay for it .

–Vibhav Hegde

We're happy that you liked the dmsytify, and the fact that an MSc Psychology liked it enough to take it away from you is quite flattering. We will be in touch with you privately to help figure out how to get you a replacement.

-Siddharth

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TECHNOLOGY WITH STYLE

GREED

For those who just want more than should be humanly allowed, we have enough to satisfy your hunger...

THIS MONTH: Merlin Digital Futureboard, Henne BMW Landspeeder, Sherp, BMW i8 Protonic Red Edition, Imperia Horns and Sherman.

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: Point Break, Gakusen Toshi Asterisk, Thing Explainer, A Short History of Nearly Everything, Guide to watch Anime and Manga.



CleverPet

After you leave, it's natural that your pets feel lonely at home. In a bid to fight boredom and also to make them smarter, the CleverPet Hub is a first of its kind gaming console for dogs. It will keep your dog busy through puzzle games using light, sound and touchpads and on successfully winning the game, your dog will be rewarded with treats.

DESIRE > **SHOWCASE**

MSI GT72S G Tobii

Big Brother is watching you



If you're an avid MOBA player, you might be spending a considerable amount of time opening up your inventory in-game. This involves a lot of mouse movement, clicking and isn't efficient enough for professional players. What could literally change the game is eye-tracking, something which MSI has inserted into the GT72S G Tobii gaming laptop. A proprietary eye-tracking technology from Tobii, the laptop will continuously keep tracking the location of your eyes on the screen. This technology can open up possibilities for an endless number of applications for games. Say, you want to open up your inventory and equip items, or maybe you want to change your targets while gunning down the enemy – the possibilities are endless. Tobii uses "triple dual lens near-IR illuminators" to track your eye movement. It works even in brightly lit environments. Not just games, it's supported by Windows 10 and Windows Hello so, you'll be able to unlock your PC by making faces to it. The compatibility goes further by enabling you to control navigation on your desktop, letting to select or move objects by simply looking straight at them and even zoom into maps. Being a gaming laptop originally and combined with the eye-tracking tech, it will cost you around ₹1.8 lakhs.

SPECIFICATIONS

Display: 17.3-inch IPS 1920x1080 | **CPU:** Intel Core i7-6820HK | **GPU:** NVIDIA GeForce GTX 980M (8GB GDDR5) | **Memory:** 32GB DDR4 | **Storage:** 256GB SSD (PCIe Gen3x4) + 1TB SATA HDD

Intelligent Parking Chair



Pushing the chairs back into the desks is a tiring job. We know, we don't do it either. Thanks to Nissan, we don't need to anymore. Behold their Intelligent Parking Chair.

Aquaris M10 Ubuntu



Spanish company BQ had already packed Ubuntu in a 10.1-inch tablet and now the updated version works like a PC after connecting a display, keyboard and mouse.

Fitbit Alta



Fitbit has released a new fashion-centric fitness band dedicated to women. It offers the regular activity monitoring features in a variety of band options, a gold one is coming soon.

VAIO Phone Biz



Surprise, surprise! VAIO has come out of the dark to release a new Windows Phone and it's slated to start selling from April at a price of around ₹30k.

Leica X-U

Taking your camera on an adventure trip can be risky since most of the point and shoot cameras are fragile and surely won't survive a drop. Hence, you turn towards action cameras but they don't offer the kind of quality you would want in your photos. Leica is filling up the void with their X-U that will fulfill all your adventure photography requirements. Capable of taking photos underwater (up to 15 metres), the camera is shock-resistant, dust-sealed and shatterproof, making it an ideal companion on an expedition out in the wilderness. The X series of cameras from Leica packs the 16.5 MP APS-C CMOS sensor, combined with their premium Summilux 23mm f/1.7 ASPH lens. The same has been carried on in the X-U, offering superior quality photos while maintaining the rigidity for rough usage. To ensure that the camera withstands the strong conditions it's going to be exposed to, the X-U has a non-slip body and a toughened monitor screen cover. The camera is also capable of shooting videos in 1920x1080 and 1280x720 at 30 frames per second. It's priced at around ₹2.3 lakhs.



SPECIFICATIONS

Lens: Leica Summilux 23mm f/1.7 ASPH. | **Sensor:** 16.5 MP APS-C CMOS | **ISO:** Up to 12500 | **Shutter Speed:** 30 to 1/2000 sec | **Screen:** 3-inch TFT LCD | **Storage:** SD/SDHC/SDXC memory cards | **Weight:** 600 g

Arcaboard

The movie Back To The Future predicted that by 2015 kids would be gliding across town on hoverboards. It's 2016 and all we've got are prototypes and wheeled boards trying to pass off as hoverboards. The latter should stop masquerading as the real thing, immediately. Among the prototypes making the rounds on the internet, most of them are based on the concept of magnetic levitation, making it restrictive to hover above magnetic material only. Arcaboard is another attempt at perfecting this nascent technology and yes, it actually hovers. There's no fancy physics involved here but rather a simple function of upward thrust. The lift is generated by 36 electric fans outputting a combined 272 bhp. Such high consumption drastically cuts down on the operational time so you won't be able to hover for more than six minutes. It further reduces to a mere three minutes if you're heavier since it switches to the "Enhanced Thrust Version" to support the extra weight. As disappointing as this might sound, it takes about six hours to charge and the company gives the impatient ones an option to buy the ArcaDock accessory to boost the charging speed in under 35 minutes. The Arcaboard will let you hover at a software-limited maximum speed of 20 kmph.





NUA Robotics Suitcase

You might have always wanted someone like R2-D2 following you around wherever you go. Since we have a long way to go until we build astrodroids, the NUA Robotics Suitcase will have to do for now. The suitcase connects to your phone using Bluetooth and gives you full control through an app. With the tap of a button, the suitcase will start following you, by tracking your location (or rather your phone's location). The proximity detection hardware will ensure that it avoids any kind of obstacle coming in its way and figures out an alternate route. Manually pulling the suitcase will charge the battery on the go and the battery pack inside will let you charge mobile devices such as smartphones, tablets, laptops etc., from the suitcase as well. Still just a prototype, we can't blame them for not putting a price tag on it yet.



Ehang 184

The picture up there can be a little misleading. That's not a little toy quadcopter you're looking at. The Ehang 184 is an Autonomous Aerial Vehicle (AAV) that can apparently even carry a 100 kg human. It does everything automatically and the only control on your end is to take off, pause flight and land the vehicle. The rest is taken care off by the drone after you enter your destination through a smartphone app. Running on a battery, it flies at a low altitude and features a fail-safe system. Any anomaly detected in the system's components will result in the aircraft initiating an emergency landing in the nearest possible area. The Ehang 184 connects to low-altitude command centers which prohibits the aircraft from taking off during harsh weather conditions, ensuring a higher level of safety. The body of the aircraft is made with the same aeronautical materials used in space crafts and it can climb a maximum height of 11,000 feet. The eight motors on-board are capable of delivering a maximum output of 106kW letting you cruise at a top speed of 100 kmph and for about 23 minutes. Nothing clear on the pricing yet, but it's rumoured to be between 1.3 and ₹ 2 crores. Yes, we were shocked as well.

Fender In-Ear Monitors

Massively popular for manufacturing guitars and amps, Fender has now entered the in-ear monitor segment with its new series. A total of five different IEMs have been announced by the company after they acquired Aurisonics, a custom-fit and premium quality IEM manufacturer. Each of the five units have a unique feature to set them apart. All the variants are packed with titanium drivers and the body has been 3D printed with Digital Hybrid Technology to emulate the feeling of a custom-fit IEM. The base model – Fender DXA1 – sells at around ₹7k and the price goes up to ₹32k for the top-end Fender FXA7. Speaking of the unique offerings in these IEMs, the DXA1 has a different shape than the rest, intended to give a better snug fit. The FXA2 sports a rare-earth dynamic driver and a mechanically tuned bass port. Founder of Aurisonics, Dale Lott's first design for balanced armature drivers has been incorporated in the FXA5. Fender's Hybrid Dynamic and Balanced Armature Array is seen on the FXA6 which again has been mechanically tuned and ported. The most premium of the Fender IEMs, the FXA7 packs all the above features with additional dual-balanced armature tweeters. So Fender if you're listening we'd like the FXA7 for review right away please. Actually, make that three.





Varia Vision

For bikers, screens that are mounted on handlebars aren't the most ideal since they require the rider to look away from the road ahead. A transparent HMD has always been the holy grail in this space but somehow no one's got it right so far. With the Varia Vision Garmin wants to take a crack at this problem. The Varia Vision intends to put up an augmented display over your glasses to alert you about traffic and directions. You'll also get turn-by-turn directions and notifications from your phone, and a rearview radar will continuously send you feeds about cars behind you. The device is waterproof and has a touchpad on the side for navigating across the menus. It connects to your phone for GPS data and can give you vibration alerts. The Varia Vision will last up to eight hours on a single charge. The small piece of tech comes at a hefty price of around ₹27k, hence it's clearly meant only for the ones passionate about bikes.

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Pentax K-1



Pentax has finally delivered what it had promised a year back. After unveiling a prototype, the company launched the K-1, their first full-frame camera and has priced it substantially lower than the competition's offerings. It'll set you back by about ₹1.2 lacs while similarly specced full frames from competition will be about ₹1.5lacs. What does Pentax's full frame camera offer? The 36.4 MP sensor has a maximum sensitivity of 204,800 ISO and a maximum shooting speed of 4.4 fps, so you can expect great detail and dynamic range. The full-frame sensor is enclosed inside a dustproof, weather-resistant and cold-resistant magnesium alloy body which gives you 5-axis stabilisation. It also gives you a close to 100% field of view through the viewfinder. Another interesting feature of the K-1 is its weird 3.2-inch LCD screen mounted on four legs sliding across a series of slots. This makes it quite useful while taking those crazy shots that could give someone a backache. The body also consists of LED lights on the back to shed light on the controls and also above the lens mount to help you swap lenses in the dark. Not only did they announce a new camera but two lenses as well – the HD Pentax-D FA15-30mm f/2.8 ultra-wide angle zoom and the HD Pentax-D FA 28-105mm f/3.5-5.6 compact zoom lens. Pentax has already been selling full-frame lenses for a while but the older ones don't have stabilisation and autofocus, so you'll have to wait for the new ones to arrive.



ThingMaker

Mattel has joined hands with Autodesk to give us the ThingMaker – an easy to use 3D printer to print out toys for kids. This is another step towards making 3D printing mainstream and not restricted to enthusiasts. You can print out all sorts of figurines and accessories using the ThingMaker Design App. The figurines follow a ball and socket design and the app contains an entire library of parts. You begin with a selection of stock figures followed by the liberty to swap and add any combination of parts. One can simply go crazy here by attaching human hands to a dinosaur's body or attaching wings to the dinosaur. Currently the ecosystem of the parts are quite generic and the company will eventually expand their library to include popular character from their franchises. The price tag of around ₹21k might sound attractive for parents wanting to experiment with 3D printing at home to make toys for their kids. Albeit, the entire process of designing your toy and printing may have been dumbed down extensively, kids will still need supervision. Mattel has incorporated several safety measures to ensure you or your kids don't hurt yourselves. The automated door locks itself up while printing, removing any possibility of irresponsible poking into the print area. At the end of a printing session, the heated print head retracts inside so that your hands don't accidentally come in contact while removing the printed toy.

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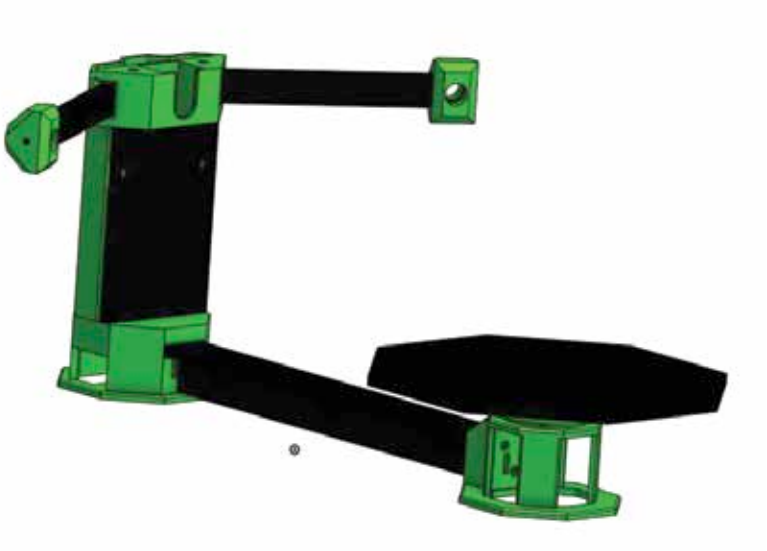
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DESIRE

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Here is where we keep an eye on crowdfunded projects that will make you go 'Shut up and take my money!'



CowTech Ciclop

Are you a proud owner of a 3D printer? Great! Do you also have a 3D laser scanner to complete the package? Probably not. Sure the concept of 3D laser scanning may not be new, but a pocket-friendly 3D laser scanner certainly is. The DIY starter kit from Ciclop costs just ₹6,804 which is way lower than any of the competitors like CowTech's own BQ Ciclop, MakerBot Digitizer or Rubicon 3D which have a starting price of roughly ₹24,000. Since it's a DIY kit you'll need to roll up your sleeves and get busy in order to assemble it. Since there's a nifty instruction manual this may not be such a hurdle but operating it may prove difficult for novices as you'd need to have a little bit of programming knowledge, specifically Arduino. Once done you'll be on your way create .STL files which are recognised by any 3D printer, within no time.

Link: http://dgit.in/CowTech

SPECIFICATIONS

Scan resolution: 0.5mm | **Published scan time:** 2-8 mins | **Kit material:** Lasers, a NEMA 17 stepper motor, webcam, acrylic parts, CowTech-designed Arduino shield, Uno development board, power supply, USB cord.

Joule Caffeine Bracelet

Yes you read it right, just like nicotine patches we now have caffeine patches embedded in bracelets. Talk about enabling addictions jeez! But hey some people really can't function without their caffeine fix. Working on the same principle of fat solubility to move past the blood-brain barrier, a single patch of caffeine in the Joule bracelet gives you a caffeine boost of nearly four hours. So what does Joule do for you? It adjusts as per your caffeine intake to give you just the right rush needed – no more, no less. If you're style conscious – and we're pretty sure you are – there's a whole range of colours to choose from. Who says getting your fix should be a purely function affair? Priced at ₹1,993 for a kit of one Joule bracelet and 30 patches, it seems quite cost effective if you consider the number of espresso shots you won't be having in the day thanks to this nifty band. Or will you? What about the pure taste and aroma of coffee? You'll surely miss the experience of stepping out on a "coffee break" clearing your head and hitting your mental reset button. If your boss gets wind of this and your increases productivity is noticed this little bad boy might just become mandatory.



Link: http://dgit.in/JouleBrclt

Pagaré NFC Payment Smartstraps

Tap and pay is the new paradigm for payments. With companies like Apple and Google coming to the fore with their tap and pay solutions, a whole realm of possibilities seems to be getting unlocked for other tech companies to experiment with. One such great result is the Pagare Smartstrap which adds NFC payment feature to your smartwatch. Its priced at ₹4,742 and currently supports Pebble Time watches only. And if you don't own a Pebble but still want to experience this product then opt for their combo pack of a Pebble Time Round (20mm) or Pebble Time Steel and the Smartstrap at ₹17,113 which is still slightly lower than the price of a new Pebble Time watch... In India that is.

Link: http://dgit.in/PagareNFC



Immersit

After 3D you got 4D but in cinemas not in our homes, yet. Have you ever wondered why though? If not then don't stress your brains out let us enlighten you. It was all because of a simple reason it wasn't supposedly affordable for companies to adopt as of yet because they have introduced 3D recently and 4D would include real time physical effects too. Immersit which promises to bring the jolts, vibrations and tilts right to your couch. Imagine playing on your PS4 while sitting on your couch and happen to tilt towards the right during a sharp curve or to dodge an attack physically which happens a lot, what if instead of you doing it, your couch does it for you. Wouldn't it be way cooler! Yes, we thought so. The possibilities are immense, imagine enjoying adult content with real world tilts and jolts, devious aye. The basic kit priced at ₹49,657 excluding taxes, may not be exactly considered cheap but it's way lower than what the competitors like D-Box are offering. And the most advantageous proposition being you don't even have to get rid of your old trusted couch to make space for the likes of D-Box.



Link: http://dgit.in/Immersit

Kamibot

Kids these days crave interactivity from most sources. Gone are the days when simply folding paper into planes or boats provided hours of entertainment. Enter Kamibot, cute little programmable papercraft robots which make learning fun. They're is a fully customizable open-source Arduino based robots, which kids can program. They can be customised endlessly and programmed with Scratch – a simple programming language designed specifically for kids which uses simple drag and drop functions. Priced at ₹6,804 it ships with 1 Kamibot, 1 Micro USB cable, 1 Kamibot Tank Papercraft Skin, 1 Line tracing mat and Android, iOS and PC apps free download code.

Link: http://dgit.in/KamiBot





Ekko

High fidelity over wireless has always been an elusive goal – especially when it came to broadcasting or streaming high fidelity wireless audio in a local set up like a living room. Enter Ekko with a promise to enable Hi-Fi over Wi-Fi. The device connects any source to any output. The equipment consists of a total of five elements - a base station, which connect the sound source, and four wireless receivers with built-in battery, which connect to a stereo, or speakers or headphones. A signal transmitted by Ekko is no less than 24 bit / 96 kHz. What more could even the most discerning ears ask for?

Link: http://dgit.in/EkkoAud

DESIRE

MOBILE WATCH

Stylish, glamorous and interesting smartphones are always on the horizon. We take a closer look at what's hot in this space...

Archos Diamond 2 Plus



After the success of Archos 50 Diamond, Archos has introduced its newer entrant in its diamond series, the Diamond 2 Plus. Featuring a 5.5-inch 1080p 2.5D screen, it packs a 400ppi IPS screen. It also features a 20 MP Sony sensor rear camera with dual-LED flash, an 8 MP selfie shooter and is powered by a MediaTek MT 6755 Helio P10 SoC with an Octa-core CPU clocked at 2 GHz and a Mali-T860MP2 GPU. You have 4GB of RAM, 64GB of storage, LTE Cat.6 support, a fingerprint sensor on the back, a USB Type-C port, and a 3,000 mAh battery running on Android Marshmallow 6.0. All this weighs at just 130g and is available for only $229 (roughly ₹16,000).

ReFlex

It's about time that flexible displays go from being mere proof of concept to everyday usable tech. The LG G Flex got so much media attention last year one would think these displays would be commonplace by now. Not so much. Still there's hope: another prototype has appeared and it adds on a few more features. Developed by researchers at the Queen's University in Canada, this phone is surely what can be the phones of the future. The phone has a 720p HD full colour flexible LG OLED display with multi-touch. There are bend sensors and haptic actuators which detect "bend gestures" to receive inputs. Bending it on the left edge for example creates the effect of flipping through pages – something that comes naturally to anyone who's ever leafed through a book. You can feel the sensation of the page moving through the fingertips via a precise vibration coming from the top of the phone. Imagine you are playing Angry Birds and instead of touching the screen, you have to bend it to pull the bird. More you bend, greater is the pull of the slingshot. These are just some of interesting ways in which we'll be able to interact with flexible screens in the future. The researchers believe that fully commercial devices could be available in the market in the next five years. We can hardly wait.



COURTESY: QUEEN'S UNIVERSITY



CAT S60

Designed especially for the engineers, Caterpillar's S60 comes with an inbuilt thermal camera. It's the world's first smartphone to have such a camera. Why? Well, engineers like to see the world through the eyes of *Predator* ! We kid of course. The idea is to let users peer inside structures, electrical panels, vehicles or other enclosures and detect heat sources. It also allows you to see in pitch-black darkness by detecting the heat points. Along with the rugged looks and build, S60 is also waterproof and can withstand drops of up to 5.9 feet on concrete, owing to its die cast frame. Priced at $599 (roughly ₹42,000), its other specs include a 7-inch HD display with Gorilla Glass 4 protection that also supports touch with wet fingers as well as gloves, a 5MP front-facing camera, 32GB storage and 3GB RAM along with a 3,800 mAH battery and Android Marshmallow 6.0 running under the hood. Phew!

EXAMINED

Really cool products come to the Digit Test Centre which don't really fit into the standard product categories that we review in the Bazaar section. We write about them here mostly to make you turn green with envy.

Merlin Digital Futureboard

Last month, we had the pleasure of drifting around the neighbourhood on a self-balancing board from IO Walk. Using different names, there are numerous other retailers who are repackaging and selling these boards in the country. No, we aren't going to call them hoverboards because they don't hover. Merlin Digital sent down their Futureboard at our labs and we wasted no time in beginning our shenanigans with the board. It wasn't a high end version like the IO Walk Elite but rather a more entry level one. One distinct feature that made this Futureboard stand out is the bluetooth speaker embedded in the chassis. You can connect your smartphone and play your favourite songs.

The material on this doesn't seem as sturdy as the previous board we'd got, but that didn't stop us from zooming around on the terrace at high speeds. The board had better precision compared to the IO Walk



and even slight maneuvers would turn the board in the particular direction. Moving around obstacles seemed easier with the Merlin Futureboard. The trade off was that it wasn't as stable and we found it difficult to maintain a straight path. It would wobble at high speeds. The Futureboard has a top speed of 10 kmph. On paper it may seem less but when you're drifting on the board, even 5 kmph seems fast. It takes around 2-3 hours to fully charge the device and it should be able to travel a distance of 20 km in one single charge. We extensively used the Futureboard for menial tasks such as getting coffee and even passing a sheet of paper from one end of the office to the other. Walking is so 2015 right?

Apart from a few niggles about build quality and stability issues, the Futureboard is still fun. At a price of ₹35,000 many of us kept looking at it longingly. Some of the more adventurous in our midst were actually considering buying it.

Henne BMW Landspeeder

Reviving a legend

Ok first off unlike the self balancing board you see above, this beauty didn't actually grace us with a visit. We wish it had but this is as good a section as any to write about it. Texan shop Revival Cycles has built the custom-designed Henne BMW Landspeeder to pay homage to a bygone era when motorcycles were works of art. Accented with vintage aesthetics, it wouldn't be a surprise if the bike is still a rage in the future. More than the technology used in the bike, the experience of riding it is of utmost importance according to the makers. Based on the original design of Ernst Henne's original landspeeder design, the 1928 BMW R37, this elegant work of craftsmanship is completely hand-made. The original design zoomed past more than 76 land speed world records between 1929 and 1937. To bring it back to life in this age, the Revival Cycles team spent more than a month working on the aluminium bodywork and were finally able to revive the legendary bike. The vehicle has been adorned with several hand-fabricated parts and a lot of time has been spent on perfecting all the details. Not exactly falling short on the embedded technology, additional improvements include increased stability for high-speeds but sadly you won't be breaking any records on this age old bike. The bodywork has been overhauled with customised stainless steel hardware and a lengthened steel body while the front suspension now has a 24 degree setup. Bike lovers will surely appreciate the intricate design of the Henne BMW Landspeeder and it's difficult to break it to you but this dream machine isn't for sale, no matter how rich and influential you are. It was apparently made on request of a client who wanted to have it just for display. Massive bummer right?



GREED

DROOL MAAL

Get your drool on and behold some of the fanciest, ostentatious and drop dead gorgeous things money can buy. Droolworthy?

Sherp



While the certainty of an apocalypse is still debatable, it obviously won't be easy to survive. But why take chances? Be Prepared as the scouts' moto goes right? Joining the list of survival gear required for the apocalypse, the Sherp is one badass truck ready to mow down zombies. The menacing tyres are almost as high as an average person and they let you traverse almost every type of terrain, even water! In the race to survival, you are bound to come across water bodies at some point (remember all those crumbling bridges in every post apocalyptic movie ever made?) and keeping this in mind, a group of Russians have made the Sherp capable of going through water like auto drivers through a Saturday evening market. Powered by a Kubota V1505-t 44-horsepower diesel engine, the Sherp can attain a land top speed of 45 kmph and while on water, you can reach speeds of 6 kmph. Speed is hardly the feature to focus on here. Instead it's the Sherp's unstoppable nature you should think about. With a fuel tank capacity of 58 litres, you should easily be able to drive around all day, looking for supplies and survivors. The base model will burn a hole of about ₹44 lakhs in your wallet whereas one equipped with all the accessories pushes the price close to ₹52 lakhs. Small price to pay to be top dog when the apocalypse comes right?

BMW i8 Protonic Red Edition



The BMW i8 started off as a concept but when it was actually put into production, it showed us that we don't need to wait for futuristic-looking cars anymore. Apparently the highest-selling hybrid sports car in the world, the i8 now has gone through a new paint job. Not that the earlier white and blue accented shade was anywhere near dull, but the new coat of special edition red makes it look a class apart. Along with the red shade, the other parts will have Frozen Grey metallic accents. Nothing changes under the hood though. It will continue its reliable 1.5 litre turbocharged three-cylinder BMW TwinPower engine capable of generating 231-horsepower and the electric motor that generates about 131-horsepower. Red won't be the last iteration of the Protonic Edition and BMW has said that there are more to follow. The Protonic Red Edition will come with the new W-spoke 470 light-alloy wheels highlighted with Orbit Grey Metallic with hubs donning an Aluminium Matte finish. High-grade carbon fibre has been extensively used including the center console and instrument panel inside, along with the pull-handles. The Protonic Red Edition is said to begin production in July 2016 and the orders will only be open until the end of 2016. They will be built at the Leipzig plant and more special editions are said to follow next year.

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Imperia Horns

Here's a piece of tech that's clearly suffering from the golden era syndrome. Oswalds Mill Audio (OMA), already known for building premium audio equipment, have come up with the Imperia Horns. The speaker system follows a four-way horn system which is essentially a vertical setup of conical horns consisting of two more rear subwoofer horns using a huge 21-inch woofer. The basic drivers have a frequency range of 100-20 kHz while the subwoofers lie between 20-100 Hz, achieving the lower frequencies. The idea behind using the conventional loudspeaker design of horns is its superiority of delivering sound at desired directions efficiently. The entire system is powered by its own solid state amplifier. The two conical wooden horns (100 Hz and 300 Hz) are available in choice of solid Pennsylvania Black Walnut, Cherry and Ash. Designed by David D'Imperio, the latest model is glorified with natural Pennsylvania ash and has been hand-rubbed in oil and wax. If you have a huge house, well maybe a mansion, and you happen to call yourself an audiophile, this should fit nicely next to the Monet hanging by the fireplace.



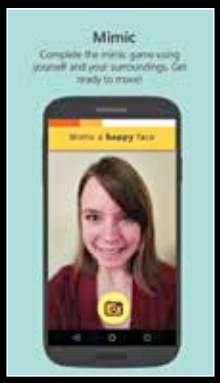
Sherman

When it comes to watches, it's best that we leave it to the trustworthy Swiss. Not only will you have elegant looking timepieces but also a display of timeless craftsmanship. Designed to resemble a cute little robot, the only capability it possesses is to tell you the time and nothing else. Sherman has been conceived and developed by Swiss watchmaker MB&F in collaboration with L'Epée 1839, which is Switzerland's only high-end clock manufacturer. This is a wonderful looking clock for your table with an in-line eight-day movement system so it will require rewinding after a week. The eight days of runtime is made possible with the barrel on the bottom at the back. The Regulator is placed right on top of the clock, hence it's also referred to as Sherman's brain, inside a polished blown mineral glass dome cover. Sherman can be moved around on this rubber caterpillar tracks. The clock come in variants such as a palladium plated one, gold plated one and maybe even a diamond variant. There's no information on the pricing but we can assure you that none of us can afford it.



APP WATCH

Mimicker Alarm



Microsoft is all set to make you hate alarms since turning it off won't be easy. The new alarm app presents a quirky way to wake you up by making you play games. The most irritable method has to be the "Tongue Twister", since it's difficult to even speak when you're half awake. Another option called "Express yourself" asks you to take a selfie and also throw an emotion displayed on the app. The last option, "Color Capture" will ask you to capture an image containing a colour and no, they aren't evil enough to ask for a specific shade.

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

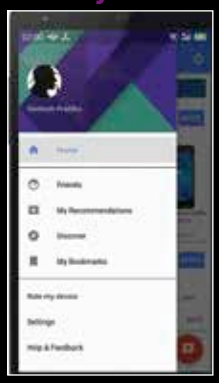
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Smartly.Me



Primarily an app dedicated to recommending the best smartphone to buy according to your preferences, it also serves you with recommendations for apps and games you should install. Based on generated persona score in the 'For Me' section, you will be given recommendations for apps, phones and games. The 'Discover' section is the cream of the app and this is where you're going to look for your next smartphone. After setting the budget, you can select your preferences for the most important features to efficiently narrow down your choice. Another important feature is the service center locator which is a pressing need these days.

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

TEMPTATION

CRITIQUE

In this section, we put stuff through the grinder and closely examine what comes out; everything except gadgets, because there's more to life than just that

ANIME

Gakusen Toshi Asterisk

Clashing swords and flaming love

Animes always have a tint of their native culture embedded in their narrative, so does Gakusen Toshi Asterisk or popularly known as The Asterisk War. The Academy City on the Water or Asterisk is the world's largest stage for battle entertainment - The "Star Wars Festival." The entire storyline is woven around the super powered main protagonist Amagiri Ayato, a Star-pulse Generation who arrived at Asterisk at the invitation of the Student Council President of the, Seidoukan Academy. Unfortunately he was noticed by the 5th ranked Princess Julis-Alexia von Riessfelt, and



ended up having to duel her. The one thing that sets apart this anime from everything else is the brilliant depiction of sword play.

Rating: ★★★☆☆

– Ashish Panigrahi

MOVIE

Point Break

Not one of those worthy remakes

Remakes are rarely well made. Had we been completely oblivious to the existence of the original from the early 90's, we probably would not have had many complaints with Point Break, but this particular reboot kept us pining for Keanu Reeves and Patrick Swayze for two whole hours. Barring some adrenaline-fueled action sequences that seemed like they were straight out of a Red Bull documentary, Point Break had little to write home about.

The premise is the same as the original, of course – Johnny Utah (Luke Bracey) is a rookie FBI agent who's been tasked with busting a group of extreme sports junkies who're responsible for a series of well-coordinated and seemingly impossible robberies. The antagonist, a man who goes by the name of Bodhi (Edgar Ramirez), leads Utah to believe that what they're doing would assist them with being one with nature, and that they're essentially chasing nirvana. Unlike the original, the dynamics between Utah and Bodhi fail to be as convincing as they ought to have been, and Utah is more or less seamlessly woven into their Robin Hood-esque gang of bandits, without



the slightest air of suspicion. Many of the supporting actors lacked background stories or definitive dialogues that could have potentially enriched the relevance of their roles.

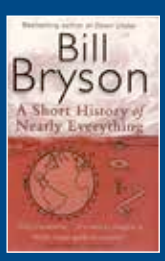
The soundtrack wasn't all that bad – but it wasn't something that you'd expect from a movie based on a cult classic where you had tracks by Jimi Hendrix, and memorable rock bands like Ratt and Concrete Blonde. In short, if you're willing to periodically draw a blindfold over your eyes and restrict yourself to viewing the lens flare-ridden panoramic action sequences, you might find this highly unnecessary movie redeeming to a certain extent.

Rating: ★★☆☆☆

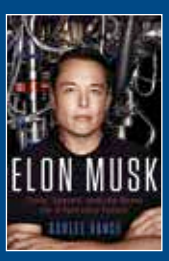
– Shiv Issar



Thing Explainer
Certain science questions tend to bewilder us, and Munroe has the best way to explain them through simple drawings in his latest book. Consider this book as a "Explain Like I'm Five" for science.



A Short History of Nearly Everything
We've subscribed to Audible and our first recommendation would be this timeless piece from Bill Bryson. It covers topics right from the Big Bang to the rise of civilisation, with humour thrown in for free.



Elon Musk
This book throws light over real-life Tony Stark – Elon Musk's vision and how his entrepreneurial journey unfolded resulting into the formation of SpaceX, Tesla and SolarCity.

TEMPTATION

TTD

Bored out of your wits? Can't think of any fun thing to do? Worry not, we'll take that burden off your shoulders in our Things To Do section every month. Read on!

Animes and Mangas

The how-to guide for novice anime lovers

Our love for Naruto and Luffy has drawn us into this Holy Land of animes and mangas, without which life would be bland as food is without salt. So buckle up dear naive and innocent weeaboos as we guide you to the depth of the world of animes and mangas. In the tradition of badly translated manga, a guide with really bad English follows.

The starters

1. **Golgo 13:** This story revolves around the protagonist Duke Togo a deadly assassin who is hired for some high profile killings and is a ghost. So find out what makes him tick through this marvellous work of fiction.
2. **Black Jack:** Karma is not going to come back to you even if you kill someone or save someone is proven by the hero of this saga Black Jack as he dabbles into the lives of multiple people to help them out but in return gets shunned all the time due to a stupid facial scar.
3. **Case Closed:** You might have heard about Detective Conan in passing. Yeah this was the original publication name of Detective Conan before it was developed as a anime, so check it out.
4. **Oishinbo A la Carte:** For all the foodies out there this is the best food manga running till date. It still salivates grownups in each and every chapter with its unique description of flavours, aromas and delicacies of regions far and wide.





5. **Kindaichi Case Files:** The case files of this manga generally deal with whodunnit Kindaichi mysteries arising from multiple homicides and supernatural interventions. This is another mystery manga in addition to Case Closed worth reading.

Main Course

After a delicious starter its time for some main course delicacies to be devoured. But hey wait a minute aren't we forgetting something? Ah yes the how to for getting these delicacies. So here's a list of some of the best website in world for reading mangas and watching anime. These websites are being arranged in order of descending likability based on their content bank, visual appeal and ease of reading or viewing.

Manga

1. http://dgit.in/Mangareader
2. http://dgit.in/Batoto
3. http://dgit.in/Mangafox
4. http://dgit.in/Kissmanga
5. http://dgit.in/Mangapanda

Anime

1. http://dgit.in/Masterani
2. http://dgit.in/Funanimation
3. http://dgit.in/KissAnime
4. http://dgit.in/SoulAnime
5. http://www.watch-anime.net/

Bon Appétit



Thank you for waiting so patiently and here is your reward the top three anime every anime fan would have to watch for getting animeducate.

1. **One Piece:** Luffy D. Monkey is a gomu-gomu man aspiring to be the King of all Pirated After Gol D. Roger, but is a little naive and good hearted pirate (yeah! it's good hearted now move on). And is also unaware of the Legacy of D's that the World Government is afraid of.
2. **Bleach:** Shinigamis after to reap the soul of a person who is going to die soon, or so we thought. Join Kurosaki Ichigo on his journey to unravel the mysteries of soul society, his own lineage and the ways of Shinigami. Unfortunately the anime production stopped after episode 366 due to the death of its director, but its still worth watching the aired episodes.
3. **Steins;Gate:** This is a little less known animes as it has far less episodes aired then the preceding two. But that doesn't stop us from binging Dr. Rintaro Okabe's crazy mad scientists moments who often goes by his pseudonym Kyoma Hooin.

Dessert el Gourmet

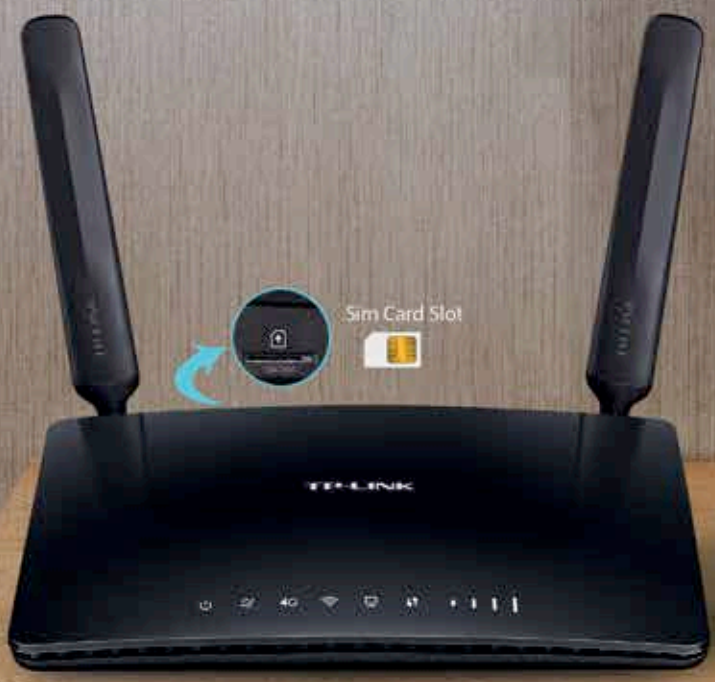
1. **Naruto:** If you haven't heard about Naruto Uzumaki yet then you have been living under a rock. So we suggest you watch the whole Naruto and Naruto Shippuden series.
2. **Fairy Tail:** This is another popular franchise which deals with the world of guilds with the essence of magic running through its veins. Watch the whole Fairy Tail and Fairy Tail (2014) before you acquire any bragging rights.

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1 REMOTE DESTINATIONS



2 MEETINGS AND EXHIBITIONS



3 ON-SITE PRODUCTIVITY

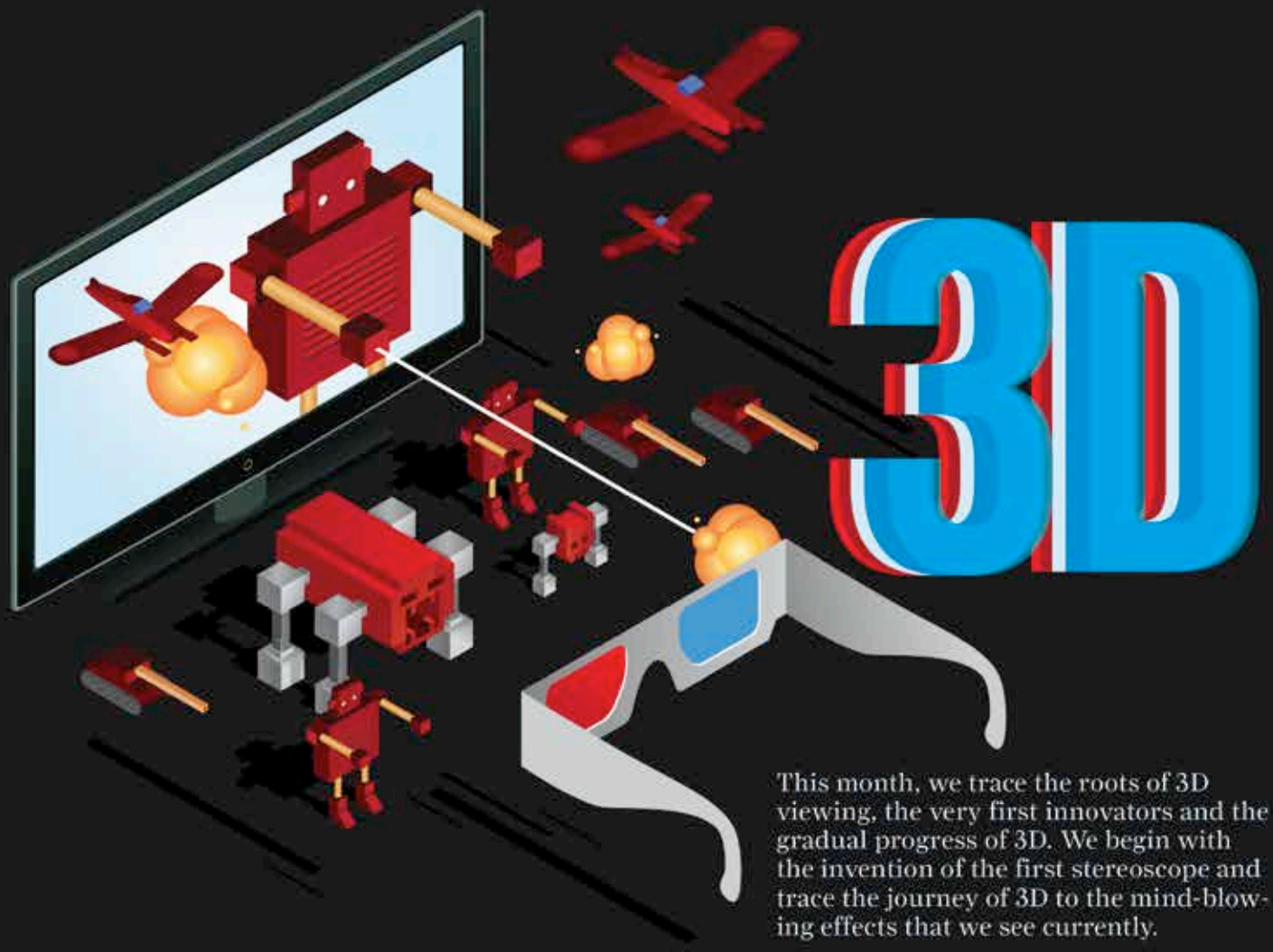
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Exclusive on flipkart.com

35

Geek life
For those with supercomputers on the brain, here's a look at the top 5 supercomputers of our country

WhatsApp Deletion
Telecom service providers have started condemning WhatsApp for stealing their audience and want it deleted. **http://dgit.in/WhatDel**



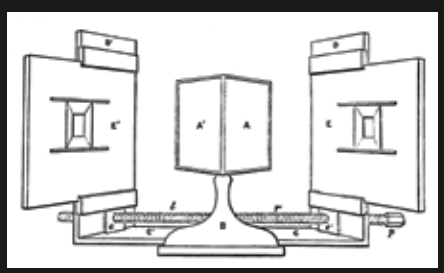
This month, we trace the roots of 3D viewing, the very first innovators and the gradual progress of 3D. We begin with the invention of the first stereoscope and trace the journey of 3D to the mind-blowing effects that we see currently.

