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Gaming interrupted

See if you can relate to this story: a teenage kid comes home from school. Soon as he enters the door a nagging mom follows a trail of discarded clothes leading up to a PC. Her voice gets drowned out by the staccato notes of machine gun fire coming from a pair of tiny Creative CS46 speakers. Remember those white boxy things with a grey grille? Even those gave that kid sitting at his 486 computer some major thrills. Between shooting Nazis on an obscenely bulging 14-inch "colour" CRT and making a very pixelated Prince jump through meat cutters, the kid absentmindedly keeps up a steady drone of "Yes mom, yes mom", "I'll do it later mom."

If you haven't figured it out already, that little kid is me.

Back then gaming was what my life was centered around. Everything was a calculated step towards more gaming. Everything from school, to sleep and even... er... other bodily functions revolved around this activity. I played every game that came bundled with Digit CDs – everything from Homeworld, Battlezone, Heretic and AOE to even NFS and Twisted Metal emulated on Bleem. The very first hotmail email account I made had an AOE cheatcode as the password. This was in an era when most kids my age would have their crush's name as their password.

I was so obsessed with gaming at one point of time, I not only wanted to play games but also create them, test them, maybe even live them (it's possible, think ARGs). In the early days of dial up internet, I hunted down undergraduate courses for game design abroad and even procured an offer letter from Penn State University. Without the proper direction (and maybe even gumption) that plan quickly fizzled out. But the gaming obsession didn't die.

Around 2002 I had to take a break from gaming in order to attend to some pressing matters such as studies, building character and you know, real life. Nah, who am I kidding? It was actually a forced sabbatical because I couldn't keep up with the upgrade race. But I never lost touch with technology. Even if I couldn't afford them I always tried to keep up with the latest and greatest in the technology space – particularly hardware. In the glossy pages of Digit I saw Voodoo^2 and RIVA TNTs transition to GeForce and saw CRTs flatten to panels that eventually bulged the other way.

After joining Digit in late 2008, I found myself surrounded by all this glorious hardware, which until then, I only encountered in print. Best of all I got a chance to return to my obsession – gaming. Thankfully even Digit was stuck in a bygone era when it came to gaming. Guys here were playing Quake III of all the things! Like riding a bike, it all came back to me. Slowly the neurons re-established their connections, muscle memory awakened and soon I was not exactly kicking ass but getting reasonably good.

Cut to 2010 and I planned my triumphant return to gaming with my brand new Phenom II X2 555 BE (cores unlocked) and HD 5670 PC. But that didn't go as planned. I'm going to use a popular meme to explain why. It goes something like this:

I have a job so I'm able to buy video games.

Can't play video games because I have a job.

In my case, it was more like I have a job so I can buy hardware. (Who thought of "buying" games in this part of the world in those days anyway?). What's ironic though is in my particular job even if my work PC screen suddenly flickers on to Far Cry 4 in the middle of the day, no one bats an eyelid.

The more I look back and reminisce of the days gone by, the more I think about how people let go of their obsessions or passions along the way. Only sometimes, like with me, you end up doing a job where your passion and obsession can merge (if you can find the time that is!).

So that's been my gaming story. Do you have an interesting one too?



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"I was so obsessed with gaming at one point of time, I not only wanted to play games but also create them, test them, maybe even live them (it's possible, think ARGs)."

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In search of inspiration...



Jayesh Shinde
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"If I'm in Digit today writing about technology, it's thanks to the mark technology left on me early on in life, and that through it we can achieve the unimaginable. All this wouldn't have been possible without the doyens of the technology world."

When I was growing up, I had interests in a variety of things. Sports, music, and space exploration, in particular, were especially close to my heart. From cricket to football and tennis, listening to classical Hindi movie songs, watching early cable TV science shows on space exploration and other heavenly bodies. I was awestruck by some of the sporting greats of my generation that I followed on the tele – from Sachin Tendulkar to Michael Jordan (oh those early Monday morning NBA telecasts before running to catch the school bus), Tiger Woods to Pete Sampras, Bhaichung Bhutia to Zinedine Zidane. And I tried to emulate them on the pitch to the best of my abilities. It was the same while trying to sing like Kishore Kumar or staying awake at nights in our native village just to gaze at the stars as they floated across the sky, wondering why Neil Armstrong or NASA couldn't go beyond the moon to more unexplored worlds.

With the sobering effect of age, the eyes don't glitter as brightly as they used to, but such topics still excite me to this day. No doubt that by themselves each of these interest areas are fascinating enough to entice enamoured eyes to explore them in greater depth. But that doesn't take away the importance of having iconic figures associated with these areas who could inspire the next generation to follow in their footsteps, and perhaps even go further, achieving more than their childhood icons ever could.

As my interest in technology began and grew, guys like Bill Gates, Steve Jobs and Linus Torvalds fascinated me. Just the sheer skill of starting their own tech companies or movement to challenge the established order and successfully realise their vision through technology is immensely inspirational. When I used Microsoft Windows, played with an Apple product, or tried my hand at Linux, I was constantly reminded of these tech pioneers who left an indelible mark on the world of technology. If I'm in Digit today writing about technology, it's thanks to the mark technology left on me early on in life, and that through it we can achieve the unimaginable. All this wouldn't have been possible without the doyens of the technology world.

Today, I observe a lot of us here in India taking pride and happiness out of the achievements of guys such as Shantanu Narayen, Sundar Pichai and Satya Nadella, who are CEOs of Adobe, Google and Microsoft, respectively. I beg to differ with that popular sentiment. Let me explain.

I don't want to take anything away from the professional heights that Shantanu Narayen, Sundar Pichai and Satya Nadella have reached in their respective careers, but I still think they're working for enterprises erected by far superior individuals – something that they'd readily accept themselves. In their current capacity, they're nothing but glorified suits. And they're far away from home to have any significant impact on young, impressionable minds who are presumably looking up to them for inspiration.

The world of technology desperately needs new outliers to emerge and save the world from the increasing commoditisation of technology. More so in India now than ever before.

Don't get me wrong, I'm not saying there haven't been stalwarts from our nation that we can't look up to. The most recent one I can think of is Dr APJ Abdul Kalam and further back in time you have CV Raman, Narinder Singh Kapany, Dr Homi Bhabha and Satyendra Nath Bose. Other than these luminaries, I can't seem to recall anyone in India who can be considered an inspiration in the field of science and technology. With our fast-exploding startup scene, there's hope that we will have new inspirations to look up to. But we need those stars to emerge fast over what appears to be an increasingly darkening horizon of innovation and guide us towards the promise of a new brighter tomorrow made possible with the help of technology.



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NASA Apollo 11 Photos
NASA recently released images from their Apollo missions to the public and we have included the ones from the Apollo 11 moon landing mission. If you still think that the moon landing was a hoax, these photographs will certainly settle the debate once and for all.

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- Mozilla Firefox
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- Steam Client
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Documentary
In 2012, market researcher John Wooley was dispatched to help the big ISPs figure out how to sell their vision for a "faster," "cleaner" Internet. Six months later he produced this report – and shared it with the world through 'The Internet Must Go'.



Addicted to that rush

As a technology savvy father, my son has always had technology around him. From birth he would stare at his baby monitor, or fall asleep to the lullabies being played softly on the bluetooth speaker by his bed. As soon as he could sit up and grasp, he started playing with whatever smartphone happened to be lying nearby. Then he discovered the office iPad... I have sheepishly had to ask Jayesh for permission to keep the old iPad 3 for good, because my son is convinced it belongs to him. He's got a pretty mean right hook in store for anyone who touches it when he wants it, and failing that, he has his secret weapons – his teeth.

However, what really strikes me is his fascination for some games. There's this game called My Talking Tom, which is basically one of those typical corny virtual pet games, where you feed and bathe and put a cat to sleep as it grows older, and then you buy outfits, and poke it in the stomach or slap it and step on its tail if you're a mean kid – the type who experiments with magnifying glasses and ants...you know, the sadistic kids... they usually grow up to be dentists...

Anyway, my son doesn't care about the cat, or feeding it, or slapping it, or dressing it up, or anything at all actually. What he cares about is one of the mini games that you're expected to play to earn coins. A simple driving game, where you swipe a car left and right to avoid obstacles on the road. Lucas is addicted to that mini game, despite not even playing it. He just loves watching me play it. He knows when I'm close to breaking the old high score too, and his body tenses and he gets excitable.

I remember being as addicted to many games in a similar way. I spent days on end bettering my own personal best in the Long Jump mini games of Crashday. I did so well that I broke the supposed "world records" for those games. I had the same addiction for another game that the team here was playing, a rather simple game called ZigZag by Ketchapp. I spent countless hours improving my personal best on that too.

This got me thinking: What is it about games that makes them equally addictive to a two-year-old child and this 38-year-old baby? If I didn't have the smidgen of self-respect I'm left with, I'm sure I'd throw a fiercer tantrum than my son does when you take his iPad away. I hated putting my phone down when I felt I was close to improving my personal best scores. I'd feel incomplete if I didn't play at least for two hours a day, especially as I inched closer to the 1,000 score mark... I also realised that I wasn't even competing with others. I was competing only with myself and attempting to improve my own high score.

It's not always competitiveness that gets us addicted. Facebook is really just a cross between a college canteen conversation and voyeurism. It's like sitting around the college canteen overhearing interesting conversations, juicy gossip, while chatting with your friends about mutual interests, whilst you watch that guy/girl you secretly like out of the corner of your eye.

On the other hand, YouTube addiction is pretty much the same as a TV addiction. Doesn't matter whether you're watching female wrestling or FashionTV, or some video on YouTube of girls in bikinis or some bodybuilding competition, we know what you're really watching all that for... The same applies to watching stand-up comedy, scientific documentaries or anything under the sun...the bottom line is that you're getting your fix.

There's no point complaining about it like an old fogey either, because technology is here to stay, and if you don't keep up with the times, you're a fossil who just can't survive. Like technology, addictions are also here to stay. We've evolved into a species that expects (and usually gets) instant gratification, and that's not necessarily a bad thing. We've written about the evils of technology in the past; however, I think it's now time to embrace the changes.

Education is the first place that needs to change. Gamify it and more and more kids will be interested in learning. Let them compete with themselves, let them try and break their own high scores. The traditional multi-player world that is life will anyway keep the competitive spirit alive. That's just the start. How many more areas could benefit from just embracing addictions? Write in and share some suggestions with me.



Robert Sovereign-Smith
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"What is it about games that makes them equally addictive to a two-year-old child and this 38-year-old baby?"

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Feedback for the October 2015 issue of Digit



✉ I'm 16-year-old Class 12 student from the eastern region of India and an avid reader of Digit magazine. Two years have already passed since I first subscribed to India's best tech magazine and this is my first time writing to you. According to me, here are some suggestions that need attention:

1. Yes I know, Digit is basically a magazine covering all things tech, but I guess a lot of your readers are laymen, and not developers. So, I suggest you decrease the volume of developer and programming information (all this is not easy to understand for a normal reader) and include more information about new mobiles, launches and everything a non-developer would want.
2. The mag is a bit costly for me, so I always subscribe for the "magazine only" package, but it can only be subscribed for one year at maximum, unlike the entire package that can be subscribed for three years, so please increase the maximum number of subscription years for the magazine package to three years as well.
3. The magazine only package should be available even at stores, not only as part of a subscription.
4. I've noticed that Digit is available only in selected stores. Please expand your reach to a larger community
5. Lastly, the best suggestions I could give is that you guys should carry a cover story on the basics of mobiles, i.e. a story describing the basic specs and features of a phone and its importance. E.g. What's RAM and ROM? HDR mode and how useful is it? What's bootloader, PPI, clocking speed, the meaning of a camera's f 1.8/2.2 aperture? What's Snapdragon, Helio, Exynos, etc? It will be very useful for readers.

Now let me list some of Digit's strengths:

1. One of the best editors on board
2. Good layout of the magazine
3. Accurate and good content
4. Large fan base
5. How can I forget about the good and continuously updated website that I keep checking before I sleep every night.
6. The Special issues (specifically the December issue) are just mind-blowing. I'm always waiting for them.

If not chosen for Letter of the Month, please at least include my letter in the next issue.

– Aman Agrawal

Thanks for your valuable suggestions. Let me try and answer them one by one.

1. It's strange that you think we have a lot of developer content. If you look carefully dev content is only limited to four pages of the devworx section. Every now and then you might have one of our Digit Squad guys write about a developer centric topic (like APIs in this issue) but that's just an additional page or two. Certainly not enough to warrant a reduction.

2, 3 and 4. Let me speak to our reader services department and run the numbers. I'm sure we can come up with something. Keep an eye out for a custom offer designed specially for you here: http://digit.in/special

5. Nice idea. Although you'll be happy to know we've covered the best specs for a smartphone in Abhijit's Ultimate Smartphone of 2016 story.

– Siddharth

✉ I'm a 14-year-old fan of your magazine, and when I read the October issue and found out that Digit is hiring writers, I thought how can I miss this chance? As I pondered, I realised that nothing is left to be covered in your magazine, because it has everything we'd want in a tech magazine, but I have an idea. Every month, you should also write about "facts and history" of a specific electronic brand. I have sent it to you as a preview and the brand is Samsung Galaxy. I hope you like it. Please read it. Thank you very much!

– Harshit Singh

Good attempt Harshit. And nice idea.

– Siddharth

✉ I'm a student who aspires to become a scientist and your dmystify booklet is helping me a lot. A year ago, I saw your magazine at a railway station book stall. Attracted by the packaging, I went for it. First, I saw the "small book of big thoughts" and then the price. I purchased the magazine just because of that booklet. Upto that point, I wasn't interested in computer technology, but after that I started saving money to buy the whole package, not just dmystify. Hats off to you guys for this great magazine. Keep printing dmystify.

– Shivam Rai

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Apple Store in India
Croma has tied up with Apple to launch the first exclusive Apple store in India.
http://dgit.in/StoreApple

Cortana in your car?
Reportedly, Microsoft has been working on a technology that will let drivers interact with Cortana while driving! Read along: **http://dgit.in/Nv15ar**

LETTER OF THE MONTH

✉ I know you may not read this as quickly as I sent it to you (In fact, I'll be lucky if you open this email in 2035). I'm just writing in to give a bit of advice. It may not be worth your time to read it, but hey, I can't leave you just like that, can I. Back to reasons for my writing in. Let's zoom into some details here:

1. "It's been 5 years and nearly 5 months since you bathed thee back." I don't mean to get weird but it's true: you haven't got a fresh coat of paint since you know when. This has started to become an eyesore, so try something new. Recently, a cousin of mine, from the States, brought with him a Stuff magazine issue, and I have to say that with Digit I have the privilege of content, but my eyes are getting bored with the few specks of colour.
2. You need to make your websites look like the best (like an Indian version of The Verge). Why don't you add a special web development team just for design?

Adverts need to be toned down. No one like to see a webpage with lots of banners for unrelated products, but yours seem good enough.

Text on your website is awful, as is the theme. Just check out what TNW and The Verge are doing with their mix. And before I leave you, add some true long reads and stop being a tech-only magazine. Become the hub for Indian tech journalism and write about the latest in Indian tech (besides the phone reviews you do in abundance).

That's it boss, Minion out.

– Devdutt Shenoi



Greetings Minion,

I agree. We don't just need to bathe our back, we need a complete hose down. The redesign has been long overdue, and been a monkey on my back for quite some time. I feel really bad that it's come to a point where loyal readers like you have started noticing. I promise you'll have something fresh at the turn of the new year with your favourite magazine. As you might imagine a redesign for the sake of it doesn't make much sense. We need to have a redesign that's driven by content, by the changing paradigms in reading habits, not just superficial beautification. This takes a bit of time.

As for your suggestions for the website, I agree wholeheartedly there as well. I'll speak to Soham (online editor) and get back to you with a more detailed reply.

Do keep in touch and keep telling us what you'd like to see more of in both, print and web.

– Siddharth

Thanks for the vote of confidence Shivam.

– Siddharth

✉ Hello Chief, how are you? I, your minion, was trying to learn JavaScript with the help of the priceless guides provided by you. The video guides were all jumbled and hence, I'm stuck in my attempt to learn how to code.

I hope you can resolve the problem, Chief, in some way or the other. E.g. If you had a list and would be so kind as to send it to me for the sake of accessibility.

– Dhruv Ahuja

We apologise for all the clutter in the tutorials sourced from Khan Academy. You can find the entire list at http://dgit.in/KAJavaScript and http://dgit.in/KAHTMLJS

– Abhijit

✉ I started reading this tech magazine back in October 2014. Basically, I didn't even know that my father had started Digit instead of that boring India Today (Sorry to say, I'm a noob). My father loved tech and new gadgets (he must have possibly watched 'Inspector Gadget' back in the good old days). When the magazine arrived, it was fantastic. All those reviews and tech updates were great. But basically, I'm a gamer so what I was looking for was a gaming mag.

My story with AC is also like in the movies. I saw my first AC game, 'AC3' on my friend's laptop and was instantly blown away. At that time, I didn't have a laptop or PC on which I could play, but I still copied it from my friend through a pen drive. Then I got AC1 and sort of liked it. After that, I got a capable PC and went through 'AC3', 'AC1' and finally 'AC4'. Due to the fact that I had some problems with my voice controller, I played the whole game only with subs. However, I liked 'AC2' the best, especially 'AC Rogue' and 'Revelations'.

Now, I'm running out of words to say, but could you please do a full round-up of 'AC' or 'Call of Duty' after all these years (AC will be blowing its eight candle this year). And one more thing - Do you like these YouTubers: AngryJoe, BlackPanthaa or HikePlays? If yes, could you possibly cover either them or other YouTube game commentators?

Swapan Singhal

It's nice to come across an AC fan. Assassin's Creed through the years sounds like an interesting story. We have covered YouTube commentators and Twitch streamers in Skoar earlier, another round-up can certainly be considered.

Abhijit

✉ I'm 17 years old and a big fan of your magazine and of Microsoft. You provide me with the monthly dose of latest tech. I'll be glad if you could dedicate your upcoming issue to Microsoft. Here are some things that I'd love to see:

Microsoft's NYC

Universal App tool for Visual Studio (It received an update recently)

C# tutorial

Windows 10 development for absolute beginners (from channel9,by Bob Tabor)

This is my first letter to you. I hope you'll try your best not to disappoint me.

– Ankur Nigam

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http://dgit.in/Nv15au

We've already given out Visual Studio 2015 Community Edition in our September issue which includes the Universal App Tool. Video tutorials for C# and Visual Studio Express 2015 for Desktop have been included in our DVD this month. An entire issue dedicated to Microsoft? Bit too much don't you think?

– Siddharth

✉ I received the magazine on 28 September, which is way too early for students like me busy with their exams. It's a nightmare to read it since then I can't focus on my examinations! But still, I read the whole magazine in five days.

The column by Jayesh "The True Spirit of Competition" was very well written. It was simply awesome. The Dgt section was quite cool as it talks about everything. Guys, I feel that phone comparisons across all segments are just increasing in the magazine. Please try to minimise this, as the same space can be utilised for much more new technology news.

"Cybersquatting Reloaded" was very informative and very useful to me. As usual, the Sci-Tech section was my favorite, as it provides huge chunks of knowledge. Now, coming to the cover story of this month's magazine. It was quite cleverly ideated and written. However, do you really believe that bots can outperform humans? Digit Diary was, as usual, funny. I wish Siddhant, the ANT best of luck as he's going to the UK for further education. Can you tell me which university he's going to and in which field?

The dmystify on Mathematics was very informative. Also previous month's dmystify was very well written and useful to me, since I'm a spaceaholic and really wanted to read something on Dark Energy and Dark Matter.

Please change the DVD's layout as it has become boring (for September's issue, because I haven't yet seen the October issue's).

This is all for now. I have a single query. I had Windows 8.1 Pro and upgraded to Windows 10 Pro. The problem is that my graphics driver crashes time and again whenever I try to play games like 'FIFA 14' and 'Grid 2', which were working perfectly when I had Windows 8.1 Pro. Also, when I played 'Mortal Kombat X' it suffered with a video TDR failure and at one time, VLC also stopped due to graphics crashes.

I've updated all my PC's drivers and installed all updates.

Computer specs:

- Intel core i7-4770k
- Intel HD Graphics-4600
- MSI z-87Mpower-SP motherboard
- 12 gigs of RAM

Please find a solution to this for me. Thanks in advance.

Also, I'm 17 and really want to join Digit. What should I do, guys?

Keep up the great work you do!

– Utkarsh Sharma

Thanks for your words of encouragement. As for the cover story, yes we do believe great strides in Robotics and AI would happen in the near future. Siddhant is doing some course on cloud infrastructure, I believe. I'll be sure to ask him specifics if he pops over some time.

Did you update drivers manually? Windows 10 generally manages its own driver installs. Many have reported problems while manually installing drivers. Use the Windows driver and update hiding tool: http://dgit.in/Nv15bl if you want to manage driver installs yourself. Otherwise, Windows will just reinstall over your driver install and that might cause issues.

It also might have nothing to do with Windows 10, but with overheating. Use something like GPU-Z (http://dgit.in/Nv15bm) to stress your system while monitoring temperature to narrow down possible causes.

– Siddharth

✉ I'm one of Digit's biggest fans. I've been reading the magazine since the past two years and it has taught me so many things which I didn't know about, so thank you for that. I'm an Engineering student and would recommend that every engineering student read Digit. In my opinion, there's nothing that Digit has to change, but I have some requests:

1. Please publish a FastTrack on search engine optimisation and, if possible, its tutorials as I want to work on the web.
2. Please give a brief description of the new tools you give in the DVD.

Now some things I like in the magazine:

1. The main magazine is the best magazine on technology I've ever read.
2. SKOAR! is one of the best gaming magazines.
3. Fast Track is icing on the cake.
4. The new book, dmystify is increasing my knowledge graph about several things.
5. The DVD is the most exciting part of the magazine.

Finally, thank you to the entire team for making Digit what it is today.

-Abdul Quadir Dewaswala

That's a nice suggestion for FastTrack Abdul, but I didn't get the bit about description of the tools. Do you want this on the packaging? Because we have descriptions given in the DVD interface already.

-Siddharth

✉ I've been struggling to get my first smartphone within a reasonable price range and facility. I searched a lot, browsed a lot and visited many stores, but couldn't succeed in shortlisting a phone from the ocean of marketing paradise. Then I chanced upon Digit and invested valuable time reading it. "The Budget War" in the October issue eased my venture.

You mentioned about synthetic benchmark tests of all those smartphones and knew that scores aren't perfect. I had nothing in hand, but relied upon your scores on fundamental test and synthetic test on battery, aspects of build, durability, design and devices.

I stumbled upon your best value money proposition and outright best performance, and finally purchased my dream smartphone online.

I'm now extremely happy to have my own Smarty. Thanks Digit for making the decision easier for me.

– Debu Joardar

We've always been staunch proponents of objective testing. Thanks for the vote of confidence.

– Robert

डिजिट
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THIS MONTH: Bentley Bentayga, Icon A5, Lazareth Wazuma V12, SeaXplorer, Beolab 90, Vertu New Signature Touch and more...

TEMPTATION

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

THIS MONTH: Narcos, The Martian, Sense 8, The Seven Deadly Sins, Show Me a Hero, Wicket City, The Catch, Trolling and more...



Chromecast

Google upgraded their streaming device Chromecast with notable features. The earlier design made it hard to use the neighbouring USB ports with the Chromecast connected since it took up a lot of the space around the port. This has been rectified with a bendable cable for the HDMI port. The new device has increased the number of antennas to three from one with a new antenna structure. Google also announced the Chromecast Audio dongle which enables wireless audio streaming to any speaker.

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Surface Pro 4

Apple approves of it, so should you

Everyone was marvelling at the iPad Pro and recently with the launch of Surface Pro 4, Microsoft managed to steal Apple's thunder. Announced with much fanfare, the Surface Pro 4 indeed is an impressive tablet. It takes the iPad Pro head on, with a 12-inch display capable of providing a battery life of nine hours. It is thinner, lighter and faster than the previous Surface Pro 3, and now it has a fingerprint sensor as well. Microsoft has continued the design from the previous generation, but this time the touch keyboard has been redesigned. Along with the Surface Pro 4, Microsoft also announced the Surface Pro docking station that's also compatible with the Surface Pro 3. It houses four USB 3.0 ports, two DisplayPort outputs capable of streaming 4K content, and an Ethernet port. The Surface Pro 4 comes in several variants so that you aren't restricted to just one basic configuration.