Souvik Das
souvik@digit.in

3D viewing is not as young a craft as we commonly perceive it to be. Back in 1838, Sir Charles Wheatstone invented one of the first and very basic forms of stereoscope, using two mirrors tilted at 45 degrees to the viewer's eyes. The instrument illustrated the impact that binocular depth perception of an image had. It also showed what roughly translates to 3D viewing of today. The mechanism presented images of the subject in question to the left and right eyes, separately, and successfully showed how the brain can perceive such images with a sense of depth. This very first instance of 3D vision, or a stereoscope, was a bare bones structure that did not even employ lenses, and came a year before the very first photograph was produced.

The first perception of depth

Sir Charles' stereoscope used a painting and showed a three-dimensional version to intrigued audiences. About a decade later, in 1849, Scottish physicist Sir David Brewster constructed the world's first lenticular telescope. He was the first to use lenses in the construction of a stereoscope, thereby making the devices much smaller in size. The stereoscopes became portable, and the initial handheld stereoscopes became known as Brewster Stereoscopes. After failing on his quest to find instrument makers in the United Kingdom who could work on his design of the stereoscope, Sir Brewster headed to France, where he met Louis Jules Duboscq, a French instrument maker famous for being one of the earliest patrons of photography. Duboscq would go on to tweak his stereoscope and market them, suddenly creating widespread demand for the 3D viewing stereoscopes and gave birth to the 3D industry.



Wheatstone's initial design of the stereoscope

The initial, miraculously realistic results that the stereoscopes gave caught the attention of Queen Victoria, and Sir Brewster's work was exhibited

at the Great Exhibition of the Works of Industry of All Nations at Hyde Park, London, in 1851. 'Stereographers', or photographers who would capture scenes and views from across the world for stereoscopes, came into being, and a large number of stereoviews and stereo cards were developed and sold. This was the very first instance of 3D viewing capturing widespread attention, and Sir David Brewster was commonly held as the inventor of the stereoscope.

This, however, was stated by Sir Brewster himself as undue credit. He stated that the very first concept of a stereoscope, albeit without the use of a lens or a mirror, was made by a Mathematics professor, Mr. Elliot. In his book titled 'The Stereoscope; Its History, Theory and Construction' published in 1856, he states that Mr. Elliot first gathered the understanding and concept of stereoscopic vision leading to perception of depth of an image when he wrote an essay for the University of Edinburgh's Class of Logic, back in 1823. Sir David's description of Mr. Elliot's very first experiment with obtaining a 3D image states, "Photography did not then exist, to enable Mr. Elliot to procure two views of the same scene, as seen by each eye, but he drew the transparency of a landscape with three distances. The first and most remote was the moon and the sky, and a stream of water from which the moon was reflected, the two moons being placed nearly at the distance of the two eyes, or 2 inches, and the two reflected moons at the same distance. The second distance was marked by an old cross about a hundred feet off; and the third distance by the withered branch of a tree, thirty feet from the observer. In the right-hand picture, one arm of the cross just touched the disc of the moon, while, in the left-hand one, it projected over one-third of the disc. The branch of the tree touched the outline of a distant hill in the one picture, but was "a full moon's-breadth" from it on the other. When these dissimilar pictures were united by the eyes, a landscape, certainly a very imperfect one, was seen in relief, composed of three distances." Mr. Elliot did not pursue this further owing to the difficulty of obtaining high quality images, and only



The first 3D film, shot in 1922, has been lost in the history of time

resorted back to his study when he noted Sir Charles Wheatstone's published paper in the Philosophical Magazine in March 1852, alongside contesting his claim of inventing stereoscopic 3D vision.

The first ever 3D movie

These were the initial stepping stones laid down by early pioneers in the field of 3D vision. The earliest known person to fidget with stereoscopes and 3D viewing in films was William Friese-Greene. A prolific inventor famous for his works in motion picture and the chronophotographic camera, which used celluloid as a medium for recording films and could capture up to 10 photographs per second on a perforated celluloid film, Friese-Greene experimented with cameras to create 3D vision on screen, thereby giving the cue to filmmakers and films that would follow. On September 27, 1922, Harry K. Fairall produced and directed a silent film, The Power of Love, using a red-and-green anaglyph 3D camera to shoot it. The film premiered at the Los Angeles Ambassador hotel, but did not generate massively favourable reviews.

This was the world's first 3D movie, and gave the audience the option to view alternate endings to the film. Viewers could watch the film through either the red eye or the green eye of the provided 3D glass, and could thus choose an alternate storyline (happy or sad), based on preference (although frighteningly interesting, we do not know which ending the majority chose to see). This move of providing two endings was owing to the use of the anaglyph 3D technology, presenting two different images that the brain synthesises into one. Unfortunately, however, the 3D version failed to garner widespread interest, and was screened only one more time in front of the press, in New York City. Between 1923-24, Selznick Distributing Corporation procured the movie and screened it in 2D, under the name of Forbidden Lover.

The Golden Era of 3D (1952-54)

The very first experiment with 3D in films did not capture the fancy of the public the way stereoscopes did with still images, and it was a long, three-decade wait until Bwana Devil in 1952 garnered notable attention. Written, directed and produced by Arch Oboler, Bwana Devil accounted for a number of world's-first records, such as the world's first 3D film in colour, and the world's first full-length feature film with audio. The film also sparked the craze for 3D movies across the 1950s, and was advertised with the tagline, "A lion in your lap! A lover in your arms!"

The film was shot in Natural Vision 3D process, devised by Milton and Julian Gunzburg. They had pitched the system to a number of production houses including 20th Century Fox, Columbia, Paramount and Metro-Goldwyn Mayer, all of whom had turned it down. Oboler went ahead, shot and presented the Bwana Devil, which would later go on to become a milestone. The film was presented dual-strip, with Polaroid filters. This spawned filmmakers into action, and gave rise to what is now referred to as the golden era of 3D films (1952-54), screening films like Man in the Dark and House of Wax (first 3D



Bwana Devil, based on a true story, gave birth to the golden era of 3D films

Skype 5 to 25
Skype goes on and increases the support of number of people from 5 to 25 on its Android and iOS apps. **http://dgit.in/Skype25**

Star Wars 35mm
The original Star Wars Episode IV: A New Hope 35mm film from 1977 has been restored in HD version. **http://dgit.in/Star35mm**

FUN FACT

Laurens Hammond, in December 1922, premiered the world's first alternating-frame 3D viewing system, known as the Teleview. Using separate prints for each eye and an interlocking projector system, frames for each eye were presented alternatingly to the other eye. Each frame was shown three times to reduce flicker, and custom viewing devices were synchronised with the projector to give the viewers a 'clean' 3D experience. Hammond would later invent the Hammond Organ, a device that took its operational principles from the Telharmonium - a massive instrument that is hailed as the origin of music streaming in any form, one that we covered in our last month's origin story of music streaming.

feature film to have stereophonic sound). Another impact that 3D films had on the history of films is in forming the juncture of an intermission in films. With two films having to be played via two separate projectors, the largest reel length possible to be loaded on to a projector was approximately of one hour. This often meant that a break within the films was necessary to continue screening the entire film, and as a result, filmmakers started incorporating the factor of the intermission as a pivotal crisis point in the films, thereby maintaining the heightened attention of the audience intact through the interval.

The golden era of 3D movies was short lived, and demand and production of 3D films gradually started declining by late 1954. Among the reasons that initiated the decline was the effort required to synchronise and maintain two separate reels with precise coordination, shooting cost, and the unusability of side seats in a theatre because of the directional silver screen (essential reflective surface for the working of Polaroid filters) leading to lower profits of movie theatres. Among the movies that brought 3D films to the audience and gathered considerable interest were Alfred Hitchcock's Dial M for Murder and Son of Sinbad, an RKO/Howard production.



The Stewardesses has been one of the most profitable films of all time

Signs of resurgence

About a decade later, the 1960s saw 3D films attempting a revival. Coincidentally, Arch Oboler was yet again the man behind 3D's slow resurgence. His usage of Space Vision 3D, a technology that allowed 3D films to be played on a single strip and using a special, Trioptiscope Space-Vision lens, deemed the restrictions imposed by dual-strip playback minimal. However, the result obtained was darker and more polarised than what was seen earlier.

In 1969, the advent of Stereovision proved to be a groundbreaker in the world of 3D films. A 35mm single strip format could now play 3D films, and the film The Stewardesses that cost $100,000 to be produced back then, went on to become a phenomenal success. It is the highest grossing 3D film till date, eventually earning a consolidated sum of $140 million over time, and becoming one of the most successful films (in terms of investment and returns) ever made. Stereovision became the basis of 3D films for a span of almost 25 years, following the success of this film.

IMAX's three-dimensional success

The rise of IMAX and its experiments with 3D gave rise to a newer chapter in 3D vision, in the late 1980s. IMAX began producing non-fiction 3D films, like Transitions in 1986 and Echoes of the Sun in 1990. IMAX's dome screen became a significant entity of its 3D screening process, and Echoes of the Sun became the first film to be screened using alternate-eye shutterglass technology. In between the '90s and the latest resurgence in computer graphics-powered 3D action like Avatar (2009), significant 3D films produced and screened by IMAX include Wings of Courage (1996), T-Rex: Back to the Cretaceous (1998) and Space Station 3D (2002).

James Cameron's Ghosts of the Abyss in 2003 saw the advent of the first, digital HD IMAX camera. It became the first film to have been shot in IMAX's Reality Camera System. Another film that was shot with the same technology but arguably varying finesse was Spy Kids 3D: Game Over, by Robert Rodriguez in 2003. In 2004, The Polar Express became the world's first animated 3D film, leading to the advent of films Avatar, Bolt, Life of Pi, The Adventures of Tintin, Superman Returns and the latest, Star Wars: The Force Awakens.


Avatar was pivotal in respawning interest in 3D

Computer-generated graphics have led to increasing finesse, and the stunning display of visuals that Avatar and Life of Pi stand for. Today, 3D viewing has reached our homes with 3D televisions becoming increasingly commonplace, and even smartphones incorporating naked eye 3D viewing. The market for 3D films, however, has seen a reported drop of interest, possibly owing to the fact that 3D is not a novel artifact to be marveled at, any more. Additionally, with the rise of virtual reality, we are not restricted to a perceived depth of space with our eyes, but can now immerse ourselves in a digitally-simulated and artificially scaled world that not only perceives depth of vision, but also simulates physical movement in the virtual world. 3D may not be dying out immediately, but its days certainly seem to be numbered.

Where sky's the binary limit

Supercomputers are every nation's gateway to innovations, and are pivotal for R&D. So what's going on with supercomputing in India?

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Supercomputers are using their high computational speeds and efficiency to help many sectors in our country, such as scientific research, weather forecasting, missile simulation, understanding the creation of the universe, creating life saving pharmaceutical drugs and much more. Now, what really makes a Supercomputer "super" is a concept called parallel computing.

Let's take an example of painting a rainbow on a wall: serial processing is like a single man painting one colour at a time, and the time taken will depend on the speed at which the person draws each colour. Now, in a parallel processing system, with, say, seven people available to paint the rainbow, each person paints one colour, and the time taken is much less. Basically, parallel processing involves the breaking up of tasks into smaller tasks that can be processed in parallel. The end result is obtained by combining outputs from each processor.

What a Supercomputer does?

Any gamer knows that adding a faster CPU, GPU and RAM means a better gaming experience, but there are limits to how well a single processor can handle loads.

A supercomputer consists of an array of processors and GPUs stacked together to perform high computational tasks.



An old supercomputer from the 1960s

These stacked processors are capable of very fast parallel processing. However, parallel computing does have some drawbacks, as combining outputs from thousands of processor requires sophisticated protocols that can arrange these thousands of outputs in the correct order. Some Supercomputers are not located in a single room, and are actually a collection of smaller supercomputers that are spread across large geographical distances. Weather forecasting needs such a setup.

A supercomputer can be built by stacking computer processors in a giant box and interconnecting them to work on a complex task through parallel processing. Such an arrangement is called a Cluster supercomputer. Here, each individual computer in the cluster is called a node. Another type is Grid supercomputers, where the processors are stacked in pretty much the same way as they are for a Cluster setup, but in this case can be located across the globe and connected via WANs or the internet.

Supercomputers in India

India is home to some of the top supercomputers in the world. We use supercomputers to conduct various scientific research, make meteorological predictions, for aerodynamic modelling, bioinformatics, and also simulating nuclear missile tests.

Unlike regular computers, where you measure performance in GHz, supercomputers are measured based on how many FLOPS (floating point operations per second) they are capable of. Think of a Flop as a way to calculate a number to a decimal place.

Top 5 supercomputers in India

India has 11 of the top 500 supercomputer in the world. Here are the top 5 of those mammoth supercomputers that serve our nation.

SahasraT (Cray XC40)

SahasraT supercomputer is located at Supercomputer Education and Research Centre (SERC) facility at Indian Institute of Science in Bangalore. SERC is India's state-of-the-art research facility for high

Advanced Education
How much technology is really changing education can be found from the fact that VR courses and systems are being adopted in US. **http://dgit.in/Adv-Edu**

iPhone Backdoor
Tim Cook has justified his reasons for not getting backdoor access to the iphone of Farook couple here's why. **http://dgit.in/iBackDoor**

performance computing in the field of science and engineering. This system bagged 96th position in the Top500.org list of top 500 supercomputers in the world.

Specs:
SahasraT (CRAY XC40) is the product of Cray Inc. an American supercomputer manufacturer. Cray XC40 is a product from OEM Cray. This Supercomputer consist of Intel Haswell Xeon E5-2680v3 processors, NVIDIA K40 GPU accelerators and Intel Xeon Phi 5120D coprocessors and whopping storage of 2.1 PB (10^{15} bytes). There are around 1500 processors and coprocessors and 44 GPUs to handle complex tasks in the system. The System implements Cray Aries interconnect routing using DragonFly topology. Cray's Linux environment is used as the OS for the system. SahasraT has been rated to 901.54 TFLOPS, which the highest rating amongst all supercomputers in India.

SaharasT provides service to our nation in the fields of aerospace engineering, meteorology predictions and astrological simulations. Also SaharasT is used for molecular and material research



India's fastest supercomputer

and mapping entire climate condition of the particular region via simulation. Overlapping of supernovae was simulated by the SahasraT system.

Aaditya (IBM/Lenovo System)
Indian Institute of Tropical Meteorology Pune, is the India's finest meteorological department which uses IBM X system supercomputer for research and development. System is called as Aaditya which is manufactured by IBM. This system is ranked at 116th position in Top500.org list.

Specs:
This system has Intel Xeon Haswell E5-2670 2.6 GHZ processors and total RAM storage of 15TB. There are 2384 compute nodes in the system. The System is rated with a speed of 719.2 TFLOPS. Red Hat Enterprise Linux is used as the operating system environment. Nodes are connected through infiniband interconnect technology.

This supercomputer helps the institute to operate and provide accurate data regarding the Nation's weather conditions, simulating weather models of the country, predicting rainfall cycles for the monsoon, and air quality forecasting. Most of our country's weather forecasting is done by this system. Farmers rely on the information provided by this system on rainfall predictions and climate changes.

TIFR ColourBoson
This supercomputer is located at Tata Institute of Fundamental Research facility. This machine is also a Cray product, model name is Cray XC-30. This supercomputer is deployed at Hyderabad and the system is ranked at 145th position.

Specs:
ColourBoson consists of 4760 nodes of Intel Xeon E5-2680 processors and NVIDIA Tesla K20x GPU. Total storage of the system is 1.1 PB. Nodes are interconnected by Cray's Aries interconnect routing technology with DragonFly topology. Linux environment is used as the OS for the system. The System can achieve a speed of 558.7 TFLOPS.



The TIFR ColourBoson

This system is used under Indian Lattice Gauge Theory Initiative program by the scientists of Tata Institute of Fundamental Research. Research and development on theoretical physics and

HOMEMADE SUPERCOMPUTER

Though many supercomputing systems in the nation have been bought from abroad, from manufacturers such as Cray Inc. from America, the Param series of supercomputers are designed and assembled in India by Center of Development for Advance Computing, Pune. When the US denied the import of supercomputers to the country, CDAC was set up in 1988. C-DAC was able to build India's first indigenously built supercomputer Param 8000 in 1991. The Param Yuva 2, CDAC's latest machine, was made in under 3 months, at the cost of a mere 16 crore rupees. To connect all Param series of supercomputers across the country, PARAMnet is used, which offers 2.5 GB/s bandwidth in full-duplex mode.


The Aaditya supercomputer in Pune

PRESENCE OF MIND

IBM's Watson supercomputer was built to develop natural responses to answering questions based on the quiz from the show Jeopardy. To tackle the questions Watson had all of the text in encyclopedia websites such as Wikipedia stored into the memory, keywords from question were joint and correlated with the content stored on the computer. Apart from winning popular TV quiz shows, Watson's cognitive capabilities proved beneficial in many fields.

Super Chef Watson
Watson analysed thousands of recipes and created a statistical map of various combination of ingredients, chemical compositions of the ingredients and figuring out new recipes from this data. Watson created 65 new recipes of its own which are available in the book called Cognitive Cooking with Chef Watson.

quantum chromodynamics is carried on by the system. The theory of study of elementary particles such as quarks and gluons is called as Quantum Chromo-Dynamics (QCD). The System is used for research of quark-boson a phase of matter that holds the mystery of the creation of our universe.

IIT Delhi HPC

IIT Delhi has one of the fastest supercomputer in their campus. This system is a GPU centric high performance system and is one of the fewest in the world. NVIDIA experts worked with IIT Delhi team to built this system that is based on GPU Tesla Platform. IITD's system is ranked at 166th position in the top 500 list.

Specs:
System specification ae HP ProLiant XL230a server & HP ProLiant XL250a Gen9 server with NVIDIA K40M GPU cards. Total storage of the system is 1.5 PB. For network connections Infiniband interconnect technology is used. There are



NVIDIA Tesla powering IITD's supercomputer

in total 322 NVIDIA Tesla K40M GPU cards in the system. System performance is rated at 524.4 TFLOPS. CUDA and OpenACC are preferred programming platforms for the system.

This supercomputer is under the use of researchers in fields of biology, nano systems, atmospheric science and bioinformatics. System provides services across the IIT campus for study and research in the field of Data Analytics , Deep Learning, Computational Physics, Chemistry, Computational Fluid Dynamics and Material Science.

YOUR PC VS. INDIA'S FASTEST SUPERCOMPUTER

Let's see how your PC, laptop or phone matches up to India's fastest supercomputer. Here, we tell you how many of a device you'd need to equal the SahasraT (specs of the SahasraT in brackets). THe devices we've chosen are the Nexus 6P, Asus G751J-DB7 (G-Sync) laptop, and an assembled ultra high-end gaming rig:

Core Count (33,024 cores)
- 4128 x Nexus 6P
- 8256 x ASUS G-Sync laptop
- 8256 x Ultra High-end Gaming RIG

RAM (5600 GB)
- 1866 x Nexus 6P
- 233 x ASUS G-Sync laptop
- 350 x Ultra High-end Gaming RIG

Storage (2.1 PB)
- 31,250 x Nexus 6P
- 1773 x ASUS G-Sync laptop
- 1593 x Ultra High-end Gaming RIG

Graphics Memory
- 132 x ASUS G-Sync laptop
- 88 x Ultra High-end Gaming RIG

Param Yuva 2

Param Yuva 2 is the supercomputer located at Center for Development of Advanced Computing (C-DAC) in Pune. The System is developed by Intel as OEM and system integrator is NetWeb technologies. Param Yuva 2 is ranked 251st in the world.

Specs:
Param Yuva 2 has 221 Intel Xeon E5-2670 nodes that also consist of Intel Xeon Phi 5110P, with Linux 64-bit (CentOS 6.2) and a total storage of 200TB. The System is rated at 388.44 TFLOPS. There are in all 3536 CPU cores and 26520 coprocessor cores. The system is interconnected with Mellanox FDR Infiniband primary interconnect for interconnection of nodes.

Param Yuva 2 provides service in fields of bioinformatics, space, weather forecasting, seismic data analysis, aerospace engineering, scientific research and pharmaceutical development. The system can also be interconnected with Indian Institute of Technology and National Institute of Technology via National Knowledge Network, which is a multi-gigabit backbone network for high speed data transfer between some educational institutions in India.



CDACs Param Yuva-2

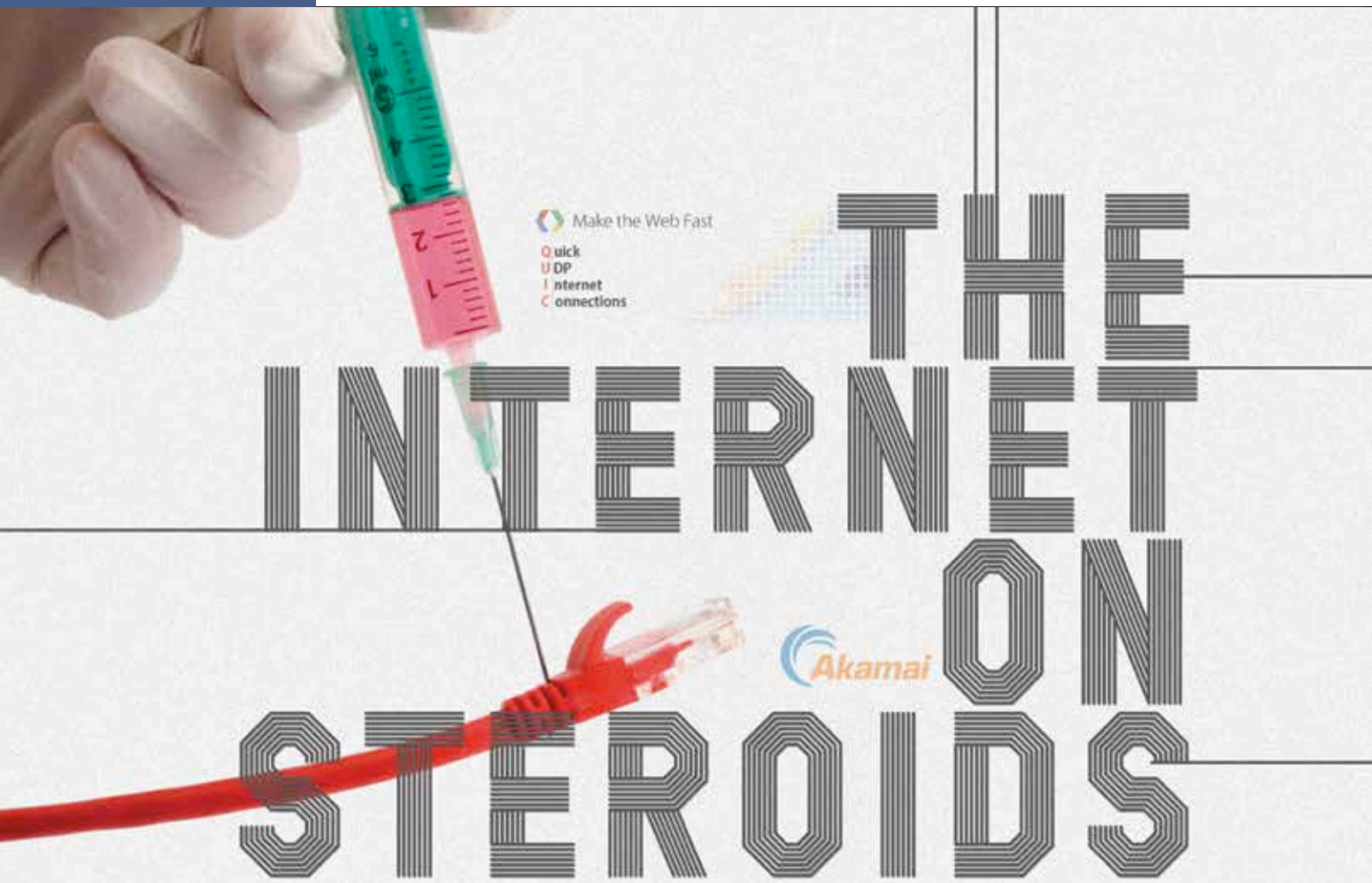
What does the future hold?

India shows promise in the field of supercomputing. We're not really where we should be in terms of the global scale. We have only 11 supercomputers featured in the top 500, and only 1 in the top 100. It's obvious that we need to do better and we will. The government of India is working towards this and has initiated the National Supercomputing Mission. Under the mission, the Government of India empowers an ambitious target of installing more than 70 high-performance computing facilities in the country. These computers will be connected by the National Knowledge Network.

This new project will not only boost Scientific Research and Development, but also improve the quality of higher education in Science & Technology. We certainly hope this dream is realised. India certainly needs to get to the forefront of supercomputing, because as a growing economy and one that hopes to bring more equality and uplift people out of poverty, we desperately need improved data crunching. We need to be able to predict the weather more accurately, have early warning for natural disasters, discover new life-saving pharmaceutical drugs, design rockets, and much more...

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A look at Japan's attempt at a fifth-gen stealth fighter, dubbed the ShinShin X-2

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Would you like to travel from Mumbai to Delhi in an hour and pay only Rs 2,500? Read on...



THE INTERNET ON STEROIDS

Tech upgrades to the core network infrastructure promise to unlock access and connectivity speed

Jayesh Shinde
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For everyone who grew up using it in India, the Internet phenomenon hasn't been without its fair share of woes. Whether it was struggling to connect through a dial-up modem into a Yahoo chat room full of Harry Potter fans or waiting for a much-awaited movie trailer to buffer on YouTube, our Internet experience has always been one full of hampered memories and stuttering video streams.

However, soon, most of the Internet's most terrifying demons that we grew up with will be exorcised and be made a thing of the past. It's not only in the interest of big internet companies to enhance the underlying infrastructure of the Internet, but it's also something that users have been demanding for a while now. While we can't imagine life without the Internet and the many services that depend on it, do remember that almost all of the Internet as it exists now is pretty much the same as it was designed back in the late 1970s by scientists for highly sophisticated communication. And in the 21st century, pretty much most of it is outdated technology. Surprising, isn't it?

Needless to say, a lot has changed since all of us had our first dose of the Internet in India (or around the world) back in the late 1980s and 1990s. While messaging and email were the big online undertakings of that time, the digital world has moved on tremendously since then. In the 21st century, high-bandwidth consuming data in the form of streaming video, backup and sync of data between the cloud and end points, and online gaming are severely clogging our Internet pipes – both under the sea, on land and over the air. The biggest improvement since that time has been the advent of efficient router technology and wireless standards, but nothing fundamentally game changing has happened to save the Internet from collapsing on its own largely outdated infrastructure.

Seeing how the world's Internet addiction and digital needs are only going to go up, Internet companies don't have a choice in the matter – someone somewhere has to innovate and solve the problem. And there are efforts underway to do just that. We may soon enter into a new era of Internet connectivity bliss.

Akamai GIGA

If you're cursed by perennially buffering video feeds that seem to take an eternity and more to load, Akamai has a solution in the works that might be just what the doctor ordered. Managing a global network of over two lakh servers, Akamai operates one of the largest CDNs (content delivery networks) in the world right now. Companies such as Facebook, Adobe, Autodesk and several online entertainment portals use Akamai's server infrastructure to move extremely high volume of data across the world in extremely little time. Not only that, Akamai also offers services such as local caching of content especially for online video platforms which reduces buffering and video load times significantly. What's more, Akamai thinks that the Internet can function even more efficiently through a new technology they've developed and tested. It plans to give the Internet a severe dose of steroids, which can help unlock a whole new level of performance never seen before. Ever.

Akamai hasn't released a whole lot of technical nitty gritties of its GIGA protocol yet but according to tests it conducted across its global CDN servers, GIGA proved to boost Internet speed for most recipients by as much as 30 per cent. In fact, in regions like India, China and Bolivia, data moved faster by as much as 150 per cent thanks to GIGA, according to Akamai. This is a significant number which could help evolve the basic infrastructure of the Internet as it functions right now.

Just what exactly is GIGA? It's a new set of protocols that Akamai aims to replace TCP with completely. For those who don't know, TCP is the protocol on which fundamental Internet communications takes place currently, and it's been largely unchanged since it was first implemented back in 1974. That's a whopping 42 years ago! GIGA proposes several improvements over TCP which can help extract better efficiency standards when it comes to transferring data over the Internet. TCP is notoriously infamous for routinely labelling free or de-congested data routes between two servers or a client and server as full or at capacity even when they're not. Also whenever the user's Internet connection isn't steady, TCP's prone to dropping links frequently. Both of these TCP inefficiencies are severely reduced in Akamai's GIGA, among other things.

What's more, Akamai has no intention of keeping GIGA all to itself as it has plans to openly release the revamped Internet protocol and hopes for broad adoption – both by end user devices and new server manufacturers. Akamai, in fact, aims to combine GIGA with QUIC, a Google developed software protocol which is geared to enhance Internet speeds as well.



Google QUIC

It doesn't take a genius to figure out why Google's taking the lead on trying to fix the Internet's fundamental architecture, seeing how the search engine giant has so much at stake in its online business. Ensuring the Internet improves isn't just to ensure Google's success but to safeguard the interests of the entire global online economy and to spur next generation of innovative technology. Which is what QUIC's all about.

Short for Quick UDP Internet Connections, QUIC relies on UDP (User Datagram Protocol) instead of TCP (Transmission Control Protocol) – the current backbone of Internet communications, so to speak. While both UDP and TCP form the core of the Internet protocol suite as it was defined since the late 1970s, they differ at a fundamental level. Where TCP requires the client and server to establish a thorough handshake and data integrity is ensured down to the network layer, UDP does away with some of these overheads from the network layer (leaving it for applications to figure out these time-sensitive nitty gritties) thereby allowing for a better, speedier real-time connection compared to TCP.

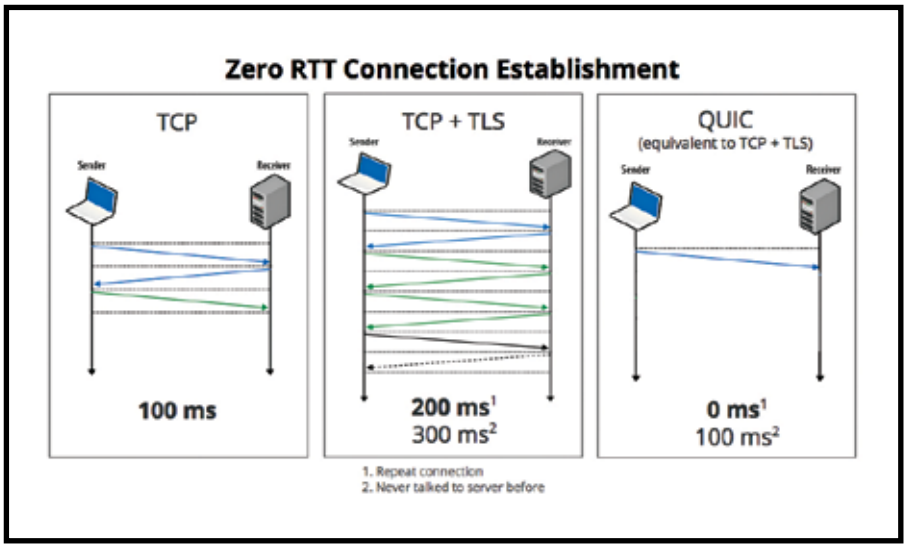
However, QUIC aims to solve both the transport (network) layer as well as application layer problems encountered by sophisticated web applications. If you were accessing a website on your browser or watching a streaming video, currently before you land on the website you see the whole "Waiting / Establishing connection" routine in the bottom corner of your browser. The sequence of events may seem lengthy depending on your connection speed but it's also a factor of TCP's inefficiency – since it requires at least 2-3 handshakes between client (user) and server (destination) to establish a successful connection and starts serving requested data. Through QUIC, for new connections only 1 handshake is required, while repeat connection requests need no handshakes and these requests are

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New study supports that Tase shocked individuals maynot be able to invoke their Miranda Rights due to inability to do so in that stage. **http://dgit.in/ShockRt**

Twitter update
A new Twitter algorithm may change the way you browse your 'while you were away' feeds. Read on to find out more **http://dgit.in/NewAlgo**

served in real-time – Google claims a speed of 0ms for repeat connection roundtrips, which means seeing the page or video load as soon as you hit enter in the URL or click a hyperlinked button. This is massive!

improvement in serving highly complex search pages, for instance. However, the results are remarkable in slower speed networks (emerging markets, mobile cellular broadband, etc) where page load times were reduced as much as over one



QUIC also mitigates TCP's age old problem of a congested stream. Where TCP wrongly assumes data paths between a client and server as congested, even when they aren't, it slows down data transmission to a trickle. QUIC's protocol ensures more information is transmitted to the congestion control algorithm, ensuring no misreporting. Another potentially harmful instance of TCP is head-of-line blocking. Whenever you're trying to watch a video, for instance, data arrives in several packets (as we all know). If any of these packets is lost in transit over TCP, it will have to be retrieved, retransmitted and received successfully before the line of packets continues. QUIC fixes this major data transmission hole, also providing for several simultaneous data streams to be downloaded at once, which is referred to as multiplexing.

Google has been working on QUIC since 2013. Unbeknownst to a lot of us, Google's incorporated QUIC support into Chrome for a while now and it's been testing performance metrics across a range of Google's browser-based services. On high-speed connection, the efficiency isn't all that apparent – 3 per cent full second and Youtube video streamed and buffered 30 per cent faster, leading to less amount of stuttering on a faulty connection, according to Google's claim.

So the fact that QUIC is potentially game changing as far as speeding up the Internet's concerned is great, and since Akamai's GIGA will potentially plug into it is a testimony of its prowess. Google plans to submit QUIC to IETF (Internet Engineering Task Force) – the folks who standardise core Internet technologies – hoping that it's effectively adopted as a standard protocol in the coming months. Meanwhile, Google's opened up QUIC's source code for anyone who wants to experiment with it further.

Shift to IPv6, DNSSEC, BCP-38

According to the "Father of the Internet" Vint Cerf, who invented the TCP/IP network protocol – which is pretty much the backbone of the Internet as it exists now – the Internet still hasn't largely adopted IPv6, which is the sixth generation of the Internet Protocol suite. If you'd recall the world seemingly ran out of IPv4 addresses back in 2011, scrambling to shift over to IPv6. Why? Because an unprecedented number of devices were connecting to the Internet, something that Vint Cerf didn't really expect back in 1974! Where IPv4 supported a 32-bit address scheme which roughly allowed for over 4 billion unique IP addresses to exist, its successor IPv6 supported a 128-bit hexadecimal address scheme allowing for 3.4 x 10^{38} addresses.

Even after five years of adoption, not enough is being done, according to Vint Cerf, as currently only 4 to 6 per cent of Internet traffic runs on IPv6, which is woefully low. Among many things, IPv6 simplifies the processing of data packets in transmission which aims to boost speed levels.

Security is another important issue troubling Vint Cerf, who believes Internet security standards should be raised by adopting DNSSEC – which is essentially security extensions at the DNS level. With wide scale adoption of DNSSEC, DNS spoofing will be eliminated, among other things.

Apart from DNSSEC, another IETF recommendation that needs to be implemented on an Internet-wide scale is BCP-38 – a process defined as Network Ingress Filtering, which will make Denial of Service (DoS, DDoS) attacks rampant on the Internet through IP address source spoofing a thing of the past.

When Vint Cerf speaks about the Internet, the world listens. And we truly hope that's true in this case.

Ericsson's Gigabit LTE solution rollout

The fact that a majority of the global population that isn't online will be connected



to the Internet over a cellular smartphone network is pretty well known. To ensure smooth delivery of a rich variety of Internet applications and interactive media, not only cellular bandwidth needs to increase but so does access speed. It's high time for the roll out of high speed data networks.

While the maximum theoretical download speed supported over existing 3G networks is 56Mbps, even the most advanced versions of wireless 4G LTE cellular speeds are capped at 300Mbps ideally. But that headroom's going to increase very shortly, thanks to new tech advancements proposed and rolled out by Ericsson, a company that enjoys over 30 per cent share of the wireless communications market in the world with several thousand patents to its name.

In February 2016, Ericsson publicly released a set of network and software enhancements which it claims will boost indoor commercial 4G LTE network uplink and downlink performance by several notches. The solution Ericsson's offering (called Ericsson Networks Software 16A) to the congested wireless networks is made of four feature components: 4x4 MIMO on 20 MHz and high bands, three component carrier aggregation (3CC), 256 Quadrature Amplitude Modulation (QAM), and Ericsson Lean Carrier.

The 4x4 MIMO array significantly increase the radio antenna's ability to support increased number of uplinks and download streams, while the 3CC boosts the cellular 4G LTE network's bitrate and bandwidth. The 256 QAM modulation scheme propels the modem to encode and increase throughput on any given radio frequency, while Ericsson Lean Carrier strives to keep signal interference down to the absolute minimum that's possible.

Ericsson claims its new set of enhancements to the network infrastructure should increase uplink speeds by 200 per cent and downlink speeds by 30 per cent at least. According to tests conducted by Ericsson with Telstra (an Australian telco), it achieved the world's first peak download rate of 600Mbps!

Ericsson's also rolling out its IoT Network Software 16B which, among other things, is aimed towards the IoT market with enhancements to the signal to ensure minimal battery impact of endpoint devices and sensors. Improved indoor coverage of GSM networks claims to deliver 20dB improvement of signal to ensure it reaches deeply embedded devices, too.

All of these are important benchmarks towards 5G adoption scheduled to take place by 2020.



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EVERYTHING YOU NEED TO KNOW ABOUT Japan's X-2 "Shinshin" STEALTH FIGHTER



Nachiket Mhatre
feedback@digit.in

Informally known as the Shinshin (spirit of the heart) in Japan, the Mitsubishi ATD-X is the country's first indigenously designed and developed fifth-generation air superiority fighter. In fact, by the time this issue is printed, the jet will have embarked upon its maiden flight if all goes according to plan. Does that mean the Shinshin stealth fighter will beat USAF's long delayed F-35 Lightning II as the second ever fifth-generation jet fighter to enter active service since the Lockheed Martin F-22 Raptor? Not even by a long shot.

More concept than reality

The Shinshin's military designation is ATD-X for a reason, as it stands for Advanced Technology Demonstrator. Even in its latest X2 iteration, which is poised to take first flight shortly, the Shinshin can't even be called a prototype, but a proof-of-concept of sorts whose main purpose is to serve as a platform for all the subsequent research and development required to come up with a viable fifth-generation air superiority fighter design. The Shinshin only serves as a stepping stone to the real frontline stealth jet fighter designated as the F-3, which won't be going into production any time before 2027.

To put this into perspective, Lockheed Martin's own fifth-generation stealth fighter jet, the F-35 Lightning II, has been in production since 2006, but it has yet to be inducted into service. Needless to say, don't get too excited because it will be decades before the Shinshin joins active service; if at all, that is, because let's not forget the X2 is nothing more than a proof-of-concept, and not even a prototype. It isn't even the only fifth-generation fighter aircraft under development. A whole host of nations from the minnows Iran and Turkey to the formidable China, Russia, and even India (with Russian assistance) are working on their own answers to the American F-22 and F-35. The Russian Sukhoi Pak FA and the Chinese Shenyang J-31 have already completed their first flights and the former is slated to be rolled out into service in 2017.

The blueprints

However, before we get into the nitty gritties of the Japanese fifth-generation jet fighter, it's prudent to understand what the term entails, and why Japan has been pursuing it aggressively. Military jet fighters are classified according to the sophistication of their avionics (aircraft electronics), radars, communication, armament, and flight characteristics such as manoeuvrability and stealth technologies. To give a brief primer on the important fighter generations, the third-generation aircraft focused on development of sophisticated attack capabilities by employing missiles and smart bombs that relied on radar, thermal, and laser guidance.

The fourth-generation jet fighters deviated from the last generation's overde-

pendence on missiles and instead pursued improved manoeuvrability by incorporating high-tech fly-by-wire systems, powerful flight computers, and powerful thrust vectoring engines that allowed jet fighters of that era to deliver significantly better dogfighting capability. This was followed by an evolutionary upgrade to this generation dubbed 4.5 generation that further enhanced fighter manoeuvrability by incorporating inherently canard-equipped unstable delta wing designs that require powerful avionic systems and flight control computers just to keep these aircraft from falling out of the skies. All these enhancements enabled these jets to achieve insane angle of attacks, rapid climb rates, and ultimate manoeuvrability.

The mid-generation upgrade also added superior Active Electronically Scanned Array (AESA) radars and stealthy, yet precise Infra-Red Search and Track (IRST) systems to hunt enemy aircraft more effectively. The use of exotic lightweight, yet high strength engineering materials enabled engineers to not only increase the overall performance, but also subject the aircraft to greater g-forces, thereby allowing for even tighter and previously impossible levels of agility. This generation also saw the use of radar absorbing paints and materials that significantly reduced the radar signature and made these fighters difficult to track and detect with conventional radar systems.

Stealth capable jet fighters

Cut to the present and fifth-generation fighters essentially combine all the defining characteristics of 4.5 generation aircraft such as advanced avionics, high-tech airframes built with exotic high-strength materials, inherently unstable and flight computer-dependent design for the control surfaces, undetectable inter-aircraft communication systems and such with a more focused approach to stealth. First-generation stealth technology has existed before fifth-generation fighters were introduced, but this was restricted mainly to dedicated bombers and strictly ground attack jets such as the B-2 Spirit bomber and F-117 attack jet. These aircraft achieved stealth with a host of radar absorbing materials and airframe design geared towards deflecting radar waves away from the source.