SPECIFICATIONS

Screen: 12.3-inch (2736x1824 pixels) | **Processor:** 6th Generation Intel Core m3, i5 or i7 | **Memory:** 4GB, 8GB or 16GB | **Storage:** 128GB, 256GB, 512GB or 1TB | **Ports:** USB 3.0, microSD card reader, mini DisplayPort, headset jack.

Bose SoundTouch 10



Bose has shrunk it's SoundTouch Wi-Fi speakers with the SoundTouch 10. It still plays songs throughout your house with the help of the app from several streaming services.

Marshall Stockwell



The Marshall Stockwell is a portable Bluetooth speaker specially built for the road. It's touted as the loudest speaker in its range that's good for 25 hours of playback.

Pioneer XDP-100R



As brands foray into new areas, Pioneer too has entered the media player space. The XDP-100R is Pioneer's first hi-fi player sporting a 4.7-inch screen with a discrete DAC/AMP circuit, while also offering 10 hours of playback.

Lumen Flashlight



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Surface Book

With everyone and their uncle making Windows 10 powered laptops, Microsoft must have felt left out enough to dive straight into the segment. The Surface Book is Microsoft's take on how a Windows laptop should be built, much like how Nexus serves as the flag bearer for Android devices. The unique design of the laptop allows it to double up as a digital clipboard. It comes with the Surface Pen – a stylus that and can be detached from the keyboard. The discrete GPU is housed inside the keyboard, which can be detached from the screen to transform it into a regular tablet. Microsoft wants users to adopt the Surface Pro 4 and ditch their laptops, which is a terrible advice for a company that has just released a new laptop. The Surface Book is available in many variants where the most high-end configuration will make you shell out around $3,199.

SPECIFICATIONS

Screen: 13.4-inch (3000x2000 pixels) | **Processor:** 6th Generation Intel Core i5 or i7 | **Memory:** 8GB or 16GB | **Storage:** 128GB, 256GB, 512GB or 1TB | **Graphics:** NVIDIA GeForce 1GB GDDR5 | **Ports:** two USB 3.0, SD card reader, mini DisplayPort, headset jack.

Nexus 6P

The new line of Nexus smartphones were received well with the audience considering the satisfying specs on these devices. The Nexus 6P is the big screen Nexus phablet built by Huawei where the P apparently stands for Premium. The 6P has a metal body and is quite slim with a slight bulge on the top section housing the camera. We can certainly say that the device looks premium. The back panel houses the fingerprint sensor right above the Nexus logo and comes with a USB Type-C port. The camera on the 6P is advertised to be brilliant and is touted to be really good snapping photos even in low-light conditions. The Nexus 6P will cost you Rs. 42,999 for the 64GB version and Rs. 39,999 for the 32GB version in India.

SPECIFICATIONS

Screen: 5.7-inch (1440x2560 pixel) | **OS:** Android Marshmallow 6.0 | **Processor:** Qualcomm Snapdragon 810 Octa-core | **RAM:** 3GB | **Internal Storage:** 32GB, 64GB or 128GB | **Camera:** 12.3MP front and 8MP front | **Battery:** 3,450mAh





Masimo iSpO2

Did you always have a penchant of becoming a doctor and spent most of your childhood with a stethoscope plugged to your ears? Well, there's another toy to cater to your fantasy of acting doctor. The Masimo iSpO2 pulse oximeter lets you monitor the blood saturation level (SpO2), pulse rate, and perfusion fate. It's fairly a simple device where you insert your finger and plug in the other end to your phone. The device is compatible with Android and iOS devices, available with a micro-USB pin for Android devices, and a lightning connector as well as the older 30-pin connector for iOS devices. We tried out the device for a short period of time and tracked our pulse rate before and after a workout. The data is displayed through its own Android and iOS apps. This device definitely seems to be quite useful for real doctors but you could give it a spin while playing doctor-doctor.

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Pixel C

There are simply too many tablets out there, with the most popular ones having been released within a very short window. The Pixel C from Google, a tablet reminiscent of the Chromebook line of devices, joins this crowded space of flagship tablets. The Pixel C runs on Android and is powered by an NVIDIA Tegra X1 processor. This device also has a detachable keyboard, which is a feature that every tablet manufacturer seems to be incorporating in their tablet. The Pixel C also sports a USB Type-C port, which is another standard in making if you consider upcoming devices. The 32GB variant will be sold for $499, whereas the 64GB one will go for $599. The detachable Bluetooth keyboard will be available for $149.

SPECIFICATIONS

Screen: 10.2-inches (2560x1800 pixels) | **OS:** Android Marshmallow 6.0 | **Processor:** NVIDIA Tegra X1 (Maxwell GPU) | **RAM:** 3GB LPDDR3 | **Internal storage:** 32GB or 64GB

Sony RX1R II

Sony has been coming up with really good compact cameras incorporating impressive specs. The company had announced the RX100 IV which was undeniably a beast of a compact camera capable of capturing 4K and slow-motion videos. We already know your thirst for stronger specs in every product and perhaps even Sony does too, and has therefore pushed the RX1R II into the market. The new untamed beast is a full-frame camera in the pocket-sized form factor packing a huge 42.4-megapixel Exmor R CMOS sensor. It has an OLED screen at the rear which pops open in the same way as seen on the other RX camera series. You won't get 4K video recording and you'll have to do with 1080p in 24, 30 and 60 fps. The RX1R II, however, will hurt your wallet at $3,300.

SPECIFICATIONS

Sensor type: 35mm full-frame, Exmor R CMOS sensor | **Number of pixels:** 42.4 MP | **Lens type:** ZEISS Sonnar T* | **F-number:** F2 | **Screen Size:** 2.95-inch | **Video:** Up to 1080p (24, 30, 60 fps) | **Maximum ISO:** 102,400





TP-Link PB50 Power Bank

High capacity power banks are rarely lightweight and slim because battery technology hasn't advanced to that level. But that didn't stop TP-Link from trying to put together a fancy and sleek looking power bank in the form of the PB50. It's got a bevy of protective circuits that ensure you don't overheat, short-circuit, over-charge and over-discharge the power bank. Moreover, it can charge iOS as well as Android devices without having to get special chargers for each device, which is now a staple on many premium power banks. And to top it all, the PB50 houses LG batteries that have a nano-ceramic coating. Take my money already!

SPECIFICATIONS

Capacity: 10,000mAh | **Input:** 5V/2A | **Output:** 5V/1A, 5V/2A | **Battery level indicator:** 4 LEDs | **Compatibility:** iPhone, iPad, most Android devices | **Size:** 139.7 x 78.9 x 19.3 mm | **Weight:** 281.3g | **Battery Type:** Lithium Polymer

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Light L16

If you have been hoping for the time when you are able to snap DSLR-level photographs in a more compact form factor device, that time has finally arrived. A company called Light has come up with an insane looking camera loaded up with 16 different sensors to capture photos.

These are multiple 8MP sensors in varying focal lengths between 35mm and 150mm. There are three 35mm, five 70mm and six 150mm modules in the camera. The L16 captures the photos with these sensors, combining them to a huge 52-megapixel image. Due to the multiple sensor setup, you will be able to adjust the focus on your images or the depth of field after clicking images. Whether the camera will be able to capture DLSR level photos is open to conjecture, but it most likely will outperform the current breed of smartphone cameras and probably compact point-and-shoot ones.

The L16 has a 5-inch touchscreen at the back, powered by a Snapdragon processor running on a customised version of Android. It can also shoot HD and 4K videos and store them in its 128GB internal storage. The company hasn't released the specifications yet, but it plans to release anytime between Q2 and Q3 2016. Just don't expect this camera to be budget-friendly since it will burn a $1,699-sized hole in your wallet.





Nexus 5X

The Nexus 5 was clearly a success, and probably the most popular Nexus device ever made. Google has now passed the torch to the Nexus 5X, a device built by LG which continues its affordable tag for Nexus smartphones, in spite of being a flagship device. The 5X carries forward the same minimal design of its previous version with a screen size of 5.2-inches. This time around, it carries a USB 2.0 Type-C port. It also houses two speakers on the front but they aren't exactly stereo since the top one is used for calls while the bottom one is used for the rest. The 5X also has the fingerprint sensor on the back like the 6P, the only difference being that the back panel has a matte plastic finish. It does cost a tad bit more than the previous version, with the 16GB variant priced at Rs. 31,900, whereas the 32GB variant costing Rs. 35,900 in India.

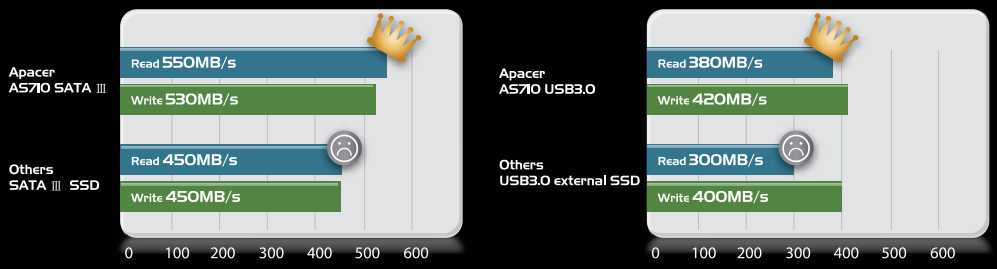
SPECIFICATIONS

Screen: 5.2-inch (1080x1920 pixel) | **OS:** Android Marshmallow 6.0 | **Processor:** Qualcomm Snapdragon 808 Hexa-core | **RAM:** 2GB | **Internal Storage:** 16GB, 32GB | **Camera:** 12.3MP front and 5MP front | **Battery:** 2,700mAh



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TAKE MY MONEY!

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



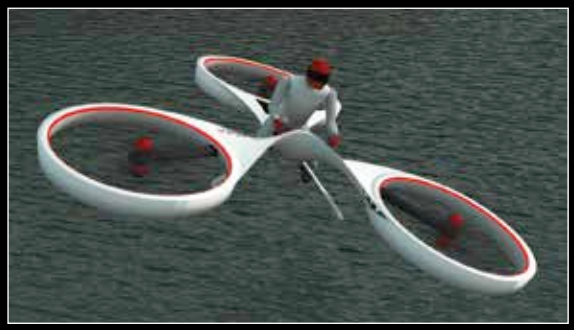
RoboHon

What do you want your phone to do today? Got confused? Meet RoboHon. This robot smartphone may be cute, but it's also chock full of features. It houses a projector and features articulated arms and legs and speaks as well. It can walk, sit down, get back up, dance and raise its arms when it's got something to tell you. It can be a speaking alarm clock, memo taker and text message reader – basically, Siri without all the inherent creepiness (sorry Apple). WiFi and LTE radios ensure that this robot still functions like a phone. A tiny two-inch 320 x 240 screen on its back,which is an odd place to put the screen. It also features built-in cameras for facial recognition, with the voice recognition feature integrated to complete the experience.



Planet Case 1

Travelling somewhere? Then let's sort out your luggage. Clothes? Check; power banks? Check; Bluetooth speakers? Check; biometric luggage lock? Check; ten-year replacement warranty? Check; global tracker? Check; weighing scale? Check. Got confused? These aren't random gadgets you're shoving into any damn luggage. Planet Traveller's new Planet Case 1 is meant for a new generation of travellers. The suitcase has a smartphone app control, smart watch interface, biometric fingerprint lock, worldwide GPS tracking, digital scale integrated in the wheels, Bluetooth speaker and microphone, anti-theft proximity security, triple USB 12 Amp charging ports, personal concierge and 10 Year Warranty with 24 hour repair worldwide. The Planet Case 1 is available for ordering the Planet Traveller website at $399.



Flike

Travelling by cars is so yesterday. Now it's time to fly. Behold the Flike, the all-electric personal flight device. It's is a flying tricycle that's also capable of hovering like a helicopter. It is a coaxial, Y6-layout tricopter. That's fancy talk for an aircraft that generates lift using six rotors, grouped in counter-rotating pairs along three axes. The pilot sits in the middle with each set of rotors surrounding him. The tricopter can be controlled by varying the speeds of each of the six rotors. Flike's site promises that it is just as easy as learning to ride a bike. Although most bikes come with training wheels and also don't move in three dimensions. The future of the Jetsons is closer than you think. Flike is proof that flying automobiles don't just exist in sci-fi.

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DESIRE

MOBILE WATCH

This month we feature a smartphone with liquid cooling, a super cheap phone with fingerprint scanner and a brand new concept of modular smartphone.

Fairphone 2

When phone giants have been crafting phones out of a single piece of metal and getting rid of joints and user-replaceable batteries, The Fairphone 2 is a modular phone that has been designed in a way that makes it simpler for users to repair or just tinker around with. There are no screws, no exposed wires, no glue – just pop the old or malfunctioning part out and clip a new one in! And this goes for the display as well. All the parts, which includes the screen, microphone, speaker, camera, CPU, and main circuit board, are directly replaceable by the user and can be purchased from the Fairphone website itself. To increase the life of the phone to five years, Fairphone not only provides replaceable parts but upgrades as well. On the hardware front, this phone comes with a Snapdragon 801 SoC, a Quad-core CPU running at 2.26 GHz. It comes with 2GB RAM and a Storage of 32GB eMMC, a microSD card slot, 8MP rear camera and a 2MP shooter on the front. Both of them are CMOS sensors and come with f/2.2 aperture. You get a 446 ppi Full HD 5-inch screen on top of all of this and the phone runs on Android Lollipop 5.1. Along with Wi-Fi, Bluetooth and Dual sim support, this phone is powered by a 2420 mAh battery. The Fairphone 2 also offers you an additional expansion port on the rear to add on sensors or components that may come in the future.



Lumia 950 and 950 XL



The Lumia 950 XL is a beast of a phone which comes with a powerful Snapdragon 810 Quad Core processor running at 2GHz. It sports 3GB RAM and 32GB Built-in storage, with MicroSD card. Lumia's are known for powerful cameras and this one houses a 20MP rear and 5MP front camera. On top of all this you get a 5.7-inch 2K display with 515 ppi. The 950XL comes with a 3,340mAh battery for longer backup. On the other hand, the Lumia 950 shares specifications similar to its big brother. It has a 5.2-inch display with 2K resolution at 565 ppi. The gorgeous phone houses a 1.8GHz Snapdragon 808 SoC and comes with a 3,000mAh battery. Both devices have the newest USB Type C connector and run Windows 10. With specs like these, we can't wait to review both of these in our labs to see if they live up to the expectations!



Umi Fair

The Umi Fair comes loaded with a great set of features at low cost. It features 5-inch HD 720p IPS display, with a fingerprint scanner at the rear. It features a beefy 64-bit MediaTek MT6735 quad-core processor running at 1GHz, with 1GB RAM, 8GB internal storage and MicroSD slot. The rear camera is a 8MP whereas the front one is 2MP. Umi Fair comes with a 2000mAh battery and is priced at $99 (Rs. 6,500 approx.) The company has released a bill of materials which states an estimated part-by-part cost of the phone which comes up to $96.9. Despite being priced low, the phone doesn't feel cheap at all thanks to a robust and premium aluminium chassis.

GREED

EXAMINED

Here we look at what's hot in the world. From cars to bikes and everything in between, the stuff on the pages that follow will definitely make you salivate.



Bentley Bentayga

Bentley has held a strong position of packing luxury in its sedans and now it's extending the courtesy to an SUV. You heard that right, Bentley is entering into the SUV segment. Not content with launching just another SUV with the Bentley logo, the company has created the fastest SUV on the planet. The Bentley Bentayga can achieve a maximum speed of 301 kph, shattering the top speeds set by vehicles from established companies in the segment. This elegant 600-horsepower SUV is powered by Bentley's 12-cylinder W12 petrol engine, delivering a maximum torque of 900Nm. The Bentayga can go from 0-100 kmph in just over four seconds and further accelerating will get you to the 301 kmph mark. The SUV doesn't fall short on luxury either. The interiors are posh and every component is made of wood and solid metal, transforming the interiors into a work of art. You'll have the freedom to pick leather, paint and veneer of your choice, spread across a wide range of colours. Two 10.2-inch detachable tablets are also provided on the rear headrests thereby doubling up as the in-car entertainment system. The Bentayga will be available in the four or five seater configuration, while a seven seater is on its way. We can only dream of buying this SUV since the price stands at a staggering £200,000.

Icon A5

It's already 2015 and we don't have a flying DeLorean yet. What we do have are flying boats or rather seaplanes that can land and take off from any water body. These seaplanes don't have the best looks considering the high prevalent standards of design and aesthetics. A private aviation company, Icon Aircraft, wants to change the status quo in this category of planes with the Icon A5. Replete with the design flair of a supercar, this aircraft is a small and lightweight enough to be stored in your garage. The Icon A5 is advertised as a recreational vehicle that is meant to be taken out on a weekend around the countryside. Of course, you will still need a pilot license to fly it on your own but one look at the plane and you would realise it's worth the hassle. The aircraft has two seats, can fly at a top speed of 176 kmph and requires not more than 850 feet to land and take off. Regarding safety measures, the Icon A5 comes with a spin-resistant AirFrame so if you accidentally stall the aircraft, you won't be tumbling down and spinning out of control. The good looks and features come at a price of $189,000.



Lazareth Wazuma V12

Quad bikes tend to incite a childlike interest in us, and one can never be too old to ride them. The problem here is that you'll have to be quite rich to own this one. The Wazuma V12 is no ordinary quad bike for bashing in the park, costing a whopping 200,000 euros. In case you're concerned about the V12 in its name, wondering who would be crazy enough to install that monster of an engine on a quad bike. You're in for a surprise because a French company named Lazareth is crazy enough to power a quad bike with a V12 BMW engine. The autotive equivalent of a maniac in a straitjacket delivers an output of 500 brake horsepower while running on regular petrol as well as cheaper bio-ethanol fuel. The Wazuma V12 is easily one of the fastest and most expensive quad bikes ever made. For someone mad enough to strap himself to a V12 quad bike, the Wazuma itself looks the part with wide-spaced 18-inch front wheels and narrower rear wheels. Lazareth had already installed a V8 Ferrari engine in its previous Wazuma. The latest one really ups the game by bolting on an engine that's usually reserved for supercars. If you have little regard for money and self preservation, the Wazuma V12 is right up your alley.



SeaXplorer

Superyacht for an arctic expedition

If you're a billionaire and fed up with claims about Santa being a fantasy, luxury ship builder Damen has created a superyacht to aid your quest to find Santa. Why Santa you ask? Well, the SeaXplorer by Damen is strong enough to break through polar ice, as a vessel to probe the obscure corners of the poles in your quest to find Santa. The superyacht has a strong and unique hull design making the journey through sheets of ice possible. Apart from locations with extreme cold climate, the SeaXplorer can also take you to tropical regions to soak up the sun as well. The ship comes in three sizes – 65m, 90m and 100m. The biggest of the lot can accommodate up to 30 guests and 50 crew members, and the yachts come with additional equipment including space for a pair of helicopters, two submarines, dive support boats and regular expedition boats. You wouldn't need to worry about resupplying since you can lead up to 40 days in absolute luxury. Talking about the luxurious interiors, you get to customise and pick everything inside the ship and marvel at the fit, finish and craftsmanship of it all. The observation and sky deck lounges literally ooze luxury.



The company hasn't revealed the price, but we are certain that we'll be spotting the SeaXplorer with a Russian oligarch or an Arab prince, or perhaps even both.

GREED

DROOL MAAL

An insane speaker, an elegant looking coffee machine, a flagship luxury phone and an amp that gives you a huge amount of hipster cred. Drooling already?



Beolab 90

Bang and Olufsen's craziest ever

When it comes to buying speakers for home entertainment purposes, you will spend a good amount of time researching the best ones which can be accommodated in your budget. That's not the case if you're filthy rich. One look at the Beolab 90 is enough to write a cheque for this insane looking speaker. As a celebration to its 90th anniversary, Bang and Olufsen has released the Beolab 90 at an astonishing price of $40,000. Built with only an intention of making your guests drool over the speaker, it has 18 drivers and an equal number of amplifiers coupled to them. The placement of these drivers on the speaker ensures 360-degree delivery of sound throughout the room regardless of the furniture. Weighing in at 137kg, the amplifiers on the Beolab 90 are capable of producing 8,200 watts individually. A dedicated app is also available that allows you to remotely control and optimise the output of your speaker system. 'Beam Width Control' will let you ensure that the sound reflections don't affect the listening experience, while 'Beam Direction Control' lets you direct the sound to a desired location in the room. Although, these features sound amazing on paper, there's no way to tell how it pans out in real life. Regardless of whether these features deliver, we have already reserved a spot for them in our make-believe mansions.

JURA J95

Coffee machine for your penthouse

We have already have sent a coffee machine to space, so it's high time that you got yourself a coffee machine that works on Earth. If you care about design in your coffee brewer, the Jura J95 is just the home appliance for you. The coffee machine oozes style quotient with the hand-finished carbon fascia and chrome highlights. You won't have to scratch your head while preparing some nice hot coffee thanks to an in-built TFT display that lets you control all operations. You can brew a cappuccino, latte macchiato, espresso and ristretto at the touch of a button. Apparently, Jura has perfected the cutting angle of its grinders in order to serve the finest coffee by preserving the aroma. The appliance lets you control the coffee strength, temperature of water and the overall brewing temperature, so that you can make coffee according to your preferences. The adjustable spout produces the perfect milk foam across any mug size. The coffee machine can be cleaned out with just a single button. Preparing yourself some coffee with such elegance can feel quite rewarding, but it sure comes at a price. The Jura J95 is priced at around $3,399. That's a lot for a cuppa!





Luxman MQ-300

An ode to the good times

People who fashion a craving for all things old school, popularly known as hipsters, have a new device that will catch their fancy. This time around, we have the perfect device for audiophile hipsters who are out there debating between the sound quality of vinyl and audio tape. Luxman has released the MQ-300 stereo power amplifier which echoes the design of vacuum tube amplifiers from the good old days. This amp has a steel chassis packed within a wooden frame. Of course, they aren't actually using the vacuum tubes to make your music sound sweeter. They are just for show. However, the amp is still touted to deliver natural sounding audio. As always, hipster-approved equipment don't come cheap. The MQ-300 sells for a cool $13,000.

Vertu New Signature Touch

A true flagship and luxury smartphone

We have had the privilege of testing and using the Lamborghini Tauri 88, and all our preconceived notions regarding luxurious phones demanding exorbitant prices were shattered. Vertu also makes such custom phones. Its recent offering is as lavish as they get. The New Signature Touch continues the company's legacy of building highly-detailed and beautiful devices that cost an arm and a leg. This phone has impressive specs such as a 5.2-inch 1080p display running on Android Lollipop v5.1, powered by a Snapdragon 810 processor with 64GB of internal storage and 4GB RAM. It has a 21MP rear camera and supports quick charging and wireless charging as well. It goes without saying that the phone will be expensive. However, the hardware seems just perfect for a flagship device.



APP WATCH

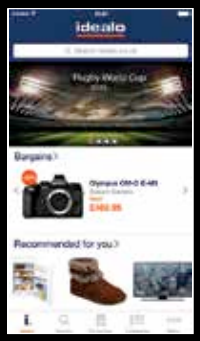
Teamchat



We hardly cover enterprise mobile apps but few manage to find a use case in the consumer segment. Instant messaging applications present several features but sometimes you wish you could do more to make conversations more productive other than simply sending good morning texts. Teamchat is one such mobile application that incorporates a feature called chatlets. They act as interactive snippets of an action like a poll or a survey and members can take part in them, starting off another thread. The possibilities are endless here and this can certainly be used to plan out the next road trip with your friends.

App Store: http://dgit.in/TeamchatiOS
Play Store: http://dgit.in/TeamchatAnd

idealo



As mentioned earlier, several apps are entering into the deal discovery space so that it's easier to get the best deals on e-commerce websites. idealo not only presents the prices available across different portals but also displays the price history of the product. The app will certainly prove helpful when all the products from every portal are listed. The in-built barcode reader apparently doesn't show up results for most of the products. Perhaps that because they aren't listed in the app yet. The app also lets you set price drop alerts; another useful feature if you have your eyes set on a product.

App Store: http://dgit.in/idealoiOS
Play Store: http://dgit.in/idealoAnd

Saregama Classical



If you're an Indian classical music lover, Saregama India has released a music app dedicated to you. The Saregama Classical app is a treasure trove of Hindustani, Carnatic and Fusion music. You can search across artists, instruments and Raagas with the app. It's certainly a treat to discover artists long forgotten by time and lost amongst the contemporary noises. The app has a subscription model like any other music streaming service with a trial period in the beginning. The Raaga library is comprehensive and you will come across almost all of them. The design and layout are also refreshing, which makes it is easier to navigate the app.