However, these design considerations limited manoeuvrability and speed, which prevented the application of true stealth technology in jet fighters, which are meant to be agile and fast. This is where fifth-generation fighter approach to stealth comes in, which covers all aspects of flying undetected but also involves moving quickly and nimbly while being able to track enemy aircraft without opening themselves for detection. This includes advanced Low Probability of Intercept Radar (LPIR) systems that enable an offensive stealth approach that isn't just limited to ground targets. Another important aspect of the new generation fighters involves the ability to achieve higher situational awareness by the means of battlefield networking technology that allows these jets to communicate without blowing their cover.



The ShinShin will hopefully be the defender of Japanese skies

Why is stealth needed?

Now that we know what entails a fifth-generation air superiority jet fighter, it's worthwhile to find out exactly why Japan is pushing to develop its own frontline stealth fighter. Let's not forget that we're dealing with a nation that shies from the very notion of war. One that goes to euphemistic extremes by referring to its armed forces in a painfully benign fashion as Japan Ground Self-Defense Force (JGSDF), where the recruits are largely trained with airsoft replica guns instead of the real deal. It's hard to swallow the fact that the same country that depends upon US military for protection would want to produce something as advanced as a fifth-generation stealth fighter.

One hypothesis points towards the rising hostilities and threat from North Korea prompting some Japanese politicians eager to break Japan's age old non-proliferation policy and develop nuclear weapons. Possessing a viable stealth air superiority platform is a great asset under such circumstances. Another catalyst for the decision comes from the fact that the F-22 manufacturer Lockheed-Martin was prohibited from selling the air superiority fighter to Japan. Interestingly, unconfirmed reports peg the F-22 maker to be involved in the development of the Shin-Shin X-2 technology demonstrator.

Another possible reason could be the current US military's rapidly diminishing power and edge, as evidenced by the recent annexure of Crimea, Russian foray into the Middle East, and being surpassed by the Chinese economy and challenged by its growing military might. To put this into perspective, the US air force would have needed 150 aircraft to protect Taiwan against Chinese air force back in 1996. Today, the estimated number stands at nearly 2000, which makes it nigh impossible for the USAF to realistically deploy enough aircraft to rescue Taiwan from a Chinese aerial onslaught. It makes perfect sense for the Japanese to invest in means to reduce its dependence on the US for security.

Let's not forget that the US government will be selling the fifth-generation F-35 Lightning II to the Japanese, but the platform has gone seriously over-budget and is marred with performance issues and damning glitches. Not to mention, the fact that it also famously got outclassed by the F-16, a jet fighter built in the '80s. The overpriced and highly underperforming F-35 purchase, therefore, is only a stop-gap solution until the Japanese induct their own fifth-generation air superiority fighter.

Crouching tiger, radar invisible dragon

However, the most pressing compulsion behind the Japanese rush to procure a

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fifth-generation air superiority platform by far happens to be the the stealth jet arms race kickstarted by China with its own fifth-generation stealth fighter in the last decade. The stealth fighter took everyone by surprise because until then China was considered incapable of making competitive fourth or even third generation aircraft, let alone possess the expertise and know-how to develop a sophisticated fifth-generation air dominance fighter.

Thanks to Edward Snowden's efforts, it was later revealed that China had essentially stolen several terabytes of critical F-35 data – on everything from radar systems, engine schematics, and heat-masking design implementations to super secret information on stealth systems – right off Lockheed Martin's servers. What's more, the Chinese had also managed to swipe F-22 blueprints to create its own copycat versions of USAF's F-22 and F-35 stealth aircraft. The more sophisticated Chengdu J-20 Black Eagle is the equivalent of the F-22 Raptor, whereas the Shenyang J-31 Gyrfalcon is nearly the exact copy of the F-35 Lightning II.



The ShinShin in all its glory

If the capabilities of the ShinShin stealth fighter are to be compared, it must be pit against its most likely regional foes – the J-20 and (to a lesser extent) J-31. However, unlike the Chinese stealth fighter jets slated to enter service within the next two years, the Japanese Shinshin isn't a final design and won't be deployed anytime before 2030. Mitsubishi is still in the R&D phase, and the specifications on the ShinShin research concept are essentially projections that are subject to change pending extensive feasibility tests. In the simplest of terms, such a comparison would be akin to pitting the existing capabilities of the Chinese stealth jets against what the Japanese hope to incorporate into their F-3 stealth platform over the course of the next decade.



The X-2 aims to reach speeds in excess of Mach 2

How does it compare?

While the information on the J-20 is sketchy, it's capable of supercruise. In other words, it can achieve supersonic flight without employing fuel-inefficient afterburners. The Russian Sukhoi PAK FA achieves the same feat at Mach 1.6, whereas the F-22 is a bit faster at Mach 1.82. The J-20, however, has a relatively slower maximum speed of Mach 2.0, as opposed to the F-22's Mach 2.25 and the PAK FA's Mach 2.3. The ShinShin aims to achieve a max speed exceeding Mach 2 with its 11,000 lbf twin turbofan engines, with a supercruise capability on par with that of the F-22. Like its contemporaries, the Japanese stealth aircraft will incorporate advanced three-axis 3D thrust vectoring technology similar to that seen on the US Rockwell X-31 experimental aircraft. If Mitsubishi were to pull this engine off, it would enable the Shinshin to achieve a crazy angle of attack and perform spectacular feats of agility that should come handy in dogfights.

In its current X-2 iteration, the ShinShin has a projected combat range of 2,900 km and a combat range of 761 km, which is on par with the F-22, but only a fraction of the range achievable by the PAK FA, which can reach out to a maximum of 3,500 km. This doesn't really matter much, since Japan is essentially concerned with defending its own airspace or reaching North Korea, which falls well within range. What's more interesting is the upgrade to avionics, which surpasses the current standards for fifth-generation aircraft. Copper-based fly-by-wire controls are being replaced by faster and interference resistant optical fibre connections. In addition to advanced AESA radars, the ShinShin's avionics will incorporate sophisticated survivability implementation dubbed self repairing flight control capability that allows the aircraft to compensate for damaged control surfaces and dynamically reconfigure working ones to regain control.

A bird in hand...

Any further comparisons are moot since not much else is known about the Mitsubishi ATD-X platform. Furthermore, all of these specifications are goals that will invariably be subject to revisions, additions, and even omissions pending the many flight tests and redesigns that will take place over the course of the next decade. Comparing the ShinShin to existing fifth-generation offerings from China, Russia, and USA is a bit like comparing apples to non-existent oranges that haven't even been harvested yet.

However, it is worthwhile to note that the ShinShin project initially began as a sort of Japanese bargaining chip to pressure USA into selling its F-22 fighters after the Chinese J-20 stealth aircraft was revealed. The programme only assumed any degree of seriousness near the end of the last decade when US Congress made it clear that it wouldn't be selling the F-22 to anyone. The rumoured involvement of F-22 creator Lockheed Martin and the ShinShin's cosmetic and operational similarities to the US air superiority fighter could very well translate into a force to be reckoned with. Just remember that it's all conjecture at this stage, when the cold, hard reality is that the Chinese and the Russians will have inducted operational units in the next two years. You can't possibly beat that with an unproven concept.

Google sued
Google is sued by students for scanning their Google Accounts and not releasing details of what happened to their data. **http://dgit.in/SueGogl**

Startup Conclave
BITS Pliani's annual international startup conclave is back to fund new innovative startups. For more details and registration visit. **http://dgit.in/IntlConclave**



HOW HYPERLOOP MIGHT FINALLY BECOME A REALITY

Transport is key to a civilisation's evolution as it facilitates the movement of resources and the faster the better. While we have conquered rail, road , water and air, it's time to conquer levitation transport - the fifth mode

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Although warp speed is the ultimate dream, it is best left to outer space where it would be practical. On Earth, however, we need a faster and cheaper mode of travel. Lets face it: roadways just don't figure in this discussion, railways are slow, planes are expensive (and limited because of needing space and infrastructure), and newer transport modes such as maglev have their own limitations. We're in the golden age of quantum physics, smashing atoms together and uncovering the secrets of the universe, but we still can't get from A to B as easily as we should.

All that's set to change soon, we hope. Just as subway trains cut down the time required to travel between places in a congested city, a new technology called hyperloop pods can drastically cut down the time and cost of travel between two cities. Think about it, you could travel from New Delhi To Mumbai in under an hour and a half! That's because hyperloop pods could have you travelling at speeds of 1,000 kmph. The same system could also be used within large cities to cut down the time required to get from one end of the city to another.

The tech

Like Maglev, the hyperloop system also uses electromagnetic propulsion, but while maglev uses electromagnetic propulsion for both thrust and levitation, the hyperloop system's pods float on a cushion of air, at least as originally envisioned. The pods run in enclosed tubes in a partial vacuum. They are highly energy efficient and are a carbon-free mode of transport. Their design is small in order to enable on-demand runs, thus minimising energy wastage. They can depart in mere 10 seconds intervals, and the system is not limited to terrain. It can run

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along the surface of land, through tunnels and even underwater. Think of the transport tubes in the Jetsons and Futurama!

The back story

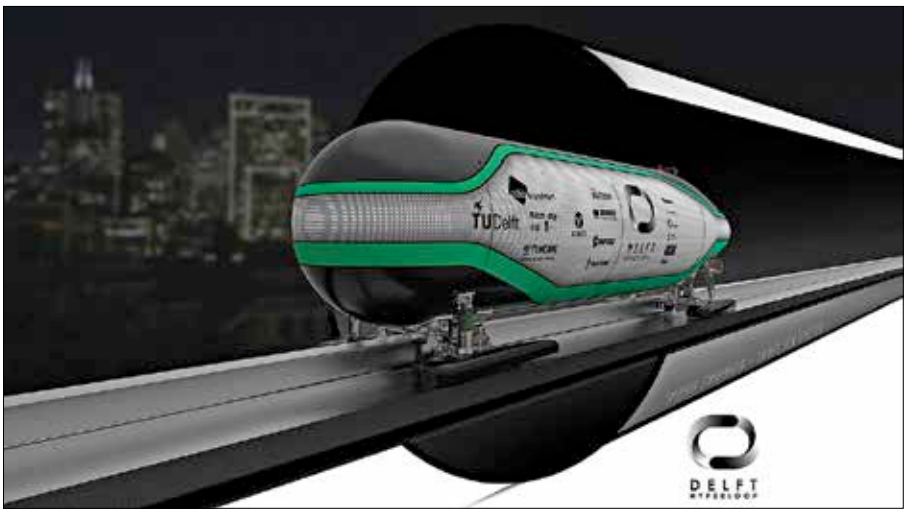
The background to the renewed interest in developing hyperloop technology is rather interesting. Elon Musk, the CEO of Tesla Motors and SpaceX was disillusioned with the idea of the California high speed rail projects and was disappointed when it was approved. His complaint was that it was an expensive project (in terms of cost per mile) and that it wasn't fast enough. Although he liked the idea of having a statewide mass transit system, but only if it was cheaper, safer and faster than existing forms of travel. He felt that if there was heavy investment in a transport project, then the benefits should be equally massive. He wanted the fifth mode of transport to be revolutionary.

Let's take a look at some of the projects being worked on across the globe.

Space X

Even though Elon Musk came out with the paper, his company won't be developing the technology. Space X held a competition for various teams comprising students and engineers to come up with design ideas for the pod. The pod designs will be evaluated by Space X engineers and the finalists will test their pods on Space X's test track in Hawthorne, California. In order to build this test track, Space X has partnered with Aesom, a company that provides technical project support and has been involved in many high-profile engineering projects. The competition saw more than a 100 prototype designs being submitted, and 22 teams made it through, and will now get a chance to test their prototype on Space X's test track in June 2016.

A team of students from Massachusetts Institute of Technology (MIT) won the Best Overall Design. Their pod is innovative and lightweight. Instead of air jets for levitation, it uses two arrays of neodymium magnets to do the same, and additional ones to keep it stable as it zips through the tube at hundreds of kilometres per hour. Safety has also been addressed in MIT's design which comes with a fail-safe braking system. The design currently lacks in internal space for transportation of people and goods, which is supposed to be the primary purpose of the hyperloop technology. However, the MIT team has until June 2016 to make changes to their design, before the track tests commence.



Faster than 1000 kmp inside a vacuum tube!

The Delft University of Technology from the Netherlands were the runners-up in the competition. Their hyperloop pod will be made of carbon fibre which will give it a lighter weight, thus enabling them to use a smaller engine. The Delft University is known for their solar car racing team, which has a record of winning most of the solar race championships.

The winners

The Top 5 student teams for the design and build category were:

- Best Overall Design Award – MIT Hyperloop Team, Massachusetts Institute of Technology
- Pod Innovation Award – Delft Hyperloop, Delft University of Technology (The Netherlands)
- Pod Technical Excellence Award – Badgerloop, University of Wisconsin-Madison
- Pod Technical Excellence Award – Hyperloop at Virginia Tech, Virginia Tech
- Pod Technical Excellence Award – HyperXite, University of California Irvine

Hyperloop Transportation Technologies (HTT)

Hyperloop Transportation Technologies (HTT) is a crowdsourced engineering project. While the name may be quite a mouthful, this startup means business.



The hyperloop isn't limited to only land-based transport

Around a hundred engineers have come together in Hyperloop Transportation Technologies (HTT) to work on the hyperloop technology. They collaborate with each other by crowdsourcing through weekly teleconferences.

HTT is working smartly and has recently partnered with Oerlikon Leybold Vacuum, a company which specialises in vacuum technology, and also with Aesom, a company with which Space X is already in a collaboration with. In January 2016, HTT applied for a permit to begin construction of a test track in Quay Valley, California.

Hyperloop technologies (HT)

The other startup in the development of the fifth mode of transport is Hyperloop Technologies. They created quite a flutter when, in December 2015, they announced that they would be conducting an open air propulsion test, north of Las Vegas. While this test was itself an important landmark, the point of even greater significance here was that it was done with the Nevada Government's backing. This is quite significant as they have a vast resource and, in the past, government backing has resulted in a lot of technologies that we use in our everyday lives – the touchscreen tech used in phones is an example of technology research that was funded by American and European governments.

HT's Blade Runner test rig allows testing in speeds ranging from subsonic thru supersonic, and is powered by two 2,000 CFM (Cubic Feet per Minute) Vacuum pumps – the speed at which it can remove air from the system. The rotor in its levitation rig achieves surface speeds in excess of 300 m/s.

The head of the system, the command centre, called The Tube Lab is a fully equipped mobile command centre built into a cargo container cargo, it comes with equipment to collect hardware data and process in into useful information used for further development of the system.

Advantages

The most obvious advantage is faster travel, because when you travel at faster than 1000 kmph, you're basically travelling much faster than subsonic aircraft can travel. The supersonic Concorde may have travelled at over 2,000 kmph, but it was just bad economics per person.

The second biggest advantage is cost. Today, you pay ridiculous amounts to travel long distances. The cost of travel is directly proportional to the distance and speed at which you want to travel. Estimates of the costs of hyperloop travel work out to about $20 for a one-way 350-mile (600 km) journey. That's the distance of Goa to Bengaluru, or Pune to Hyderabad, or New Delhi to Jodhpur, in just 35 minutes, and costing only Rs 1,350! That's just a little more expensive than what we would pay for an AC bus ticket, except that the bus would take over 12 hours! That's not all, since hyperloop pods are contained in partial-vacuum tubes, travelling at high speeds, they're completely isolated and never affected by bad weather.

Since the system is powered by electricity produced by solar panels mounted on the tube itself, the hyperloop can actually give back to the grid, and certainly won't be affected by power failures of the grid – a huge boon in a place like India.

Challenges

Obviously, security is a major concern. Terror attacks target systems like this one, and it would be easy to find and attack a weak spot in a 600 km vacuum tube.

There are high costs involved in the beginning. It's estimated that a 600 km line would cost about $7.5 billion (Rs 51,500 crore). Although Space X has calculated that, if done right, private industries owning a hyperloop implementation could earn as much as 300 million USD a year! However, this is more likely to be a government-backed initiative.

A really big drawback is the fact that the current designs have amounted in really claustrophobic cabins. Although toilets may not really be required for a 30 minute journey, there might be a need for a few only because of the sickness passengers might feel when being locked in a small metal tube.

If an accident were to occur, there is no doubt it will be spectacular – there are vacuums and hollow tubes being shot at another city at over 1000+ kmph, and even the failure of a single system will result in catastrophe.

Whatever the case, we need to seriously consider any tech that will make the world a smaller place by letting us travel further and faster than ever before. Write in and let us know your thoughts on this...



A future hyperloop loading area where you board a pod?



Quasar peering
Group of reseachers peered inside the brightest Quasar using ALMA and found out its ready to spill over. **http://dgit.in/ALMApeer**



Chrome Pickup
Chrome pickups new security trends from the spreading Windows 10 to safeguard its users in the new update. **http://dgit.in/ChroPick**

THE NEW SPACE RACE

The idea of deploying satellite clusters into space to bring highspeed internet to virtually anywhere on earth is fine enough. But the challenges seem to be many.

Dhinoj Dings
feedback@digit.in

While space has been something that has fascinated humans since time immemorial, advances in space science has been a relatively recent development in the human history. It was only in the previous century that man managed to break through to space physically and the farther reaches of the heavens still seems to be a long way off.

But that's not to say that human endeavour related to outer space is not progressing. In fact, even at this very moment, a new space race is on, and unlike the race for the conquest of space in our past, this time around it's not nations that are the key competitors but business entities. Also, it's not for exploring outer space that the new race is underway but to make something happen down here on Earth.

And what they aim to do is certainly something that'll benefit earth's population: to provide access to broadband internet for the billions who currently do not have the access which many of us take for granted.

Ways to make things out yonder work for the earthlings

The idea is as simple as its execution is complex: to launch mega satellite clusters into outer space that will provide superfast internet almost anywhere on our planet.



Bezo's Blue Origin-World's first reusable rocket

One of the main terms related to this method is backhaul. Backhaul means the links that have to be established between the satellites and also between the satellites and the internet so that customers can access the internet. This could be made possible using microwave beams or laser beams that function at millimeter wavelengths. This will also require self-aligning systems that can locate other satellites and maintain links even in the case of changes in their relative positions.

Another way in which backhaul can be formed for the satellites is by connecting them to ground stations that are connected to major internet gateways.

The key players racing for the pie in the sky

Though multiple companies are involved in this new space race, two of the major firms involved are OneWeb and SpaceX. Though from two different companies-

OneWeb is of Great Britain while SpaceX is American, both the companies have the same goal.

It's not just achieving the objective that the firms have to focus on, they'll also have to contend with regulations regarding gaining of satellite spectrum. And since issues such as assigning satellite spectrum on such massive scales have never been tackled before by anyone on Earth, it's without the benefit of hindsight that authorities will have to make the necessary decisions.

All this makes it extremely interesting to keep a close watch on the way this new space race is unfolding.

And from what we could glean so far, it certainly seems as though Greg Wyler's OneWeb is on the right track. The company has not only earned the support of satellite makers such as Airbus, but also that of Virgin Galactic (Sir Richard Branson's blue eyed vision for the future) and also many other leading corporates and telecommunication providers. The fact that OneWeb is a startup makes this even more impressive. The company which is based in the Channel Islands of Britain intends to launch 600 to 700 satellites as soon as 2019.

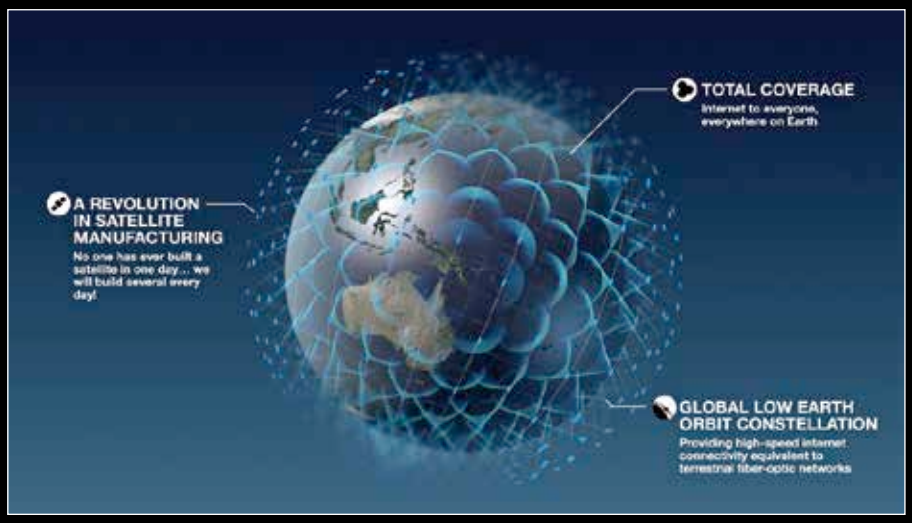
The rosy picture of OneWeb doesn't mean Elon Musk's SpaceX is withdrawing from the race. SpaceX comes with its own expertise – the California-based aerospace company is not just one of the best rocket manufacturers around, but is also the fastest growing launch service provider in the world.

The company aims to launch about 4,000 satellites within the next five years. And with the backing of heavyweights such as Google and Fidelity who have already announced a $1 billion investment for SpaceX, the firm has every reason to be hopeful of winning the latest space race.

Kuband and the supposed monopoly of OneWeb

One of the most fascinating things about satellite-based internet is that for it to operate, it will rely a lot on the Kuband radio frequency range. OneWeb was the first company to register its plans with the Geneva-based International Telecommunication Union (ITU) – a United Nations agency for the coordination of satellite spectrum frequencies and orbital slots. This is a fact that OneWeb hastily let the world know. Richard Branson even suggested that this gave Oneweb the claim over the entire Kuband frequency. To use his own words, OneWeb "has the rights, and there isn't space for another network."

But as maybe you've guessed from the fact that it's not the only active participant of the space race, Branson's statements are hardly accurate. The truth is that although OneWeb may be the first to register interest, this does not grant it rights to a monopoly. It's highly unlikely that the United Nations is going to allow a monopoly, and besides, it's just better from a customer's standpoint to have competition – not just for prices, but also for quality of service.



OneWeb's global web

When bureaucrats crash the party

As beautiful as the dream of bringing the internet to practically everyone on the planet is (and thereby making the world truly interconnected), the idea of satellite-based internet will have to contend with being handled by the bureaucracy before it can be realised. The ITU is just the beginning of the story. In fact, one needn't even consider the ITU as part of the bureaucracy per se. Contrary to what you think, the ITU isn't a patent office for spectrum. Instead, it's only a facilitator that ensures that the use of spectrum is equitable and faithful. The consensus which the companies involved in the space race must come to is that they will have to draw from a reserve that none of them may own.

The actual bureaucratic hurdle comes with the fact that just like a country has its sovereign airspace, it also has spectrum control in its territory. This brings national-level bureaucracy into play, making it necessary for companies such as SpaceX to gain the approval of distinct countries for the use of spectrum. Given the history of how even the most progressive of governments have elements in them that are corrupt, this could mean a major challenge for companies in the space race in the first half of the 21st century.

Technically speaking though, there are some technical challenges

Skeptics who view the satellite internet as a pipe dream of billionaires cite some technical problems (which are in turn linked to finance) as the reasons for their skepticism. And one of the main technical hassles they point out is called extreme latency. It's nothing but the difference in time between a satellite receiving a request and responding to it. This lag would obviously make such things as teleconferencing and online games impractical.

Musk and Wyler are both trying to get around this by deploying their satellites in what's termed as low Earth orbit – some 100 to 1,250 miles above Earth. By plac-



Brain-machine link
In a move to lubricate the integration of robotics to human body Australian scientists have developed an interface device called 'Stentrode'. **http://dgit.in/Stentrode**

Wet Data
After sky, water is the next step to connect you better is what Microsoft is thinking with its underwater data centers. **http://dgit.in/DataWet**

ing their satellites closer to home, both SpaceX and OneWeb could bring down latency from 500 milliseconds to 20 milliseconds – roughly the time equivalent for a home internet connection that works with fiber optic in the US.

But before you think that this is the solution that puts satellite internet back in business, there's something else you ought to know: the signal from a satellite in low Earth orbit won't cover as much surface area of the Earth as a satellite in geosynchronous orbit (about 22,000 miles above Earth). This means more satellites need to be deployed. Even though the price of satellites have come down in the last two decades, it still may not be cheap enough to allow for a significantly larger number of satellites being deployed in such a short timeframe.

Augmenting the skeptic's view is also the matter of failed attempts in the past. For this isn't the first time that the attempt to bring high speed internet with the aid of satellites is being made. Multiple companies tried to deploy satellites into low Earth orbit with the same intention in the 1990s. One of these companies was Teledesic which was funded by Bill Gates among others. The company planned the launch of 840 satellites but faced setbacks only to cancel its operations in 2002 followed by relinquishing their wireless spectrum rights to Federal Communications Commission (FCC) the very next year.

And then we come to the money part

As mentioned before, there's the cost incurred with so many satellites (fittingly enough, the figure will be astronomical) that's a cause for worry for the companies involved. Yet another problem area that the firms will face is with controlling the



Money - always a key player



SpaceX-charting the heavens

costs of the internet which they're going to provide for the billions who don't have internet access at the moment. And these billions are the poor in developing countries for whom subscription, satellite dishes etc. must come at an affordable price.

Also, fiber optic internet connections and wireless mobile data connections are gaining traction throughout the world. This points to the possibility that these modes of connecting the world would prove to be cheaper than serving them using satellites.

The shape of things to come

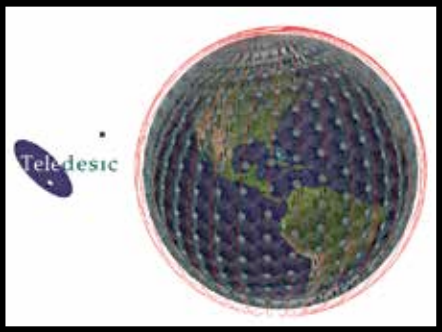
By this time, it has become rather evident that the space race to bring internet to a larger population is rife with challenges. But the fascinating thing is that companies are still not backing down from the endeavour. Many believe that they will only realise that the costs involved are too high when it's already too late.

They aren't even backing down after knowing the technical hurdles that are involved, which makes us woinder what it is that they know that we don't.

Hopeful as the fruition of the process seems to be, one aspect that should be taken particular note of is that in this version of the space race – unlike the one between America and Russia that took place during the 1950s – it's billion dollar companies that are the key players. Governments have been reduced to being mere facilitators.

It's rather obvious to most that the future of the world will be determined by how much we explore (or exploit) resources that are outside our planet. The companies that get a first-mover advantage in the space realm will have a huge impact in shaping the world to come. Should the governments sit back and not have a stake in this?

It's not just in terms of satellite internet that private firms have become the main players. Even the arena of rockets, which have traditionally been the domain of nation-states, is experiencing this paradigm shift. Recently, Blue Origin a firm established by Amazon.com founder Jeff Bezos was able to successfully launch a rocket to suborbital space and brought it back down again for a soft landing – making it the world's first reusable rocket. This is something that could make space exploration much more economically feasible. This is the kind of technology one would expect a government agency such as NASA to come up with, rather than a private firm – especially since the government agencies have been working in the field for a much longer time, and also because they have been complaining about their budgets being cut by governments for the longest time.



The failed plan of Teledesic

Whatever the case, a clear picture emerges that paints mankind's future in space as being directed by firms driven by the eventual goal of making a profit. This raises some interesting social questions, such as, is it wise to let the interests of corporations dictate the space race, or should we focus more on the needs of the common people?

It is, afterall, the mistakes made by governments and the greed of corporations and individuals that's caused all of the inequality and suffering of the poor. Is it really wise to expect a solution to emerge by using the same methods that caused the problem in the first place? Only time will tell...

digit RECOMMENDED BUYS

From smartphones to graphics cards, here's what we recommend for your next purchase!



TOP 3 PREMIUM SMARTPHONE

Brand	Model	Price (in ₹)
Apple	iPhone 6S Plus (128GB)	82,480
Samsung	Galaxy Note 5 (64GB)	59,900
Huawei	Nexus 6P (64GB)	43,999



TOP 3 SMARTPHONES UNDER 15K

Brand	Model	Price (in ₹)
LeEco	Le 1s	10,999
Huawei	Honor 5X	12,999
Lenovo	Vibe K4 Note	11,999



TOP 3 GAMING MONITORS

Brand	Model	Price (in ₹)
ASUS	MG279Q	55,060
Acer	XR341CK	89,999
BenQ	XL2730Z	63,599



TOP 3 GAMING MICE

Brand	Model	Price (in ₹)
Logitech	Proteus G502 Core	4,750
Mionix	Castor + Mouse Pad	4,890
Razer	Ouroboros	11,990



TOP 3 FITNESS TRACKERS

Brand	Model	Price (in ₹)
Jawbone	UP3	14,999
Fitbit	Alta	12,999
Jawbone	UP2	9,999



TOP 3 TABLETS

Brand	Model	Price (in ₹)
Microsoft	Surface Pro 4 (128GB)	89,990
Apple	iPad Pro (Wi-Fi + Cellular + 128GB)	91,900
Microsoft	Surface Pro 3 (128GB)	73,990



TOP 3 BLUETOOTH SPEAKERS

Brand	Model	Price (in ₹)
Bose	Sound Link III	22,388
B&O	Beolit 15	47,990
JBL	Xtreme	24,990



TOP 3 CPU COOLERS

Brand	Model	Price (in ₹)
Noctua	NH-D15	17,340
Noctua	NH-C14	15,559
Cooler Master	TPC 812	4,549



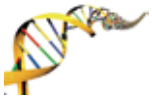
TOP 3 POINT AND SHOOT CAMERAS

Brand	Model	Price (in ₹)
Canon	PowerShot G3x	58,759
Sony	DSC-RX100M4	67,040
Canon	PowerShot G9x	32,995



TOP 3 BUDGET GRAPHICS CARDS

Brand	Model	Price (in ₹)
Sapphire	R7 260X	10,999
MSI	GeForce GTX 750Ti	12,399
Zotac	GeForce GTX 750	11,110



Editing Humans
UK scientists are the first to receive license for editing human embryos to find out why some embryos don't grow normally. **http://dgit.in/EditMan**

Elkhorn milestone
Scientists were sucessful in raising Elkhorn, an endangered species of coral, in lab to full maturity of reproduction **http://dgit.in/ElkRaised**

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GAMING CONTROLLERS

Brand	Model	PC	Xbox 360	Xbox One	PS3	PS4	Android	iOS	Connection	Price (in ₹)
Speedlink	Strike NX	Yes	No	No	No	No	No	No	Wireless	2,131
Logitech	F310	Yes	No	No	No	No	No	No	Wired	2,195
Thrustmaster	T-Wireless	Yes	No	No	Yes	No	No	No	Wireless	2,349
Speedlink	XEOX Pro	Yes	No	No	No	No	No	No	Wireless	2,399
Thrustmaster	GPX	Yes	Yes	No	No	No	No	No	Wired	2,500
Mad Catz	Micro C.T.R.L.R	Yes	No	No	No	No	Yes	No	Wireless	2,950
Sony	DualShock 3	Yes	No	No	Yes	No	No	No	Wireless	2,990
Mad Catz	C.T.R.L.R	Yes	No	No	No	No	Yes	No	Wireless	3,490
Mad Catz	C.T.R.L.i	No	No	No	No	No	No	Yes	Wireless	3,950
Logitech	F710	Yes	No	No	Yes	No	Yes	No	Wireless	3,999
Microsoft	Xbox One	Yes	Yes	Yes	No	No	No	No	Wireless	3,999
SteelSeries	Stratus	No	No	No	No	No	No	Yes	Wireless	6,480
Sony	DualShock 4 (White)	Yes	No	No	Yes	No	No	No	Wireless	6,504
Razer	Sabertooth	Yes	Yes	No	No	No	No	No	Wired	6,899
SteelSeries	Stratus XL	Yes	No	No	No	No	No	Yes	Wireless	7,086



SURROUND SOUND SPEAKERS

Brand	Model	Configuration	Output (in Watts)	Chassis Material	Frequency Response	Price (in ₹)
Mitashi	HT 51 FU	5.1 Channel	20 W	Plastic	35Hz – 20kHz ±6dB	3,990
Philips	SPA4040B/94	5.1 Channel	45 W	Plastic	20Hz – 20kHz ±8dB	5,540
Mitashi	HT 106BT	5.1 Channel	35 W	Plastic	14Hz – 20kHz ±6dB	5,990
Philips	SPA6700B/94	5.1 Channel	60 W	Plastic	20Hz – 20kHz ±8dB	6,190
iBall	Dynamite BT4	4.1 Channel	48 W	Wood	20Hz – 20kHz ±8dB	6,999
iBall	Breathless BT49	4.1 Channel	72 W	Wood	20Hz – 20kHz ±8dB	7,625
Logitech	Z506	5.1 Channel	115 W	Plastic	45Hz – 20kHz ±6dB	9,995
F&D	F8000U	5.1 Channel	150 W	Wood	150Hz – 20kHz ±3dB	13,990
Yahama	NS-P40	5.1 Channel	150 W	Wood	30Hz – 25kHz ±3dB	20,990
Swans	M20	5.1 Channel	150 W	Wood	118Hz – 20kHz ±3dB	34,250
Logitech	Z906	5.1 Channel	165 W	Wood	35Hz – 20kHz ±2dB	35,995
JBL	Cinema 500	5.1 Channel	150 W	Plastic	32Hz – 20kHz ±6dB	39,990
Boston Acoutics	SoundWare XS	5.1 Channel	150 W	Graphite Polymer	150Hz – 20kHz ±3dB	42,946
Wharfedale	DX-1 HCP	5.1 Channel	150 W	Graphite Polymer	120Hz – 20kHz ±3dB	59,850
Edifier	S760D	5.1 Channel	540 W	Wood	160Hz – 20kHz ±1dB	105,700

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BASIC RIG

Mini-PC	Intel NUC NUC5CPYH	9,990
SoC	Intel Celeron N3050	0
Connectivity	802.11ac + Gigabit Ethernet + Bluetooth 4.0	0
Audio	Realtek ALC	0
USB	4x USB 3.0 + (Including 1x Charging capable)	0
OS	Linux	0
Power Supply	Adapter included	0
Mouse	Logitech MK220 Wireless (Bundle)	1059
Keyboard	Logitech MK220 Wireless (Bundle)	0
RAM	Gskill F3-1600C11S-4GSL	1,535
SSD	ADATA SP550 120 GB	3,099
Sub-total	(Excluding Monitor)	15,683
Monitor	Dell E1916hv 18.5 inch LED	4,989
Total		**₹20,672**

HTPC

Processor	AMD A10-7850K	11,075
Motherboard	MSI A88XM-E35	6,064
RAM	G.Skill RipjawsX DDR3 4 GB (2 x 2 GB) PC RAM (F3-14900CL9D-4GBXM)	2,098
HDD	Western Digital WD30EZRX 3TB	8,100
Graphics Card	AMD R7 On-board GPU (512 Cores)	0
PSU	Corsair CX430 V2	3,099
Speakers	None	0
Optical Drive	LG GH24NSD1 SATA DVD Writer	935
Mouse	Logitech MK220 Wireless (Bundle)	1,059
Keyboard	Logitech MK220 Wireless (Bundle)	0
Sound Card	None	0
Monitor	None (your TV)	0
Cabinet	Cooler Master N200	3,550
Total		**₹32,430**

ENTRY-LEVEL GAMING

Processor	AMD FX8320	11,500
Motherboard	Gigabyte GA-78LMT-USB3	4,550
RAM	ADATA AD3U1600C2G11-B 1600 MHz (2x 2 GB)	1,760
HDD	Seagate Barracuda ST1000DM003 1TB	3,268
Graphics Card	Sapphire R7 360 2GB	9,500
PSU	Corsair CX430 V2	3,099
Speakers	Philips MMS4040F - 2.1 Channel	2,816
Optical Drive	LG GH24NSD1 SATA DVD Writer	935
Mouse	Logitech MK200 (Bundle)	800
Keyboard	Logitech MK200 (Bundle)	0
Sound Card	None	0
Sub-total	(Excluding Monitor and Cabinet)	38,228
Monitor	BenQ RL2240HE	9,450
Cabinet	Antec X1-T Gaming	2,750
Total		**₹50,428**

MID-RANGE GAMING

Processor	Intel Core i5 - 6400 + Cooler Master Hyper TX3	15,799
Motherboard	ASRock H170A-X1	7,673
RAM	Kingston HyperX Fury (HX318C10F/4) (2x 4 GB)	3,500
HDD	Seagate Barracuda ST1000DM003 1 TB	3,268
Graphics Card	Gigabyte GTX 960 N960WF2OC	18,700
PSU	Antec VP650P V2	4,350
Speakers	F&D W330X	4,600
Optical Drive	LG GH24NSD1 SATA DVD Writer	935
Mouse	CM Storm Devastator (Bundle)	3,048
Keyboard	CM Storm Devastator (Bundle)	0
Sound Card	None	0
Sub-total	(Excluding Monitor and Cabinet)	61,873
Monitor	BenQ RL2240HE	9,450
Cabinet	Antec X1-T Gaming	2,750
Total		**₹74,073**

ULTRA HIGH-END GAMING

CPU + Cooler	Intel Core i7-6700K + Cooler Master Seidon 120V	32,499
Motherboard	Gigabyte Z170 Gaming 3	15,999
RAM	Corsair Vengeance (2x 8 GB) CMK8GX-4M1A2400C14R	7,650
HDD	WD WD30EZRX 3TB + Samsung 850 Pro 256GB SSD	18,749
Monitor	Acer XB270HU 27-inch 144Hz 4K G-Sync	61,300
Graphics Card	MSI GTX 980 Ti Gaming 6G	53,760
Cabinet	Cooler Master MasterCase 5	9,249
PSU	Antec HCP-1000 Platinum 1000W	17,990
Speakers	Logitech Z906 5.1	17,990
Optical Drive	LG Blu-ray WH14NS40 RW	5,999
Mouse	Logitech G502 Proteus Core	4,180
Keyboard	Corsair Vengeance K70 RGB	14,600
Sound Card	ASUS XONAR Essence STX	10,720
Total		**₹2,70,685**

PRIMARY DIGIT TEST RIG

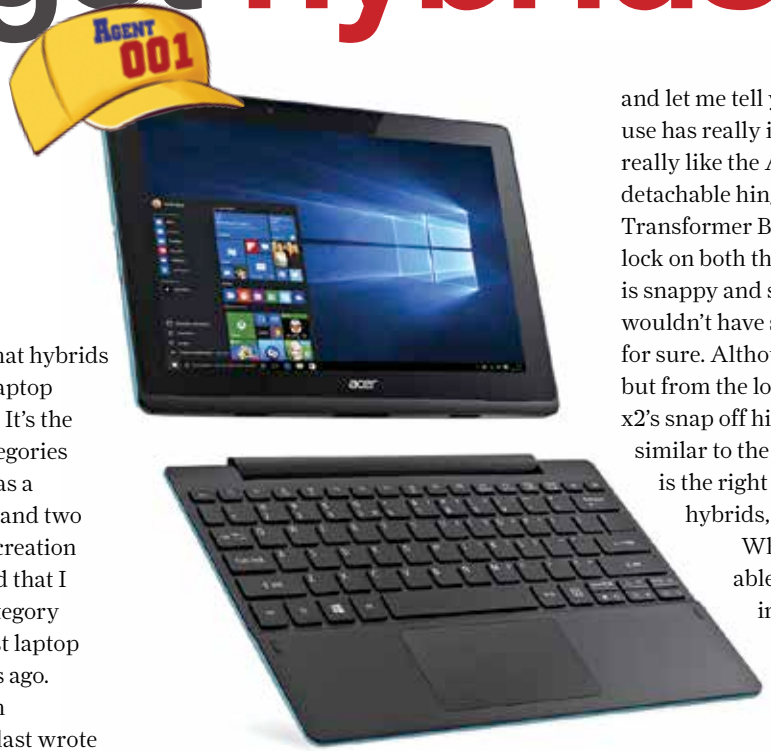
Processor	Intel Core i7 - 4960X (Extreme Edition)	71,950
Motherboard	ASRock X79 Extreme 9	23,999
RAM	Apacer Panther 2666 MHz 32 GB (4x 8 GB)	15,840
HDD	Western Digital WD40EFRX	12,920
SSD	SanDisk Extreme II 240GB (x2 for HDD testing)	34,000
PCIe SSD	Intel 750 NVMe + Kingston HyperX Predator 480 GB	119,275
Graphics Card	Zotac GeForce GTX TITAN X	86,990
Cabinet+ Cooler	Cabinet (NA) + Noctua NH-D15	8,199
PSU	Corsair RM1000X	13,990
Monitor	LG 29UC97C	40000+Tax
Optical Drive	NA	NA
Mouse	Mionix Castor + Mionix Mouse Pad	4,890
Keyboard	Corsair STRAFE RGB	12,490
Total		**₹4,43,846**

Google Podcast
Google may soon launch its much anticipated podcast services as was suggested by Bill Simmon's deleted tweet. **http://dgit.in/GPodcast**

Kindle update!
Amazon is going to release a new update for 2013, 2014 paperwhite and 2015 Kindles which will ease the book buying process. **http://dgit.in/KindleOTA**

Budget hybrids

Is it a tablet? Is it a laptop? Oh no, it's a hybrid!



Agent 001
agent001@digit.in

I think it's safe to assume that hybrids as an amalgamation of a laptop and tablet are here to stay. It's the ultimate fusion of two categories that are high in demand – one, as a content consumption medium, and two as the ultimate mobile content creation device. Given the uber tech nerd that I am, I've been rooting for the category since I checked out my very first laptop and tablet device all those years ago. When the much-awaited fusion

Couple of years ago when I last wrote about them I was rather cynical about the whole segment, even though I craved for a 2-in-1 device that worked like a laptop when I wanted it to and also allow me the flexibility of using it like a tablet with a touchscreen. Back then I thought the space hadn't matured enough, every manufacturer was either over cautious or way too exuberant in their imagination of what the ideal laptop-tablet hybrid should be like. Because it was a new product category at the time, manufacturers were demanding a lot of money from customers to be afforded the privilege to own a hybrid.