App Store: http://dgit.in/SaregamaiOS
Play Store: http://dgit.in/SaregamaAnd

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

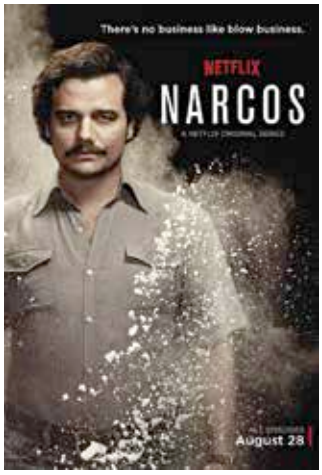
TV

Narcos

"Plata... o plomo?" - El Patrón

As a civil servant in Colombia during the reign of Pablo Escobar, the quote above could very well have been the last words you'd hear. His offer was all but an illusion of choice. You could either accept his bribe or be riddled with bullets.

Narcos is yet another feather in Netflix's cap which portrays the story of Pablo Escobar and his run-ins with the DEA. Pablo, who was known by a lot of monikers – one of which was The Tsar of Cocaine – was one of the most feared drug lords to have originated from Latin America and the seventh richest man in the world at his peak. Wagner



Moura's portrayal of Pablo Escobar truly does justice to the drug kingpin's persona – the way he dealt with family, friends, "associates" and enemies.

This isn't the first time Escobar's story hit the silver screen but it sure feels like one of, if not the best, retelling. We're hooked!

Rating: ★★★★½

- Mithun Mohandas

MOVIE REVIEW

The Martian

To the promised land... and back!

It's great to see so many movies around the science of space exploration in recent times. And The Martian is a great addition to that list. It captures humanity's innate fascination with our second closest celestial neighbour.

Matt Damon is at his charismatic best in this movie, far from his villainous tendencies which he so genuinely portrayed in Interstellar, another recent flick where he was left stranded on an alien planet. Jeez, get it together Matthew! Jessica Chastain is the commander of the mission that successfully lands on Mars. Its crew hastily retreats following what's best described as unscientific circumstances.

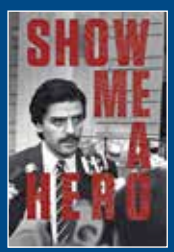
With my limited scientific knowledge, I just couldn't wrap my head around the kind of storm that Matt Damon and his crew experience within the first ten minutes of the movie. It just seems physically impossible. Then, at one point, Damon's character tries to seal his temporary Martian base with duct tape and plastic tarp. I mean, come on! The less said about the rescue mission the better, which was just too Evel Knievel to be honest. You expect audiences to believe that? Seriously?!



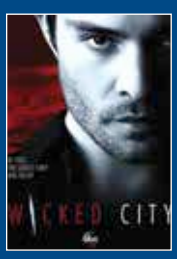
But that's about the only gripe I have with the movie, but that's okay as long as you don't go all Neil Degrasse Tyson on it. Because ultimately, the movie is daring and funny, but still cautious and optimistic at the same time. It simultaneously exposes some of the dangers of space travel and the potential of human ingenuity. For all of us who love Mars, adore Matt Damon, and even those interested about the human space program should indeed watch this movie. You'll have a lot of fun. Another reason to watch would be a certain actor who breaks the prolonged stereotype and doesn't die in the movie.

Rating: ★★★☆☆

- Jayesh Shinde



Show me a hero
Get a perspective of the dirty politics that go down within the power corridors of the US Senate as the mayor of Yonkers, New York fights for the desegregation of public housing.



Wicked City
Murder and romance go hand in hand for Kent Grainger and Betty Beaumontaine, but the LAPD is closing in fast on the couple. Would the LAPD catch them first or will the murderinig spree continue unabated?



The Catch
After getting embezzled out of everything she owns, Detective Alice Vaughan is out to get even with her fiancé, who took everything away from her. Is she the hunter or the hunted? Catch the series to find out.

TV

Sense 8

One with a sense of 8?



Sensates are emotionally and mentally connected humans who can access each other's language, knowledge and skills. But they soon realise that they are not the only sensates around. Sense 8 moves beyond the barriers of a typical TV series, as all the sensates are from different locations and of varying ethnicities, genders and nationalities. The series was refreshing thanks to its rather ingenious take on the future. The sense of 8, or the collective intelligence and knowledge that the sensates share in this series is a glimpse into our own potential to grow as connected beings, with unlimited knowledge and skills that can be downloaded from a host as seen in the brain-gate implants implemented by scientists in the real world. While the modern sci-fi deals mostly with aliens and superhumans, Sense 8 depicts a future that's so tantalisingly close.

Rating: ★★★½☆

- Ashish Panigrahi

ANIME

The Seven Deadly Sins

Brilliant manga adaptation!



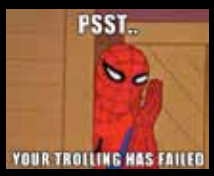
The Seven Deadly Sins is about, well, the anthropomorphised versions of the Biblical seven deadly sins, who were once an active group of knights in the region of Britannia and later condemned as renegades. It's a three-way holy war between the Holy Knights, The Seven Deadly Sins and unknown entities of other worlds. This anime is a wonderful journey of the seven deadly sins to the royal court, in order to free the king from the treacherous Holy Knights. The depiction of the European Middle Ages, character animation and interaction is significantly better than most other medieval themed anime. It has a good blend of romance, risqué humour and overpowered characters. This is at least a one time watch.

Rating: ★★★★☆

- Ashish Panigrahi

Things to do

Memes and GIFs



You've created a glorious troll account but simply throwing words at naive interweb users doesn't seem to be enough. So, you resort to spamming your unworthy opponents with GIFs and memes to have the last laugh. The Internet is an endless chasm for GIFs and you can possibly come across memes that dangerously mirror all your emotions. Our intention here is to improve your Internet "communication skills" so that you're proficient in expressing your true misanthropic feelings also known as trolling. Here are the tools that every Social (in)Justice Warrior needs in his arsenal for not only searching, but also creating image macros for your comebacks during productive discussions on the Internet.

Giphy

GIPHY

If you ever longed for a website that serves as solution for searching reaction GIFs, fret not, Giphy is exactly what you need. It is neatly organised into several categories of GIFs, and you can search for them across TV shows, movies and anime using tags. You can browse through the curated sections on the website and when you stumble upon the best reaction GIF, you can download and share it on the flame war of your liking.
http://giphy.com/

Imgur

imgur

You probably expected Imgur to be on this list and we're definitely proud of your preferences. Imgur can be plugged as a funny image search engine and it doesn't end there. With it's own MemeGen app (web app also), you can select memes from their vast library and even create your own right from your mobile device. You can create GIFs from videos across YouTube and Vimeo up to fifteen seconds.
http://imgur.com/
Video to GIF: **http://imgur.com/vidgif**

GIMP/Photoshop



When one incorporates the use of software such as GIMP or Photoshop in their trolling endeavours, it's clear that poop just got real. Photoshop might sound overkill but it does act as a great tool for editing GIFs and memes. Otherwise, you can opt for the free and open-source alternative, GIMP.
http://www.gimp.org/

worldview

OUR PICK OF THE BEST TECH ARTICLES FROM AROUND THE GLOBE

(MUST READS)



JACK'S JOURNEY

Almost ten years ago, Jack Dorsey helped to create Twitter and has come a long way since then. He was brought back as the company's CEO recently, willing and able to continue its legacy.
http://dgit.in/DorseyTw

ANDROID PHREAKING

Remember when nerds who had expertise in telecommunications could make free calls to anyone across the world with just a whistle? You can do that on Android apparently.
http://dgit.in/AndPhreak



TIME TO CODE

Developers are on a creative spree as we witness the learning curve for code going down. Are we actually creating something new or simply combining templates to get the job done.
http://dgit.in/DevlprTime

STAR TREK GUIDE

The next episode of Star Wars is just around the corner, but if you are more of a Trekkie, a handy guide is what you need to binge-watch all video content.
http://dgit.in/StrTrkio9

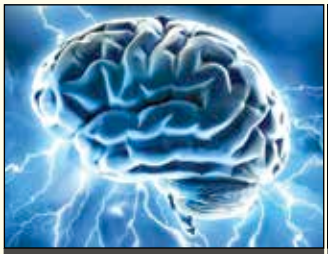
[MIT Technology Review Corner]

ROBOTS LEARN TO BRACE THEMSELVES



Judgement Day is nigh as robots move towards becoming sentient beings. Researchers have already developed an algorithm to help humanoid robots from damaging themselves when they have a little tumble. **http://dgit.in/RoboBrace**

Interactive page



Fixing the brain
Neurosurgeons have been conducting experiments on healing mental disorders with the help of a pulse generator. The idea involves supplying electrons to the patient's brain and stimulate neural fibres, with the aim of treating the ailments.
http://dgit.in/BrainFix



Sense of touch
We already have prosthetic hands and legs, but recently researchers have been inching towards incorporating plastic and carbon nanotube sensors within artificial skin to emulate the sense of touch on prosthetic arms.
http://dgit.in/TouchArm



Shaking hands in AR
Microsoft Labs has people working on technology that could make augmented and virtual reality applications more intuitive when two people interact with each other, while exploring additional methods of communication and collaboration.
http://dgit.in/VRMsft

SHORTS

A REAL RAILGUN



We don't have a real working light-saber yet, but someone out there went ahead and built an experimental railgun. If that doesn't ring any bells, you probably don't belong to the golden era of Quake 2. Read on to find out more.
http://dgit.in/RailgunIRL

PROJECT WINGS



Google has been thoroughly testing out its drone-delivery service under Project Wing and recently it conducted a dry run where the drone dropped a package and flew off.
http://dgit.in/GoogWing

50 SCI-FI MOVIES



We know that you absolutely dig sci-fi movies. For all you film buffs out there, here's a compilation of fifty such flicks that you simply have to watch at least once in your lifetime.
http://dgit.in/50SciFi

UBER MAP-MAKING



Uber has unleashed its own line of map-making cars on the roads in order to improve their maps and optimise driving routes. Uber mapping vehicle is reminiscent of Google's Street View car's design.
http://dgit.in/UberMapCar

8 cool features of the new Chromecast

Google unveiled the second iteration of the Chromecast conveniently called, well, Chromecast. Nevertheless, the device packs an interesting set of features.

– By Sameer Mitha

Launched back in 2013, the original Chromecast was a dream device for those that wanted to stream content from their Android smartphone to their dumb TV. Put simply, this compact HDMI dongle can plug into the back of your TV and you would be able to not only mirror your smartphone's display on the TV but stream movies and music as well. Today we are going to talk about the Second Generation Chromecast which significantly improves on the original. Here is a quick look at eight new features of Google's new HDMI dongle.



New Design

The original Chromecast had a compact design but was inconvenient especially if you were looking to plug in another HDMI device right next to it at the back of your TV. Sure, you can use an HDMI extender, but that just adds to the clutter. The new Chromecast has a circular design with the HDMI cord sticking out at one end. The new Chromecast is available in three colours – red, black and yellow (Google calls the yellow one lemon). The new device still needs external power but the new design has an attractive change.

Better Wi-Fi

Having used the Chromecast for over a year now, I have never faced any Wi-Fi connectivity issues. The new Chromecast supports 802.11ac over 5Ghz, so it's compatible with all modern state-of-the-art Wi-Fi routers enabling faster and smoother streaming. On the inside, it has three bespoke antennas. To put things into perspective, the first generation Chromecast has only one antenna. Interestingly, the Chromecast team worked with Google's OnHub team to ensure better streaming, and it shows.

It is important to note though that the overall quality depends on two factors. The access points (routers etc.) are always a step ahead of phones, which means that while phones such as the Galaxy S6 and iPhone 6 are compatible with 802.11ac Wi-Fi, some or many others may not be. So, before you complain about your new Chromecast, you should verify if your phone supports that.

Fast Play

If you thought content takes too long to start and stream (and we aren't talking about the bad internet plans in India), then Google



agrees with you. With the new Chromecast, Google has added Fast Play which is Google's version of smart streaming. So if you were watching an episode of the Big Bang Theory, Fast Play will start buffering the next unwatched episode, even before you hit play. Sit back and think of the number of times you have patiently waited for a movie to buffer. As per Google, the movie starts playing 80% faster.

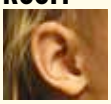
Gaming

Mirroring your Android smartphone to your TV via the original Chromecast wasn't a great experience thanks to lag. What's cool about the new Chromecast is that you can now use your large screen TV as a display and your smartphone becomes a dedicated controller. At the event, Google demonstrated the ability to play Angry Birds Go in multiplayer mode, where two people use their phone as the controller and the TV as a display. This is similar to multiplayer on console. That's impressive. Sure, the graphics can't match

EMAIL HACKED

CIA Director, John Brennan's email id was hacked recently and the twenty year old hacker was open enough to explain how he incorporated social engineering to gain access to his personal email account and compromised sensitive government files.
http://dgit.in/CIAJBHack

MICROSOFT'S QUIET ROOM



Microsoft's anechoic lab has entered the Guinness Book of World Records for being the quietest room on the planet where precise audio experiments and tests are conducted for the company's speech recognition systems.
http://dgit.in/MsftQuiet

STATE SNOOPING



You can't be really sure whether you're being monitored on social media, especially Facebook. To tackle this, the company will send out notifications if you're being hacked by the government.
http://dgit.in/FbGovAl

LICENSED DRONES



According to recent announcements from the Department of Transportation in the US, drone owners will have to register their drones with the federal government, considering the rampant unregulated flying of drones and the ensuing legal as well as law and order issues.
http://dgit.in/DroneReg

the PS4 or the Xbox One, but it is great for casual gaming.

New App

Up till now, the Chromecast app sucked, but Google has changed it to become your one stop shop for streaming everything. If there is content that you are looking for or an app that is compatible with Chromecast, but you don't have the app downloaded, Google will suggest that app to you via the Chromecast app.

Google has claimed to have updated the Chromecast app with the intention of making video discovery easier. And this is true across the apps that work with Chromecast. Expect the updated Chromecast app to hit your device in the coming weeks.

Photos

Phone mirroring was an annoying feature with the original Chromecast. For example, if you wanted to see photos on your large screen TV, you would have to mirror your smartphone display and then open the photos app. Thereafter, essentially anything you did on the phone would be replicated on your TV. With the updated app, you can now interact with photos the same way you would with YouTube. You can start streaming a video and conveniently, add videos or navigate out of YouTube. This allows you to use your phone to send messages or do anything else with your phone without affecting the video being streamed to the TV. So unless you pause or stop the casting video, it will continue to play on your big screen TV. Google has done the same thing with photos now. Now you can start a slideshow, add photos to the 'cast' library and continue to user your phone even while others enjoy your photo collection on the TV.



Chromecast Audio

The Logitech Bluetooth Audio Adapter was the only option I had to stream music to my classic speakers and it worked just fine. Google wants to cash in on this functionality and is therefore launching the Chromecast Audio. The device looks just like the new Chromecast, but instead the HDMI connector has a 3.5mm input. You can connect it to any old speaker via AUX and voila! Your good old speakers are now Wi-Fi ready! If you have friends over, they can add to your existing playlist and they can also pause or change the tracks that you are playing from the comfort of their smartphone. This can lead to annoying fights, but the availability of these options is a great addition.

Same Price

If you thought Google would raise the price of the new Chromecast you are mistaken. The Chromecast and the Chromecast Audio are both priced at $35 each (Rs. 2,300 approx. directly converted). We think both the devices will be priced at Rs. 3,000 when they launch in India, same as the existing Chromecast (which we presume will be phased out slowly). There is no information on the Indian launch of the new Chromecast or the Chromecast Audio but the device has launched in 17 countries now.

Will you buy the new Chromecast?

Well, if you are rocking a flat screen TV which isn't smart, or consume a lot of multimedia content on the phone then yes, the new Chromecast is definitely worth checking out. The improvements over the first generation Chromecast are significant enough to warrant an upgrade. If like me you have an awesome pair of stereo



speakers lying around then the Chromecast Audio looks like a good investment. Like we mentioned earlier, the Logitech Bluetooth Audio Adapter is also a great option for stereo speakers.

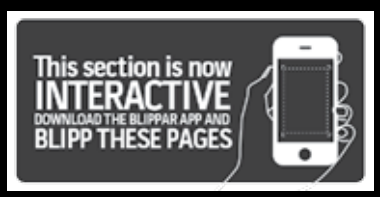
Coming back to the new Chromecast, if you own an iPhone or iPad or Mac, then the Apple TV may be a better proposition for you. Sure, the Chromecast works with iOS but you will get the "ecosystem" advantage with an Apple TV. There are a number of other HDMI based dongles available in the market that can help you stream content from your smartphone to your TV. Would you like to answer the million-dollar question for yourself this time? Will you buy the Chromecast 2? Let us know at editor@digit.in.

PERIODIC VIDEOS

You may or may not have an affinity towards chemistry, but if you've always had a penchant for watching chemicals



blow up and learning about the properties of various elements from the periodic table, you've got to watch the videos on this channel. Breaking Bad fans, shut up and subscribe right away.
http://dgit.in/PeriodicVid



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

(PRODUCT LAUNCHES)

HONOR 7



Huawei's current flagship, the Honor 7 has been launched in India, and comes with a 20MP camera. The phone sports an Octa-core Kirin 935 processor and 4GB of RAM.
Price: ₹22,999

ASUS UX305LA



Asus has launched its most powerful ultraportable laptop in the India. The UX305LA sports several variants of Core i5, i7 and M processors housed inside an aluminium body.
Price: ₹97,990

LENOVO YOGA HOME 900



The Lenovo Yoga 900 is a convertible laptop with a 13-inch QHD display powered by Intel's 6th Generation Core i7 processor, which is backed by 16GB of RAM.
Price: ₹1,00,000

PICTURE PUZZLE

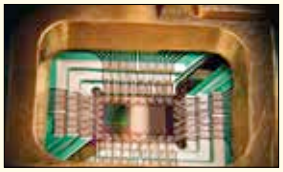
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BLIPP IMAGE INTO LIFE!

Top 3 YouTube Picks

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



Quantum computing leap
Scientists have been trying to turn quantum computing into reality, but a recent breakthrough has got us closer to real quantum computers.
http://dgit.in/SciShowQC



What is Light?
It's not just coincidence that you can only see a select portion of the electromagnetic spectrum. Learn more about light and how fast is space travel.
http://dgit.in/WhtisLght



Jelly Tennis in slow-mo
Everything looks great in slow-motion, when tinkering around with non-newtonian fluids. See what happens when jelly goes through a tennis racket.
http://dgit.in/JellyTennis

A quick dive into ECMAScript 6 – the Future of JavaScript

>>With the hype around HTML5 waning, ECMASCript 6 is what all the cool kids are talking about these days, let's find out why>

The web is a confusing and beautiful mess, and a central part of that is its scripting language, JavaScript. It is the only programming language that is native to the web, and can run directly in any browser.

What this means is that the capabilities of the web are closely tied to the capabilities of JavaScript and likewise the productivity of working on web apps is tied to how productive JavaScript is.

With the push for HTML5, JavaScript now has a larger surface area of features to work with. It can work with 3D objects using WebGL, it has a rich 2D API using the HTML5 canvas. There is video, audio, WebRTC for real time communication, and a whole lot more.

However, there are many convenient features that are still missing from JavaScript that developers have been clamouring for. This is where the latest ECMAScript 6 standard comes in.

If you're wondering where ECMAScript comes in when we are talking about JavaScript, let's take a quick look at the history of the language to understand this mess.

A Brief History

JavaScript has been around for a long time, this is in fact the 20th year of its existence. Back when it was conceived, it was no different that something like Flash or Silverlight, i.e. a proprietary solution offered by a single vendor to differentiate their product. It showed up in Netscape Navigator 2.0 and drove Microsoft to create its own scripting language JScript that was compatible with JavaScript.

To make sure that the web didn't end up with a dozen splintered, and slightly different dialects of the same scripting language, JavaScript was soon standardised by Ecma International (European Computer Manufacturers Association) a standards organisation. This standard is what is known as ECMAScript. JavaScript is thus an implementation of the ECMAScript standard.

The specification for all revisions of ECMAScript can be downloaded from the Ecma website: http://www.ecma-international.org/

The ECMAScript standard went through many revisions, notably ECMAScript 3 was the first somewhat major update to the language. ECMAScript 4 was supposed to be an even more ambitious update to the language with the addition of a type system, modules, classes and a lot more. ECMAScript 4 was abandoned and the language moved to a different direction with ECMAScript 5. If

*coding matters



***New Programming languages rated!**

>>After RedMonk released its ratings, we find that a lot has changed in the world of coding.

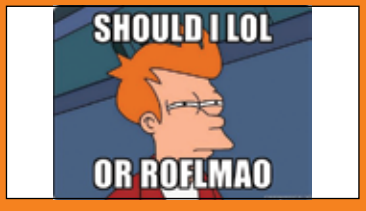
http://dgit.in/Nv15bn



***Welcome Facebook's TechPrep**

>> Facebook launches TechPrep to attract minorities and women into the development sphere.

http://dgit.in/Nv15bo



***Man, are you kidding me?**

>>Check out this 'serious' issue posted by a man where he humbly asks if his 'code' makes him sexist?

http://dgit.in/Nv15bp

*The Lost ECMAScript 4

>>If you're wondering what ECMAScript 4, check out ActionScript 3.0, the programming language used by the Flash Player. It was based on ECMAScript 4, and is now the closest you can get to what this edition of JavaScript would have looked like had it been accepted.

Now JavaScript seems to have embraced a quicker pace of development. Even as ECMAScript 6 is being implemented in current-generation browsers, ECMAScript 7 is already being designed. In fact ECMAScript 6 is also known as ECMAScript 2015 or ES2015 and ECMAScript 7 is called ECMAScript 2016.

Rather than repeat the rather verbose and clumsy ECMAScript 6 or ECMAScript 2015 we'll use the shorthand ES6 for the rest of the article.<<

you currently code for the web, this is the version of the language that is widely supported and available in browsers.

What's New With ES6

There is a whole lot new in ECMAScript that we just can't get into in the scope of a single article, and quite a few of the improvements have to do with subtleties of the language that would take up an entire chapter of a book to explain. We will only look at the more major and high-impact features.

That said, let's quickly dismiss some of the small (but no less significant) features.

- **const:** It may surprise you to know how difficult it has been to declare a constant value till now. With ES6 it is now as simple as typing `const ABC = 'xyz'`.
- **let:** This might be a simple addition to JavaScript, but its significance is more complex to expound. Variables defined as `let var = 'value'` only exist within the block in which they are defined, unlike variables declared with `var`.
- **Proxies:** Using proxy objects, you can intercept calls to another object or function and use the opportunity to modify it's characteristics or perhaps log the interactions with that object. It has some great implications that are out of scope for this article.
- **Tail-call optimisation:** While recursive algorithms for common problems such as calculating factorials are fun to learn and code they are often impractical. Each time a function calls itself, the computer needs to keep track of the entire chain of function calls. This makes recursive programs impractical except in very simple cases. With Tail-call optimisation properly coded recursive functions can work even with millions of levels of recursion. Such functions pass on computation to the next recursive call leaving nothing for the calling function to do. So the computer need only keep track of the latest recursive call.

Improvements to Functions

The first improvement to functions is the addition of the new shorthand `=>` for declaring functions. With this new syntax, you can create functions as:

```
(num1, num2) => num1 + num2
```

This is equivalent to:

```
function(num1, num2) {
  return num1 + num2;
}
```

If you find this new syntax a little pointless, thing of the kinds of situations where you need to have a one-off function. For instance, if you want to filter an array keeping only the even numbers, here is how you would need to do it with the current JavaScript syntax:

```
array.filter(function(e) {return e % 2 == 0; });
```

Compare this to the equivalent code in ES6:

```
array.filter(e => e % 2 == 0);
```

Hopefully you'll agree it's a lot cleaner. You don't need to limit yourself to single-line functions with this new syntax either, you can use a code-block to extend such functions to multiple lines. For example:

```
(num1, num2) => {
  if (num1 < num2) {
    return 1;
  } else {
    return 2;
  }
}
```

Another great addition to ES6 is the ability to define functions with default values for parameters. In current-generation JavaScript, you need to check if a parameter value is `undefined` and in that case assign it the default value. With ES6, this is simply part of the languages:

```
function add(num1=1, num2=2) {
  return num1 + num2; // returns 3 if no arguments are supplied
}
```

Finally we have support for arbitrary length arguments using the new spread operator .... In a function defined as `function add(...nums)` the variable nums will be an array containing all the arguments provided to that function. So you could call this function as `add(1,2,3,4,5,6)` and the variable nums would then be the array `[1,2,3,4,5,6]`. The function can have additional arguments before such an argument as well.