Devices that truly worked as they should have both at a functional and aesthetic level only existed at the premium end of the market at a very high price. However, the 2-in-1 tablet-laptop hybrid devices are now available in 10 or 11-inch form factors, which is making it a lot more affordable than ever before.

I've definitely looked at quite a few tablets announced and launched through last year and the beginning of 2016 – you know me, I like to keep a close eye on every new development in technology, not just here in India but all around the world – and what has me really excited about budget hybrids is the fact that they now come with detachable screens. Yes, this is not a completely new trend, I confess, but at the budget end the machines have gotten really sleek and sexy. What's more, the good ones seem to come with detachable screens – unlike rotatable screen that transformed the laptop into a rather thick, unwieldy tablet.

Another development in the budget hybrid space which I approve of is snap off magnetic latches on the screen and keyboard hinge. This has really unlocked (pun intended) the true potential of hybrid devices, in my opinion. This single biggest design feature makes a significant difference in how you use and perceive a hybrid device in your day-to-day life. I hope more manufacturers accept this trend and stick with it, because it's the right thing to do, in my opinion.

I've taken a look at more than a few hybrid 2-in-1s that are sporting these and let me tell you the build and ease of use has really improved over the years. I really like the Acer Aspire Switch 10E's detachable hinge; ditto with the ASUS Transformer Book T100HA. The hinge lock on both their respective screens is snappy and secure, something I wouldn't have said a couple of years ago for sure. Although, I haven't tried it yet but from the looks of it the 10-inch HP x2's snap off hinge design seems very similar to the Acer Switch 10E's. This is the right evolutionary path for hybrids, in my view.

While hybrids with detachable screens are appearing in increasing number, 2-in-1s with 360-degree rotating screen hinge – the ones seen on Lenovo YOGA, for instance – are still prevalent in the market. Personally, I think this trend needs to end soon, because it's doing more harm than good, especially at the low-end hybrid market – I'm talking about the 10-inch form factor here. My rationale is simple – when I want my 10-inch hybrid to behave like a laptop, I appreciate its keypad. But when I want to kick back, relax and use it like a tablet, I don't want the keypad stuck to it – because it makes the tablet unnecessarily fat and bloated. Really bad.

Micromax's Canvas hybrids are the only ones selling at the ₹11k mark. Acer, ASUS and HP's detachable hybrids are priced higher. Nothing separates them in terms of core performance – it's a question of picking the least slowest device, to be honest – and it all comes down to features, build and design.

I recommend buying hybrids with detachable screens priced around the ₹20k mark, if you really want to enjoy the best of both worlds. However, try to test drive them at an offline retail store before purchasing one online – hopefully at a discounted price.

A suitable graphics card

Dear Agent 001,
I have one PC which has following configuration

- Processor-Intel Core i5 2400 CPU @3.10 GHz,
- Motherboard- Intel DH67BL,
- HDD- 2 Nos. Seagate SATA- 1 TB,
- RAM- 4X 2 GB DDR3 Strontium,
- Operating system- Win 7 Ultimate,
- Wireless adaptor- D-Link N150 USB Adapter.

Now I want to add a ZOTAC NVIDIA GTX 650 Ti 1 GB GDDR5 Graphics Card, whether it is suitable for Intel Corporation DH67BL (LGA1155) motherboard? Or tell suitable graphics card.

–Milind Jadhav

Hey Milind,
You need not worry about physical compatibility of graphics cards with motherboards. As long as they have an x16 PCIe slot, they'll accept graphics cards.



ZOTAC AMP 650 Ti

The DH67BL does have an x16 slot. An important aspect that you've left out is the PSU (Power Supply Unit). Graphics cards consume a lot of power. While the 650 Ti doesn't consume as much as the flagships do, you'll still need to verify if the card is compatible. So the PSU will have a ratings sticker on it telling you how power much it can provide. And the graphics card's product page on ZOTAC's website will tell you the max power it can consume. This should allow you to judge if your PSU is capable of handling the graphics card.

Need new keys

Hi guys,
I am an ardent fan of Digit. I saw this mail address to send any queries regarding PC and gadgets. I have a HP laptop, Model: HP r008-tx and I need a compatible internal keyboard for it and I want to purchase it online preferably Flipkart or Amazon. And I have trouble choosing the right model. Can You please help me in finding one? Or give me suggestions on how to find one? I don't want to end up purchasing an incompatible model. I have enclosed some pictures of the keyboard for your reference. Please help me. Thanks In Advance.

Arvind J



Pay attention to details

Hey Arvind, getting spares can be quite a pain, especially if the unit is a little old. So here's what you should do. Check out HP's website and download the service manual. This will list out all the keyboards that are compatible with your laptop. Just search for these models on any eCommerce store and you'll find a spare that'll be compatible with your laptop.

Sandy Bridge with Windows 10

Hello 001,
My name is Ankit, I'm using an HP 431 Notebook computer. I recently installed Windows 10 but it is posing a problem. I'm not getting a Windows 10 driver update on the HP site for this model. The computer is unable to run games with even the most basic resolution. My system specification is as follows. Hope You can help.

–Ankit Misra

Hey Ankit, unfortunately Microsoft doesn't support Windows 10 on Sandy Bridge processors. Your Core i3 - 2310 is a Sandy Bridge processor so you can either shift back to whichever Windows you were running previously and use the appropriate drivers or move to Linux. Since Steam does run on Linux you might as well give that a try before moving back to the previous Windows version.



Ubuntu's the way to go. Linux FTW!

A PC for 60K

Hey,
I want to assemble a computer. (I have a monitor and a set of speakers) my primary use will be designing on CorelDRAW x7. I would prefer an Intel 6th gen processor (but you can suggest any other.) I don't think I'll need a sound card. But please do ensure that the hard drive is of at least 1 TB.

–Sachin Agarwal

Hey Sachin,
Here's a pretty decent computer configuration with 6th Gen Intel CPU. It will easily run CorelDraw x7 and you'll be able to render your creations pretty quickly as well. The total budget comes down to 57,249 so there is a little wiggle room for a 120 GB SSD which usually costs 3,500. So if you're up for it, you might as well grab a Kingston UV300 120 GB.

Processor - Intel Core i5 6500	14,600
CPU Cooler - CoolerMaster Hyper TX3	1,799
Motherboard - Gigabyte B150M-D3H	7,500
Hard Drive - WD Caviar Blue 1 TB	3700
Memory - G.Skill RipJaws V 8GB 2133MHz DDR4	3,500
Graphics Card - Zotac GTX960 4GB DDR5	17,800
Power Supply - Seasonic S12II 520w	4,800
Keyboard - Logitech MK200 Keyboard & Mouse Combo	800
Cabinet - Antec X1-T	2750
Total	**57,249**

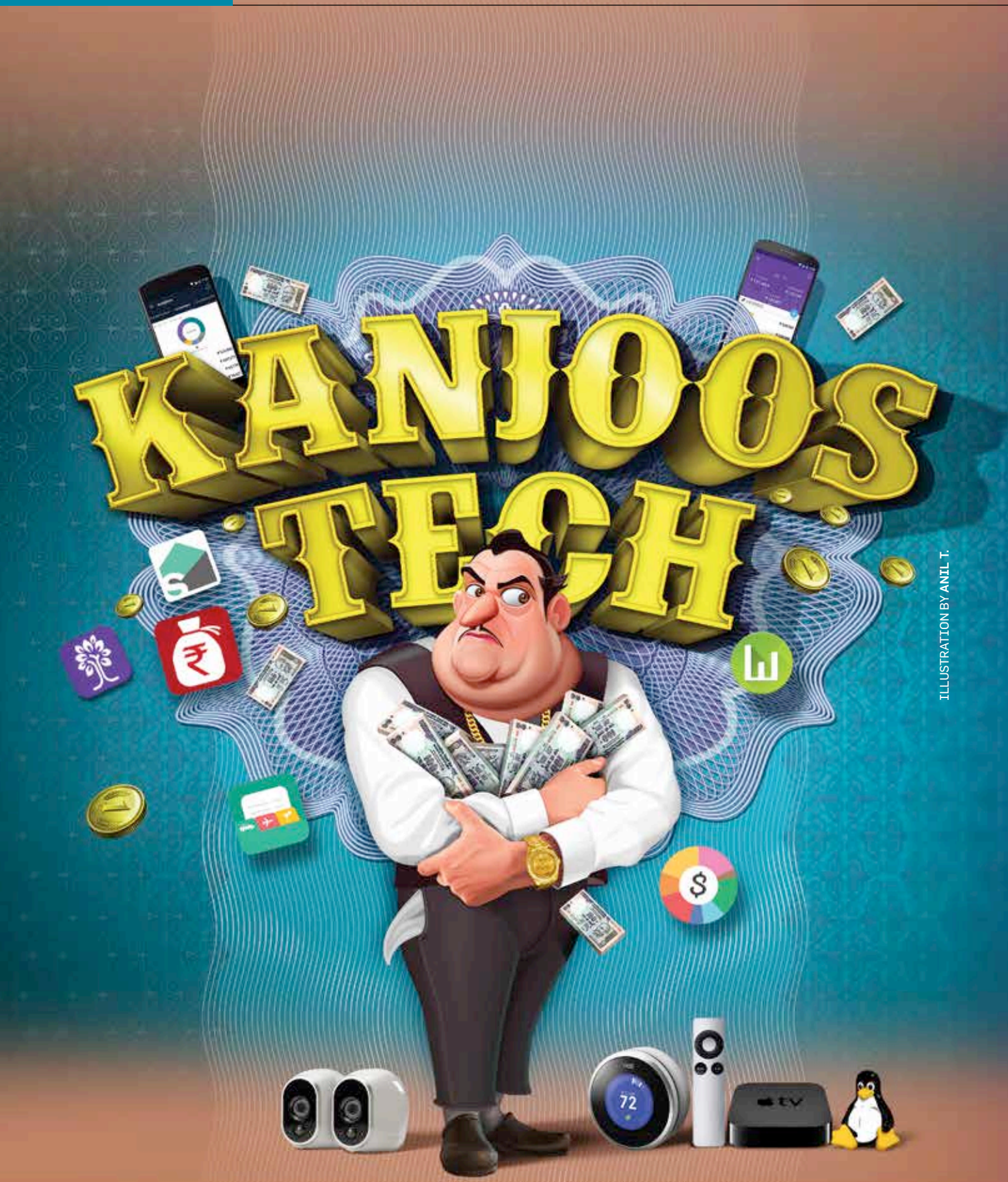


ILLUSTRATION BY ANIL T.

THE GEEK'S GUIDE TO MANAGING MONEY USING TECH

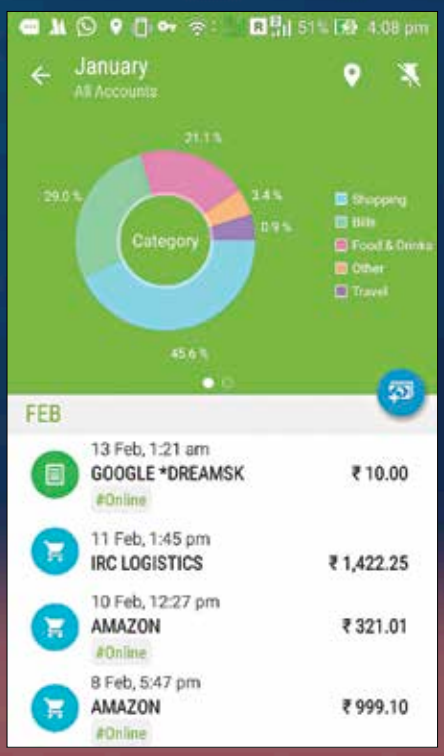
An assortment of apps and web tools that promise to take on the role of your personal accountant, investment manager and much more

BY **ARNAB MUKHERJEE**

It is that time of the year again. The taxman is almost knocking at the door and your workplace is biting its nails for the increments to come. Your head bursts trying to keep track of your income, expenses and investments over the past month and year. Even if you're not the type who needs any assistance with numbers, having your expenditure and bills automatically tracked and reminded, never really made anyone's life harder. That is exactly what a host of services in the form of smartphone apps and websites are offering you now, with little or no effort from your side. We went through a bunch of them and here are the ones we found useful.

1 Walnut: Broadly an expense and budget tracker with SMS analysis capabilities, it has a category analysis feature and also, groups your transactions accordingly. In the analytics area, you will get compiled pie-charts of expenses of each time period, grouped into categories, as well as rankings. Some features which distinguish it are the ability to enter comments for each transaction, attach pictures of bills to each transaction, and to read the SMS from within the app. It can additionally detect online transactions separately and highlight them. Also, the notifications are amazingly useful, showing you the percentage of spending left in each category.

If you are looking for more detail in the automatic categorisation and would like more comprehensive analytics that lets you compare specific categories across months, WealthPack is a similar and better SMS analysis based app.
Walnut: http://dgit.in/WalnutXpnse
WealthPack: http://dgit.in/WealthPk

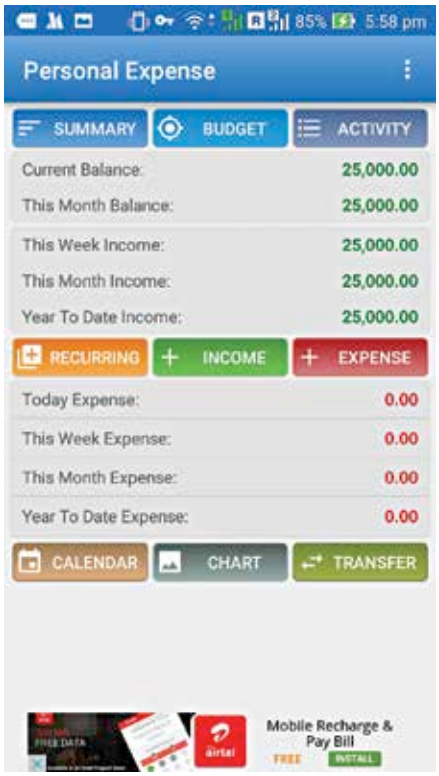


Walnut does an excellent job of showing you the big picture across months as well as a detailed breakdown of each month

2 Zoho: This one isn't an SMS expense tracker. You have to manually enter and categorise your expenses then enter the merchants in Zoho expense tracker. Then why is it even here? It has a report oriented approach which lets you generate reports for entire trips or certain days with an option to mark each transaction to be claimed as reimbursement. A very useful feature is the app's ability to scan a receipt and retrieve the data from it.
Link: http://dgit.in/ZohoXpense

3 Expense Manager: Even though the UI on this app is not as friendly as the other alternatives, the overall approach is very professional. You have to enter data and modify categories manually but there's no automatic detection. The graphs and charts this app can generate are at par with professional options with charts classified by category, subcategory, time period, etc. You can also mark payments as cleared or uncleared, attach pictures and define the payee in each payment. If you are looking for a powerful tool and don't want the app to auto-detect stuff, this is totally what you should go for.
Expense Manager: http://dgit.in/ExpenseMgr

4 MoneyLover: Out of all the apps we tested, MoneyLover has the most persistent notification settings that we could find. It constantly shows you the current amount of money you are left with on



Although Expense Manager's dashboard isn't friendly, the granularity at the Expense recording interface is an advantage

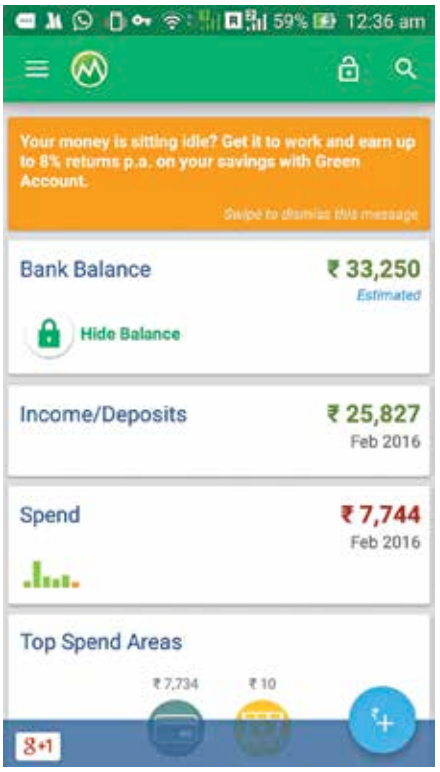
the notification screen. Although it does not auto-detect your transactions and requires you need to enter them manually, the material design makes that task quite easy. The app makes up for it in the amazingly useful budget settings allowing you to set spending and saving targets.
Link: http://dgit.in/MoneyLvr

5 HomeBudget: Similar to Expense Manager in terms of entering data and MoneyLover in terms of usability, HomeBudget also allows you to create groups with Family or Friends using HomeBudget and managing a common budget. It allows you to customise categories and groups with icons of your own. It also lets you save reports. A fair warning would be its lack of proper analytics tools. The charts and summaries in place seem half-hearted.
Link: http://dgit.in/HomeBdgt

6 Monefy: Possibly one of the best user interface's that we have come across, Monefy doesn't really boast of groundbreaking money management capabilities. You simply tap the '+' or '-' to indicate an income or expenditure and categorise it accordingly. The moment you enter a transaction, the home screen is loaded with your transaction flashing at the centre before it disappears. Following that all the categories around it are updated accordingly with lines pointing to the pie chart at the centre.
Link: http://dgit.in/MonefyLite

7 MoneyView: Another Indian origin SMS analytics based expense tracker, MoneyView doesn't detect transaction categories but ends up categorising most of the transactions under a broad "Debit Card" category. Although weak on this point, a strong point of this app is the ability to pay your bills from within the app, even though the app could not detect all my bills that other apps had detected. You can also mark your transactions as reimbursable and track them in a separate header altogether. But you would still need something like the Zoho expense manager to generate useful reports of those reimbursements..
Link: http://dgit.in/MoneyVu

8 MyUniverse: From the Aditya Birla Group, this app gets all its points for the concept; the execution lacks things like incorrect bank names and slow transaction updates. One more point, this app needs to log into your bank (via your internet banking credentials), credit card (via card number and PIN), investment account (via credentials) and any other accounts. Although the website does proclaim that its transactions are secured by Verisign, a user may not be comfortable sharing this level of details with an app. It even has an additional tool called ZIPSIP to invest in mutual funds online.
Link: http://dgit.in/MyUnivrse



MoneyView offers recommendations for investing your money better.

9 Tax Calculator India: This app does what it says – it calculates tax. A no nonsense calculator, it allows you to simply enter your annual income and declare your investments in categories such as medical, education loan interest, house rent etc. The sliders to set the amounts are quite handy. Once you have entered the amounts, the tax breakup page shows you exactly why you are paying the amount of tax you are paying.
App: http://dgit.in/TaxClc

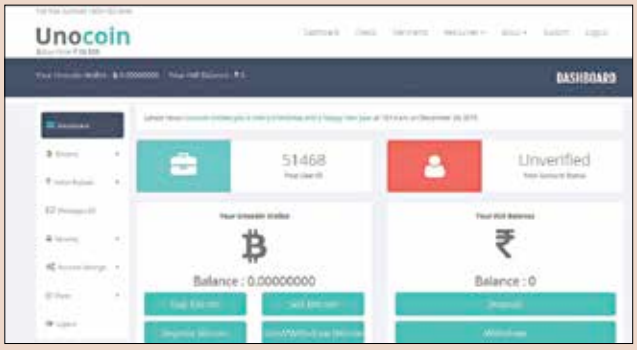
SLONKIT

Rather than being just another digital wallet-like payment solution, Slonkit's offering is quite unique. Even though on the PlayStore it has a low 3 Star rating, Slonkit aims to be the smarter way for teenagers and young adults to save their money. Once you download the app and open it, you have the options of signing up via just your mobile number or your Facebook or Google account. Past that, you need to choose a profile type between "Parent" and "Child", based on which the app can be used. As a parent profile, you will need to add the child profiles to transfer money to them. As a child profile, you will only be able to use the money sent by the parent profile and request for more when it finishes. Before you can start using it, you need to order a Slonkit card from within the app, which will be a physical VISA card delivered to you.

Slonkit will give you the oversight that you felt missing from the way your children handle money. And with a real card and the limits of expenditure right before their eyes, it would also inculcate a sense of responsibility within them to save and manage money better
Link: http://dgit.in/Slonkit

BITCOIN

For the ultra tech savvy who prefer a more esoteric form of payment, there are still a number of options in the market.



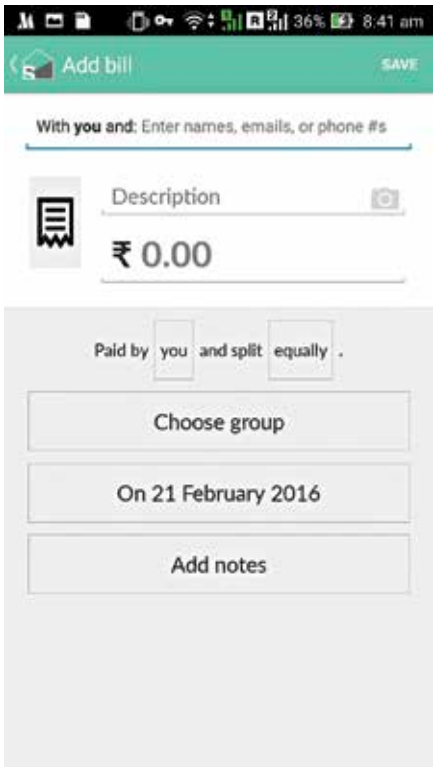
1 **Unocoin:** After a quick sign up and verification via email, you will be all set to use 'India's Bitcoin wallet', as the web tool proclaims itself. It integrates with your bank account after you enter the details and allows smooth Buy/Sell requests for Bitcoin. A comprehensive dashboard shows a useful summary of all your Bitcoin related transactions and balances. There are a number of merchants partnered with Unocoin in India that will accept payment through their Bitcoin wallet, although if you are looking for digital wallet options like utility bill payment, you should consider Zebpay.
Link: http://dgit.in/Unocoin
App: http://dgit.in/BCZebpay

2 **Coinsecure:** At first glance, Coinsecure might appear to be just another Bitcoin wallet trying to make headway in India. But a slightly deeper look at their website reveals their positive features. With a low trade fee of 0.3%, Coinsecure claims to be the only Bitcoin wallet in India that uses the REST API. It's also an ISO 9001:9008 compliant company and a NASSCOM member. Their Trade Engine uses a hybrid wallet solution that keeps most of your funds in cold storage while keeping a little inside a hot wallet for quick transactions. To raise awareness about Bitcoin, they also have a number of handy tutorials on their YouTube channel and a Bitcoin Practitioners Training Program that can be enrolled from their website. Also, a highly useful ticker on their website updates the Bitcoin exchange rates from four major Bitcoin exchanges in India.
Link: http://dgit.in/Coinsecure

10 **Splitwise:** When it comes to splitting bills between a group of people, there is no other app as easy to use as this one. Splitwise syncs with your Google+ account contacts and allows you to add friends into the app (when you add people who are not using the app, they receive an invite). Once they are added, you can create any bill and split it in whatever way you wish to between any number of friends on the app. The home-screen will show a nifty summary of how much people owe you or how much you owe others.
Link: http://dgit.in/Splitwise

11 **Google Sheets Budget Template:** This is not an app. It's just a spreadsheet template that you can use in Google Sheets. There is one for monthly budgets and one for yearly budgets. The monthly budget sheet has all the formulas in place and you only need to enter your transactions in the second sheet and categorise them. The first sheet keeps updating based on what you enter and shows your overall savings, your actual expenditure against your planned expenditure for categories and overall. This is a simple and easy to use tool that you can seamlessly download as an excel sheet. The data from the monthly budget can be input into the yearly budget sheet to generate trend charts.
App: http://dgit.in/GSheets

12 **Google Now:** Even though Google's smart AI is not a dedicated money manager, it does a pretty good job of detecting your pending bills from your emails and SMS inbox and reminds you of the same through its cards when they are due. This comes in very handy because Google Now is deeply integrated into Android and might even feature integrated bill payment options in future updates. Along with that, if you have entered the stocks that you are interested in, you will also have a card showing the value trends for those stocks. The usefulness is that you would probably check Google Now regularly.



Transactions are very easy to split between you and your group on Splitwise, and the useful dashboard shows a summary of all your dues

13 **MoneyControl's Markets on Mobile:** This app is a dedicated stock market app which can be very useful to someone with a keen interest in stocks. It provides useful general categories such as 'Market Movers', 'Top Commodities' etc., and allows you to track your own stocks once you have registered as a user. It is quite easy to use once you dedicate a little time to understand all the options available on the app.
App: http://dgit.in/MrktsMob

As of now, there is yet to be an overall solution for India similar to what Mint is for the US – budgeting capabilities, transaction tracking, bank integration, investment recommendations, bill payment and credit rating, all rolled into one. The one that comes closest according to us is Walnut, which lacks the firepower of bill payment and investment capabilities,

TAX FILING

Most of us will agree, filing taxes is a nightmare every tax season and people would be suddenly seen with less hair on their head and uneven fingernails. Not any more. There are a number of websites that help you file your income tax while cutting down on the hassle from the process. Here are the four websites that we found useful:

1 **ClearTax:** A website with a pleasant UI, ClearTax allows you two methods to provide your information – either you can enter manually or you can upload your Form 16 PDF and let the tool scan your details. All you would need to do is enter your PAN number, address and other profile details. If you are new to online tax filing, you can go through the useful guide section where the basics of tax filing are explained quite well. There is a paid option for ₹499 where CA's are available to do the entire filing for you over a few phone calls. But if you want 24/7 free support at the cost of paid Form-16 detection, try Taxsmile.
ClearTax: http://dgit.in/ClearTax
Taxsmile: http://dgit.in/Taxsmile

2 **H&R Block:** While it also offers automatic detail scanning and an easy to use UI, the major difference for H&R Block are the "Agents Ready to Help" as an option even on the free tier. It also has premium options at ₹499 to have your filing checked and ₹999 to have your filing done by a CA. Compared to ClearTax, this is oriented towards slightly experienced users.

3 **Taxspanner:** Perhaps the costliest alternative compared to the other three, Taxspanner has no free tier and does not offer automatic Form-16 detection. Then why is it here? It's the best option for those who are actually looking for something more than copy pasting Form-16 details. The annual subscriptions for ₹1,499 offer CA support throughout the year for monitoring income to provide you tax efficient options. Somewhere between this and ClearTax is H&R Block that helps you get your filing checked or filed in its premium options.
Link: http://dgit.in/HnRBlock

but is very good at tracking, budgeting and providing detailed breakdown of all your transactions.

PAYMENT AGGREGATORS

Since the major e-commerce boom in India, one of the most significant changes in the way money is handled has been the rise of payment aggregators and digital payments. It has created a familiarity between people and internet banking and people are now willing to take care of most of their purchases, bookings and bills digitally. This has created the market for payment aggregators and the market is filling fast with options where some are good, and others, not so much. Some of the interesting payment aggregators have been covered here.

1 **Your Bank's Mobile App:** The mobile apps from most major Indian banks now have the ability to settle utility bills and do recharges within the apps itself. A major perk of using the mobile app of your own bank is that you don't have to trust any third party with your account credentials and authorisations go through very smoothly. Needless to say, options might be limited compared to dedicated aggregators.

2 **Paytm:** From one of the first independent online recharge options to being well on the way to becoming India's spiritual equivalent of Paypal, Paytm's truly showed up on the map when it integrated with Uber as the only payment option. Paytm deals with utility bills as well as ticket bookings, but just like most other dedicated payment aggregators, suffers from a limited number of states covered. With the largest user base, it is majorly known for the cashbacks it offers. Although it does cover most grounds, it still doesn't provide a card that can be used for payments. You can opt for Freecharge that has the option to avail a Freecharge Go MasterCard.
Link: http://dgit.in/Paytmapp



At first glance, it almost looks like a business news channel in your pocket, but with a little stock know-how and some dabbling, it can prove to be very useful.

One of the major reasons to use payment aggregators is the reduced dependency on the bank as your sole money management institution. There's an increasing complication in the payment scenario online, with credit cards, debit cards, gift cards, online banking, payment gateways for your electricity bills, mobile bills, DTH bills, ticket bookings etc. A simplified payment aggregator that brings it all under one roof can help you save a lot of time.

Now that you have all these apps and web-tools at your disposal, pretty soon you should be saving a ton of money and suddenly turn into a financial guru, right? Unfortunately, technology still hasn't completely replaced the need for your actual intentions. With the right tools, you just need to have the actual intention of saving money rather than expecting the app to do it for you. Then, and only then, will you be rid of the woes of month-end and tax seasons. So get that smartphone out, roll those sleeves and get ready to save!

डिजिट
अब हिंदी में

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

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डिजिट

THE KANJOOS JUGAAD

Stingy and splurging don't have to be mutually exclusive. We tell you how to get things done and save money at the same time, thanks to technology that doesn't cost a bomb.

BY **JAYESH SHINDE**

The biggest thing to remember in any Kanjoos situation is that the aim to spend money isn't just to show off that you have the latest and greatest things in your house. No, that's not what a jugaadu Kanjoos does. Not if you're a Digit reader, at least.

Here the idea is to make sure that we give you solutions and gadget replacements that will help you gain certain if not all the features that you crave for in any technology deployment in your life – be it at your home or office – without upsetting your bank balance. Why spend unnecessarily if the world of technology's full of ingenuity and cheap alternatives?

So let's take a quick look at some of the ways in which you can save money by investing in smart technology solutions without leaving a hole the depth of the Marianna Trench in your beloved wallet.

SAVE MONEY WITH EFFECTIVE LIGHTING

This is pretty much a no-brainer to begin with. If nothing else, at least change your existing home light fixtures, and try to opt for money saving lighting devices available in the market currently. Incandescent bulbs are largely outdated – we hope. Not only are they highly inefficient but also ridiculously expensive now. Using them makes absolutely no sense in the 21st century. What's more, the much awaited replacement of the incandescent light bulb – CFL technology is also not all that great. Sure it helps you save money in comparison to the incandescent light bulb, but there are products available in the market that will let you save even more money. Yes, I'm talking about LED lighting solutions. Available as large and tiny bulbs, LEDs not only last longer than both incandescent and CFL bulbs combined but they are capable of operating at very low power levels without compromising on luminance levels. On an average, LED bulbs last 11 years of continuous operation or over 20 years of 50% operation (daily usage of 12 hours). It's also very efficient, transmitting up to 90% of the energy it consumes to produce light, as opposed to the incandescent or CFL which are about 20% or up to 50% efficient, respectively.



We highly recommend you to switch all your existing light bulbs now with the available options of Eveready, Philips and Wipro. And if you're feeling a little adventurous, you can even go for something like the Phillips Hue LED bulbs and Cube26 Iota Lite 26, as it retails at a slightly lower price than the Philips Hue, claiming to be India's first LED bulb. Both offer LED bulbs that connect via Bluetooth and have a customisable colour palette all controlled by a smartphone app. Also, check out I-Switch, a cheap light automation switch available for just ₹900 (http://dgit.in/autooncfl). Getting your conventional bulbs and CFL's to act 'smart' is what this product does. Hook up one of your CFLs to this I-Switch and it becomes one smart bulb which lights on and off using an in-built motion sensor and a passive infrared sensor which senses a human presence in the room. A great way to optimise your electricity usage.

HARVEST FREE SOLAR ENERGY

Due to India's position near the equator, we are blessed (or cursed?) with a lot of sunlight throughout the year, and with reduced / fluctuating monsoon, that spell has only increased in recent years. Solar power is an expensive substitute for one's day-to-day energy needs – meaning it requires a sizable initial investment to begin with – rooftop deployments for offices and large housing colonies are reporting enhanced savings from electricity bills. So yeah, it's a bit of a chicken and egg problem this, you won't see savings immediately with respect to your initial investment in solar panels atop your home or office building, but with time you will recover that investment from savings made on your monthly electricity bill. That has to appeal to everyone's kanjoos side, surely now? As to what are some of the key questions you need to ask before taking the solar plunge, read this nice little primer we found online – http://dgit.in/SolarPowInstll.

For other things, try to have a solar power alternative. For example, if you're going to buy a brand new powerbank, see if you can buy one that has a solar panel

on its back. But wait for prices to fall or a discount sale to trigger because as of now, buying a solar power bank just doesn't make a lot of sense.

However, buying solar-powered LED lights is definitely a good idea. Check the ones sold on Amazon (like this one – http://dgit.in/SwftlyDnLED) that cost around ₹1k per unit. They are remarkably easy to install and glue on to any substance fairly quickly, whether it's indoors or outdoors. Charge through the day and activate at night. What's more, they are only activated when they sense motion. Pretty effective and efficient, huh?

MAKE DUMB TVs SMARTER FOR PENNIES

You might cringe every time you look at full page advertisements on the front page of your daily newspaper splashing across TVs costing tens of thousands and even lakhs of rupees. Touting "smart" features such as access to an app ecosystem, Web browsing and screen-casting technology, you don't really need to spend all that money just to get a "Smart TV".



Remember, just like a camera is all about optics and the ability to take great photos, so it is with a TV – considering the type of panel, refresh rate and other core display specifications. Everything else, especially the so called smart features can be found elsewhere. As long as your HDTV has an HDMI port, you can make it smart. All these jargons and more have been covered in our FT to Display Technology, so be sure to check it out.

If you're a tinkerer at heart, look no further than the Raspberry Pi 2 which can be tweaked with appropriate software in order to convert it into a media streaming device. You then connect it to your TV using an HDMI cable and voila! You have your very own, very cheap, Smart TV alternative. If you want a little more out of the box setup and user experience, try checking out the new Chromecast. It connects to any HDMI-enabled TV and allows you to stream content from your phone or laptop on to the TV. It also comes with built-in app support to ensure the whole process is as seamless as possible. The Chromecast sells for about ₹3k.

Beyond Chromecast, there's Teewe 2 which is a nifty little HDMI dongle that has been made by Indians, in India. Like the Chromecast, the Teewe 2 is a streaming stick available on most e-commerce websites, at ₹2,399.

So yeah, don't be tempted to buy that next best Smart TV only for its smart features. Because you'd be doing your bank balance and your sense of stingy ingenuity a whole lot of disservice.

TAKE YOUR CAR'S IQ FROM LOW TO HIGH

The TV analogy given above also applies to cars and other automobiles. If you don't want to spend on buying the latest Mercedes or Audi or BMW for its style statement and comfort of ride on the road or elsewhere, then you're better off scavenging some of these high-end luxury vehicles' "smart" features through inexpensive alternatives – not cheap knockoffs. By doing this, you will make your old, faithful automobile smarter and just as useful in the realm of gizmo wizardry as the high-end European cars.

Actually, whether it's brand new or old as your office furniture, your car is smarter than you think. If your car's built after 1996, and you've been driving it since then, you can access a treasure trove of data inside it which goes beyond just the speedometer. Purchase a nifty little Bluetooth dongle called Automatic (US $100), to start communicating with your car like never before. It automatically plugs into any car's standard diagnostic (OBD-II) port. It accesses and unlocks the data in your car's on-board computer and connects it to your phone wirelessly using Bluetooth.



You are going to get a whole lot of info from your car, so be prepared. Telemetry data, track mileage, car location, and many other features incoming with the Automatic adapter and app sync.

Similar products that are launched and made in India include CarIQ and Zene. Both products offer similar solutions like the Automatic plug, with the added bonus of being customised and made specifically for the Indian market to support cars sold in India. Both the products are available for purchase on their respective websites.

BREATHE NEW LIFE INTO OLD HARDWARE

Just because your gadgets are old and not as fast or effective as they were in their prime doesn't mean you have to get rid of them. Far from it. Here's what you can do from old, ailing hardware like your old PC or laptop.

- **Convert it to a NAS:** Install FreeNAS on your old PC. After doing this and sharing folders with data on it, and obviously connecting it to the network, you can use your old PC as a network drive.
- **Retro console:** Install FreeDOS or any other standard NES emulator and turn your old PC into a retro gaming console. For free.
- **Jukebox on request:** Buy a decent pair of speakers (like the F&D F680s), plug them into your old PC, stick in your music or connect it to Spotify, Gaana or Apple Music and forget about buying a dedicated music player.
- **Hotspot:** If you have an aging laptop that you're thinking of getting rid off, stop, don't do it just yet. You can use it as a Wi-Fi hotspot or Network Repeater if your house isn't fully getting covered by your wireless router's signal.
- **Firewall:** Connecting to the Internet can be a security risk. In these cases, you can convert your old PC as a hardware firewall to ensure all incoming traffic is routed through it and it's the first defence against the Web. You can also apply parental controls. Surf the Web for open source tools, there are plenty of them around.
- **Cloud storage:** If you don't want to submit your data on a third-party cloud service, install something like ownCloud on your old PC and an external drive to host your own always-on private cloud which will be accessible from anywhere on the web.

THE KANJOOS CHEATSHEET

You have finally reached the finish line of our kanjoos tech tips. You don't have to wait for Diwali deals to indulge into your favourite gadget wants. Here's our wishlist for the miserly who believe in spending less but getting the maximum value.

BY **ABHIJIT DEY**

If you have read the past two cover story pieces, then you must have received ample kanjoos tech hacks. Not only have you learnt how to wisely manage your finances and make every penny count, but with the previous story you have also been introduced to smart and stingy ways of enabling tech in your life. Here we try to give you very good alternatives to highly desirable but ridiculously expensive products in popular categories. Not all of us can afford the greatest smartphone, the best camera, or a kickass gaming laptop. But we don't have to. Read further to find out how you can settle on less expensive alternative gadgets that offer close-to-best in class performance in their categories.

You may laugh at our suggestion but this is no joke. Is it necessary to spend money on premium gadgets and software services? No. Can you survive by being fully dependent on cheaper alternatives? Yes. You can expect premium features to be present on cheaper and free alternatives (talking about software). In fact, you might even observe professional grade features present on free and open source software alternatives. Of course, compromises are bound to happen and this is where we jump in to reduce them by recommending the best products under a budget. You can obviously survive with cheap gadgets and free/open source software, and this is what the story tries to bring into perspective.

GADGETS

Let's kick things off with gadgets. Our labs have been adorned with hundreds of exuberant and expensive products. We admit that we've been spoilt by choice and we do hold high standards for several product categories. Having observed critical test processes involving both real world and synthetic scenarios, we can strongly conclude that you will do just fine with products that are cheap. By cheap we don't mean the ones built with unacceptable quality of components but the ones invested with informed compromises to meet a budget. Being a Digit reader, you're already aware that poorly performing products have been critically busted in our reviews. So, you can be assured that our recommendations are worth your money. We'll also look at certain gadget categories whether you actually need them and the explore the existence of alternatives.



The OnePlus Two is robust enough to be your daily driver

Smartphones

In this age, you'd be classified as an outlier and looked down upon if you don't own a smartphone. Considering the volatile nature of the market, buying a new smartphone is a tedious challenge. And the worst part comes when better phones at better prices are released just after you've bought yourself one. This is inevitable in such a competitive category spread across a wide price range. Yes, the best smartphones cost somewhere around ₹50-60k but do you actually need one? Chinese smartphone manufacturers have rattled up the market with their cheap and powerful devices. The most noise was made by OnePlus and their latest offering, the Two packs premium features and is still surprisingly priced at ₹ 25k. The reason this phone has been receiving so much appreciation is because the internal components are seen on other premium smartphones. The Snapdragon 810 SoC is present on several flagship smartphones and it has faired well against Samsung's Exynos 7420 and Apple's A9. Obviously, not better but the performance offered is enough to enjoy all high-end games and apps without any visible lag or drop in performance. The camera sensor is really good and even though it falls short against the Honor 7, priced

lower than the OnePlus Two, you can click sharp and good quality images. The 64GB internal storage should be enough for your multimedia content. After having tested endless number of smartphones in the current generation, we can firmly say that you shouldn't spend more than the ₹25-30k mark on smartphones.

In-ear monitors (earphones)

Almost everyone will agree that the earphones packaged along with smartphones are bad. They don't last long and deliver poor quality audio. This motivates you to ultimately go ahead and buy a pair of IEMs, but wait. This category is again riddled with hundreds of options lurking around online and you shouldn't fall for the crappy ones out there. We have covered IEMs across different budgets and if there was one to suggest when the funds are low, the Cowon EK2 has to be the one. Not quite different from the previous



Good quality audio under a tight budget

EM1, the major differences are the ear tips and the tuning that gives you more details in the higher frequency ranges. Yes, there are other worthy options such as the SoundMagic E10S and the JBL Synchros E10, and their price being close to ₹2k, buying the EK2 would be smarter since it sells for around ₹1k. These are the best pair of IEMs you can buy at this budget.

DSLR Cameras

Nowadays you'll find increasingly more people carrying a DSLR camera than ever before but are they making the right buying choices? This category again consists of premium and entry-level variants and you don't really need the features offered on the high-end ones, unless you're a professional. It's debatable whether you're actually going to optimally use the features available on the entry-level segment but considering you



Perfect for entry-level photography

don't want to blow off money, the Nikon D5200 is where your money should go. Priced at around ₹25k, you'll have all the necessary features and control over the camera's manual settings. Compared to the popular choice of picking up the D3200, currently if you look at the price and the advantages of having the swivelling screen, more focus points, greater ISO sensitivity level and a bigger pixel area, the D5200 is a steal. It's smarter to spend less on a camera body and more on lenses, of course if photography is just your hobby otherwise owning a better camera body is always favourable.

Basic and Gaming PC

If you're planning on building a basic computer rig and don't require much computing power, then you can have a wonderful setup at a surprisingly low price of about ₹20k by buying a mini-PC. Of course, you can't expect to run games and work with creative suites on this rig but a normal use-case of internet browsing, working with documents and consuming multimedia content will be a breeze. But if you have higher demands, then you have to spend much more. A budget gaming rig or a creative editing rig has to undergo several compromises in such scenarios. The decision of whether one should buy a micro-ATX motherboard with more features or a simple ATX motherboard with the basic features can be quite daunting. That decision is again dependent on your choice of CPU and hence, the socket type. When it comes to choosing the GPU, the most popular choice would be the NVIDIA's GTX 970. Looking at the local prices, it turns out to be expensive but considering its lower brethren, the GTX 960, will also serve you well and let you play video games in high and ultra-settings. It's advisable to spend most of your budget on a better performing CPU and GPU while cutting short on the other components. The component choices are intriguing but your head doesn't need to meet a wall. We scratch our heads hard enough every month to come up with a list of such rigs, featured in the "Killer Rigs" section of this magazine. So, our humble suggestion would be to check them out and decide for yourself the most comfortable budget segment.

Laptops

Classified further into dedicated categories, laptops offer the advantage of portability but fall short on performance compared to a desktop. For the same budget, one can possibly build a PC, sometimes a stronger one with the equivalent desktop components. Students usually require a laptop since it's easy to store and carry to college. People on the go always need a laptop to take their work along, becoming an ideal use-case. If you fall under the previously mentioned demographic, only then should you consider buying a laptop. Otherwise, spend your money on a desktop since it gives you a wider and easier scope of future upgradation of components. When buying a laptop for mainstream use-case scenarios, you should be looking around a budget of ₹40-45k. Ultrabooks, convertibles and gaming laptops are all a luxury, and they matter when you're really serious about performance regarding computing power and data transfer speeds. We reviewed the HP Pavillion 15-ab125AX long back and it still remains the best in the mainstream category. The AMD A10-8700P APU combined with 8GB of RAM, 1TB of HDD storage and an AMD Radeon R7 Series M360 GPU, it will take care of all your PC needs and even let you play certain games at lower settings.

Can you live without some gadgets?

Obviously. The gadget categories covered until now belong to the most essential ones. Yet again, you can further make choices of ignoring some categories like if you aren't much keen on clicking photos with a DSLR camera, a smartphone with

a better camera sensor will do just fine. A laptop is only appropriate if portability is an important factor otherwise it's smarter to invest in a desktop PC – a basic rig or a mini-PC. There are a few other gadgets which are plain luxury items being promoted as one of your daily drivers. Fitness bands do an incredible job of tracking your activity but the accurate ones are expensive. For the cheap ones available in the market, they are disappointing and an utter waste of money. At a beginner's level, you can use the sensors on your smartphone that are accurate enough to track your footsteps, calories burnt and distance travelled. Another such gadget is the smartwatch. You will come across people flashing them on their wrists but broadly, they are simply a substitute for your analog or digital watch acting as a secondary screen for your



Don't spend your money on smartwatches

smartphone notifications. While some of them do include health and activity tracking features, they are still expensive and don't pose much of a utility.

If you've already bought a pair of IEMs, buying a pair of headphones whether for music or gaming wouldn't be economical. Again, they are a form of luxury that gives you better audio quality and a different level of comfort. While building a PC, you're obviously going to get yourself a speaker system. Buying Bluetooth speakers at this point again becomes a luxury but if you're one of those who love to go out on trips frequently, the JBL Go priced at under ₹2k should be enough for music. Wireless routers have become an important product at our homes and the ones installed by the ISPs aren't efficient in



Not the best but favourable for short trips

handling multiple connections. Your choice has to be TP-Link's Archer C20 priced at around ₹2k that comes with two antennas (2.4GHz and 5GHz), something rarely seen on routers at such a low price. The inclusion of a USB port at the back will let you share files in the network which is quite a useful feature.

SOFTWARE

Now that we've got gadgets out of our way, let's shift our focus towards software. Unlike gadgets, you can acquire and use software services for free. And you should be glad that almost every commercial software out there has a good enough free alternative available. You might be interested in working with documents but aren't quite keen on spending your hard earned money on the Microsoft Office suite. Among the many alternatives for word processors in the wild, apart from a few premium features, similar software such as LibreOffice, WPS, OpenOffice etc., are sufficient for an individual. Similarly, there are options available on other categories of software as well. Few of the most essential and popular ones have been covered here in an attempt to help you avoid spending unnecessary money on software.



Good alternatives for free office suites exist

Office applications

When talking about office tools and applications, you'll naturally be inclined to talk about Microsoft Office. It's a premium set of applications covering all your needs for documentation, spreadsheets, presentations, email etc. Available at different pricing plans, the Office 365 Home gives you online cloud storage as well for a monthly fee of ₹420 per month. If you aren't comfortable in paying the amount and can manage cloud storage through other free services (more on that later), you should look at the alternatives and there are plenty to experiment. OpenOffice and LibreOffice are almost the same in terms of features since they are based on the same open-source suite. The difference between them comes only on the front-end design of LibreOffice which looks appealing and that's about it. If you're looking for a lighter solution for an office suite, WPS Office is another worthy option.

Adobe Creative Suite

Being a professional doesn't mandate that you have to buy premium software solutions due to the existence of their alternative free and open source versions. The Adobe Creative Suite is hands down the most popular creative suite in the market. And we are glad that alternatives exist, robust ones. Starting off with Adobe's most popular and favourite tool of the internet – Photoshop. GIMP is available on every platform and has the dedicated backing of its users trying to keep the software away from glitches. Illustrator is a powerful vector graphics editor tools and although no alternative matches the features offered, Inkscape is the most favourable option. Premiere Pro is another strong video editing tool and for this category we have two alternatives – Lightworks and DaVinci Resolve Lite. Among the two, Lightworks offers professional grade features like advanced multi-cam editing, secondary monitor



Only makes sense for professionals

output and support for plugins. For audio editing, look no further than Audacity since it offers several features similar to Audition Pro. Many other tools are included in the Adobe Creative Suite, and due to its sheer potential, we went out and wrote an FT on open source alternative tools for creative editing suites in July 2015. Rather than paying ₹32,400 for a year of all the Adobe Creative Suite tools, you could use these free ones instead. A comprehensive coverage has been done and you'll find more tools in this category.

Music Streaming Services

Listening to music is a healthy habit and in fact, listening to certain genres of music while working increases your productivity. Contrary to the good old' days of buying Music CDs, the current age is rocking through a number of music streaming services. There are several to choose from and Spotify (not available in India), Apple Music, Gaana, Saavn are the ones that would pop in your mind. Although most of the services work with a subscription plan that gives you a seamless experience with better features, you would still have to pay for them. Partially free services such as Gaana, Saavn and Wynk let you play songs by serving you with ads but people usually overlook the best and obvious source for music – YouTube. Every major artist and band out there, even Indie artists share their music or lyric videos on YouTube, making it the best source for music. The only caveat here is the platform. While you can play songs on your desktop endlessly, the YouTube app doesn't support background playback (a feature on its way soon) so you can't play the videos if you close or minimise the app. Hence sadly, when it comes to listening to music from your mobile, you won't get features like offline playback but at the expense of your internet data, you'll still be able to stream music for free on the music streaming services mentioned above.



YouTube is a great music streaming service

Video Games

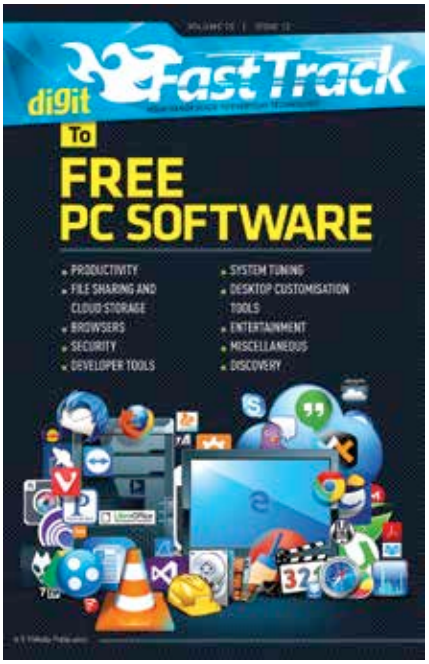
When it comes to playing video games, not everyone actually buys them. But that's not what you should be doing. Video games can be expensive, agreed, but there are so many other games available for free that you might end up spending more time playing them. Digital distribution platforms such as Steam, Origin, Desura etc., have several free to play games. For the ones who are unaware, yes, there are games that won't ask you to pay apart from the additional micro transactions in-game which aren't mandatory. Popular games such as Team Fortress 2, Dota 2, World of Tanks, Star Wars: The Old Republic etc., can be downloaded and played for free. Websites such as IndieDB and Gamejolt list out games developed by independent developers, and most of them are available as demo or full version. Now you might be wondering how you could get your hands on the games from major studios and publishers, and the best way is to wait for online sales. Another method of acquiring games for cheap would be to sign up for game bundles such as Humble Bundle, Indiegala, BundleStars, One More Bundle etc. Rarely, you will find these bundles packing triple A games at surprisingly cheap prices.

Humble Bundle

Catch great deals and bundles on video games every week

Miscellaneous applications

When it comes to security, free antivirus services like Avast and free firewall tools like ZoneAlarm are quite robust. In case of malware and adware infection, you can trust Malwarebytes and AdwCleaner. For developers, an endless number of free and open-source IDEs are available, most of them vouching for Eclipse and Visual Studio Community edition (free version of the Visual Studio Suite). Cloud Storage services are abundant and since they are free, there's no harm in checking them all out. Picking one out of either Google Drive or OneDrive is a choice you need to make based on the ecosystem you're more accustomed with using. It's clear that the software category is vast and many other categories need to be covered. So vast, that we had to dedicate an entire FT where we made an extensive coverage of even the most obscure categories on the internet. Make sure you check out December 2015's FT to Free PC Software. We are quite confident that after completing this FT, all your software woes for PC will find closure.



Comprehensive coverage of alternatives

So there you have it. There's no debate whether premium gadgets and software aren't good enough but the debate here is whether you need them, especially under a tight budget. Turns out that it is sustainable to be completely dependent on inexpensive gadgets and free/open source software. The only bottleneck you'll face is during advanced requirements of features and support, otherwise you can face the world and the internet by depending on these alternatives.

Armed with this cheatsheet, you finally move towards the final step of being a Kanjoos. Until then, spend well my friend.

Dying RAM modules, Slow PC and a mouse that doesn't like Call of Duty

Sometimes you wonder if your PC hates you

Q Stop Win10 upgrade

My office PC is running on OEM copy of Windows 8. I clicked on OK when the Get Windows 10 update notification popped up. After starting download I cancelled the download. But my PC continued downloading that update in the background. I'm using a metered Internet plan which is very costly. I'm unable to do any other work on the Internet because this background download is using up all the bandwidth. Please help me stop this download. Thanks in advance.

–Subodh Kumar



Not so fast Windows 10!

A We understand your pain, especially since metered connections are what most Indians have and unwanted downloads like these end up costing a lot. There are quite a few ways to stop the Windows 10 upgrade files from being downloaded onto your machine. You can always go the easy way by downloading a simple software like GWX Control Panel (http://dgit.in/GWX_CP). Once you've got that installed, you can disable and delete the update in question which is forcing the Windows 10 upgrade on your machine. You can set a Windows Registry flag to disable upgrade. Make a backup before you mess around with the registry. Then Navigate to Subkey: `HKLM\SOFTWARE\Policies\Microsoft\Windows\WindowsUpdate` and add a new `DWORD` value on the right if it doesn't already exist and set its value to DisableOSUpgrade = 1. Also, navigate to `HKLM\Software\Policies\Microsoft\Windows\Gwx` and set the `DWORD` value to `DisableGwx = 1`. This will hide the Get Windows 10 app notification. Lastly, open Windows Updates and click on Installed Updates. Search for KB3035583 and uninstall it. After that, go back to the main Updates windows and search for Windows Updates. This will cause KB3035583 to show up in your list of updates that are ready for download. Right click on that update and hide it to prevent it from being installed ever again.

These methods are limited to just the one update, Microsoft may eventually slip the update through some other means.

Q COD hates my mouse

I recently installed Call of Duty: Modern Warfare 3 on my PC. When I ran the game I found that the mouse was not working. I was not able to click any option and I had to use keyboard for that. Even in-game, I was not able to look here and there. I was only able to fire bullets. I installed the game twice but the problem was not resolved. What is the problem?

My PC specifications are listed below:

- Intel Core i3 4150 @ 3.50 GHz,
- RAM - 4 GB,
- Windows 8.1 Pro,
- Graphics: Intel HD Graphics 4400.

–Tushar Ranjan

A This is a well known issue with the game and the solution is quite simple. Since your keyboard does function in the game, use the same to navigate to Options and then open Video Settings. Under Display Mode, you'll find three options – Fullscreen, Windowed and Windowed (No border). Select Windowed or Windowed (No border) and your mouse's icon should change. This means your mouse has been detected. Enjoy gaming!



Bring me back to life

Q RAM RAM RAM!

I have Windows 10 installed on my machine. Of late, I've noticed that sometimes my PC crashes after giving errors like "Critical-process_died" and "page_fault _in_nonpaged_area". What could be the problem?

–Ricky Singhania

A Oh dear! The most common reason for this to occur is a faulty RAM module. You could check if the module has been seated properly, if not, then remove the module, clean the slots with a soft brush and then reseat the RAM module. If that doesn't solve your problem then you'll need to download Memtest86+ (http://dgit.in/Memtest86) and let it complete its run. This should tell you if any of the modules are messed up, but if the RAM modules



Reseat your RAM

are indeed properly functioning then any of the hard drive partitions that have a page file might be on its way to the grave. So now, you should run HDTune to see if any of your hard drive partitions have bad sectors and accordingly arrange for a warranty RMA or replacement.

Q 1... 2... 3... Clear !

I want to buy a CPU COOLER and I've found the CoolerMaster Hyper 212X seems to be very popular. Please take a look at my PC's specifications:
Motherboard: M5A97 LE R 2.0
Cabinet: CoolerMaster K281
RAM: Corsair Vengeance 8GB.
Processor: AMD FX8350 Black Edition.
I want to know if this cooler will fit in my cabinet and whether it will go right with my given configuration.

–Neeraj Kamal Jit

A The CoolerMaster Hyper 212X is indeed a very good cooler and offers great performance for the price. You didn't mention if you plan on overclocking your machine and to what extent. So at stock,



A close fit with the K281

this cooler will be more than sufficient and even if you do overclock your FX8350 to a little over 5 GHz, this cooler will still be able to do its job.

As for the whether it will fit in your system, well it'll be really close. The K281 has a CPU cooler clearance of 162 mm and the Hyper 212X is 158 mm tall. So just by looking at the numbers, it will certainly fit.

Q Slow machine

My PC's configuration is as follows:

- CPU - 5th Gen Intel Core i5 5200u
- RAM - 4 GB
- GPU - NVIDIA GeForce 820m
- OS - Windows 8.1 64-bit
- HDD - 1 TB

My PC is just too slow! Not particularly when it comes to gaming but in other things like booting, opening applications like browsers, BlueStacks, etc as well. Could you please suggest something so that my PC runs smoothly. Up to 350 GB on my HDD is occupied by games, music, apps and videos. I also don't play or have very heavy games but have many 1080p videos. Lastly, could you also suggest a good smartphone under ₹10k?

–Divyansh Pangtey

A You are facing a problem that all of us have faced some time or the other. Eventually, as a system ages, things start slowing down. Every few months, you should make it a point to uninstall unwanted applications and delete files that are of no use to you. Then proceed to look up all applications that are affecting your start-up. CCleaner is a pretty nifty tool that'll help you do most of what we've mentioned. Once you've removed all unwanted files and programs, defragment your hard drive partitions starting with your OS partition. Also remove all unwanted registry entries and definitely scan your machine for malware using software like your antivirus or you could use more specialised tools like Malwarebytes.

Once you've cleaned up your system, if you still aren't satisfied with the performance then it's time you considered investing in an SSD. A 120 GB drive is often more than enough to house your OS and essential programs that you frequently use. If you wish you can create a new partition on your HDD and move all files to a separate partition and keep just the OS and essentials on one partition. Then, you can clone the OS partition onto the SSD to ensure that you don't have to spend an awful lot of time performing the entire migration process manually with a fresh install.

As for a phone under ₹10K, you should take a look at the Meizu M2 Note, it offers a good mix of performance and pricing.



GOOGLE MAPS

Google Maps has been around for quite a while now. Since its inception it has undergone lot of improvements and it is by far the most powerful mapping system today. That doesn't mean you can't get more out of it. Here are some tips and tricks to make the most of this powerful system.



Google Maps.....13
Software level smartphone maintenance 15

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.

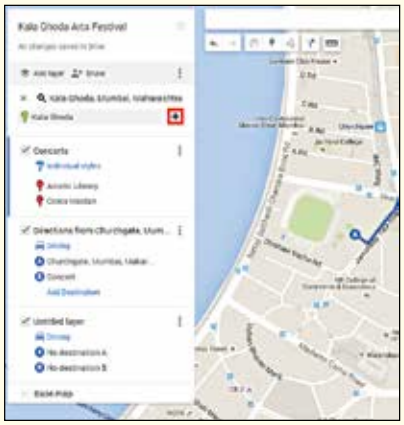
Create a personal map using My Maps

Google lets you create personalised maps to share with your friends and families.

To create your personal map head over to google.com/mymaps log in with your Google account to continue. You'll get two options: `Create a map` and `Open a map`. Click on the first option to create a new map. Start by naming your personal map by clicking the "Untitled map" heading at the top left > Enter a name and/or description > Save.

Begin personalising by clicking on "Add layer". Use the search bar to quickly navigate to a point of interest for marking. Below the search bar are the tools that you can use to customise your map. To start with, search for a place that you want to mention in your map, select "Add marker" from the tools and click on your place. Click on the marker to change the colour.

My Maps tools also allow you to draw lines on the map. There is a handy way to draw your personal driving route to denote a shortcut.



Search a place and click on "+" next to it to quickly add a marker.

Make use of multiple layers

Each layer acts as a group which holds all the markers and drawings. You can assign each layer for similar type of markers. Example: If you want to denote places having concerts add it under the layer "Concerts". Personalise your layer by clicking on "Individual styles" below your layer name. The styles are:

Individual Style - where every marker in the layer can be styled separately

Sequence of color and letters - you get the first point A=red, B=yellow, C=green, D=blue, etc. which is same for every layer.

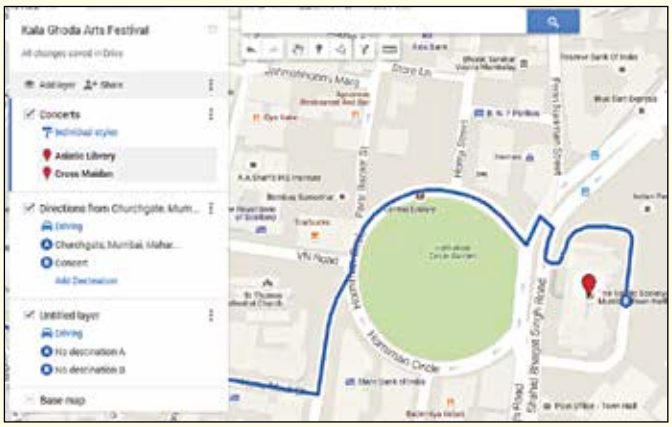
Uniform style - all the markers in one layer are styled similarly

Provide driving direction to your marker

To provide driving directions to the place denoted by your marker, click on your marker > "Directions to here".

Use My Map to denote an event

An event or a festival detailed by a driving map is a boon for many visitors. Now that you've learnt how to make a custom map you can use the same to create a map for any event. Make the use of the various layers you are offered. The layers come handy when you are mapping event location for different days. Assign each layer for a day and you can make the map clutter-free and easy to understand.



The driving route is added as a separate layer

Pin your address book on My Maps

If you have an address book with an "Address" field in it you can easily pin people on the map. This gives you a visual representation of their address which otherwise might be difficult to find. For this you need to export your address book as a spreadsheet (XLSX or CSV). Then create a `New Map > Import > Select` the file from your computer. Once the uploading is completed you'll be asked to choose the field (column) which represents the address in the spreadsheet. That being done Google maps will automatically pinpoint the places in the map.

Easily embed your personal map

You can share your personal map easily by embedding it on your site or in your email. To do that open your personal map and in the left panel where you see your layers hit `Share >` `Embed on my site > copy the HTML` tag provided and paste it where you want.

Get an offline map

Unlike other map services Google doesn't offer their entire database offline, however, it has given you the option to download a particular area for offline viewing. This comes handy when you are travelling and you don't want to be charged roaming data to download maps. To download a map on your phone search for the area you want to download.

Hit "Download" located at the right of the page > mark the area you want to include > Download > give an appropriate name > Save. The downloading will start and your map will be included in the offline list.

Alternatively, go to side menu ☰ > Offline areas > Tap the "+" button > select an area > Download.

Try Time Travel

Putting its old photo database to interesting use Google adds time travel to Google Maps. Time travel is a part of Street View where you'll be able to see a popular place through the years. Due a to limited database this feature is restricted to popular places only.

To try Time Travel search for a popular place (ex. London Eye) > See inside > click on the clock icon followed by a date located at the top left corner. It will present you with the available archives for the particular place. You can select them by sliding the timeline accordingly.



Keep an eye on the available storage and required storage while downloading

Modify map history

Google keeps the track of your Maps activities. It includes everything from the places you searched to the places you reviewed. It is possible to delete the entire history as well as selected searches. In order to selectively delete your history click on the side menu ☰ > Settings > Maps history. Click on the X button next to the entry that you want to delete and hit Delete.



India isn't ready with 3D buildings

Use Google Maps like an FPS gamer

Moving along a road in Street View using a mouse will be painful. Thankfully Google has given us keyboard shortcuts to do the same. In addition to the obvious arrow keys, these shortcuts include the WASD keys which any FPS gamer would feel right at home using. You can move forward and backward using the "W" and "S" key respectively, and "A" and "D" key will let you turn left and right.

See your timeline

Google keeps a track of all the places you have visited if your location services are turned on. All this data is systematically presented in the form of timeline. To see your timeline click on the side menu ☰ > Your timeline. You can also add, remove or edit a place manually to your timeline.

Use God Mode

Google Maps is integrated with Google Earth. With this you can quickly jump between the maps as well as satellite imagery of an area. What's interesting in this is the so called God Mode. Once you switch to Google Earth satellite imagery, you'll see an icon called "Tilt the View" on the right-side This will tilt the view and will let you fly anywhere in the world. To make this cooler hold `[CRTL]` and pivot around any axis using your mouse. You'll get a virtual god-like journey around the Earth. Furthermore, you can also click on any building to get its information card.

Watch real-time traffic

The traffic information that Google Maps offers is one of its best features – something that we all love. However, this is the typical traffic information that Maps uses which is based on historical data rather than real time data. To deal with this Google has added Live traffic information that will provide you accurate traffic information beforehand.

To get live traffic information click on the burger menu ☰ > Traffic. An overlay will appear at the bottom centre which will allow you to choose between Typical and Live traffic.

Let Google Maps predict directions for you

Google Maps revealed an interesting feature called Driving Mode in its last update for Android. Driving Mode is compiled with intelligent machine learning algorithms that will predict where you want to go based on the time of the day and your previous searches. However, it is restricted to Google Maps users from U.S., United Arab Emirates, Great Britain, Ireland, Malaysia, New Zealand, and Singapore only. India will be on the list soon.

To access this feature, add Driving Mode shortcut to your homescreen by long pressing the homescreen > Android widgets > select Google Maps driving shortcut. To access from the Maps app go to menu ☰ > select "Start Driving'.

Don't miss the last trains and buses

In some places the trains or buses don't run all night long which could be problematic. Fortunately this hidden Google Maps feature will let you know the time of the last train or bus on the particular route. To check this, set the source and destination of your journey > choose the train icon > click on "Settings icon" > Last > Done.

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Use indoor maps

If you are unaware Google added indoor maps to Google Maps some time ago. Currently these indoor maps are available in selected locations only. Here's a comprehensive list of all the locations ready with indoor maps https://goo.gl/fCtbc3

Make use of Lite mode

If your Google Maps experience is sluggish it's possible that your computer is not able to handle the heavy rendering cost on your system. In such cases Google automatically switches you to the "Lite" version of Google maps. Lite version brings you back to the classic Google maps eliminating 3D buildings, current location, etc. You can force switch to the Lite version by firing this URL: https://www.google.com/maps/?force=lite

Try these voice commands

- Ok Google, next step
- Ok Google, what's my next turn
- Ok Google, unmute
- Ok Google, when will I get there
- Ok Google, find gas stations
- Ok Google, exit navigation
- Ok Google, resume navigation
- Ok Google, show route overview
- Ok Google, Show alternate routes

Search for restaurants, gas stations, etc along your route

Another handy feature that made its way recently to Google Maps is the ability to search for places along your route. If you are dedicated Google Maps user already, you'll know how painful it is to search for a place along a route. You had to stop the navigation, check for the place and then start the navigation from the scratch. However, with the latest update for Maps on Android you've been offered a feature to allow for pit stops and detours in navigation mode.

To make use of this, start your navigation and tap the floating search button that appears on the right side. You'll see a list of places like Gas stations, Restaurants, Grocery stores, Coffee shops, and a search button to find custom places too. Use these buttons to quickly search for places along the route.

SOFTWARE LEVEL SMARTPHONE MAINTENANCE

Android

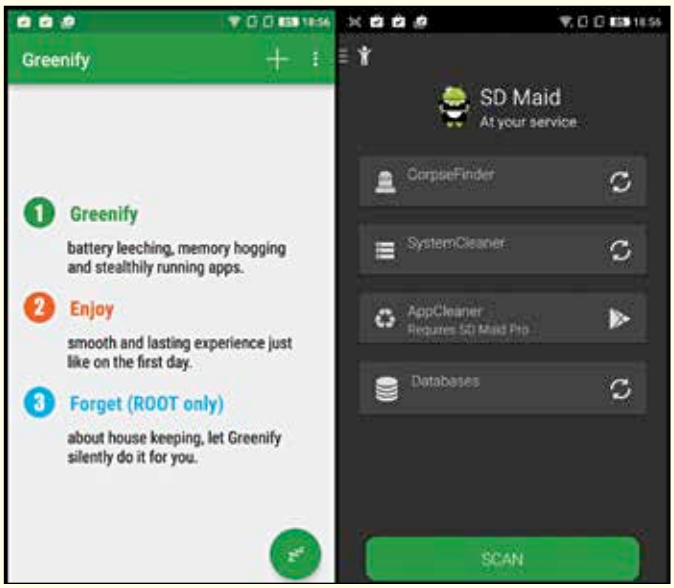
While Android has indeed come a long way (particularly with Marshmallow), we often struggle to keep our Android devices performing at their best, over time. There are a number of simple steps that you can take to ensure that your Android device keeps performing smoothly. While some of these can be done from within the settings, we recommend a few apps that can truly enhance your Android smartphone experience. Here's how you can keep your phone running smoothly.

Disable apps that are used infrequently

We often tend to download apps that we probably needed for only a day or two. You probably have some of these yourself, and should at least disable them to prevent wastage of resources. Go to `Settings - Apps`, and `click on each app` that you wish to disable. The `Disable` options are placed within each app, and you can keep it off till you require it again.

Stop using widgets! (You probably don't use half of them, anyway)

While the idea of widgets is to give you access to information or settings directly from your home screen, you probably do not use them that often, and anyway, it only takes a few more taps to access the relevant settings from within the Settings menu. Widgets use up memory, are constantly active in the background, and consume a large amount of data, depending on the widget that you are using. Deactivate the widgets, you can almost certainly do without these. Just long press on any widget on home screen, and remove them. It will make your phone considerably bloat free.



Greenify and SD Maid are two of the best apps you can use to optimise your phone

Use Greenify to reduce background app processing

Greenify is possibly one of the best tools for Android devices to clean up memory and optimise performance. With Greenify, you can hibernate apps that you do not require and reduce background processing, thereby majorly improving on performance. Reducing background app processing cleans up a lot of memory that is taken up by stealthily running apps, making Greenify one of your most essential tools in maintaining your Android device.

Use SD Maid to remove unnecessary directories and defrag your phone

SD Maid is a really powerful Android tool, allowing you to defragment temp and junk files left back by apps after uninstalls. SD Maid assesses your phone, and cleans up unnecessary directories and folders to free up space (you will be surprised with the amount of space that you can recover) and remove lag and stutters from your Android device. Like Greenify, SD Maid is also a free tool.

Clean out junk and temporary files with Clean Master

Clean Master is like a one-stop shop for all your performance and cleaning requirements. Clean Master scans and removes junk files like temp files, system and app cache. It also comes with a `Phone Boost mode` that can free up RAM, an `app manager` to control the background

resources consumed by apps, a `task-killer` to give you specific control over the active processes in the background (be careful while using this), and also the ability to `backup application APKs` and `move apps to your memory card` if your internal storage is running low.

Use a low-resource custom launcher like Nova

Often, a very decked-up interface can be the root cause of the stutters on your phone. While highly customised launchers look really good, they are very high on memory consumption. In such situations, try out launchers like Nova – a lightweight, highly customisable Android launcher. Nova is fast, and you can customise it exactly to your requirements, meaning that you can easily optimise the performance to conserve memory.

Control internet access of specific apps with IF by IFTTT

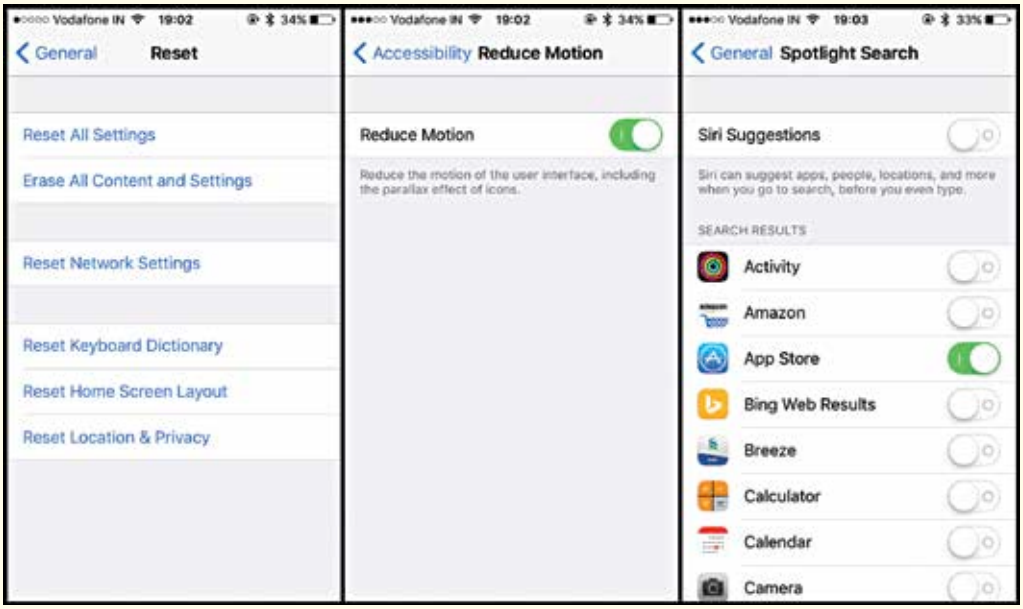
IF by IFTTT is an action-based optimising app that focuses on Internet access control of specific apps. This can decrease a lot of load on processes, as it bars certain apps from accessing the network, simultaneously decreasing load. For instance, you can choose to get Daily Edition alerts from Flipboard, but prevent the e-commerce portal apps on your phone from accessing the Internet unless you explicitly require it to.

Set communication apps' refresh frequency to manual

Setting the app refresh frequency and barring push notifications of communication apps like Email, WhatsApp, Facebook and the likes can save a lot of memory and processor load, along with decreasing network usage to simultaneously improve battery stamina. Disable automatic app refresh from `Settings - Apps`, and `switch to manual`. Once you see the effect for yourself, you can consider switching a necessary few back on, to optimise your phone's performance.

If all fails, go for a Factory Reset

As we have been doing with our PCs for the longest time, it is time for a clean reboot of your phone, if none of the above-mentioned steps help you out. Backup your necessary data, and reset your device to factory settings. Your phone will boot right from scratch, meaning that you will possibly need to install a number of updates, download plenty of your everyday apps and key in your saved passwords after it, but the effort is worth it if your Android device is showing significant amounts of struggle. Chances are high that if the previous steps did not significantly ease stutters and free up memory on your phone, even a factory reset would not give you anything more than a brief phase of significantly improved performance and more free space (the worst case situation is if you get stuck with 8GB of internal storage and no expandable slot). Additionally, doing a factory reset when the going gets tough does not really have an adverse effect on your device, so getting your device thoroughly cleaned once in a while is actually a good idea.



(L-R) Reset Network settings to remove cached network IDs, Reduce Motion, Turn Off Siri Suggestions

iOS

Over time and with the latest features catering to the more powerful iPhone 6s, you'll find older generation iPhones do tend to lag. Although iOS does not allow you a deep level control over your OS the way Android does, here are a few simple yet effective tricks to speed up your iPhone, particularly if you're using devices older than the iPhone 6.

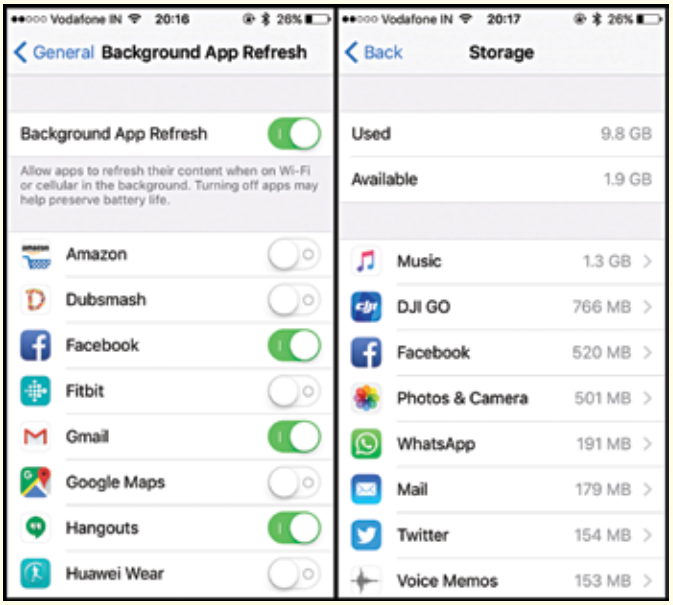
Reset network settings and connect to only relevant networks/devices

Over time, we end up connecting to too many network hotspots, and at the end of the day, you are left with barely one or two that we regularly connect to. The same goes with the list of Bluetooth devices. This often takes up a considerable amount of memory, and the best way to clean this up is by resetting Network settings from `Settings - General - Reset - Reset Network Settings`. This can also speed up your device, with the cleaned up cache memory.

Reduce/disable transparency and motion to improve usability

While iOS has a number of neat visual effects, they generally take a toll on memory and constantly engage your iPhone's GPU. For instance, the constant parallax effect of icons floating on top of your wallpaper and the 'Perspective' wallpapers themselves may be a reason for your older generation iPhone slowing down. Try the following steps to remove the graphic tweaks and improve overall speed:

- Go to `Settings - Wallpaper - New Wallpaper - Stills/Custom Image`. From here, select your still image, and choose `'Still'`



(L-R) Turning off Background App Refresh, Optimising app storage settings

instead of 'Perspective'.

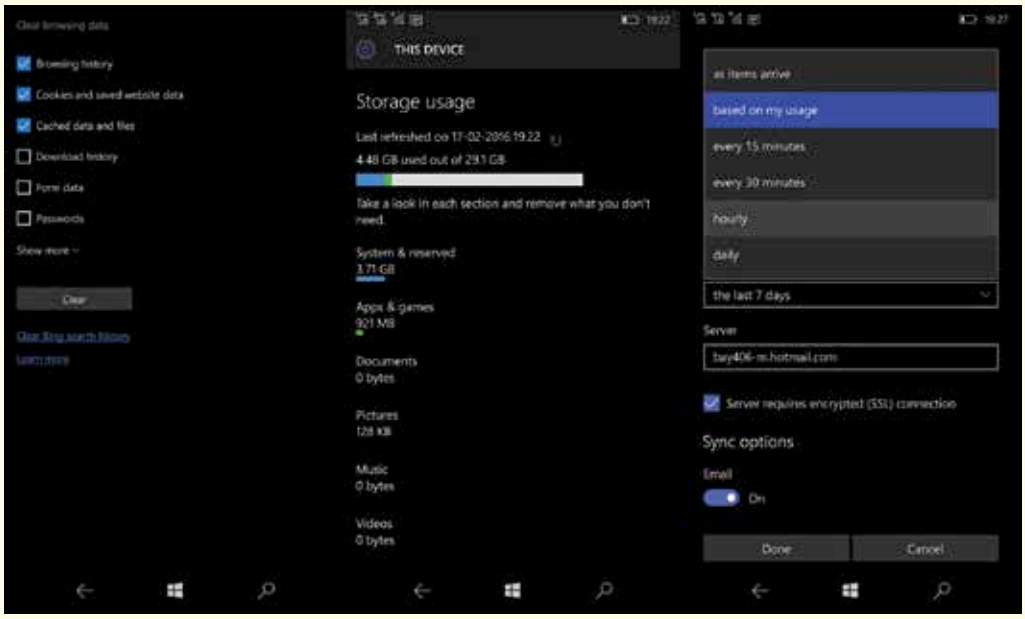
- Go to Settings - General - Accessibility - Reduce Motion, and turn it on. You may miss the dissolving slides animation on your iPhone, but the lower stress on graphic resources is worth the trade.
- Go to Settings - General - Accessibility - Increase Contrast, and turn Reduce Transparency on. You will see opaque panels on shortcuts bar, notifications panel and the likes, and while it will not be visually appealing, it will work at making your phone faster and easier to use.

Disable Siri Suggestions from Spotlight Search

Do you really often use Siri Suggestions to find what you are looking for on your phone? Head over to Settings - General - Spotlight Search, and disable Siri Suggestions. It does not make life considerably difficult, to be honest. Additionally, the list underneath this shows the apps that Spotlight will crawl to return the best results. This leads to background processing and may be a reason for your older iPhone slowing down. Select only the essential apps that you think you will require with Spotlight Search, and deactivate the rest. It does help significantly.

Control background app refresh

Background app refresh consumes memory, processing power and hogs bandwidth, so unless you are completely irked at the possibility of having to wait for apps to refresh upon reload, disable background refresh of apps. You can also choose to be selective here, and keep app refresh on for the select few apps that you access only too frequently. Go to Settings - General - Background App Refresh, and toggle it off. If you wish to have a select few apps on, you will have to keep Background Refresh on and turn off selective apps, one by one.



(L-R) Clear browser data, Analyse storage, Set mail fetch interval

Check and clear space used up by specific apps

Go to Settings - General - Storage & iCloud usage, and check the storage data. Tap on Manage Storage, and you will see a list of your apps. The ones that take up maximum space appear at the top, and depending on amount of free storage, you can choose to remove the ones that take up more space. You can also come across apps that are unnecessary, and remove them immediately.

Access Facebook from your browser

Facebook itself has confessed that it has an incredible amount of battery drain on iPhones, and the app itself is high on resource consumption, creating a large amount of dump in the cache. If you can live without it, uninstall Facebook from your iPhone, and access it from the Safari browser. This makes a significant amount of change to your phone - certainly more than you would think.

Windows Phone

In comparison to the great divide between the Androids and the iPhones of the world, the number of users in Windows Mobile's army is much lesser. However, that does not mean that they have not devised their own ways of getting that extra mile out of their Windows Mobile devices. If you happen to be one, consider one of these to keep your device up and running at its glorious best:

Set Glance Screen to Peek to save on battery

Setting Glance Screen to Peek would mean that the glance display will only come once you wave your hand over the phone. This not only enhances battery mileage, but reduces strain on processing to give you better

optimisation of performance. You can also switch of `Double Tap to Wake` to further restrict resource consumption.

Control Cortana's resource consumption

You can restrict Cortana's prowess to not make it work in the background and turn off location too, saving on memory usage and battery strain. In the `Battery Saver` mode, go to `Usage` and deselect `Allow this app to run` in the background. Cortana is relatively heavy on resource, and hence, switching its auto-update off can lead to quite a difference in the performance of Windows phones.

Clear browser history and Cortana search history

Ensure that you keep your browser cache clean, which can accumulate to massive chunks over time. Open your browser, go to `Menu`, tap on `Settings`, and hit `Delete data`. To clear Cortana's history (which can also end up being a fair bit), go to `Settings`, swipe to `Applications`, tap on `Cortana`, and hit `Delete data`.

Set Mail Sync frequency to 30 minutes or more

If you do not need to immediately check and respond to emails, set Mail sync to a certain periodic interval, instead of keeping it at 'As Mails Arrive' or 'Based on Usage'. Go to `Settings – Email + Accounts`, tap on the account, and from the drop-down `Download New Content` menu, `select 30 minutes` or `1 hour` for every time new emails will be fetched to you.

This means that mail will not need to constantly be searching for new email, and save on resources and battery.

Use Storage Sense to monitor app resource usage and clean it

Access `Storage Sense` (`Storage` for Windows 10 Mobile) from `Settings`, and check the apps that are consuming more resources and space. You can use Storage Sense, previously also available as a separate Lumia app but discontinued now, to clean out unnecessary applications or app data, thus freeing up space on your Windows smartphone.

Did these help? If they did, ensure that you maintain these processes of maintaining a continuous cycle of optimising and maintaining your smartphones. After all, getting the tiny extra bit is always crucial for your mobile phone's healthy sustenance.

SOMETHING EXCITING THIS WAY COMES

The Digit e-mag app is in the pre-beta phase.

Yes we know, we know it's been long overdue. But now that we're making some progress we're inviting our most diehard fans to join the pre-beta programme.