Destructuring

Desrtucturing is a powerful feature that allows you get data from inside data structures a lot more naturally. For instance if we have the following array:

```
let arr = [1, {x: 11, y: 12}, 17];
```

As you can see this array contains three elements, the first and third are numbers, and the second is an object. If we wanted to retrieve the x and y values from the second element of this array, it isn't difficult, but with destructuring it is a lot clearer:

```
let [, {x: x1, y: y1}, ] = arr;
```

The above code will result in `x1` being equal to 11 and `y1` equalling 12. This can be particularly useful if you are dealing with a function that returns a structure, and you just want some data inside the structure. For instance:

```
let {x: x1, y: y1} = coordinatesOf(someShape);
```

Likewise this destructuring can be a part of function parameters as well:

```
function coordinatesOf({width: width, height: height, size: size}) {...}
```

This above function will allow you to pass parameters as a structure, but you don't need to write the code to extract data inside that object, it will be directly available via the variables `height`, `width` and `size`.

Modules

This is probably one of the biggest additions to JavaScript with ES6, since it stands to change the way that applications and libraries are structured and written.

The new module syntax allows developers to include code from external JavaScript files in a manner similar to other programming languages like Ruby, Python etc.

This would allow you to write future jQuery-dependent code as:

```
import $ from "libs/jquery";
 $('.element').hide();
```

If you wanted to write your own bit of JavaScript code that can be imported in other files you could do:

```
export default function (a,b) {
  // does something
}
```

You can also export named variables as `export var sheep_count = 11;`. Likewise you can import such variables `import sheep_count from "sheeplib";`.

On the server side, the Node community has already had to come up with its own system for loading external modules using the CommonJS module format, which has its own browser-equivalent: RequireJS. A number of other systems for modularising JavaScript have arisen over the past few years, but with ES6 there will finally be an official, native way built into the browser.

Classes

JavaScript uses a rather uncommon approach to Object Oriented programming, that uses prototypes, rather than classes. Even so, class-based object-oriented programming is still the most dominant paradigm, and with ES6, JavaScript is embracing that.

While ES6 classes wukll continue to use prototypes under the hood, developers can now use a syntax that they are more familiar with:

```
class AwesomeButton extends SimpleButton {
  constructor(width, height) {
    super(width, height);
    this.width = width;
    this.height = height;
  }
  get dimensions() {
    return {width:this.width, height:this.height};
  }
  // ...
}
```

String Interpolation and Templating

With ES6 there is a new way to declare strings that adds a number of convenient features for those dealing with long multi-line strings and those wanting to cleanly insert variable values inside strings (string interpolation).

Using backticks (`)` you can easily create multi-line strings by simply typing the string across multiple lines. For example:

*pointers

>>Interesting developer news



*Future of TypeScript ECMAScript 6

>>Here's some more info on the future of ECMAScript 6 which plans to add on to JavaScript

http://dgit.in/Nv15bt



*Kerbal Space Program: Best mod?

>> Make your own simple programmable mod for Kerbal Space Program - kOS!

http://dgit.in/Nv15bu



*DIY- FrSky Programming cable

>>This complete tutorial is for making your own programming cable that can be used to program a FrSky X series receiver!

http://dgit.in/Nv15bv



*Best Features ECMAScript 6

>>From minor to major, this video will explain the best features of ECMAScript 6 in under three minutes

http://dgit.in/Nv15bw




```
let htmldoc = `<html>
<head><title>Some Title</title></
head>
<body>
</body>
</html>`;
```

The above HTML code sting will be interpreted literally, i.e. line-breaks will translate to \n characters in the `htmldoc` string.

Using string interpolation we can also easily inject variables inside strings a lot more easily, for example:

```
let message = `Are you sure you want
to remove ${book} by ${author}?`;
```

Here the value of the `book` variable and the `author` variable will automatically be inserted in string at their placeholders. The bit inside the `${}` doesn't need to be a variable, it can be any JavaScript expression. For example:

```
let message = `The time is:
${formatTime(getTime().toTimezone('IST'))}`;
```

In the above example, the value inserted will be the result of evaluating the contents inside the `${}`.

Promises

Promises offer a much cleaner alternative to asynchronous programming than callbacks.

If you are not familiar with these terms, here is a brief. When you perform a task that will take time (for instance downloading an image), there are many ways to handle the wait. Either the entire application can halt while that task is being completed, or the application can continue responding and deal with the result of that task later.

The callback approach is that when you launch a task in the background that will take time, you also provide it with a function, called a callback function that will be sent the result of the task when it is complete. This can get convoluted quickly if you have multiple dependent tasks. For instance you want to do task1 which complete should launch task2 which should launch task3. With each callback the code becomes more confusing as you have callbacks within callbacks within callbacks. For example:

```
downloadImage("image1", function(img1) {
 downloadImage("image2", function(img2) {
  downloadImage("image3", function(img3)) {
   //...
  });
 });
});
```

Promises are a differnt approach to the same problem. With promises the above will look like:

```
downloadImage("image1")
.then(() => downloadImage("image2"))
.then(() => downloadImage("image3")) //...
```

We won't got into how you can use promises in your code since it's out of scope, however if you often write asynchronous code, they are definitely worth checking out.

Generators

Imagine a function that keeps running even after it has returned a value. In fact it can keep returning values as long as needed. On the other hand, you can call such a function, and what you get is an object that can keep returning the next value when you ask for it. This is a concept that is popular in Python, and is now part of ES6.

Let's look at a simple generator that returns consecutive odd numbers starting with 1:

```
function* oddNumbers() {
  let num = 1;
  while(true) {
    yield num;
    num += 2;
  }
}
```

You'll notice two odd things about the above function. The first is that there is * following function. This is not a misprint, it is the syntax to define a generator function. The second oddity is the presence of the yield keyword instead of the usual return. Where return returns a value and ends the execution of the function that returned the value, yield continues executing even after the value has been generated.

Ihe the above case you could use the generator as follows:

```
let oddNums = oddNumbers();
oddNums.next(); // returns {value: 1, done: false}
oddNums.next(); // returns {value: 3, done: false}
oddNums.next(); // returns {value: 5, done: false}
```

It is also possible to create an iterator using a generator which would allow you to use it in expressions such as `for(num of oddNumbers) {...}`.

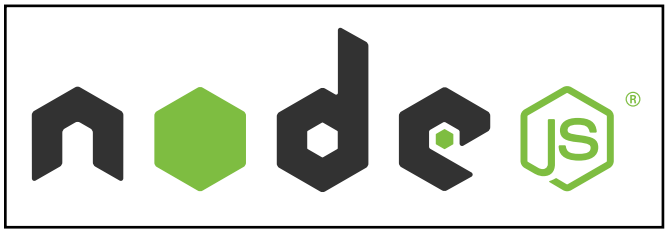
How to Use ES6 Today

We wouldn't tease you with the good stuff that is coming with future versions of JavaScript if there wasn't a way to start using it already.

While a lot of these features are still not fully supported across the browser spectrum, most engines have already implemented over half of these features. Microsoft is for once leading the charge in implementing these new features and if you are looking to play with these new features you should check them out on their new Edge browser.



You can find out how to configure Babel for your workflow at babeljs.io



With the release of Node 4.0 a lot of ES6 features such as proxies, promises, arrow functions etc. are available in Node.

Fact is though, you will need to support old JavaScript for a long time, even if all browsers reach 100% support for ES6 over the next few months. It obviously makes little sense to code everything twice, once in ES6 and once in ES5, that would defeat the point of the improvements in ES6.

If you want to start using ES6 already but want to still support older browsers, you should check out a project called Babel that compiles ES6 JavaScript to ES5 JavaScript, allowing you to take advantage of the new syntax today while still targeting older browser users. Once you feel ES6 has achieved the level of mass acceptance you want, you can simply use the ES6 code directly instead of passing it through Babel. >

*addons



*Microsoft's early source code out!

>>Microsoft's OpenSSH, a Windows port code for developers is published and welcomes all you coders to get your hands on it.

http://dgit.in/Nv15bq



*Bad Programming habits we love!

>>As coders we all have pesky habits which we know aren't good, but as usual we end up breaking the rules. And love it!

http://dgit.in/Nv15br



*OpenBSD turns 20

>>OpenBSD, the unix-like free to use operating system turns 20. On its anniversary, a new 5.8 version with a long list of improvements was released.

http://dgit.in/Nv15bs

digit Tech Stars

...and then there were 10. It's only fair that we dedicate an entire page for these bright chaps who developed something really cool with Intel technology and shared a wonderful story about it with us!
Kudos, guys!

EDITOR'S PICK



Hannan Satopay
Intel XDK

USER'S CHOICE



Shivansh Gupta
Intel INDE

SPECIAL RECOGNITION



Abhishek Nandy
Intel XDK

TOP DEVELOPERS



Ravi Kanth
Intel System Studio



Balaji N
Intel RealSense SDK



Pulkit Lall
Intel VTune Amplifier XE



Rushikesh Revandkar
Intel Parallel Studio XE



Anbu M
Intel XDK



Syed Amanat
Intel XDK



Omkar Khair
Intel IoT Developer Kit

intel Software

Intel offers software resources that can help you in your developer journey. All participants were required to visit the Intel Developer Zone to access these resources and share their experiences on Digit to win prizes worth over ₹1 lakh and more.

46 **Tomorrow's tech**
Discover the latest technologies and innovations that could revolutionise the way we live.



The new nuclear material
After largely destructive usage of nuclear tech, there's a peaceful application for nuclear power. **http://dgit.in/Californium**

The wet planet?

No longer is that title reserved only for Earth. With the discovery of water on Mars, everyone with an interest in space is stoked. Here's what they're talking about.

Robert Sovereign-Smith
robert@digit.in

The fourth rock from the sun has always been known to us as a wasteland. Sure there have been a few movies and books that romanticise it and try and make it some fantasy-world filled with life. Total Recall actually tried to suggest that aliens had left the means to terraform Mars into an Earth-like planet, and many of us want that to be accomplished as well. However, everything we found out about Mars, courtesy all the missions by NASA and others, left us a tad disappointed. The hope of even finding microbial life on Mars was dwindling, and fast. Until now.

On September 28, NASA held a press conference to announce that liquid water does indeed flow on today's Mars. Scientists had earlier identified streaks on slopes of craters and hills as probably caused by flowing water, but the question was always "When?". As in, were these streaks made last week, a couple of centuries ago, or 3 million years ago? Were the streaks actively growing, or were they just remnants of a past history of water on Mars? These streaks were studied in detail, and termed recurring slope lineae (RSL) by Lujendra Ojha, a researcher from Georgia Tech, Atlanta, who was born in Nepal.

NASA confirmed that these RSL were active, and that in Mars' summer, there is actually liquid water inside these gullies, which seeps down the slopes.



IMAGE CREDIT: FACEBOOK

Lujendra Ojha of Nepal was instrumental in studying the RSL phenomenon, and played a huge part in NASA's discovery of flowing water on Mars

Pool party!

Sadly, there isn't enough liquid water at any one place to do that as a human, but we're all very interested to see whether there are any microscopic organisms who are skinny-dipping in this Martian water.

Of course, you should know that this water was discovered by analysing a type of salt that was found in the gullies and streaks – called perchlorates, some forms of which were detected to contain water in their crystals. Perchlorates are a type of hydrated salt (contains water), that not only captures water, but also modifies its characteristics significantly. For example, given that the Martian atmosphere is so thin, and the pressure is so low, liquid water (which boils at about 100 degrees centigrade on Earth) would begin to boil at around 10 degrees on Mars. Pure water would still freeze at 0 degrees, making the effective temperature range for liquid water 0 to 10 degrees (or 10 times less than Earth's 0 to 100 degrees). Thankfully, the perchlorates step in here, and reduce the freezing temperature of the water they capture to minus 70 degrees centigrade. This effectively gives the briny water that seeps down the slopes on Mars a much better 80+ degree range to exist, and that's why we see those streaks.

Mars attacks!