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BUDGET SUPER HEROES

Good news, 3GB RAM is quickly becoming the norm in the 10k price range. Bad news, there are many phones to choose from. Don't worry, here's help!

IMAGING: SHIGIL NARAYANAN

Hardik Singh
hardik.singh@9dot9.in

One of the most common questions we get nowadays goes something like this: "I have a budget of ₹10,000, suggest the best phone in this budget. I want to play games, it must have a good camera and the best performance". It tells us that a majority of phone buyers are not looking for a premium smartphone, or the best phone in the market but, for something in a budget that can still provide a good experience.

Thankfully, developments in the smartphone market have led to budget smartphones doing much more than they used to a couple of years ago. Features like 3GB of RAM is new, but it's quickly becoming an imperative for this segment. So, when it's power and efficiency you want, these are the phones that you should go for.

Companies launch new phones by the dozen today though, which means there's a lot to choose from, even in this difficult category. An important category where most of the emerging smartphone consumption demand is situated currently. Don't you worry, we're always here to help you out and make the buying decision simpler. Here is what eight of the best in this price range look like, when they're pitted against each other.

COOLPAD NOTE 3 LITE

The Coolpad Note 3 Lite is the most affordable smartphone in this shootout. While it may not be the overall best performing smartphone in the sub-10K category, it is definitely the one to buy in the sub-7K price bracket. At its stellar price of ₹6,999, the phone is able to offer 3GB of RAM, but it is also the first phone in the sub-7K range to boast a fingerprint sensor and hence sets a new benchmark for budget smartphones. The phone feels robust in the hand, thanks to bi-metallic frame.

In terms of performance, the MediaTek chipset delivers acceptable performance in terms of multitasking, gaming and all the other regular tasks. You can, for instance, easily stream audio online, stay connected to Wi-Fi, update applications in the background and play reasonably intensive games, without a hint of a stutter. The phone also keeps the battery life in check. It can last around 8 hours on a single charge on our battery test, although it can do more than that on regular usage. It is the best buy amongst the phones in this comparison by a good margin, no doubt.

The 13MP rear camera however, isn't that great and leaves us wanting for more. Image quality is average but video recording is certainly good. The camera app has useful features such as filter and a Pro mode. All things considered, this phone definitely does its bit to distinguish itself from the rest of the bunch.

INTEX CLOUD SWIFT

The Intex Cloud Swift is one of the more disappointing smartphones in this comparison. It is not very good looking and the build quality isn't that great either. While the plastic build should work in the ₹7.5K price range, this phone still looks quite cheap for its price. The Cloud Swift has a decent display though, and the 720p IPS LCD panel provides decent colour saturation along with good viewing angles. However, it still lacks the overall quality of the Coolpad Note 3 Lite.

What's more disappointing is that the phone's performance isn't great either. The 1.3GHz quad-core Mediatek SoC on this device delivered the lowest score on synthetic benchmarks, during our tests. Even on real life performance, the phone seems quite average at best, and the UI is less than welcoming. For example, while there are on-screen navigation keys, the recents button actually opens 'options', while there is an extra capacitive screen that acts as both home and recents. Long pressing the capacitive button opens recents, while the regular recents button for some reason opens Options.

HOW WE TESTED

Performance and battery tests

Synthetic benchmarks aren't always the best reflection of how a device performs in real life, but they are the first step to find how competent these phones are and to compare them against their peers. Benchmarks also provide a comparative score with phones that haven't been included in this comparison, which gives us even better insight. Of course, we don't depend on them alone, but you get the point.

To test the battery life of the phones, we used the standard Geekbench battery test. After charging the phones to 100 percent, displays of all smartphones were turned to full brightness. After that, we simply started the battery benchmark and let it run till the battery died. There's also a looping video test that we use, and together, these two gives us a really good idea of the battery life, which is then justified by real world usage.

Real life tests

To test the real world performance, we devised tests, ranging from gaming to regular simpler apps, testing them out on the phones side by side. The fact that they have 3GB of RAM means that multitasking should be a breeze for them. So, we tried playing multiple games on the phones, simultaneously, checking how long it took them to give up.

Camera test

We conducted our camera tests in various of light conditions — dawn, daylight, overcast, studio (fluorescent), tungsten, night, low light and flash. Video recording tests were done out of fast moving vehicles, of fast-moving objects from a stationary point, still objects, and low light situations to test noise levels and frame interpolation in the recorded videos. We also tested the phones on aspects like shutter speeds and focusing times.

Design and Usability

The eight contesting phones were judged on the following parametres — Looks, build quality of the phone, build quality of the display, interface design, and ergonomics. Even though these are just budget phones, build quality is given much importance.

The competitors in this test were — Intex Aqua Ace, Intex Cloud Swift, Xolo Black 1X, Lava X10, Coolpad Note 3, Coolpad Note 3 Lite, Kult 10 and Micromax Canvas Pulse 4G.

	Intex Aqua Ace	Intex Cloud Swift	Xolo Black 1X	Lava X10	Coolpad Note 3	Coolpad Note 3 Lite	Kult 10	Micromax Pulse 4G
Price *(Best prices availble online)*	₹9,500	₹7,750	₹8,999	₹9,999	₹8,999	₹6,999	₹8,799	₹9,999
Performance (on 100)	60.0	48.4	66.7	58.9	76.7	63.5	50.5	68.8
Features (on 100)	75.8	71.2	87.2	76.0	75.6	73.7	74.7	81.3
Design and Usability (on 100)	69.7	63.6	64.4	71.7	69.0	72.3	71.9	70.8
Total (on 300)	**205.5**	**183.2**	**218.3**	**206.6**	**221.3**	**209.5**	**197.1**	**220.9**
SPECIFICATIONS								
Display	5-inch 720p	5-inch 720p	5-inch 1080p	5-inch 720p	5.5-inch 720p	5-inch 720p	5-inch 1080p	5-inch 720p
Processor	MediaTek MT6735	MediaTek MT6735	MediaTek MT6753	MediaTek MT6735	MediaTek MT6753	MediaTek MT6735	MediaTek MT6735	MediaTek MT6753
RAM	3 GB	3 GB	3 GB	3 GB	3 GB	3 GB	3 GB	3 GB
Storage	16 GB	16 GB	32 GB	16 GB	16 GB	16 GB	16 GB	3 GB
Battery rating (mAh)	2300	2500	2400	2900	3000	2500	2350	2100
Rear Camera	13-megapixel	8-megapixel	13-megapixel	13-megapixel	13-megapixel	13-megapixel	13-megapixel	13-megapixel
Front Camera	5-megapixel	5-megapixel	5-megapixel	5-megapixel	5-megapixel	5-megapixel	5-megapixel	5-megapixel
SCORING								
Performance								
AnTuTu 6.0	33499	26231	39303	33567	36197	32742	33614	37601
Geekbench 3 Single Core	624	618	615	620	628	623	626	633
Geekbench 3 Multi Core	1816	1843	2605	1801	2753	1835	1789	2887
GFXBench Manhattan	379.7	0	259.9	0	520	360.7	0	361.5
3D Mark Unlimited	4900	4851	6845	4996	6737	4839	4953	6907
Camera (Normal light) (so 5)	2.5	2	3	3.5	3.5	2.5	2	3
Camera (low light) (so 5)	2.5	2	3.5	3	3.5	2.5	2	2
Camera (shutter response) (so 5)	2.5	2	3	3.5	3	3	2.5	3
Camera (Video recording) (so 5)	2.5	2.5	3	3	3.5	3	2.5	3
Camera (front, overall) (so 5)	2.5	2.5	3	3	3.5	3.5	3	3
Gaming performance (so 5)	3.5	3	3.5	4	4	3.5	1.5	4
Browsing performance (so 5)	3.5	3	3.5	3.5	4.5	4	2.5	4
Call Performance (so 5)	3	2.5	2.5	3	4	4	2.5	3.5
Battery life (in hours)	7.46	7.42	6.35	11.04	10.3	8.47	8.27	6.36
Design and Usability (so 5)								
Build Quality	2	2.5	4	3.2	4	4	4	4
Screen Quality: Temperature/Hue	2.5	3.5	3.5	3.5	4	4	3	3.5
Screen Quality: Sunlight Visibility	3	3	3.5	3	3	3.5	3.5	3.5
Screen Quality: Colour Accuracy	2.5	3.5	3.5	3.5	4	4	4	3
Screen Quality: Viewing Angles	3	4	4	4	4.5	4.5	4	4
Touch performance	3	3	3	3	3.5	3.5	3	4
Interface design	4	2.5	2.5	4	3	3	4	3
Ergonomics	4.5	4	2.5	4	3.5	4	4	3.5
Features								
Display PPI	294	294	441	294	294	294	294	294
Display type	IPS-Panel LCD	IPS-Panel LCD	IPS-Panel LCD	IPS-Panel LCD	IPS-Panel LCD	IPS-Panel LCD	IPS-Panel LCD	IPS-Panel LCD
Expandable Memory (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
4G (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
OS	Android v5.x	Android v5.x	Android v5.x	Android v5.x	Android v5.x	Android v5.x	Android v5.x	Android v5.x
Fingerprint sensor	No	No	No	No	Yes	Yes	No	No
Thinness	6.7 mm	8.9 mm	7.6 mm	7.9 mm	9.3 mm	8.9 mm	7.6 mm	8.8 mm
Weight	121.5 gm	140 gm	125 gm	133 gm	155 gm	142 gm	128 gm	128 gm

Further, the 8MP rear camera is not very likeable either. We found the image quality to be just below average, in all kinds of lighting conditions and the shutter response wasn't very fast. The front facing camera also had a similar story to tell. Lastly, the battery life was just about fine, but nothing that would make up for the phone's other weaknesses.

KULT 10

The Kult 10 smartphone is one of the newest entrants into the Indian market, but it has all the right specifications to be a good phone in this price range. Unfortunately though, the company needs to put more work into its device if it wants to position it next to the best budget smartphones out there. Seriously. While the phone runs on the same quad-core MT6735 SoC, as the Coolpad Note 3, it doesn't seem as well optimised. While the Kult 10 does do well on synthetic benchmarks, it's not as fluid and responsive as the Coolpad Note 3 in real life performance.

Considering the fact that they both have 3GB of RAM, it's somewhat disappointing. The phone stutters and lags, and even froze once while playing Asphalt 8.

On the other hand, the build quality of the Kult 10 is commendable. The Oneplus-like sandstone finish on the back cover, provides good grip, and adds more grace to the orthodox candy-bar design. The 5-inch 720p display on this phone is also pretty good, with just about the right colour accuracy and viewing angles. The whole form-factor reminds us of the Xiaomi Mi 4i.

The Kult 10 though takes another hit in the camera department. The 13MP rear shooter is lower than competitors, and is just about average for the price range. Colour saturation isn't very good and there's quite a bit of noise. The front-facing camera isn't a any good either.

COOLPAD NOTE 3

This phone does consistently in all our tests. While we would have preferred a 1080p resolution on the 5.5-inch display, 720p is still reasonable. Moreover, the display quality is among the best in sub-10k smartphone category with crisp, warm colours that most would like. The Coolpad Note 3 may not stand out in terms of design though. It has a boring candy-bar shape and doesn't look very attractive.

It is still one of the best performers when it comes to processor performance. While it may not be the best in terms of synthetic benchmarks, real life performance was far better than most in this comparison. Be it day to day tasks, such as browsing the web, or long gaming sessions, the phone was able to handle it all. There is a slight lag at times after prolonged gaming sessions, but it's a small hitch.

The 13MP rear shooter is also good. Images taken



Coolpad Note 3

in daylight conditions have decent details and true-to-source colours. Even in low light, the noise reduction algorithm keeps noise to a minimum, without compromising on details.

However, the best attribute of this phone is its battery life. The 3000mAh battery is well optimised, lasting almost ten hours on a single charge.

XOLO BLACK 1X

The Xolo Black 1X is one of the best smartphones in this shootout. While it has the same SoC as the Coolpad Note 3, the Xolo Black 1X performs marginally lower than that device, especially on synthetic benchmarks. Even in real world performance, the two phones are quite close and leave very little to differentiate them from each other.

In using the phone as your daily driver, it feels pretty good and fluid to use, very similar to the best phones in this price range. Normal tasks such browsing the web, playing music or just watching a FHD movie are done quite well and though budget phones will eventually start doing even better, this is definitely amongst the best right now. We even tried heavy gaming on the phone, and the phone did quite well there too.

The Xolo Black 1X is also one of the few phones in this price range to boast a metal frame on its side. The Micromax Canvas Pulse 4G also has the same. The faux leather back on the Black 1X should appeal to some as well. The physical buttons are a little tough to press, but nothing that would really hamper day to day usage of the phone.

The Black 1X's biggest win, is in the fact that it has a 1080p display, being the only one to boast such a spec amongst the eight phones in this comparison. As a result the 5-inch IPS panel obviously has the highest pixel density and is sharper than all the other displays. Perhaps more important though, is the fact that the Xolo Black 1X does well in terms of colour saturation and viewing angles. We would have preferred if Xolo put more thought into the phone's UI though.

Talking about the camera, the Xolo Black has a 13MP shooter on the back, and even though the image quality is decent, the camera does lack sufficient details. The colour reproduction is respectable, and the shutter delay is less than ideal.

The 5MP front facing camera is similar to most other phones in this price bracket, but features a front-facing flash, which may come in handy for those night time selfies. The Xolo Black 1X also has a 2400 mAh battery, which is somewhat of a downer, thanks to only six hours of battery life on real world usage.

INTEX AQUA ACE

If the Intex Cloud Swift was a disappointment, the Intex Aqua Ace is the polar opposite of that phone. The difference in build and design between the two phones is huge and the Intex Aqua Ace is definitely one of the best looking phones in this sub-10K price category. It weighs just 121.5 grams and is only 6.7mm thick, which means that it is lighter and slimmer than any other phone in this comparison. It also feels much more premium than the rest of the phones that we compared, except perhaps the Micromax Canvas Pulse 4G, which we will talk about in just a moment.

While the glossy plastic on the Intex Aqua Ace does look good, it is somewhat of a fingerprint magnet. The 5-inch 720p panel on the Aqua Ace isn't great, especially when compared to the Xolo Black 1X. While the viewing angles are decent, the colour saturation, temperature and sunlight visibility of the display are quite average. Unlike the Intex Cloud Swift, this phone carrier a more stock-like user interface, which is something that many Android users would really like, as do we.

The disappointing bit about the Intex Aqua Ace though is its camera, which is not the best feature of this phone. The 13MP rear camera is an average shooter, and images taken by it

RIP Picasa
Google is moving on from Picasa to Photos, ending its support to Picasa from March 15 **http://dgit.in/Pic2Phts**



Tweet your GIFs
Twitter now supports GIF search on Android, iOS and Web powered by Giphy and Riffsy. **http://dgit.in/GIFTwtr**

LEECO LE 1S VS. LENOVO VIBE K4 NOTE VS. HUAWEI HONOR 5X

Now, while those phones we just compared are under 10k, if you can spare up to ₹3000 more, then there are three devices that beat all of them by a mile. If you're in the market for a new smartphone, chances are these three phones are what you're looking at. Chinese LeEco (formerly known as Letv), Lenovo and Huawei have taken over the budget conscious Indian with the LeEco Le 1s, Lenovo Vibe K4 Note and the Huawei Honor 5X.

The devices are priced around the same point, have fingerprint sensors installed and check all the right boxes. We've had the Le 1s and Honor 5X for a while now, and we finally bought the Lenovo Vibe K4 Note, just for this comparison. Here's what we found.

Performance

Kicking off with the performance, the MediaTek Helio X10 quite easily outperforms the Snapdragon 616 and MediaTek MT6753 SoCs on the Honor 5X and Vibe K4 Note respectively. While LeEco Le 1s is easily able to pull off 500+ frames on the GFXBench Manhattan Onscreen benchmark, the other two lie below the 400 mark. In addition, the 3D Mark test, which takes the entire system into consideration while testing graphics performance, also shows a similar difference between the Le 1s and the other two. In terms of regular performance, the difference is depicted quite accurately by Geekbench 3.

In terms of real world performance, the differences that we saw on the benchmarks are quite easily replicated as well. In addition, it seems that the Honor 5X isn't very well optimised in terms of driver support for newer graphics. For example, the Manhattan 3.0 tests on GFX Bench can run on the Honor 5X, but the updated Manhattan 3.1 can't. On the other hand, the Honor 5X also doesn't support 5GHz WiFi bands, which can be a bummer for some.

From a performance point of view, while the LeEco Le 1s is easily the winner, between the Vibe K4 Note and Honor 5X, we'd have to choose the Vibe K4, since it's better optimised.

Winner: LeEco Le 1s

While all three phones have 5.5 inch FHD displays, this is another area where the LeEco Le 1s outperforms the other two. In terms of colours, while the Le 1s lies on the warmer side, the Honor 5X provides cooler colour elements. The Vibe K4 Note is somewhere in between the two. In our experience, the slight warmth of the Le 1s is something that many users prefer on their smartphone displays. More importantly though, the Le 1s does better with contrast and sharpness, which is what makes it the winner.

Winner: LeEco Le 1s

Build and Design

From a design standpoint, the fact that the Le 1s and Honor 5X have metallic bodies gives them an edge over the Lenovo Vibe K4 Note. Both the Le 1s and Honor 5X feel like they're made out of low-grade metal, making it a tad difficult to choose between the two devices. From pure looks point of view, the final choice will come down to personal preferences. In



fact, from the back, the Le 1s and Honor 5X are near replicas of each other, except that the Honor 5X has a healthy dose of plastic on the front, which makes it feel much less premium as compared to the Le 1s. That, combined with the fact that the Le 1s is not as wide as the Honor 5X, adds to the ergonomics and makes it our winner.

The Lenovo Vibe K4 Note lacks in all respects when it comes to the build. While the phone does have a metal frame, it feels like low grade metal. The matte plastic back on the Vibe K4 Note is no match to the metal on the other two, despite the fact that they don't carry the best quality metal finishes.

Winner: LeEco Le 1s

Camera

For all the other differences, the LeEco Le 1s royally lacks when it comes to the 13MP camera on the back. Compared to the Vibe K4 Note and Honor 5X, the LeEco Le 1s lacks sharpness and details. In addition, it tends to subdue colours, even in bright sunlight.

Between the Vibe K4 Note and Honor 5X, while the quality is very close, the Vibe K4 isn't as fast to focus with the Honor 5X and often struggles to focus. That said, it's worth noting that the Le 1s has the fastest camera of the three.

All things considered though, the Honor 5X shoots the best images, be it in sunlight or low light. It does better with details and provides sharper images, with well balanced colours.

Winner: Honor 5X

User Interface

Neither of the three phones really adds a lot of functionality from a UI point of view. While Lenovo has done a good job in making its Vibe UI closer to stock Android, the Le 1s and Honor 5X are much farther away from Google's Android. That said, LeEco's UI follows its Chinese roots, where its eUI is designed around the fact that the company provides a lot of content on the phone. As a result, the learning curve on this UI is steeper than the other two.

On the other hand, from an aesthetics point of view, eUI is ahead of the other two, and looks more modern. The final choice comes to the user, since none of the UIs really add anything groundbreaking to the devices.

Winner: Tie

Best Performer

While the LeEco Le 1s is definitely the winner in this comparison, you would have to compromise on the camera quite a bit. So, if the camera is of paramount importance to you and you don't mind compromising a little bit on the other things, we'd recommend the Honor 5X. If not, the Le Eco Le 1s is the best phone to buy in this price range. The Lenovo Vibe K4 Note seemed nice on first impressions, but it just can't stand up to the current competition.

Winner: LeEco Le 1s

showcase oversaturated colours while lacking details. The camera software tends to soften images while post processing them and this in turn, robs the image of almost all its details while adding a pastel colour-like look to it.

If you're a light user, then the battery life of this phone should be just about all right for you, but for most, it wouldn't suffice.

LAVA IRIS X10

The Lava Iris X10 is a well designed budget phone that offers decent performance. Powered by the MT3735 SoC from Mediatek, the phone works completely like a quintessential budget phone should. There will be no complaints if you are a light user and even you do push it a little, it will happily go that extra mile without much problems. The lags that we saw during heavy gaming is pretty consistent for phones in this price range, which means the Lava Iris X10 is at par with its competitors.

As mentioned above though, the design is one of the key features of this smartphone. Even though it is completely made out of plastic, the phone is quite robust. Lava has used a 5 inch 720p IPS panel for this phone, which again puts it at par with many phones in this price category, but the display on this one is also better than many of those other phones. It does lack, somewhat, in terms of colour saturation, all things considered, the display is still worth appreciating.

The 13MP rear camera on this device, is one of the best in the category. The image quality is good as long as the light conditions is good. But while the image quality does drop in low light conditions, it is still better than most phones currently available in its price pool.

The phone makes the biggest statement in terms of battery life though. It has the best battery life amongst the phones in this comparison, clocking about 11 hours on a single charge. For many, this phone can even be pushed to last a work day. In terms of battery life, it's a job well done.

MICROMAX CANVAS PULSE 4G

The Canvas Pulse 4G from Micromax, is one of the best looking smartphones in the budget smartphone range. Offering a bi-metal design and beautiful chamfered edges, the phone is quite a looker. The metal rims around the edge, combined with the matte back, gives this device a very robust and premium feel in the hand. Turning it on, we found that the phone complements its build quality and design, with a good display as well. The 5-inch IPS display has a 720p resolution, which, as you know, is what many other phones in this category offer. We found that the display quality is quite good, right from the viewing angles, to the touch experience of the display, the Pulse 4G does an impressive job.

Going by the synthetic benchmarks, this is the second best performer in our shootout and unlike many phones, it is able to show that processing prowess in daily tasks as well. In our tests, the phone performed well consistently. Games, such as Asphalt 8, which requires more resources than most other applications, were dealt with relatively ease. We did notice a slight stutter, but nothing that can't be overlooked, considering the price range.

The big downfall of the Micromax Canvas 4G though is the 2100mAh battery, that won't even last a full work day for most people.

The device boasts a 13MP rear camera, which is decent, but we've come to expect a little more out of budget devices nowadays. The colour reproduction on the images are nice, but the sharpness is not up to the mark. There is a lot of colour noise, and images lack the crispness that some of its competitors can provide. Photos also look like paintings at times, which is not optimal. Low light images are also, just about satisfactory. While some would appreciate the fact that the Canvas Pulse 4G has a front facing flash, the camera experience is not ideal, but enough.

BEST BUY digit MARCH 2016



Coolpad Note 3 Lite

BEST BUY: Coolpad Note 3 Lite

When it comes to budget smartphones, nothing beats the Coolpad Note 3 Lite in terms of value for money. The phone costs merely ₹6,999 and ticks all the right boxes, making it our best buy for this comparison. Good performance, combined with a nice display and good battery life, is what brings the Note 3 Lite this prize.

Moreover, it is the only phone in the sub-7K smartphone category that has both, 3GB of RAM and a fingerprint scanner, which does add a lot to the value proposition you get from this device. While the camera quality isn't really ideal, if you're checking images on your phone alone, you should be fine. So, at ₹6,999, the Coolpad Note 3 Lite is the best value for your money that you can get.

BEST PERFORMER: Coolpad Note 3

The Coolpad Note 3 is our best performer in the sub-10k list, amongst phones that have 3GB of RAM. It is not only the best performer, but it's best battery life is also amongst the best in this range. Yes, we would agree that it is not a particularly good looking phone, but, every other feature on this phone makes it a very good choice when your budget is limited.

It features dual-SIM slots and a dedicated expandable storage slot, which make it an even better proposition for budget smartphone buyers. The 5.5-inch FHD IPS display is the one of the best, amongst the phones that we've compared here. What makes this phone a even better buy is the fact, that it costs ₹8,999, which means you still don't reach the highest point of your budget. While the Note 3 performs well, it comes with a fingerprint sensor, has a 3GB RAM and a 13MP camera which is easily one of the best among this lot.

Bazaar

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

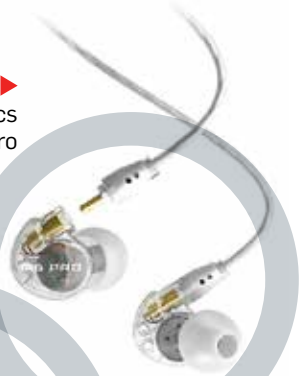
For better understanding of our ratings, here's a quick guide to our overall score

- 10 to 30 — **Extremely poor product.** Keep away!
- 31 to 50 — **Strictly OK.** Not recommended
- 51 to 70 — **Decent product.** Go for it, but there may be better products out there.
- 71 to 90 — **Very good product.** Highly recommended.
- 91 to 100 — **Ground-breaking product.** We've never seen anything like it before. A definite must buy!



INSIDE

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◀ Page 88 Corsair H110i GT Liquid Cooler



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▲ Page 92 HP Pavilion 15 Star Wars Special Edition

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BlackBerry Priv

Great smartphone but expensive

The beauty of the world of technology is that no company stays on top forever. BlackBerry, once the ideal weapon of choice for the business man is now struggling. Can the Priv save it?



Price ₹62,990

Hold the phone in your hands and you know that you are holding a premium product. Slide the keyboard a couple of times and you know that the slider is of top notch quality. BlackBerry expects you to take the smooth keyboard slider for granted and it shows with the quality of materials used.

Once you slide the BlackBerry Privs keyboard you'd expect the smartphone to be unbalanced but surprisingly it isn't. Its quite comfortable to hold and if you have used a BlackBerry keyboard in the past, you will definitely feel at home on this device. Speaking of the overall build quality, the BlackBerry Priv can give any other flagship you can think off a run for its money.

The display on the Priv's curved at the edges too (when held in portrait mode). The cure isn't as obvious as the one on the Samsung Galaxy S6 Edge Plus but its presence is evident nonetheless. The overall performance of the display is great too be it for watching movies, playing games or good old social media, mail and messages.

The onscreen keyboard is similar to the stock Android keyboard with a few differences. Predictive words appear as you start typing and you can simply swipe up to chose the predicted word. The slide out keyboard on the Priv, is comfortable to use. It's a throwback to the good old BlackBerry days with the gesture capabilities of the BlackBerry Passport thrown into the mix.

Coming to everyday performance, the phone works well. It will run any app that you throw at it with absolute ease. The only downside is that the smartphone gets quite hot after some use. I watched a few YouTube videos, played Asphalt 8 for a bit and sent a few messages and email and the device was quite hot. Hot enough to be uncomfortable when I put the phone in my jeans pocket.

Moving to the call quality, the audio from the loudspeaker are well as the earpiece is crisp and clear. When talking a call through the earpiece, I recommend you monitor the volume. At full volume the earpiece is really loud. Loud enough to be the loudspeaker in a quiet room and that can be a disadvantage if you are surrounded by eavesdroppers.

Despite having a 3410mAh battery, the battery life of the BlackBerry Priv is a little disappointing. With mails, messages, some YouTubing and light gaming, the device had less that 30% battery at the end of the day.

The big deal with the BlackBerry Priv is that its running a 'close to stock' version of Android with BlackBerry apps thrown into the mix. You have customized notifications and widgets, and BlackBerry apps like the Hub and DTEK for security make an appearance on the device too. BlackBerry says that they will roll out monthly updates for the phone to keep it up to date with software and security.

Coming to the camera, the short story here is that the low light photography is good but in well lit situations, the images are soft and there is loss of detail when you see the image in their full size.

The Blackberry Priv is a great smartphone with a few shortcomings. It heats up, there is no fingerprint sensor which is taken for granted today and the smartphone launched in India almost a year after its international release. The front facing camera isn't great when compared to the competition in today's selfie driven world. On the plus side, it has the best display on a smartphone, the curved display is brilliant, the typing experience is great and the overall Android performance with Blackberry thrown into the mix is great for Blackberry fans and newcomers alike. Will you shift from your current phone to a Priv? Well only if you are a fan boy or you have some way of getting this device at a discount. For the price you pay, you may want to consider your options before investing.

Sameer Mitha

Interactive review



Features 75
Design 89
Performance 71
Value for money 50

Specifications

Display: 5.4-inch AMOLED display with a 2560x1440 pixel resolution; **OS:** Android OS, v5.1.1 (Lollipop); **CPU:** Qualcomm Snapdragon 808, Dual-core 1.8GHz & quad-core 1.44GHz; **GPU:** Adreno 418; **RAM:** 3GB; **Storage:** 32GB built-in expandable up to 2TB via a microSD card; **Camera:** 18MP rear/2MP front; **Battery:** Non-removable Li-Ion 3410 mAh

Contact

BlackBerry
Phone: 1800-27194
Online: https://salesforce.services.blackberry.com/webforms/supportin

Alphabet Unveiled
In the Q4 results Alphabet finally unveiled the cost of its other projects along with Google's core business revenue. **http://dgit.in/CrazyCost**

Smart Car!
The smart gets smarter as the smart car AIs can now track pedestrains in real time and as accurately as humans. **http://dgit.in/AIinCar**

Gigabyte GA-Z170X-Gaming 3

Premium features for a better price



Price ₹18,900

Not a lot of people going in for the Z170 platform would opt for the expensive boards so you have the mid-range offerings coming to your rescue. Gigabyte's GA-Z170X-Gaming 3 is one such board. It might be placed towards the lower end of the Gaming series but when it comes to features, the board is very much a premium offering. For starters, you have Killer Ethernet and the audio section features a swappable OP-AMP. And if that isn't enough to soothe your audio woes then the board features USB ports that provide a filtered power supply for external DACs(Digital to Analog Convertor). Also, Gigabyte's G-connector which is a tool to make wiring the front-panel headers simpler is better than what the competition offers thanks to little locking tabs at the top.

So what's missing? Well, you don't have onboard power and reset buttons so it becomes a little irksome for open-air rigs but that's a minority use-case anyways. Another thing, that we noticed with this board was that the width of the board is a little narrower than other Z170 boards. It's 235mm wide while other boards are 244mm wide, this reduction costs the user the ability to use the rightmost mounting holes. So you'll have to be a little careful while unplugging tough connectors like the 24-pin ATX connector. That being said, this board has a good mix of features than make it quite favourable for anyone looking to buy a Z170 board.

Mithun Mohandas



Features 80
Build 75
Value for Money 75

Specifications

Chipset: Intel Z170; **Memory support:** 4x3466(OC)MHz upto 64GB; **LAN:** Killer E2201 Gigabit Ethernet; **Audio:** Realtek ALC1150; **SATA:** 6x SATA III; **Expansion:** 6x PCIe x16(x1/x16/x1/x8/x1/x4); **Dimensions (LxWxD):** 305 mm x 235 mm; **Warranty:** 3 years.

Contact

Gigabyte Technology (India) Pvt. Ltd.
Phone: 022-40633222,
Email: sales@gigabyte.in,
Website: http://www.gigabyte.in

ECS V20S (v2.1)

Good looks, lacks performance



Price ₹29,990

The ECS V20S (v2.1) is a budget all-in-one computer. This model comes in a barebones package mounted on an adjustable stand which helps in tilting the AIO in a variety of positions from 0 to 30 degrees. The chassis is made out of hard plastic with the front having a glossy finish and the back a textured finish. The bottom has a rubber sheath as stump to protect the panel from abrasion.

The display is a 19.5inch non-touch type featuring a low-cost TN display panel and a 1600X900 resolution, which falls below the full HD standard of 1920X1080 pixels. The display features a matt anti-glare coating which makes it fine for a bit of word processing, but not so good for editing photos or watching movies as it causes for poor viewing angles and lower-quality colour, although brightness and contrast are good.

The sound output from the pair of speakers embedded just below the display panel is loud enough to fill a small room but lacks bass and hurts our ears if used for an extended period. ECS sells this unit without a hard drive and RAM, so we added our own to review it.

Compared to a Beebox N3150 coupled with an IPS or TN display and keyboard combo which would cost around ₹22k approx. PCMark 8 benchmark scores revealed substantial difference in performances between the two with Beebox being at 1884 creative score and ECS V20S at just 1352 creative score. All said, this unit isn't a good performer.

The ECS V20S is not the best value for money product, but if you want to eliminate the clutter of wires on your desk then this AIO will address the issue completely.

Ashish Panigrahi



Feature 55
Design 60
Performance 55
Value 55

Specifications

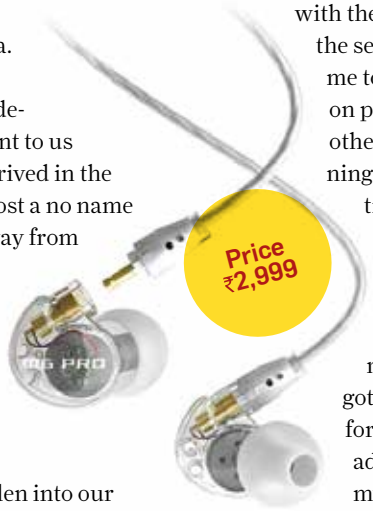
Display: 19.5-inch, **Weight:** 3.1 kg; **CPU:** Intel Pentium J2900; **RAM:** Supports upto 8 GB DDR3L (1333 MHz) Single DIMM; **Connectivity:** Wi-Fi 802.11n, Bluetooth 4.0, 4x USB 3.0, 1x Card reader, 2x Audio Jack, 1x Gigabit-LAN; **Storage:** Supports 1x 2.5-inch SATA II HDD, 1x mSATA; **OS:** Supports Windows 8, 8.1, 10

Contact

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Meelectronics M6 Pro

Ultimate value at this price point



The M6 Pro brings with it a certain amount of nostalgia. It takes me back to 2011 (or was it 2010?) when its predecessor the Meelectronics M6 was sent to us for review. When that fateful M6 arrived in the Test Center, Meelectronics was almost a no name brand. Of course that didn't take away from the fact that the M6 became our de facto budget recommendation for a good year or so. The only problem with the M6 was its build quality – even its sound quality deteriorated over time, presumably due to wear and tear.

So now when the M6 Pro has fallen into our lap, there's naturally a whole lot of anticipation and obviously consequent questions follow... Is the build quality better? Has the sonic performance been enhanced? Let's find out.

The M6 Pro is positioned as a "musician's in-ear monitor" which would possibly lead you to believe they're neutral. After all, musicians want their equipment to be as accurate as possible so that any changes they desire in the sound can be affected through source manipulation such as via a mixing console. But this is not the case with M6 Pro. They're definitely coloured. Is that a bad thing? Ordinarily yes but in this particular case no. Let me explain.

These days there is this growing movement against analytical sound signatures. "Oh take your puritanical flat response elitism elsewhere and let us pleebs enjoy our bass," seems to be the growing sentiment. If this sentiment strikes a chord, or in other words, you like big bass and you cannot lie, these in ear monitors won't disappoint at all. The bass is absolutely brilliant. I found it better than the Audio Technica ATH-CKS550iS which is supposed to be an IEM specially designed for bass performance. The sound signature on the EM1 is a mix of a finely accentuated high end with enhanced bass. So you get clarity without any depriving you of any of the "fun" bits.

There is however a caveat for the above to be true. I cannot emphasise how important fit is for the M6 Pro, as it's unbelievable how utterly useless the M6 Pro sounds without getting the perfect fit. I suspect the oddly shaped housing has a lot to do with why getting a good seal is so much of a process with the M6 Pro. Incidentally this is only the second IEM ever that's compelled me to look at the manual for guidance on proper wearing instructions. The other headphones that had me running around for searching for instruction manuals were the Yurbuds Venture Talk with their "twist and lock" mechanism.

With the M6 Pro I tried every tip provided (and believe me there are a ton) and eventually got the goldilocks fit I was looking for. Once I found the right tip and adjusted the memory wire around my ear for additional stability, the seal made for absolutely tight, thumpy, bass delivery. The size and shape of the housing made me a little suspicious about how the M6 would handle different ears.

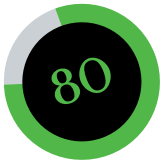
There is an upside to the oddly shaped housing. The isolation it offers is one of the best I've ever experienced on a passive IEM. And while one of the other reviewers here found them uncomfortable I had no issues with prolonged use.

In terms of features, there is a lot on offer. The highlight feature is detachable cables. Being detachable they are also replaceable. The Meelectronics website even has replacement earpieces. This means if say the right or left driver stops working you don't need to chuck out the entire thing, simply replace the non-functioning part. You get two cables in the box one with a mic, remote, and volume control for use with smartphones and one without. The box also has a carrying case that's large enough to hold the additional cable as well as the six sets of silicone eartips. Oh and you also get Comply foam eartips. The absolute cherry on the cake is the IPX5 water resistance rating making the M6 Pro comfortably sweat proof.

Overall the Meelectronics M6 Pro offers great clarity with superb low frequency response. The extreme highs do tend to plateau fairly quick. The bundled accessories round off the offering nicely. If you're looking for an upgrade over the SoundMagic E10M or E10S look no further. In fact at the ₹3k price point I haven't come across any IEM that's better. The Meelectronics M6 Pro is worthy enough to just be an additional collectible.

Siddharth Parwatay

Interactive review



Performance..... 85
Features..... 85
Value..... 75
Build..... 75

Specifications

Driver size: 10 mm; **Frequency response:** 20 Hz to 20 kHz; **Impedance:** 16 Ohms at 1K; **Sensitivity:** 100±3 dB (1mW at 1KHZ); **Cable length:**1.3m detachable; **Weight:** 164g

Contact

Headphone Zone
Phone: +917506646988
Email: Direct@headphonezone.in
Website: www.headphonezone.in

Cheaters Banned
Apparently AndroidL a steam user got 1000s of cheaters banned from CS:Go with their cheat hack pack. **http://dgit.in/CSGoBan**

Mobile OS wars
War for the third place in mobile OS market is over with Windows non-delivery and Blackberry 10 out of commission. **http://dgit.in/WarofOS**

Corsair H110i GT Liquid Cooler

Better built, now with RGB

Interactive review



The H110i GT isn't a new cooler by any means but it is one of two All-in-One units to sport a 280mm radiator, the other being NZXT's Kraken X61. While this might reduce your options when it comes to picking a cabinet, it's compensated by the extra cooling afforded by the bigger radiator. Another aspect that makes the cooler seem attractive to enthusiasts is the RGB lighting present on the CPU block. Using Corsair Link, you can monitor coolant levels, temperature sensors and set your colour profile to vary based on different heat levels. The OEM is still Asetek so you're still getting a great product. The tubing is sheathed in a thin cloth layer with the joints reinforced with a short springy winding. This is a good change over the rigid plastic joints which would occasionally crack after some time. Lastly, the bigger cold plate is a welcome change and when you see that its mounting relies on a sandwiching mechanism of two metal plates, the cooler becomes viable for GPUs, too.

As for the cons, it would have been better if they'd have included a small tube of thermal paste. And the fans don't have any rubber padding to reduce vibration. This is a little odd since if you go about purchasing Corsair fans, they do come with a little block of rubber at each of the corners.

Performance wise, there's barely any difference between the H110i GT and the H110. We saw peak temp of 53 degrees at load conditions with a 4960X running at 3.6 GHz while taking it up to 4 GHz took peak temps to 63C.

Mithun Mohandas



Performance.....77
Features.....65
Build.....75

Specifications

Type: AIO Liquid Cooler; **Radiator size:** 280 mm; **Radiator dimensions:** 140 x 322 x 27 (WxLxD); **Cold plate material:** Copper; **Intel Sockets:** LGA 1150, 1151, 1155, 1156, 1366, 2011, 2011-3; **AMD Sockets:** AM2, AM3, FM1, FM2; **Warranty:** 5 years

Contact

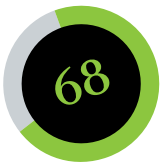
Corsair Components, Inc.,
Phone: 1800-425-5464,
Email: Contact form,
Website: http://www.corsair.com

Zebronics Stacks ZEB-523B

A cool cabinet, quite literally

The Stacks ZEB-523B looks appealing at the front but doesn't include a transparent-windowed side panel, so you aren't going to be showing off here. Packing all the bells and whistles of a basic gaming cabinet, it fares well on an important parameter, keeping your system cool. At 100 per cent load for several minutes, the Intel 4960X with a custom cooler hardly crossed the 68 degree mark in our Prime95 load test. A Radeon HD 7790 stayed at around 60 degrees running at a preset 1080p setting in FurMark. The CPU and GPU sat stable at 36 and 32 degrees respectively during idle time and saw a rise of about six to eight degrees in normal usage.





Features.....74
Performance.....68
Build.....70
Value.....62

Specifications

Motherboard form factor: ATX and Micro-ATX; **PSU form factor**: ATX standard; **Front IO:** 4x USB 2.0, HD audio ports, 2x fan control knobs; **Drive options:** 4x 5.25-inch ODD, 4x 3.5-inch HDD; **Fans:** 3x 120 mm.

Contact

Phone: 1800-102-0220
Email: enquiry@zebronics.info
Website: http://zebronics.com/

Three 120 mm fans are shipped with the cabinet – one at the bottom-front area and two fans on the side panel with individual manual speed control through the dials on the top of the case. This leaves the 120 mm fan slot at the back panel empty and having observed a CPU temperature drop of 3 to 4 degrees after adding one, it would have made sense to include a stock fan in the box. There's provision for two more 120 mm fans under the top panel.

The hard drive bay trays are not optimal for SSDs as they sit right at the middle of the tray once installed. It's not easy to hook up a 2.5-inch drive or SSD without L-shaped SATA data and power cables. The cabinet loses out on points for cable management as the drive trays force you to wire the SATA data and SATA power cables from the other side. However, the tool-less design makes it a better offering.

Abhijit Dey

9000 LHC cables
CERN has to identify and disconnect 9000 LHC cables to just plug in new ones because there is no space left. **http://dgit.in/9000Cnt**

Robot room service
Future of having robots for everything is not too far as Savioke is aiming to launch its 'Robot' room service in US hotels. **http://dgit.in/RoomSrvc**

Microsoft Lumia 950XL

Riding into the danger zone

The Lumia 950XL is perhaps the most important product that Microsoft has launched over the past few years. One of the first phones to run Windows 10, Microsoft has a lot of hopes from this device. Unfortunately though, this isn't the phone that'll save Microsoft. The device has a polycarbonate body, and unlike the Lumia 920, 1020 and 930, this is nothing compared to flagship phones in the market today.

The plastic body simply looks and feels cheap for a phone that costs ₹49,399. While other Lumia devices, mentioned above, looked and felt like flagships, this phone feels like a sub-20k device. Compared to the Galaxy Note 5, iPhone, Moto X Force and many others that this phone competes with directly, the Lumia 950XL just doesn't belong.



The QHD display on the phone is as good as ever though. While you won't feel a big difference on the home and app screens, the higher pixel density (compared to older Lumias) shows when you're viewing content on the device. In addition, the Clearblack display is one of the best in terms of colour reproduction as well.

While the power of this device was never in question, the software is still not up to the mark if you want to play games. It's not as big an issue as the design, since gaming matters less on an enterprise device. The Lumia 950XL is much more responsive and fast as compared to older Microsoft flagships. In addition, the phone does really well in terms of call quality and reception.

The biggest problem with this phone though is also its best feature. While Continuum for Windows is good, you have to buy the Display Dock separately, which adds about ₹6000 to its overall price. In addition, while Universal Apps do work well on Continuum, there are very few of them actually available at the moment. Microsoft needs to ensure that the Windows Store is populated with new and useful Universal Apps as soon as possible.

Moving to the camera, the 20MP rear camera is perhaps the best part of the Lumia 950XL. It is faster than older Lumia smartphones and takes sharp and true to life images. The colour reproduction is really good and it is also very good in terms of low light image quality. The problem though is in the fact that most of these results come from the rich capture mode, which means you can still not depend on the Lumia completely, when it comes to the auto-mode. While the phone will take good images in the auto-mode, it often leaves you disappointed.

In addition, Windows Hello doesn't make up for the lack of a fingerprint sensor. At most times, the Iris Scanner takes too long to unlock the phone, which is neither intuitive, nor useful. When you're walking outdoor, Windows Hello will almost always keep asking you to 'move closer' and in low light conditions, it's almost useless.

The battery life on the Lumia 950XL has deteriorated as compared to older Lumia devices. While the battery life meets industry standards, you can't really depend on it to last a full day. It can go on for about 10 hours, which covers a regular work day, but if you're looking for more, then have a charger with USB-Type C support handy at all times.

Overall, the Microsoft Lumia 950XL is a good phone, but one that's really overpriced and will not be the phone to save Microsoft. It is an enterprise device, but even for enterprise customers, it can't really make up for its shortcomings. The app support needs to be sorted as soon as possible and Microsoft needs to look at a more modern and high-end design language. The lack of a fingerprint sensor on a device that costs nearly ₹50,000 is also a big issue.

Prasid Banerjee

Interactive review



Features 77
Performance 72
Design 72
Value 59

Specifications

Display: 5.7 inch QHD; **Processor:** Snapdragon 810 octa-core 64-bit; **RAM:** 3GB; **Storage:** 32GB, expandable to 200GB; **Battery:** 3340 mAh; **Operating System:** Windows 10 Mobile

Contact

Microsoft
Phone: NA
Email: Contact form
Website: microsoft.com

The Mail Mess
Hillary Clinton's mail mess updated! 22 of the emails were recently marked top-secret apparently due to data sensitivity. **http://dgit.in/MailMess**

'Ghost' ownership
Ubisoft and EA fight it out to take ownership of the word 'Ghost' but it remains to be seen who is the victor. **http://dgit.in/UbiEA**

Bose CineMate 15

A good upgrade for your TV speakers



The Bose CineMate 15 is a deceptively loud but compact soundbar for your TV. It is able to produce deep bass via a pretty large subwoofer which Bose calls the Acoustimass module.

Over the past five month's that it's been with us we've tried multiple sources and multiple audio types on it including gaming on the PS4, movies on a 65-inch 4K Samsung curved LED and flacs files on a PC. One thing was certain – it's not meant for music.

What it IS meant for however is enhancing your movie watching experience. And at this it excels. The upgrade you get over your 20W TV speakers is exponential. The Bose CineMate can be hooked up to your TV via optical, coaxial or RCA analog inputs. While the performance on analog was decent, it really shines on optical. The overall sound signature is warm and quite well suited for dialogue and thumpy bass or low frequency rumbles. If you are expecting detail or sonic purity you won't be getting it. But when you are looking to only enhance your movie watching experience are you really looking for fidelity? Not really.

The compactness of the soundbar is appealing. The soundstage it produces is quite something given its size. Quite a feat that this tiny bar produces room filling sound.

Is it worth the money? Well maybe you could put together a custom setup at the same price but you are unlikely to get the same ease of installation, compactness and features. For example the remote – it truly is universal. Works with almost every TV/Set top box you throw at it. Hook it up to a TV and you're good.

Siddharth Parwatay



Performance.....80
Features.....75
Build.....80
Value.....65

Specifications

Soundbar dimensions: 8.5 x 30.5 x 7 cm; **Soundbar weight:** 0.67 g; **Subwoofer weight:** 36.7 cm H x 22.2 cm W x 48.5 cm D; **Weight:** 10.6 kg; **In the box:** Power cord, Digital optical cable, Analog cable, Universal IR remote with 2 AA batteries

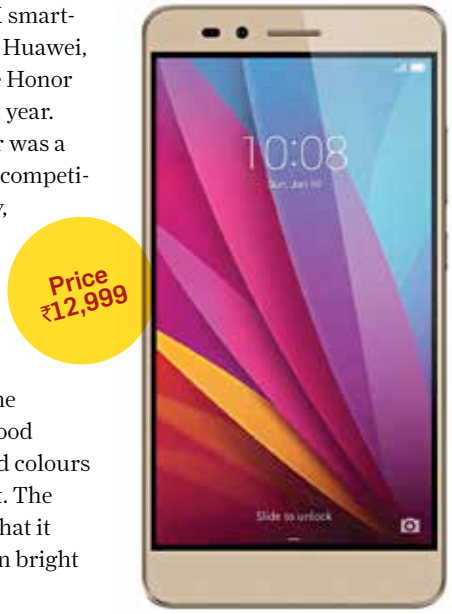
Contact

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Phone: 1-800-11-2673
Email: in_customersupport@bose.com
Website: http://www.boseindia.com/

Huawei Honor 5X

Interactive review

Could be better



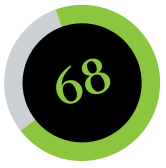
The Honor 5X smartphone, from Huawei, succeeds the Honor 4X from last year. While its predecessor was a very good phone, the competition has changed now, thanks to phones like the Lenovo K4 Note and LeEco Le 1s. The Honor 5X has the best camera amongst the three. The 13MP camera takes good images, with balanced colours and focuses quite fast. The only shortcoming is that it overexposes images in bright sunlight at times.

In terms of performance, the Honor 5X runs on a Snapdragon 616 SoC and does satisfactorily in regular real world usage. It's not as powerful as the LeEco Le 1s though, and just a tad above the Lenovo Vibe K4 Note. The same can also be said about the phone's battery. The 3,000 mAh battery was able to last about 12-13 hours on regular usage, which is a tad above the LeEco Le 1s and similar to the K4 Note. The display brightness was turned on to maximum though, which means you can get a little more out of this phone.

The most disappointing part of the Honor 5X though is the display. The device has a 5.5 inch FHD display, which just doesn't fit the bill in this price range anymore. It's dim and produces cooler colours, which is not ideal.

Overall, while the Honor 4X was a very good phone, the Honor 5X loses out to its competition. The fact that it costs more than the K4 Note and Le 1s, just makes things worse.

Prasid Banerjee



Features.....75
Design.....71
Performance.....69
Value.....55

Specifications

Display: 5.5 inch FHD; **RAM:** 2GB; **Processor:** Snapdragon 616 octa-core; **Operating System:** Android 5.1.1 Lollipop; **Battery:** 3,000 mAh; **Camera:** 13MP rear, 5MP front; **Storage:** 16GB, expandable to 128GB

Contact

Phone: 18002096555
Email: service.hw.in@huawei.com
Website: http://hihonor.in/support/service

Shodan Snop
If you used a IPv6 on a Linux system then Shodan has snopped through your system for its IoT connect. **http://dgit.in/ShodanIP**

Baby Fluids
Smearing babies with vaginal fluids may boost their immune systems for protection against health problems. **http://dgit.in/BabyFluid**

Samsung Gear S2

What goes round

Interactive review

77

Design 87
Features 83
Performance 80
Value 51

Specifications

Processor: 1GHz dual-core; **RAM:** 512MB RAM; **Display:** 1.2 inch 360x360p SAMOLED; **Storage:** 4GB; **Connectivity:** WiFi, Bluetooth, NFC

Contact

Phone: 1800 3000 8282, 1800 266 8282
Website: http://www.samsung.com/in/info/contactus.html#

Samsung's Gear S2 won't make smartwatches worth buying, but it takes a big step towards doing so. It runs on Samsung's own Tizen operating system and has a 1.2 inch 360x360p Super AMOLED display. It achieves a really high pixel density and has perhaps the best and brightest display amongst smartwatches today. That's not the reason to buy it. though.



Price ₹24,300

The rotating bezel, which is the highlight of this smartwatch is much better than any other navigation method we've seen till now, so props to Samsung for offering something better than anyone else in the market currently. The rotating bezel can be used to navigate around the watch, scroll through emails and texts, scroll through menus, etc. We wish Samsung could have made it even more independent of touch though, but the rotating bezel is still the most intuitive way to manage a smartwatch.

Yes, it's better than the Crown on the Apple Watch. This is further complemented by how responsive the Gear S2 is. You almost never have to wait for an email to pop-up and it doesn't show lags while you're replying to texts, etc. Our only complaint is that the watch could have been made to look better and even more premium in some ways. While it is made of metal, the Gear S2, with its leather strap, feels quite toy-like at times. It's quite sturdy though and very light, meaning many would still like it.

Prasid Banerjee

ASUS Transformer Book T100HA

Attractively priced, well-rounded hybrid

73

Performance 61
Features 70
Build Design 70
Value 88

Specifications

Screen: 10.1 inch touchscreen, 1280x800 res; **CPU:** 1.44 GHz Intel Atom x5-Z8500; **OS:** Windows 10; **RAM:** 2GB; **GPU:** Intel HD; **Connectivity:** 1xUSB 3.1 Type C, mini HDMI, Bluetooth, Wi-Fi 802.11n, micro SD card; **HDD:** 64 GB

Contact

ASUS India Pvt Ltd
Phone: 1800-2090365
Web: www.asus.com/in

After the Acer Switch 10E last month, we tested another 10-inch hybrid ultraportable in the form of ASUS Transformer Book T100HA. We've seen literally every generation of the Transformer series from ASUS since its inception, and are quite pleased with this current iteration in particular. It literally weighs just 1 kg, weight equally split between its screen and keypad halves, and carrying it inside a handbag or backpack's super convenient. It looks attractive with a lustrous metal finish on its screen cover (but not its bottom panel), adding a tinge of premiumness to its overall exterior. It's built well, when you open it up its keyboard and trackpad perform satisfactorily, too.

Tablet mode works like a charm on this device and the multitouch input is quite snappy. Watching video and listening to music on the ASUS Transformer Book T100HA was nice, as well as working on productivity apps (Google Drive, Microsoft Office 365). As long as you aren't trying to do more than 2-3 tasks at a time, you're going to be okay with the T100HA's multitasking prowess. Its battery life of 4 hrs 52 mins in our benchmark falls short in comparison to the Acer Switch 10E's 5 hrs and 47 mins. It's still good to last over 7-8 hours easily, with conservative settings. It's in the price department is where the T100HA pulls away from the Acer Switch 10E.



Price ₹23,990

Definitely worth considering, if you're looking to buy a 2-in-1 under 25k. A close second to also consider would be the Acer Switch 10E. Both are good.

Jayesh Shinde

Access denied!
White House's barring of researcher Soltani maybe considered as a consipracy to oust Snowden case helpers. **http://dgit.in/AccDeny**

Hopper 3 DVR
This is one crazy DVR from Dish showing four shows on the same screen thanks to its 16 in-built tuners. **http://dgit.in/16Tuners**

HP Pavilion 15 Star Wars Special Edition

Star Wars Collectible

Interactive review



The HP Pavilion 15-an003TX Star Wars Edition is a regular Pavilion laptop draped in the Dark Side's black and red theme. Lucas Films and HP have ensured that the design and artwork on the laptop is fabulous, and it shows. The dark theme representing the Dark Side is visually appealing, and this makes the laptop really stand out. The overall build quality of the laptop is satisfactory. The build quality, especially the matte-ish plastic, is certainly better than the Acer E5-574G that we reviewed earlier.

While the laptop may look battle-worn from the outside, it houses decent mid-range hardware under the hood. At its core is the new 6th Gen. Intel Core i5 processor — the i5-6200U. It is coupled with 8GB of DDR3 RAM, and an NVIDIA GeForce 940M with 2GB of vRAM. The specifications of the HP Pavilion 15-an003TX are good, and thus, the laptop can handle all small tasks with ease. You can do some gaming too but, you will have make do with low graphic settings. Although compared to other similar laptops, the 15.6-inch matte display seems quite good.

The laptop lasts about 3.5 to 4 hours on a single charge which is nothing unusual. All in all, if you are a Star Wars fan and wish to invest in Star Wars memorabilia, this might be the laptop to buy otherwise we would suggest to go for the Asus GL552JX.

Hardik Singh

64

Features 75
Performance 56
Value 66
Design 59

Specifications

Processor: Intel Core-i5 6200U; **GPU:** NVIDIA GeForce 940M 2GB; **RAM:** 8GB; **Internal Storage:** 1TB HDD; **Display:** 15.6-inch 1080p; **Keyboard:** Island type (backlit); **OS:** Windows 10; **I/O:** 2 x USB 3.0, 1 x USB 2.0, 1 x HDMI, SD card reader, 1 x Headphone/mic jack combo, DVD drive

Contact

HP India Pvt Ltd
Phone: 1-(800)-180-1810
Email: hpestore.in@hp.com
Web: http://www.hpshopping.in

Audio-Technica ATH-CKS550iS

More thump at a price

Audio Technica recently added four new models to its "solid bass" lineup. These in-ears are supposed to be tuned to deliver more bass without compromising on other frequency ranges. The ATH-CKS550iS is the most entry level SKU out of the four.

They look typically like any other Audio-Technica IEM. They vaguely remind me of the old Sonic Fuel CKX9 we'd received from Audio-Technica sometime back except the CKS550iS doesn't have that characteristic C-tip for additional stability.

The CKS550iS features a tangle free flat cable which is always a welcome feature. The build quality too is what you'd expect from a brand like Audio-Technica. There are four sizes of silicone eartips thrown in but the lack of a shirt clip and hardcase seems strange since most IEMs in this price range have now started offering these accessories.



In terms of performance you get what is promised: tuning that is bass oriented while the mids and highs aren't suppressed. Comparing it to the SoundMagic E10M the bass is definitely tighter (and there's more of it) but it's still underwhelming when compared to the Meelectronics M6 Pro which you'll find reviewed elsewhere in this section. The retail price for the ATH-CKS550iS is ₹3,499 but we found that it's currently selling on Amazon for ₹2,614. That's roughly a ₹600 bump over the SoundMagic E10M.

Worth it? For the quality it seems to be demanding a fair price, yes. But if you are expecting the bass to blow you away, you'll need to look elsewhere and maybe fork out a little more dough.

Siddharth Parwatay

72

Performance 78
Features 68
Value 66
Build 75

Specifications

Driver Diameter: 9.8 mm; **Frequency Response:** 5 - 24,000 Hz; **Sensitivity:** 104 dB/mW; **Impedance:** 40 ohms; **Weight:** 7.5 g (0.3 oz); **Cable:** 1.2 m with mic and single button.

Contact

Email: purna@audio-technica.co.in
Website: http://www.audio-technica.com/

360 Streaming
Youtube may start 360 degree video streaming sooner than later, as suggested by its new "Global VR Evangelist" recruitment. **http://dgit.in/Vid360**

Smart Mirror
Get all your major updates of the day in your bathroom! Yes that right with this Google smart mirror. **http://dgit.in/SmrtMir**

Pebble Time

Tic-Toc, Tic-Toc and I still have battery life

81

Design 86
Apps 68
Performance 91
Value 64

Specifications

Platforms: Android 4.0+ and iOS 6+; **Display:** 1.25-inch; **Display resolution:** 144x168; **CPU:** 100MHz single-core; **Weight:** 42.5 grams; **Connectivity:** Bluetooth 4.0

Contact

Pebble
Email: support@getpebble.com

The Pebble time is a very well built smartwatch. It is compatible with iOS and Android. It has a square design and the display has Tough 2.5D curved glass protecting. The display is surrounded by a stainless steel bezel. Surprisingly the thick bezel doesn't make the display look small. The Pebble Time weighs 42.5 grams making it relatively light to wear and also feels sturdy at the same time. The maximum battery life I got out of the watch was about 5 days. The Pebble Time has the best battery life when compared to the other smartwatches we have reviewed. Apart from the slew of watch faces, there are a bunch of useful apps on the smartwatch. You can set up timers and alarms on the watch independently and play games too. The Pebble Time has a colour e-ink display and doesn't have a touchscreen. There are 4 buttons on the watch for navigation and the buttons are well built. You wont be pressing these buttons by accident. The Pebble Time has an interface called the Timeline and overall the UI is very clean and easy to navigate. On the downside, it doesn't have Siri or Google Now voice services and that is a bummer. But you can reply to a WhatsApp message or an SMS from the comfort of the Pebble Time without removing your phone from your pocket. When compared to other watches, the wheel interface of the Gear S2 is more convenient than the buttons on the pebble. A very cool thing about the Pebble Time is that when the battery is nearly drained, it stops working as a smartwatch and only shows the time. This way it adds one day battery life.



Sameer Mitha

ASUS Zenfone Zoom

All for nothing

Interactive review

69

Design 76
Features 77
Performance 64
Value 56

Specifications

Display: 5.5 inch FHD IPS; **RAM:** 4GB; **Processor:** Intel Z3590 quad-core; **Storage:** 128GB; **Operating System:** Android 5.1 Lollipop; **Camera:** 13MP with 3x Optical Zoom, 5MP front

Contact

ASUS India Pvt Ltd
Phone: 18002090365
Email: https://vip.asus.com/VIP2/Services/QuestionForm?lang=en-in
Website: https://www.asus.com/in/support/

If this phone was launched in India last year, we'd perhaps have been able to appreciate it more. The ASUS Zenfone Zoom has a 13MP rear camera with OIS and 3x optical zoom. While optical zoom is of course better than digital zoom, it's no use on this phone, since the base image quality is lacklustre. It lacks sharpness and images are quite noisy. This is because to make the thinnest zoom lens on a smartphone, ASUS has had to reduce the sensor size, which in turn affects image quality. While optical zoom is actually better, the same image taken from a Zenfone Zoom and Nexus 6P, with 3X optical and digital zoom respectively, will look better from the Nexus 6P, because the base image quality of the 6P is better.

That said, in terms of performance, display and battery life, the ASUS Zenfone Zoom is almost identical to the ASUS Zenfone 2, which costs about half of what the Zoom does. The higher clock speed on the Intel Z3590 SoC allows for better single core performance, but in the real world, it doesn't amount to much of a change.

As a result, priced over ₹35,000, it makes little sense to buy this phone. If it was priced more competitively, maybe it would be more palatable. As of now, though, the Moto X Style, Nexus 6P and even the Nexus 5X are better choices than this. While ASUS has made some good phones over the past year or so, the Zenfone Zoom is definitely not its best work.



Prasid Banerjee

Screenshot them all!
Been awkardly highlighting text using your browser? Check out the top 3 text-screenshot apps you ought to have!
http://dgit.in/24e7hxn

Livestream from GoPro
Periscope all your adventures with GoPro as Periscope extends its support to GoPro cameras
http://dgit.in/GPPeriscpe

Seagate Personal Cloud 3 TB

Technically a NAS, essentially an external.

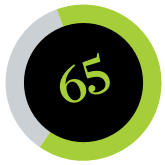


When you call a device a NAS, you expect it to offer a competing array of features and services that a NAS provides. These include an OS which further expands the features one can get. But all of that comes at a price, a rather steep price. But what if you wanted a simple storage device that can be connected to your home network? The Seagate Personal Cloud is one such device. It's basically an external hard drive with an ethernet port priced appropriately. You can get 3 TB externals for around ₹8,000 with just a USB 3.0 port and if you do have a wireless router with a USB 2.0 or 3.0 port then you can achieve the same thing except these routers aren't cheap. So you'll spend the extra ₹5,000 on a better router or on a external device like the Seagate Personal Cloud.

The Seagate Personal Cloud houses a Seagate NAS HDD which is more suited for a 24x7 operating schedule. Performance wise the device is like any other external hard drive and a lot has to do with your router if you are going to be streaming. We were able to stream an 8-bit 1080p 24 FPS video with a few unnoticeable stutters which is quite good for a non-RAID external source.

The Seagate Personal Cloud is a plug and play external drive with the added bonus of having an ethernet interface. It aims to fill the ever growing need for a home NAS without being too pricey and it plays the role very well.

Mithun Mohandas



Performance.....55
Features.....75
Build Quality.....65

Specifications

Model: STCR3000301; **Capacity:** 3 TB; **Interface:** USB 3.0, USB 2.0, Ethernet; **Internal HDD:** ST3000VN000; **Colour:** Black; RPM : 5400; **Dimensions:** 119 x 235 x 48 mm; **Weight:** 1151 g; **Warranty:** 3 Years

Contact

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

Coolpad Note 3 Lite

Pocket Rocket

The Coolpad Note 3 Lite is a smaller, lighter version of the Coolpad Note 3 which was launched last year. The recipe of the phone is kept same for the most part which means, there is a nifty fingerprint sensor at the back and for the first time in this price range you get to have ooldes of system memory – how much? How about 3GB of RAM? Yes, it packs three gigs of RAM.



The phone carries forward a similar candy bar design with a new textured back. The Coolpad Note 3 Lite features a very good display. The 5-inch IPS LCD has good colour saturation and colour vibrance. The viewing angles good too. The UI remains unchanged and is filled with bright icons but still simple to use.

The MT6735 which beats inside the Coolpad Note 3 Lite churns out some great performance for the money and is able to keep up with most tasks required from the smartphone. The 13MP rear shooter however, isn't that great though. Images taken in normal lighting conditions have oversaturation and while they look good on the phone's display, they look pixelated on a larger display. Images quality further deteriorates in low light conditions.

While the battery on the Coolpad Note 3 Lite is small by today's standards at just 2500mAh, the phone was able to stay up a whole day (if you watch your multimedia usage), which is pretty good considering the price point and specs on offer. To conclude, the Coolpad Note 3 Lite is undoubtedly one of the best phones in the sub-7k smartphone category.

Hardik Singh



Features.....91
Performance.....84
Value.....60
Design.....72

Specifications

SoC: Mediatek MT6735; **RAM:** 3GB; **Internal Storage:** 16GB; **Display:** 5-inch 720p; **OS:** Android 5.1 Lollipop; **Battery:** 2500mAh

Contact

Coolpad India
Phone: 1800-1027-159
Website: http://www.coolpadindia.com/

worldview

OUR PICK OF THE BEST TECH ARTICLES FROM AROUND THE GLOBE

(MUST READS)



FROM WINDOWS 95 TO WINDOWS 10

The humble start menu has undergone a lot of changes throughout its life-cycle and was even killed off once. Here is a recap of the start menu right from Windows 95 to Windows 10. Do you know all of it?

http://dgit.in/Strt9510

THE CHEAT SHEET TO ALGORITHMS

You either hate or appreciate algorithms that control everything the computerised world runs on, but how many of us know the actual manner in which these work? Here's a good guide to understanding algorithms.

http://dgit.in/AlgothmCS

WHY DID UBER CHANGE ITS LOGO?

Everyone noticed Uber's new logo and appreciated it when it decided to go country specific. But why did Uber decide to change the logo altogether? It was definitely more than a corporate re-branding effort that made this engineer come up with the new logo.

http://dgit.in/UberNwLogo

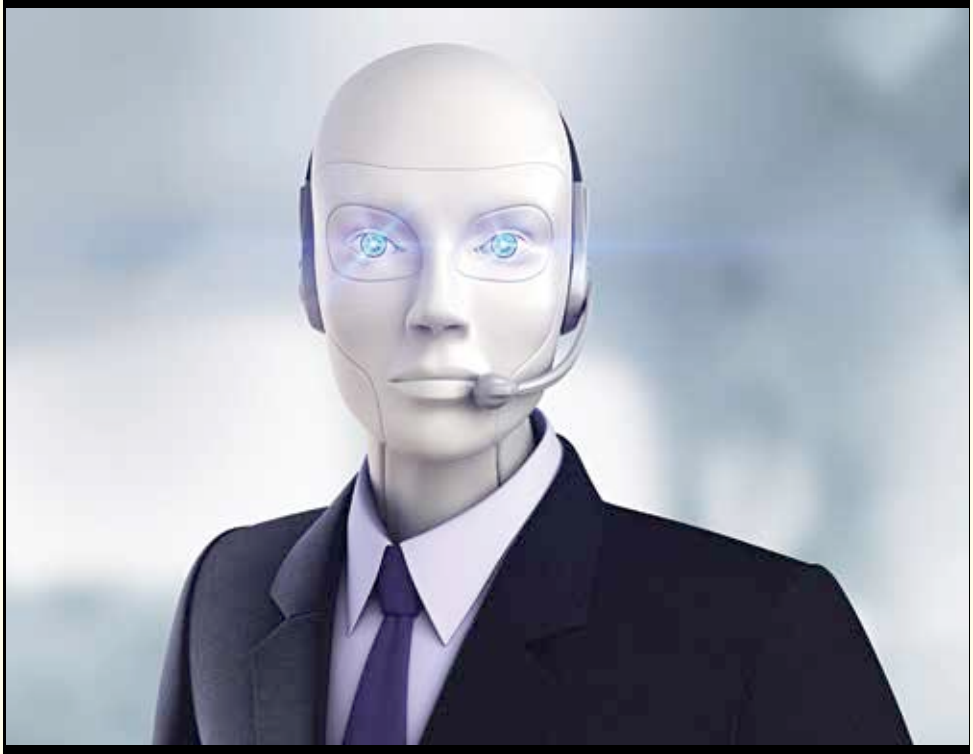
WHAT'S THE PERFECT SCREEN SIZE?

Why do all the latest flagships have to have huge screens and go slimmer? We agree that things look better on bigger screens but you have to give up one handed operations. Which makes you wonder, what's the perfect screen size.

http://dgit.in/FlagshPhabs

[The Atlantic Corner]

YOUR INTELLIGENT ASSISTANT



They'll monitor everything you are doing and saying and will try to predict what comes next. They'll even remember the context. No, we aren't talking about virtual assistants but your own cognitive assistant that will act as your brain and remember all of your memory. The future of personal assistants is here. **http://dgit.in/CongAsstnt**

Interactive page



Learn from the Dark Web

The 'research pirates' have struck gold and unlike pirates, they've decided to share the look. Academic research papers from behind university paywalls have been leaked on to the dark web. Good or bad? You decide!
http://dgit.in/DWRPirates



Busting frauds in the future!

Very few frauds and scams are reported and just a fraction of them ever get busted or cracked. With even more advanced technologies coming out each day, how will the authorities tackle the ever rising threat of fraud?
http://dgit.in/FutureFrauds



Bewilder us, technology of the future!

Will the technology of the future have the power to bewilder and awe us? Or will we become jaded with technology just like most of our elders become after a certain while?
http://dgit.in/BFutureTech

SHORTS

TO BLOCK ADS OR TO PAY FOR PREMIUM?

Everything good comes for a price. Are ad-blocking extensions and filters, at the risk of content getting affected, still the ideal solution or would you prefer paying a minimal amount to keep receiving quality content? Read and decide for yourself.
http://dgit.in/NoAdBlock

CONNECTIVITY 2.0

Networking advancements are taking place at a faster pace than you think and we are not very far from seeing advances in the 5 GHz band with the introduction of the new 802.11ad and 802.11ax Wi-Fi standards. This and more were discussed at a recent Qualcomm workshop.
http://dgit.in/QlmNWkshp

THE BATTLE OF VIRTUAL ASSISTANTS!

We've definitely seen who's funnier amongst Cortana, Siri and Google Now in several videos, but who's the ultimate winner when they're put to face the heat along with the newest entrant in the field of virtual assistants, Amazon's Alexa.
http://dgit.in/VAsstntBtl

INSIDE GOOGLE'S SELF-DRIVING CAR TESTING CENTER



Right from planning and recruiting people to getting self-driving cars out on the road for pilot tests, here is everything you need to know in-depth about Google's self-driving car. Want more? Have a look what's inside the factory
http://dgit.in/InsideGSDC

6 Gadgets that will make motorheads flip

Interactive page

If you are a motorhead and you love 'tech'ing up your ride, you are in for a treat with these 6 ultra-cool gadgets for your vehicle! Read on and enjoy!

– By Adamya Sharma

BMW Head-Up Helmet

What will clearly make you feel like an F-35 fighter pilot, the BMW Head-up Motorcycle Helmet is definitely drool worthy. BMW has partnered with DigiLens to get you this funky helmet that allows you to ride easy without having to look down from the road. The helmet houses an Augmented Reality display that shows drivers their RPM and gas levels without having to look down. The helmet also features front and rear cameras that captures the road and brings the feed directly to the rider's visor.

Navdy HUD display

How many times have you almost hit something or someone on the road with your head buried in your phone? Straight out of science fiction, the Navdy Heads-Up Display is a petrolhead's fantasy realised. The device plugs into your smartphone and projects the display on your dashboard, as if it were floating in the air in front of you. You can read incoming notifications, view maps, swipe in the air to answer or reject calls, dictate to post tweets and talk to Google or Siri, all from the comfort of a projected display on your dashboard! Nerdgasm anyone?

Jabra FREEWAY Bluetooth Speakerphone

Wanna go hands-free on the freeway? Get the Jabra Freeway Bluetooth Speakerphone. Complete with 3-speaker stereo sound and background voice elimination,



the voice guidance will talk you through the setup and the pairing process. It will also announce battery level, connection status, the name of all incoming callers and ask if you want to accept their calls. Simply use your voice to make, answer, end, redial, or reject calls while keeping both hands safely on the wheel.

FOBO Tire Plus

FOBO is a smart Bluetooth tire pressure monitor that tracks real time car tire pressure and temperature 24x7 and provides 3-level alerts. Low air pressure in tires can cause punctures and now with the help of this tiny little monitor, you can be forewarned. FOBO Tire App allows up to 100



authorized users to receive readings from the same FOBO Tire. There is also a 2–level theft deterrent- a mechanical lock nut and a cloud-based ID lock. The theft deterrent lock nut requires a proprietary wrench to unscrew. A cloud ID locks the sensors and the in-car unit to owner's FOBO Cloud account rendering stolen sensors and in-Car unit non-reusable.

Viotek Accessory Heated and Cooled Seat Cushion

This one is made especially for your bum. Yes, you heard it right. The Viotek car cushion can heat up or cool down on demand, and give your bum the temperature of its liking. Simply plug in the cushion into the lighter socket of your car and you and your bum are good to go!

4Moms Self-Installing Car Seat

Moms deserve a break and the 4Moms Self-Installing Car Seat will do just that. This baby car seat installs itself, connects to your smartphone, checks seat status while the carrier is connected, ensures base is installed at correct level, even when parked on an incline, recommends seat position based on vehicle's make and model, gives reminders to adjust harness & headrest based on child's height, weight and projected growth and finally alerts you when child has outgrown the seat. You simply can't accuse the seat for caring too much!

Interactive page

AI- RUBIN'S NEXT PLAYGROUND

We know how Andy Rubin's Android has created an impact in the world of technology and how the father of Android is developing the next platform, Artificial Intelligence. Here is what Playground Global, Rubin's foundation to develop AI, is going about developing the AI of tomorrow.
http://dgit.in/PlygrndGbl

BEST MECHANICAL KEYBOARDS YOU CAN BUY RIGHT NOW



After the science behind making the perfect keyboard, we bring you a list of 15 best mechanical keyboards that you can buy right now with detailed reviews and all the information you'd need to make an informed decision.
http://dgit.in/BstMKybds

DATING APPS WINNING THE HEARTS

Celebrated valentine's day with yet another gadget? Maybe it's high time you start finding the "one" using apps like Tinder, Badoo, etc. You'll be surprised how the market for these dating apps is growing and their success rates have been skyrocketing.
http://dgit.in/DtngAppsRS

LET'S FACE THE REALITY



VR and AR are already huge and they're just getting bigger but there are so many unreal expectations which threaten and question their long term potential. Are we expecting a bit too much from these technologies? Know where we stand and what is safe to expect from the future when it comes to AR and VR.
http://dgit.in/ARVRRlty

Why are we so interested in Apple's Virtual Reality deeds?

Patent approvals, employee recruitments, analyst reports and a circulating whisper of the "next big thing" adds up to only one thing – Apple's foray into VR is not too far away. Will this have the same impact that the iPhone had on the smartphone industry?

– By Souvik Das

With Virtual Reality becoming a widely appreciated field, numerous stalwarts of technology are taking their nascent steps into Virtual Reality, Augmented Reality, and the seemingly endless possibilities that these fields represent. Swiping the thin air with your hand to switch to the next music track is almost a reality, and live virtual music concerts will soon see bands playing to a virtually packed Slane Castle meadow, with virtual audiences. In such times, with Sony's Morpheus, Microsoft's HoloLens, Facebook's Oculus, Google's (very basic) Cardboard, HTC's Vive and Samsung's Gear VR virtual reality headsets, there's only one name that is missing — Apple.

While the Cupertino-based behemoth has remained tight-lipped about its involvement with virtual reality, there have been signs and traces, and some of them have been very prominent. Apple had filed for a patent for its virtual reality headset design back in 2008, which was finally approved in February 2015. In reply to Piper Jaffray analyst Gene Munster's question on Apple's involvement with Virtual Reality, CEO Tim Cook stated that he did not think virtual reality is a "niche". He said, "It's really cool and has some interesting applications." This line itself brings us to the point, why are we talking exclusively about Apple entering the field of Virtual Reality?

Why are we talking about Apple entering VR?

This falls in line with what Apple did to the smartphone industry with the iPhone — make it really cool with a number of interesting applications. Apple has recently been acquiring a number of startups in the space of VR and AR, some of the notable ones



being Flyby Media, Metaio, Emotient Inc. and PrimeSense. Each of these companies specialise in certain aspects of VR and AR, and have previously worked with major companies. Flyby Media has expertise in computer vision, a brand of technology that facilitates 3D mapping and placement of real objects in virtual landscapes. Metaio simulates real furniture in 3D space, PrimeSense makes camera hardware to enable computer vision and Emotient Inc. uses artificial intelligence and advanced sensors to gauge facial expressions.

Adding to this, The Financial Times had reported that Apple has an underground team of researchers working on a Virtual Reality project. Recent designations and job listings across the Internet happen to suggest the same. Nick Thompson, part of Microsoft's HoloLens project, has been roped in by Apple, and so has Doug Bowman, a human-computer interaction researcher at Virginia Tech. Incidentally, Bowman was also a lead author of the book, *3D User Interfaces: Theory and Practice*, and was one of the first to receive Microsoft's $100,000 grants to work on the HoloLens. With a number of large-name acquisitions taking up desks at Apple, we are somewhat certain (hopeful, rather) that they are working on something that will define what Apple does the best — bring in the best of an industry together.

Apple has also recently added a $30 Virtual Reality Starter Pack by View-Master, that uses an iPhone to push for smartphone-based augmented reality content, similar to Google Cardboard.

Blipp to read more.

MINUTEPHYSICS

If you've ever wondered how things happen and why they happen then here's a channel that should interest you.

MinutePhysics, in an ultimately cool way, explains daily happenings with the laws of physics that might blow your mind. But wait, is that even possible, according to physics?

http://dgit.in/MinPhysics

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

(PRODUCT LAUNCHES)

LENOVO YOGA TAB 3 PRO



The Lenovo Tab 3 Pro is a 10.1-inch tablet with a 180-degree rotatable stand and projection support up to 70 inches. Running on an Atom X5 processor, it sports an all day 10,200 mAh battery with 2 GB RAM and 32 GB storage.
Price: ₹39,990

MOTO X FORCE



Moto X Force is a smartphone made to last. It comes with a 5.4-inch 2K AMOLED Moto ShatterShield display, runs on a Snapdragon 810 processor along with 3 GB RAM and 32 GB storage. Also, it features a 21 MP camera.
Price: ₹49,999

EUROCOM SKY X9



Eurocom Sky X9 is a user-customisable and user-upgradeable mobile workstation. It supports desktop grade Intel Skylake processors and let's you decide the laptop's specifications, the way you want it to be.
Price: ₹1,80,000 onwards

PICTURE PUZZLE

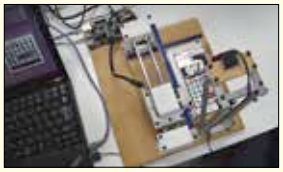
ABSOLUTE TIMEPASS





Top 3 YouTube Picks

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



Robots do it better
Duration: 03.54
Watch an iPhone turn into a robot and solve puzzle games at high speed and with optimum steps in real time.
http://dgit.in/AutoPuzSlve



Solved in a sec!
Duration: 03.39
0.900 seconds. That's the time taken to solve a Rubik's cube, fastest ever done. Is it even possible to come close to it?
http://dgit.in/RubikCWR



Robo-dance, literally!
Duration: 02.18
540 Robots were spotted shaking a leg in unison. Do you know how were they made and how do they work?
http://dgit.in/RoboDnce

The largest platform for free scientific books. http://dgit.in/OpenLibraPDF

Node.js — JavaScript Meets World

>>If you've even vaguely kept up to date with web development news, you've likely heard of Node.js > by Kshitij Sobti

Introduction

Yes, JavaScript has indeed escaped the confinement of the browser, and is now available as a scripting language that works somewhat like Ruby or Python. You write applications as JavaScript files, and run them using Node.js which includes libraries for some common tasks.

Often programming languages are designed to be general purpose and then get embedded as the scripting language for an application. For instance Python scripts can be used to control parts of Maya, a popular 3D design application. JavaScript has taken the reverse approach!

JavaScript was designed from the beginning to be a scripting language for the browser. It was confined within the browser, and only had access to modify the web page loaded in the browser. As browsers have become more powerful JavaScript has become more central to our idea of the web. Today running a browser with JavaScript disabled is no longer a viable option.

Full complex web applications such as image edition, word processors and more have been built in JavaScript. Even so there are limitation to what JavaScript can do withing a web page, and for good reason! However, this is not a restriction of the language itself, but rather the environment (the browser) in which it runs. Node.js provides an alternate environment for JavaScript to run in. It builds upon the V8 engine from Google's Chrome browser, and provides a runtime for it that makes JavaScript applications viable.

Node.js isn't the only runtime to allow running JavaScript outside the browser, neither was it the first. It is however the most popular JavaScript runtime developing JavaScript applications thanks to its extensive and powerful API, and the growing ecosystem of libraries, modules and packages around it.

As a developer today, it is impossible to avoid JavaScript. It is one of the most popular programming languages in the world. JavaScript is the only language that all major web browsers understand. If you develop client-side applications for the web, you're already

*Coding Matters

***Node using Chakra**

>>Chakra, Microsoft's JavaScript engine used by IE and Edge was made open source, and now effort is underway to enable it as an alternative to Google's V8 in Node.js

http://dgit.in/NChakra

***Angular JS 1.5**

>>Google's AngularJS framework is being overhauled for its 2.0 release, till then they have released v1.5 to help developers smoothen the transition.

http://dgit.in/Angular1-5

***JavaScript Module Guide**

>>This article looks at all the different systems available to developers for modularising their code. It covers different module systems and more.

http://dgit.in/JScrptMG

invested in JavaScript, it isn't a stretch to use it on the sever side as well. By using JavaScript on both the client and server it becomes trivial to share pieces of code that are common to both (such as form validation).

If you're familiar with JavaScript, Node.js is just a stone-throw away. The language is the same, so all you need to learn are some of the conventions and features of the Node.js environment.

Getting Up and Running with Node.js

Getting a Node.js running on your OS is quite a simple matter. All you need to do is visit the Node.js website, nodejs.org and download the latest version for your OS. You're likely to see two versions available, an LTS version for people who want long-term support. You're better off with the Stable version; it has the latest features.

Linux user might find their distro's package repositories have a rather old version. The Node.js website offers Linux users tar packages that you can just extract and run. Mac and Linux users can look into nvm or Node Version Manger that helps you keep your Node.js version up to date.

Once it's installed, you can type node at your command prompt to get a JavaScript REPL. So go ahead and try the obligatory "Hello World" program; type:

```
> console.log("Hello World");
```

You should see "Hello World" printed on the console, but you will also notice that Node.js prints out undefined after that. This is expected behaviour since Node.js will print the result of whatever code you type. If you typed 2 + 2 you'd see the result 4 printed at the console. The console.log function returns nothing and as such you see undefined.



If you end up doing something interesting in the REPL, you can save the code you've run using .save filename.js and later load it using .load filename.js

Modular JavaScript

Any serious application is likely to be spread across multiple files that each focus on a single aspect of the program. As such any serious programming language needs some form of module system that allows you to break down a large application into smaller pieces and put it together in some way.

Unfortunately JavaScript doesn't have a module system because of its origin as a browser-only language. Node.js has had to create its own system of modules that allows one JavaScript file to directly reference another, and to pull variables, and functions from it. There is a module system that is being standardised for JavaScript, and it isn't too hard to pick up once you are familiar with Node.js.

Let's say we want to create a simple program that inputs a user's name and outputs it in upper case; for this app we need some way to read user input. For our purpose we can use the inbuilt module 'readline' which provides this functionality, and we can get access it by setting a variable to require('readline'). The 'readline' functionality can now be accessed though this variable.

Here is the code in question:

```
const readline = require('readline');
const rl = readline.createInterface({
 input: process.stdin,
 output: process.stdout});
rl.question('name: ', (answer) => {
 console.log(answer.toUpperCase());
 rl.close();});
```

To run this code, put it in a file with the .js extension, and then run it as node mycode.js.

Like other scripting languages, Node.js comes with its own standard library. Given its focus on server-side applications, the functionality provided by Node.js is skewed towards the requirements of a web service.

Of course you are not limited to the libraries that Node.js ships with, there is an entire ecosystem of packages available for Node.js that is just a single command away.

Node Packages

Just like Ruby has gem, and Python has pip to install packages from a repository, Node.js has npm. Hundreds of thousands of packages are just a single command away. Just run npm install package_name in the directory of your project and you will be able to import its code and use it in your project.

ASIDE: While it may seem most obvious, npm does not, in fact, stand for Node Package Manager.

By default npm installs packages into a folder called node_modules in the directory in which you run it. This allows only code contained within this directory to use these modules. For some kinds of packages, such as command line tools it can be useful or even necessary to install them globally by adding a --global parameter. For instance Microsoft's command-line tool for managing their Azure cloud computing service can be installed with npm install --global azure-cli, after which it will be available to run as azure like any other command line tool.

Creating your own package is very simple with Node.js. Run npm init in the directory in which you want to initialise your project, and answer the questions it asks. This will create a package.json file in the folder. You can modify this file to your liking using any text editor.

Among other things this file lets you list all the other modules your code depends on, and the version of that package you need. You can create these entries manually or, add the --save parameter while installing to automatically install the package and add it as a dependency to the package.json file. This file can also list dependencies on other modules that might be needed only during development. For instance you might need JavaScript linting and testing tools like eslint and mocha while developing your application, but they aren't needed to run it. These can be installed using --save-dev instead of --save.

If a folder has a package.json file in it, you can install all the dependencies it lists by simply running npm install in that folder. These packages can also all be upgraded using npm upgrade. These upgrades always ensure not to upgrade to a version that might not by compatible any more.

Modular JavaScript

You'll notice quickly that the Node.js community errs towards more modularity rather than less. Case in point, the popular lodash JavaScript library is composed of hundreds of useful functions, and each one is available as a separate package if it is all you need. One of the packages for instance is 'lodash.gte' which is a package composed of a single function that compares two values and tells you if the first is greater than or equal to the second!

It is not uncommon for a single package to depend on dozens of other small packages. To ensure that a single package doesn't bring down your entire running application by breaking something in an update, npm takes version numbers very seriously.

Node.js packages need to follow the SemVer (Semantic Versioning) standard for version numbers that dictates rules for assigning version numbers to your code based on what's changed. A version number has three parts x.y.z where x is the major version number, y the minor and z the path number. Which number should be incremented depends on how the changes made to the code in a package will affect other packages that depend on it.



The npm init command walks you through creating a basic package.json file, and you can take it from there.

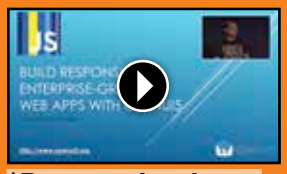
For instance, if there is a minor fix to a package that fixes a bug, or clarifies some documentation or otherwise makes changes that have no effect on its public API, then the patch version is to be incremented. A change that adds features, but in a way that doesn't affect existing uses of the API will increment the minor version number. Finally any change that can break existing code using the public API should increment the major version number.

Since version numbers a generally dependable, npm allow you to specify what kinds of upgrades you are OK which for which package.

ASIDE: SemVer only has to do with the effect of the changes you make to your package. So if you make a necessary bug fix that unfortunately breaks some existing applications, it should come with a new major version!

*pointers

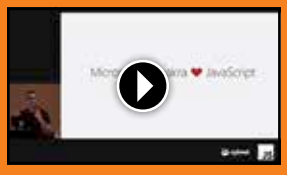
>>Interesting developer news



*Responsive Apps with OpenUI5

>>OpenUI5 is an open source web app development framework by SAP. Watch this video to learn more about developing apps with it.

http://dgit.in/RaOui



*Inside Chakra

>>Get an inside look into Microsoft's Chakra JavaScript engine used by Internet Explorer and their latest Edge browser.

http://dgit.in/InsChkra



*The Route to HTTP / 2

>>HTTP, one of the central protocols that runs the entire internet is due for an upgrade! Watch this talk to find out what this means and why it's important.

http://dgit.in/RtHTTP2



*Electroknit

>>This fascinating talk is about interfacing with legacy hardware using Node.js and how much there is in common between knitting and programming.

http://dgit.in/Elctroknt



Once you have installed a package, you can import a package to use in your code using `require('package_name')` syntax to access the package functionality, similarly to how you'd access a core library.

If you have multiple JavaScript files in your project you can use this syntax with the path to a file in your project to include that code. For instance `const Button = require('./components/Button')` will load the file `Button.js` in the `components` directory.

Modularising your own Code

When Node.js was being developed, JavaScript will still predominantly a browser-only technology and had no support for modules. Node.js based their module system on the CommonJS standard for JavaScript modules. The `require` function syntax for loading other JavaScript packages is what we have as a result.

To make the JavaScript module system work, any code you write that you intend to import in another file should explicitly export the bits of code that the other files should have access to. An "official" standard module system is now in development for JavaScript which is similar conceptually but with a slightly different syntax.

The Node.js convention for JavaScript modules is that any data or function that you attach to the module.exports property can be imported when you use `require` on that file.

Let's create a simple file to demonstrate all of this:

```
const PI = 3.14159;
exports.add = function(x, y) {
 return x + y;}
// In the following we use the new
// arrow function syntax for brevity
exports.multiply = (x, y) => x * y;
exports.circleArea = (r) => PI * r * r;
```

Let's say this code is in a file called `math.js` in the same directory as your main code. You could then import this using: `const math = require('./math');` Note that the .js extension is not required.

Now the functions defined in the above code will be available under the `math` object. So you could run them as `math.add(1, 3)` or `math.circleArea(4)`. The `PI` constant will not be available however, as it is not explicitly attached to `export`.

If a directory contains a `index.js` file then you can use require on that directory itself. This `index.js` file can then import other files from that directory allowing better organisation and encapsulation of your code. In the case of packages (i.e. folders with a `package.json` file) you can specify which file should be imported when that package the "main" field in the `package.json` file.

Creating A Simple Web Service

Let's get our hands dirty by creating a simple web app which converts an absolute date into a relative date. So given a date like 11-02-2017 it will say something like "in 2 years".

To build this app we will use two very popular packages. The first is HAPI, which is "A rich framework for building applications and services". The other is library called "moment" that lets you work with dates and times, and includes the ability to compare date.

While HAPI is a pure Node.js package that is designed to run on the server side, moment is pretty much a JavaScript library that can run in the browser or on Node.js.

You should start by creating a directory for this project, and running `npm init` in it. Just stick with the defaults by pressing Enter at all the prompts.

With this done you should install the packages we mentioned by running the following two commands:

```
$ npm install --save hapi
$ npm install --save moment
```

Finally create a file called index.js in which you can place the following code:

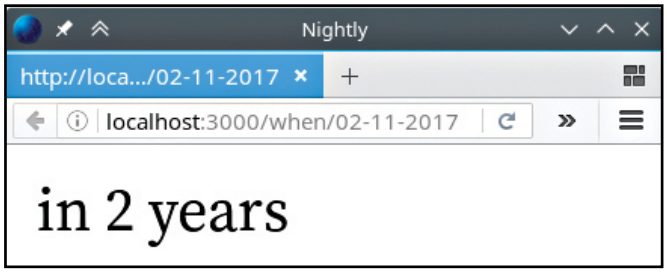
```
'use strict';
const Hapi = require('hapi');
const moment = require('moment');
const server = new Hapi.Server();
server.connection({ port: 3000 });
server.route({
  method: 'GET',
  path: '/when/{date}',
  handler: function (request, reply) {
    reply(moment(request.params.date, "DD-MM-YYYY").
fromNow());
  }
});
server.start();
```

Explaining the intricacies of creating Hapi apps is out of the scope of this article, but here's the gist of what's happening here:

- We first import both the libraries we need.
- We create a new Hapi server that will run out app.
- We specify that this server will use port 3000
- We set up a route on this server which can be accessed at '/when/' followed by the date
- We have some code that is run whenever someone visits such a URL
- We start the server

The function that is run when someone visits our app with a date simply uses the moment library to convert a data string in the format 'DD-MM-YYYY' into a date object, and then we use moment's `fromNow` method to convert this into a relative date. This is sent back as a reply to the browser.

If you now run this index.js using node, you will be able to open this app in your browser at http://localhost:3000/ or http://127.0.0.1:3000/. That particular page has nothing to show and will probably show a 404 error, however if you visit a URL like http://localhost:3000/when/02-11-2017 you should see the browser display the simple text 'in 2 years'. Unless of course you are reading this in the future and it shows 'in 1 year' or '2 years ago'. Funny how relative, relative dates can be.



Our HAPI-based web app running in Firefox. We've zoomed it in here to make it more visible.

Conclusion

There is a lot to like about Node.js other than simply reusing JavaScript for server-side development. Many of the architectural decisions made by Node.js make it especially good for handling a large number of connections and in handling real-time web applications.

Even if you only want to develop browser-based client-side applications and don't want to use JavaScript on the server side, knowing a bit about Node.js and npm can be a huge help. There are tonnes of tools like gulp, grunt and webpack that make it easy to set up a pipeline for handling complex web applications. >

*Nodes of Interest



*JXCore

>>JXCore is an open source alternative to Node.js that is compatible with Node.js but can use Mozilla's SpiderMonkey JavaScript engine, and works on more platforms.

http://dgit.in/JxCoreOS



*Webpack

>>If you want to do front-end development, webpack is great for bringing all your code and assets together and packaging it for deployment.

http://dgit.in/WbPck



*NVM

>>NVM or Node Version Manager is a great tool for OSX and Linux users to manage multiple Node.js installs and switch between them as and when required.

http://dgit.in/NdVMan



Drone Legislation
If you own a drone and are worried about restrictive legislations, you're in for a treat. **http://dgit.in/DroneLegis**



Big bad telescope
Nasa is going to launch another space telescope much more powerful than the Hubble. **http://dgit.in/BigTeles**



One ARM to rule them all?

Championing the cause of RISC like no other, ARM's finding itself at the centre of almost all emerging hardware technology trends of the 21st century. We caught up with Graham Budd, Chief Operating Officer, ARM, to get a sense of what's keeping them busy.



Graham Budd, Chief Operating Officer, ARM

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ARM only offers processor design and not necessarily the SoC as a complete platform. Why?

Graham: Actually, ARM also provides interconnects in specific system IP components and other types of IP that we create will help SoC designers to put these chips together more quickly and efficiently in a physical IP. The cell libraries for any SoC design are also shared so that a company doesn't have to reinvent the wheel. This is one of the strengths, I think, of ARM's business model because we are enabling many different companies to make their own systems on chip using our IPs in their own different ways. So there is a lot of healthy competition in the market that supports innovation and it is definitely one of the strong factors that has helped us in contributing towards the amazing innovation that we saw over the last few years, for example in the smartphone or tablet market.

A lot of companies, including yours, are trying to tackle the power efficiency problem at the hardware level during the CPU design stage. Does ARM also look at the power problem from another perspective, like, thinking beyond Lithium-ion or Li-po batteries?

Graham: So we think about power from a perspective of the whole system even though we are not providing all the components of the system. For ARM, power efficiency has been in the DNA of this company since the very start when ARM was founded 25 years ago. And it has always been at it from a system context but also it's about the scalability of the architecture. This is so important because having that broad range of different power-performance processors enables us to use the same architecture. At one extreme end we have the very tiny power sipping cortex MO designed to enable end-point IoTs that could run on tiny Lithium-ion batteries for years, and on the other end we have efficient data centre servers that are obviously consuming more power than the MO but are still optimised for the type of workloads that are being run in that data centre. And it's that scalability across the breadth of usage scenarios that really helps as well. So power means three things for me – (1) It's the inherent power efficiency of the design which we are always concerned about, (2) the power efficiency of the system and then (3) the scalability of the architecture that enables people to built efficient systems.

Internet of Things, connected cars, how is ARM at the centre of all these innovative technology trends?

Graham: The connected car space is a very exciting area for ARM and we are seeing a very rapid growth in advanced technology being built into vehicles, particularly, with driver assistance. Actually this is where the car and the IoT come together because the ADAS is going to require communication between vehicle and sensors while on the road and also for inter vehicle communication. So ARM, today, is used all over the vehicle. The Cortex M class processors are embedded into many of the electronics systems that control aspects of the chassis, braking, air-bags, etc. I think what is more exciting in the car is the developments of these new ADAS systems. We have been working on building features into our processors to make it easier for silicon suppliers and car manufacturers to build robust safety features into their cars as they get more and more connected to manage all of that complexity. So this is an exciting growth area for us, but as mentioned earlier, it is a relatively slow burn. The products that we license to companies today is going to take quite a while before they are road ready. The automotive industry is being disrupted by EV Technology from companies like Tesla, for example, are bringing down the innovation time in the industry quite rapidly and is going through quite a bit of shake up and transition at the moment and there are exciting opportunities for all.



Powerwall 2
A revamped version of the popular Powerwall named will be launched soon by Tesla, declared Musk. **http://dgit.in/Ver2**

Morgan Cars
Morgan Motors, best known for producing classic cars is set to launch its hybrid electric cars in next 3 years. **http://dgit.in/EMorgan**

Decoding Netflix's India strategy

Netflix really wants Indians to like them. Where piracy reigns supreme. We sat down with Jonathan Friedland, Chief Communication Officer for Netflix to understand their streaming and content plan for India.



Jonathan Friedland, Chief Communication Officer, Netflix

Adamya Sharma
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Could you tell us what is the response to Netflix in India so far? Do you see a healthy demand for the service so far?
Friedland: We've had a lot of free trials. The level of engagement seems to be pretty good, particularly around original programs like Jessica Jones, Daredevil, Narcos, Master of None. But, you know it's the early days right now, we'll see.

A lot of people are upset about some of Netflix's original content is missing and the content library in India is much smaller than that in the US. We know this could be due to the existing licensing deals with television channels in India. How is Netflix positioned to grow their content library in India?
Friedland: There are a couple of different things here. First is, we have been streaming in the United States for 10 years. There are 45 million people paying in the United States for streaming content, so, we can afford a lot more in the United States. Whenever we start out in a new country, and we have launched in 60 countries before we launched in the 130, we have a pretty small catalogue to start with and we add to it pretty consistently over time. So, you can already see a significant increase in what's on the platform since we started. The reason why we do that is because we want to know what people are watching and we get more on what people want to watch and we do away with the stuff that people are not watching. So over time, you will get a much broader catalogue here.

You know, licensing is still pre-internet. The way it works is that studios license content per territory to one broadcaster. So, with House of Cards for instance, we made HoC 3 years ago when we were only in the US and couple of other countries so we couldn't afford it across the world. So, somebody else licensed it in India.

Netflix just acquired Brahman Naman, which is a film by an Indian independent director. Is the company looking to invest in more Indian content in the future?
Friedland: Yeah, very much so. We have a content licensing team that does that stuff and they are constantly looking for new things. Brahman Naman is interesting because I was at the Sundance Film Festival last week in Utah and a bunch of us saw the movie and loved it. So, we made an offer and luckily they accepted. So, this will be available not only in India on Netflix, but, everywhere else in the world.

What is Netflix doing to block VPNs and apps like Smart Flix that help users access its entire US library?
Friedland: First of all, anybody who has been using a VPN to access Netflix, it's been against our terms of use forever. What we have done is that we have upgraded the technology alongside Hulu and BBC iplayer and all the other streaming services, because, the people we license content from won't do so unless we respect their territorial rights. That, unfortunately is a business model that was per-internet and the internet has changed a lot of things but that business model still exists and as long as it exists, we have an obligation to protect that territorial integrity.

Is Netflix implementing local caching servers at the ISP level in India?
Friedland: Yeah, we already are. We have local caches and we have our Open Connect servers here in India and we have been working on them for quite sometime.

Why doesn't Netflix offer the viewer the ability to download videos offline?
Friedland: Our business is streaming and we are going to stick to that for now. We have no plans, as of now, for an offline module.

Any plans for launching a Netflix Stick (like Apple TV) if you find the right OEM?
Friedland: No. We're on Apple TV and Chromecast. So, we aren't looking to create our own hardware platform. Never.

Morning Gene
A new study by 23AndMe researchers reveal the genetic heritage influencing a persons waking and activity habits. **http://dgit.in/MrngGene**

Problem solved!
Apple bought the company LegbaCore which was responsible for pointing out the Thunderstrike 2 firmware flaw. **http://dgit.in/FlawFirm**

Bitcoins are getting more popular in India

Interactive page

Bitcoin has been in the limelight for quite some time but has yet to gain a foothold in the Indian economy. We sit down with Mohit Kalra, CEO and Founder, Coinsecure to know why.



Mohit Kalra
CEO and Founder, Coinsecure

Abhijit Dey
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What are the technological and socio-economic (legal) factors that will enable transactions in Bitcoins in the country?

Mohit: India was lacking with Bitcoin traction but we've seen a massive growth after the launch of Coinsecure. Within just one year, we have touched the maximum volume that India has ever seen in the Bitcoin space. We have seen the growth of our customer base increase 20 times within the past 3-4 months. Since Coinsecure went live (1st Jan 2015), we haven't faced any legal issues from either the Government or Regulatory authorities such as RBI, ED, SEBI etc. They're well aware of our business. We have a transparent exchange and wallet service. Also, we were the first company to launch India's very first Blockchain Explorer. We enable users to check the public ledger in INR. As advised by our compliance team and our legal consultants and lawyers, as well as advice provided to us by the RBI, we follow strict KYC & AML Policy for customer boarding.

Coinsecure's wallet service is an off-chain wallet service. Users can transfer Bitcoin from our wallet to our exchange to buy or sell with a zero percent fee. We run our platform 24/7 and we have multiple banking partners linked with our company such as AXIS Bank, ICICI Bank, HDFC Bank and YES Bank. All *fiat* (INR) deposits and withdrawals are done through banking channels and we do not accept cash for trades. We are also India's first Bitcoin company to get an ISO Certification.

When are we going to see e-commerce websites such as Amazon and Flipkart support transactions through Bitcoins? What are the challenges impeding that reality from happening?

Mohit: We are working on a Bitcoin payment gateway and will be releasing it out very soon for merchants to start accepting Bitcoin with zero percent volatility risk and that too with a very minimal fees. Our basic merchant boarding plan will be charged at the rate of 1% of the transaction value as compared to the 3.5% being charged by INR payment gateway providers such as PayTM, PayU Money etc. At the end of the day, merchants will be saving 2.5% on each transaction if they accept Bitcoins and also, we will be attracting the Bitcoin community on to their e-commerce platforms.

We have already signed contracts with a few merchants who will be using our payment gateway. India will soon be seeing top merchants accepting Bitcoin through Coinsecure's Bitcoin payment gateway.

What are the series of events or factors that will eventually lead to Bitcoins becoming mainstream in India?

Mohit: Bringing more use case of Bitcoin in India will definitely get the masses on board and will make Bitcoin mainstream. Once bigger players like Flipkart, Snapdeal, etc., start accepting Bitcoin, we will see a massive growth in the Indian Bitcoin Space.

I think such huge players should come forward and start accepting Bitcoins even if proper regulations are not out yet in India. This is how it happened in the USA and even in China. E-commerce players in India should focus on accepting Bitcoin and work together with Bitcoin companies to get the regulations or guidelines formulated as soon as possible.

I see Bitcoin growing this year, as Coinsecure will be providing much more services for investors, traders and for merchants. At the end, it depends on how the Government or Regulatory Bodies react to this. As per the recent article by RBI, it's more of a green signal for Bitcoin companies to expand even further. Again, I think new improved guidelines should be released by the RBI as soon as possible.



Be Oculus Rift ready!
If you are in search of an Oculus Rift ready PC, here is list of off the shelf machines. Thank us later! **http://dgit.in/OcRftPC**

Tomb Locator
An archeologist is on the hunt for tombs of lost pharaohs using satellite imagery and help from locals via a game. **http://dgit.in/LctTomb**

Manage time like a boss!

Time is of the essence! So using it more efficiently thickens your pocket by the minute literally.

Ashish Panigrahi
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Scheduling and organizing your to do list on a daily basis is a great habit to inculcate, but in all practicality of the task, how many of us are able to follow the deadlines without wavering? Maybe one out of ten or even twenty? In this world ingrained with technology preparing organizers is also a waste of time and tracking your progress at the end of the day is even more painful. At the end of the day we all have just 24 hours in our quotas, which is proving to not be enough anymore.



Time Doctor Lite interface.

Before going into anymore details, let's discuss what time really is. Merriam-Webster defines time as, "The measured or measurable period during which an action, process, or condition exists or continues". But is it really that simple to define time as a measurable period? Definitely, no. That's the whole reason time based systems or clocked/fixed hour work cultures are losing the appeal as well as failing to bring out the innovative bone in most of the employees, employers and other associated personnels.

'The day just flew by' is a common statement heard from most of the working class people and even entrepreneurs. But when you look at your productivity statistics, it's pretty evident that you're not making the best of your time. So where has all the time flown to, is it spent on social media, movies, coffee breaks or by the water cooler indulging in a little gossiping session?

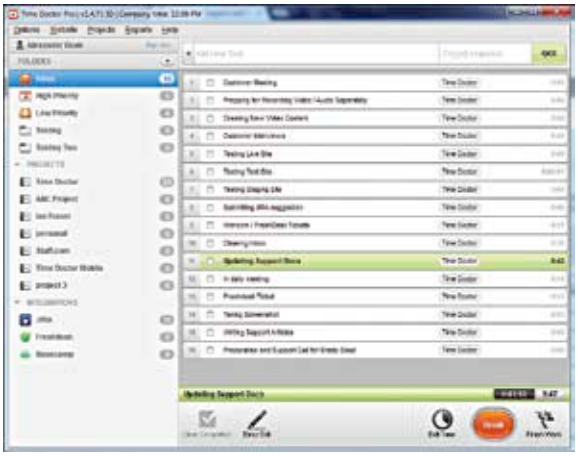
There was very less that could have been done to track your time till now, but with all the different time management software popping up, it's now up to you to track your time or your boss could do it for you. Before we get down to the different software you could use to spy on your workers, let's take a look at what all can be accomplished using these software.

Track your time spent online/offline

Human beings are social animals, but with the advent in technology it has risen to a whole new level. Socializing with fingertips, more popularly referred to as social media, is one of the major ways people while away time. But what are the odds to know how much you or your employees or co-workers spent in there and deduct them from their billable hours. If you think its impossible then you can't be any more wrong.

Track status of assigned tasks

There are many tasks creation and management software out there for employers to assigns and teams to collaborate on and work. But the convenience and allure of tracking time spent by people working on those projects or tasks is not something to be overlooked. Time management software do help in those too.



Time Doctor Pro interface.

Track time spent away from your desk

So you have assigned a task or project and are also capable of tracking how much time are your employees spending online and offline, but what about lunch hours and tea breaks. Aren't these also being billed to your account? There is just one way to discreetly account for those, that is via time loggers embedded in these software.

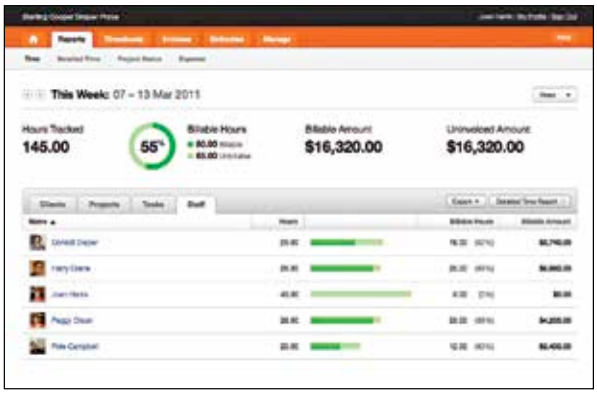
Track time spent while using applications

You can make your employees work on thin clients or even on machines that can't run anything other than the software that's necessary to get the job done but never underestimate the will

power of an employee trying to skip work. Which is why most of these software carefully tabulate what all applications were executed and for how long they were running on said machines.

Log and track your billable hours more efficiently

If you are going to ask is everything about time management for the benefit of employers, then we would say just hold on a minute mate. Logging away billable hours is the most attractive features offered by time management software. For instance, if you are going for a meeting or conference to a location other than your office and are not able to come back to office then you can just log it as billable hours and keep track of non-working days with a single click.



Consolidated billable data

The software

1. Time Doctor

This is one of the oldies and has been around since the inception of the concept of tech-based time management. It has all the basic functions of a TMS along with a not so common addition of screenshot based activity monitoring which simply means saving timely screenshots of your screen onto its server for the admin to access. But its time logger pop-up can be really annoying at times. It comes in two versions: Lite for those who don't have too many tasks to log or don't work on the go. The Pro version comes with cross-device support, a web mail like interface for organizing tasks under different headers for easy accessibility and syncing data from various software like Asana, Basecamp and so on.
Cost: *$9.99 per user/month (Both Lite & Pro)*

2. Harvest

This is more of an employee productivity tracking solution with different financial, analytical, communication, CRM tools. It doesn't have application tracker like what Time Doctor has. But even then it's still worth your money. Enough to make our list due thanks to its ease of usability through a web portal as well as support for add-ons. In this software, the billable hours are calculated on a predefined pricing and category of pricing. For instance if you've been billed $20 per hour against a specific employee for a specified project parameter then at the completion of the task the CTC is automatically generated. The mobile app sure does come in handy since it makes it convenient to log billable hours when working remotely.
Cost: *Free, $12 per 3 users/month (Solo), $49 per 9 users/month (Basic), $99 unlimited users/month (Business)*

3. Rescue Time

Like every other time tracking solution, this too has an online/offline tracker, application tracker and many more features. But the interesting aspect here is that of gamification! Simply put, it allows you to rate an employee's work productivity and give them something to feel proud about. So it's nice to improve your scores and clinch the top position. What makes it even better is the fact that results are represented in a graphical manner which is very easy to read.
Cost: *Free (Lite), $9 per user/month or $72 per user/year (Premium)*



Rescue Time interface.

4. Manic Time

This is one of the most comprehensive tools out there. It tracks all of your online/offline time spent, has an application tracker and a time logger with the ability to colour code the day into different segments. Just hover your pointer over the bar and it shows where you spent that time. Also there is the consolidated pane which stacks all the applications or web pages you have visited during the course of the day. There is even a server module to integrate all the machines in that have Manic Time installed and are on the same network. You can use this feature to produce a consolidated result of all the users.
Cost: *Free, $67 per user/month (Pro)*

5. Work Time

This is a complete enterprise solution with a server deployable application to track every keystroke on connected devices on the same network. And just like Rescue Time, it also incorporates gamification. The reporting dashboard highlights employees who average more time on certain software so you know who your star performer is. It is one of the most comprehensive solutions out there but it is expensive.
Cost: *$49.95 per user/year (Corporate), $1954.48 per 10 users and 1 server/year (Corporate) , $49.95 per user/year (Professional)*

110 **Community**
Still haven't tried out Arduino? Here's a quick and easy guide to get you started.



$30 Cyborg
Make you own cyborg cockroach at just $30 with some surgery, an Audrino board and some programming. **http://dgit.in/Cyborg30**

Stupid stuff no one needs

Ever wondered what inventors do when they've got a bad case of Inventor's Block? They build the first thing that comes to mind. Here's why the Ig Nobel Prizes were probably instituted.



NonAd Block

An advertiser's wet dream, this ungodly Chrome plug-in blurs out all the worthy content on a web page and leaves all the adverts untouched. However, it isn't entirely useless. Since ads are turning out to be indistinguishable from normal content, one can always use this to single out and block adverts before moving onto reading the article without distractions.

YOUrinate

True to the Indian tradition of outsourcing, if you'd like to outsource your body's ablutions then you can turn to YOUrinate. The gizmo consists of a headband and a flat box strapped to your stomach and it keeps a tab on your fluid consumption to let you know when it's time to pee - loudly. So if you'd like to announce your pee breaks, go for it!





Profanity-PGP

PGP provides end-to-end encryption and like all things open source, it prefers function over style. Which made one foul-mouthed programmer to re-write the way PGP produces its headers. Instead of random text, you have a wonderful assortment of profanity that accompanies each of your encrypted mail. Way to make a first impression!



Twerk Dynamo

The bane of our current times. Every millennial wants to learn the mysterious ways of this ridiculous dance form so we're going to have a lot of worthless talent on our hands in the next 15 years or so. Here's a little gadget to put them twerk afficianados to proper use. Strap this gadget to their torsos and watch as they generate electricity while twerking.

Diet Water

The Japs are at it again. Just because it says Diet, it doesn't make this brand a more healthier alternative to ordinary bottled water. But heck! It exists and it's ridiculous. Apparently, this contains specialised peptide bonds that seek out fat cells to obliterate once it enters the blood stream. If you're too lazy to move, might as well grab a bottle of diet water.





3D Cheese Printer

Cheese makes everything better. EVERY THING! So how do you top the best of the best? By taking out all the non-cheesy parts, of course! But plain cheese looks rather drab so to make a blob of cheese more appealing you can make use of this 3D Cheese Printer and print out your very own cheese burger with cheese buns, cheese patties, cheese everything!

How we unwind



Moar CS:GO!

What's worse than two bad players playing CS:GO? Six bad players! That's right, Ashish, Nikhil, Jayesh and Siddharth have joined Abhijit and Mithun in their collective tomfoolery. You can find the six getting their arses owned in evenings on Indian servers. Pick the other team if you want to win.

Audibles Addiction

You've probably seen an Ad for Audibles at the end of countless videos and so have we but one fine day Siddharth couldn't bear it anymore and he went and activated his free Audibles account. He's been hooked ever since. Last we checked, he'd "read" through four books in under one month!





Two more join the army!

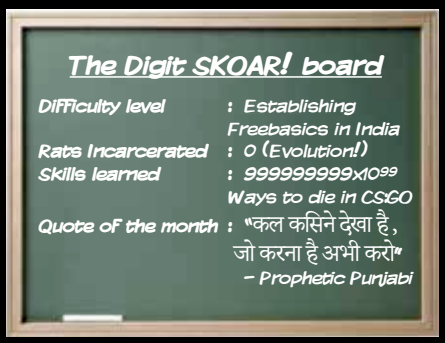
Another benefit of our endless CS:GO sessions was that Nikhil and Ashish could no longer bear to watch from the sidelines so they held on to their ground for quite a long while but eventually succumbed to the irresistable charms of PC gaming. Lo and behold, we had two new gamers! HAIL PC MASTER RACE!

digit DIARY

Finally! A month worthy of being labelled 'ordinary'. Much has been said how month after month the residents of the Test Labs would barely scrape through into the next month. This February, which is generally a painful month given the shortage of days just went past without most of us even flinching.

That doesn't seem right, not by Digit standards, at least. So why not recap the events of the month. We started off with our last month's cover story gaining more traction than ever before which led to them being published online. And boy, oh boy! Do people have ridiculously miniscule attention spans. Many folks didn't even realise that we'd covered the pros and cons of the whole Free Basics package but people just don't read. Never has Siddharth been showered with such vitriol for standing by Free Basics! People took to Twitter, Facebook and forums to call him a twit, a lackey, Zucky's favourite left ... shoe. Well, you get the point, it wasn't a healthy discourse by any means. Mithun, on the other hand, had taken the popular stance and he sat by with a bucket of popcorn watching Siddharth deal with all the trolls till he was at his wit's end.

Jayesh ended up joining the Mumbai Press Club so there has to be a celebration! He has promised to deliver. Sometime. This month. Or the next... month... year. Well sometime. He'd been after that membership for quite some time and only recently got around to getting all the formalities sorted. And not an easy process it was.



This month had another case of the missing intern. Pavan, who'd been with us till last month stopped coming in one fine day. We assumed he might have had the shivers or maybe he'd been mauled by a sparrow but that wasn't the reason for his disappearance. Turns out, he'd completed 30 days and thought that was it. And just like that, he got up and left without a casual chit-chat. Strange fellow! But he isn't the first one who's exhibited such anti-social tendencies and he definitely won't be the last. The allure of the Digit Test Labs attracts the weirdest that our species has to offer.

In other news, Mithun nearly had a brain aneurysm going through some of the articles that came across his desk for proof-reading. Ashish's rustic style has an indescribable ability to trigger a partial shutdown of one's cognitive abilities. Thankfully, Jayesh came to his rescue and threw the book at Ashish, literally. He's been tasked with completing a few books on English grammar and composition.

Abhijit and Nikhil have been watching a lot of YouTubers and taking notes. Why you ask? Well, we've been looking at the kind of videos we make and it's bloody well time that the format gets overhauled. So keep your eyes peeled, for we just might come out with a few new formats and what we stick with depends entirely on you lot! Yes, you. Feel the honour coursing through your veins as you click on the like and unlike buttons on YouTube in the coming weeks. Wield this responsibility with utter caution!

Safe Harbor 2.0
Some people may argue Safe Harbor 2.0 is the best option, but Max Schrems explains why it's another doomed attempt at connectivity between the continents. **http://dgit.in/LostSafe**

Sync your 'fitness'
Oklahoma's Oral Roberts University has made it mandatory to own a Fitbit for a course which counts for 20% of grades. **http://dgit.in/SyncFit**

Every month we recognise the best article written by our community members and publish it here. Keep up the good work, Digitians!

Hello world for sensors with Arduino!

You've obviously heard of the Arduino boards and how they've revolutionised hobby electronics. Here's a little primer to get you started.



Praneet Sah

You've heard a lot about 'Internet of Things' and probably bought yourself an Arduino kit along with a few more sensors but you can't figure out how to exactly use them! If that sounds like you, then you're at the right place.

Before we begin, I'll recommend you to skim through the "Fast Track to Arduino for Everyone" (Available with Digit's December, 2014 issue) and of course, if you want to see a preview of what you can expect to build after reading this article, then open up the December 2015 issue and check out the DIY article about Home Automation (pg. 132). And of course, I'm assuming that you know basic programming stuff, knowing how 'if' statements work & what libraries are, is the bare minimum for this article.

Here's what you'll need:

- An Arduino Uno (Obviously!)
- Jumper wires (Make it yourself!)
- Breadboard (Optional, but helpful)
- Arduino IDE (Get it here http://bit.ly/1R2xniM)

There are undoubtedly a lot of sensors available and covering all of them won't be feasible and that's why I'll cover the most frequently used sensors. So let's get started!

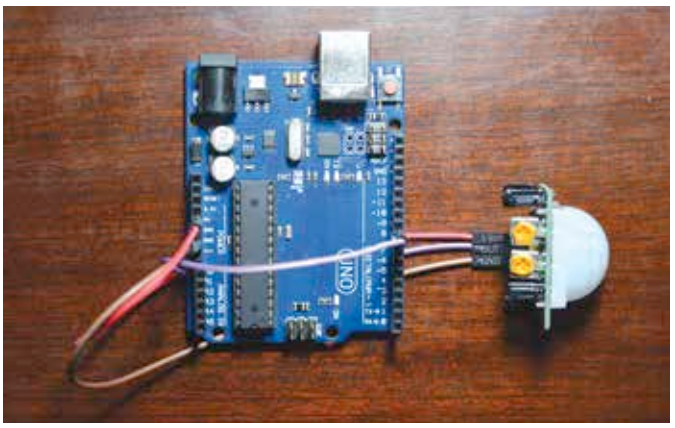
Ultrasonic Distance Sensor

You would have probably read about the SONAR that's used in ships. By taking the same concept into a small form factor we get a distance sensor. This sensor is available in multiple variants and I'll be using the 'HC-SR05' variant. It can easily detect range between 2 to 450 cm and has 5 different pins, out of which, we don't need the 'OUT' pin for now. To brief you a little, the 'trigger' pin will send the pulse and the 'ECHO' pin would wait for it to return. The other two pins, GND & VCC, are common and found on almost every component, 'GND' pin stands for 'ground' and the 'VCC' pin means '5v input'.

The connection is fairly simple; you need to connect the sensor to the Arduino directly (you may also use a breadboard). Using the jumper wires, connect the 'GND' pin to the 'GND' port of the Arduino and connect the 'VCC' pin to the '5v' port on your Arduino. The 'TRIG' and 'ECHO' pin can be connected to any of the Arduino's Digital pins. For now, I'm connecting 'TRIG' to Digital pin no. 12 and the 'ECHO' to pin no. 11. And don't forget to connect the Arduino to your computer using the USB cable.

The beauty of these sensors is that most of them have a library function available, which basically ease our work since we don't need to re-invent the wheel. The library for this sensor is named as "NewPing" and you can get it from http://bit.ly/1pYs30V and then unzip it into the Documents → Arduino → libraries folder. Open up the Arduino IDE (or restart in case it was already open) and on the menu bar, navigate to File→Sketchbook→libraries →NewPing→NewPingExample. Clicking on it would open up another Arduino window that has got all the code necessary to use the Distance Sensor. Click on the Upload button and a few LEDs would blink on the Arduino. After 2-3 seconds open up the "Serial Monitor" under 'Tools' menu option and there you go! You'd be seeing the distance between the sensor and the object in front of it. Using a flat surfaced object will get you better results.

You don't happen to write any code this time since most of it is handled by the library. However, if you've noticed then the distance is actually returned by the function named 'sonar.ping_cm()'. So, yeah, go on, assign that to a variable and use the variable for your programs. You can make a car that turns automatically if something comes within 'x' units or maybe, automate the lights in your home, so that if something comes within 'x' units then turn on or off the lights.





Spiralling teeth
'Pre-historic animals are from out of this world', theory again supported by this fish with buzzsaw like teeth. **http://dgit.in/SpiralTeeth**



Zika transmission
A case of the Zika virus spreading through intercourse has led the WHO to declare it as a 'public health emergency'. **http://dgit.in/TransZika**

Digit Squad

COMMUNITY CREATIONS



About the creator

Anubhav Wadhwa (aged 16) is a technology entrepreneur. He founded TechAPTO, trends on internet and Tyrelessly. He believes in contributing towards the fulfilment of sustainable development goals through corroborative participation.

About his creation

At the age of 13, Anubhav established TechAPTO and in the year 2013, the venture was selected from 600 startups and made it to the top 40 across India, which translated to top 10 in Delhi and NCR. In 2015, Anubhav founded www.tyrelessly.com from his internal accruals originating from his 3 year old venture, TechAPTO.

PIR Motion Sensor

Talk about detecting motion and here we have our ₹100 sensor that will detect motion for you. As the name suggests, PIR stands for Passive Infrared and it works by detecting differences in Infrared light emitted by objects. As soon as it notices any differences in infrared levels, it registers it as motion. It comes with three pins VCC (5 volts), GND and OUT.

The connection is again pretty simple. Connect the VCC pin to the '5 Volt' port on the Arduino and the 'GND' pin goes into the GND port. In fact, these are some conventions that you must get used to by now because you'll encounter these two pins in almost every sensor. And the other pins are generally connected to the Digital pins and in the PIR sensor, connect the 'OUT' pin to the Digital Pin no. 8 (you can choose other ports too, it's totally your choice, just make sure to make relevant changes in the code).

Open up the Arduino IDE and enter the code as given on http://pastebin.com/AE35ac9N. This code will turn ON or OFF the onboard LED light if any motion is detected. So, edit that as per your program's requirement and you'll start using the sensor.

Temperature and Humidity Sensor

Almost every variant must have at least three pins, each for 5 volts, ground and signal respectively.

They work by calculating the electrical resistance between the two electrodes that is present beneath it but you need not worry about that, rather, let's get familiar with its connections. Chances are that instead of 'VCC' or 'GND', you may notice that it has plus and minus signs marked respectively. 'SIGNAL' pin would be marked with an 'S'. This time, try to connect them with Arduino on your own (after all, you won't blow it up). For now, we'll connect the SIGNAL pin to the DIGITAL pin no. 7.

Fortunately, we've got a library function for this sensor which you can download from http://bit.ly/1PPAiZZ and extract it into the Documents → Arduino → libraries folder. Get back to Arduino IDE and get the sample code from http://pastebin.com/tRaThA9h. Hit the upload button and open up the serial monitor and you'll see the temperature and the humidity coming up.

Relay

This exactly isn't a sensor but is useful as it acts as an electric switch and you would be using it often. It generally comes in multiple channels which translate into "how many individual switches you want?" Buying a '5 Volt 4 Channel relay' would be ideal for most of you. It will have 4 pins, 1 for each switch and 2 more pins for GND and 5 volts. On the other side, the relay's switch will contain 3 ports. C stands for Common, NO stands for Normally Open and NC means Normally closed. One end of the wire will go in the 'Common' port and the other in either of the remaining two ports, NC or NO, depending on your usage.

Library file for this one would make no sense since all it needs to do is to accept either HIGH (1) or LOW (0) commands from Arduino. I've made a small program that will demonstrate the usage of relay using the temperature sensor. You can copy the code from http://pastebin.com/cW15YBU5 and as you can see, I've used the functions from Temperature sensor, thus, if the temperature is above 20 it will turn ON the appliance (if it doesn't then you'll need to put the 'second' wire into NO port).

And guess what, you just used two different sensors to build a project that is intuitive enough to take surrounding's temperature and 'react' accordingly. Likewise, there are other tons of available sensors which you can combine together and create something more awesome. Happy DIY!



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