So how likely are we to find life inside those streaks of seeping water? Although some people are ever the optimists and feel if there's liquid water, there is always a chance of life existing, sadly, the majority seem to think that those little streaks of seeping water will just be way too salty to ever support life (as we know it). Most bacterial life cannot survive in freezing temperatures with that amount of salt content. The closest comparison we have here on Earth to this type of water on Mars is at the Don Juan Pond in Antarctica. Widely accepted as the saltiest water body on Earth, Don Juan almost never freezes because it is so salty. It's estimated to have over 40% salinity level, which is significantly greater

Boring routine?
Is your daily routine boring? Watch this to see what you should not expect to come out.
http://dgit.in/In-Out

Living dead:Plants!
Zombie plants also exist in nature. Find out how and why plants zombify.
http://dgit.in/ZombiePlant

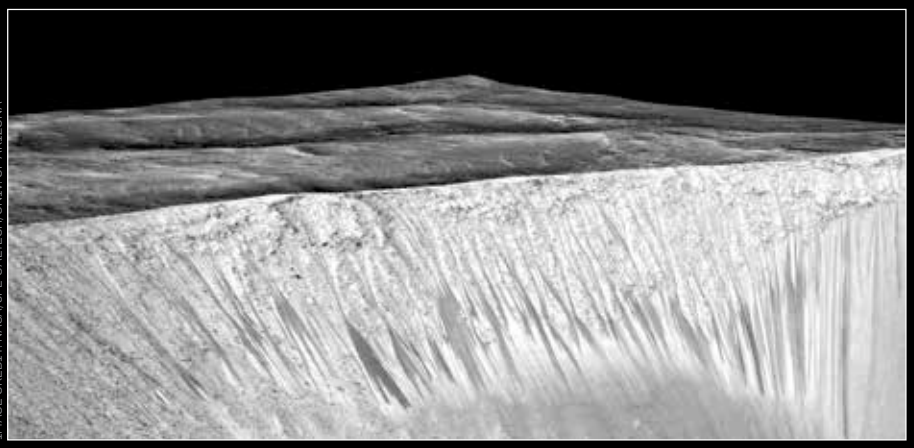


IMAGE CREDIT: NASA/JPL-CALTECH/UNIV. OF ARIZONA

RSL / dark streaks on the walls of the Garni Crater on Mars. The streaks are a few hundred metres long, and have now proven to be caused by slow flowing water

than the 34% salinity of the Dead Sea. Normal ocean water has about 3.5% salinity levels; just in case you need a reference.

It's hard enough for life to survive with that amount of salinity, but add on the almost non-existent atmosphere of Mars (as compared to Earth's rather comfy atmosphere), and the fact that scientists expect the salinity of Mars seepage to be even higher than Don Juan, and you have a very weak case for finding life.

However, new studies seem to suggest that certain types of life forms can adapt to survive in water as salty as that which is found in the Don Juan Pond, which makes the optimists let out a cheer! Either way, we're never going to find out until we go there – in person or in camera (through robots such as rovers). The challenge is not contaminating Mars (and these salty streaks) with life from Earth. Although a lot of care goes into trying to sterilize things for space, we all know that life is stubborn, and always finds a way...

If we ever send humans there, we have the additional headache of making sure that we don't bring any unknown life forms back to Earth with us. After all, just a single Martian virus could potentially wipe out all of Earth's life, or infect it.



IMAGE CREDIT: WIKIMEDIA

The Don Juan Pond in Antarctica is the world's saltiest water body, and even that may pale in comparison to the saltiness of the water on Mars!

All your base...

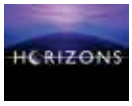
One of the most important resources needed for space exploration also happens to be water. The fact that water is made up of Hydrogen and Oxygen, which is basically A-grade rocket fuel, is mostly the reason why it's so desired. Then again, the fact that we humans cannot live without very large amounts of it (not just to drink, but also to bathe, wash up, cleanse, dissolve stuff in, etc., also plays a large role in why we want water wherever we go. Another advantage of Mars it the perchlorates, because rockets currently use some perchlorates as rocket fuel.

All long range exploration needs food, water and fuel to be able to succeed. In terms of Mars, it's obviously desirable to get that water in an already liquid form, and not have to chip away chunks of ice from the frozen poles of Mars, and then melt and purify it. It's the reason why Europa, one of Jupiter's moons which is known to have a lot of water in the form of ice, would be a challenge if we tried to use it as a base station in the distant future. Mars certainly is the closest planet / moon with water on it, and that makes it the perfect candidate for the first off Earth base station in our attempts to explore the solar system and beyond.

Just because!

Of course the most buzz around this discovery is to try and get people interested in getting off this rock and looking to the stars for a change, instead of the bleak over-crowded future we all face if we don't. If there's water there, maybe we can go there... that's the thought that many scientists want the general public to have. Because as we all know, unless the politicians – who control all the money – feel that the general public is interested in humans exploring planets other than our own, we're never going to get funding for such missions.

It's Mars. Another planet. It's far away. It might contain life. It might have fossils. It's the current frontier that we haven't been able to cross. Do we really need more reasons to want to go there? How about a super-chilled glass of grade-A brine? That settles it! Mars or bust!



Catch Horizons on BBC
Horizons Series 5, part 2 is scheduled on BBC World News from October 3rd every Saturdays at 7 am, 2 pm and Sundays at 8 pm.



Living on Mars.
How to live on Mars? A 3D printed habitat maybe the answer to that. Find out more here. **http://dgit.in/3DHabitat**

Imagining the future

In an exclusive guest post for Digit, the presenter of BBC's award winning show Horizons, Adam Shaw, tells us about discovering the latest technologies and innovations that could revolutionise the way we live

Adam Shaw
readersletters@digit.in

Imagining the future is what Horizons is all about. This series we have looked at some of the biggest challenges facing our planet in the 21st century, from energy generation to food production and beyond. We explore how scientists across the world are rising to this challenge and developing the technology of the future.

The technology of the future doesn't necessarily have to be invented or born out of thin air. Janine Benyus, the founder of the Biomimicry Institute, explained to us this series that nature is the greatest laboratory of all – understanding and learning from it – she says, is already bringing us huge advances. If you think about the world as a scientific core which, through evolution and various other processes, has been trying to solve scientific problems for thousands of years, it's done the work for us.



Alex Forrest and Prof Gordon Cheng: enabling Biomimcry.

Biomimicry

Biomimicry is perhaps one of the most appealing areas of science; not just because it makes for exciting television, but because it is something that everyone can understand and has a connection to. Quantum mechanics, astrophysics, nuclear biology etc., are all really exciting areas of science but they're very distant from ordinary people's everyday experiences. Biomimicry, however, takes its inspiration from nature, so you can look all around the world and see inspiration.

The most obvious example of biomimicry is Velcro. When the Swiss engineer, George de Mestral, came back from walking his dog on the moors he noticed it was covered in these burrs which he couldn't get off. When de Mestral examined the seedpods under a microscope he marvelled at how they bristled with hooks ingeniously shaped to grasp at animal fur. The plant had worked out a system of dispersing its seeds by just attaching themselves to any passing animal. He realised that being able to attach something really firmly and then detach it would be really useful and with that, he invented Velcro and changed the world of fastening for ever.

Triboelectricity

The future of energy generation and supply is one of those fundamental forces that will shape our societies. For the most part we think of energy generation as big energy plants, solar fields, nuclear power stations or gas and coal power stations, but energy is all around us. We use energy as we walk and generate energy all day, even when our clothes rub together they generate energy, we just don't have a way of gathering that.

In this series of Horizons we speak to Professor Zhong Lin Wang, from the Chinese Academy of Science in Beijing, who is researching a fascinating new type of electricity generation called the triboelectric effect. The word comes from the Greek word 'tribein' meaning 'to rub'.

Triboelectricity can create a surprising amount of power by rubbing or touching two different materials together and Professor Wang is looking at ways to collect this energy and use it. For instance on the floor of a shopping centre; when your foot touches the floor, the movement can generate a tiny electrical current. If you can capture that tiny current in a space where hundreds or thousands of people walk every day, suddenly you're generating quite a lot of electricity. The same is true with clothing; scientists are experimenting with putting collectors on clothing and as you walk, your clothes rubbing together will create an electric charge that you could attach to a mobile phone in your pocket and have it constantly charging.

This use of movement to generate electricity has been seen before; a couple of years ago a hotel put their gym on the grid for a publicity stunt. The idea was that if you went to the gym and used the bicycle you generated electricity for the hotel and they knocked a bit of money off your bill. This research is taking that idea further and, rather than seeing us as consumers of electricity, each person becomes a generator.

I think triboelectricity is one of those things which is really emblematic of Horizons, this isn't something that's going to happen tomorrow but it is fundamental

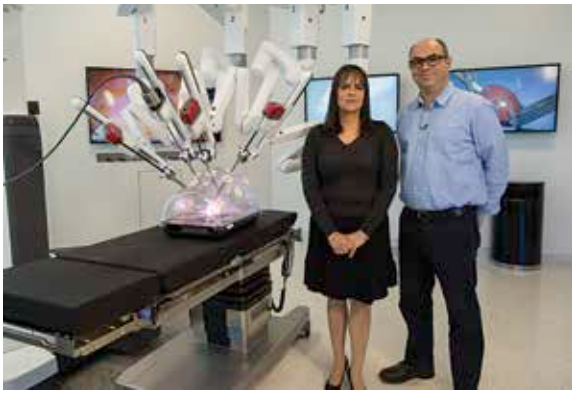
science that really has the potential to revolutionise the whole world. At the moment, it's really just a laboratory but if it's scalable into something that everyone can do, it could not only change the products that we make but how much electricity we need, pollution, infrastructure, almost every area of people's lives. Everybody could stop thinking about electricity generation as a power station and start thinking about it on an individual level, we're all generating electricity and that is genuinely very exciting.

Robot surgery

The world of medical technology is also experiencing vast changes and this series we visit a facility in California where surgeons are being trained to use robots in surgery. The robot itself does not actually conduct the surgery, it is robot assisted; it's a bit like the game at the funfair where you have to control the pincers and grab a teddy bear. At the funfair they purposefully make it difficult to grab the teddy bear, here of course they make it much easier; to move the cutting arm, or the pincers a tiny amount you have to move your arm a lot, which means you have very precise control. This is something that is perhaps harder when doing surgery in person as moving the tiniest amount can be very difficult, but using robots you can control a millimetre by moving your arm a foot and the machine just scales that down.

I was allowed to have a go on the machinery and did the test that surgeons have to do. I had to control two mechanical arms through a series of gears, pick up tiny rubber bands and then stretch them over tiny bubbles; I mastered the movement within an hour. What was interesting was that the operating table was only 2 or 3 feet away from me and the machine was controlling the surgeon's tools remotely, which to me suggested that there was no reason why a surgeon in California couldn't be operating on someone in London.

This technology really raises the possibilities for new kinds of treatment as expert surgeons could operate on patients that are on the other side of the world. This isn't something that's in a laboratory, this is really happening now and these expensive machines are being installed in hospitals all over the world. But this new frontier in surgery isn't about replacing surgeons, as there is always a surgeon the other side of the machine, making all the decisions, it's about giving surgeons a new set of technological tools and pushing the frontier of surgery even further forward.



Myriam J. Curet and Adam Shaw with the robotic arms that will enable the next generation of intuitive surgery

Frontier farms

We are now pushing at the frontiers of farming, not just growing crops on the edges of our productive land but right in the heart of our cities. This is an attempt to provide us with nutritious, locally produced food but also to revitalise an industry that is suffering from a declining and ageing workforce. When we think about frontier farms it conjures up images of farming in the wildest of places and in some cases, the opposite is true; it's actually about urban agriculture.

There are two places that are a good example of this; one is in Clapham, South London, where they have converted an old bomb shelter into an underground farm with polytunnels and a hydroponic system to grow fruit and vegetables. This particular venture is being partly funded by the chef, Michel Roux, who uses their herbs and salads in his restaurant. I am a little dubious about whether this can solve the agricultural problem because you wonder how many underground tunnels there can be around the world but I do think that the technology, which in itself isn't particularly ground breaking but the vocation of it is very interesting, could be a step towards solving a big agricultural and pollution problem.

A similar approach has been used by Toshiba in Japan where they are growing lettuce hydroponically in an old floppy disk factory. They use an old floppy disk factory because it is dust free and because there are no pests, animals or disease involved there is no need for any pesticide. They also control the environment and you have to wear a mask and pass through UV lights and vacuum chambers to make sure no contaminates get into the room. These factories of food are unlike any other farms and operate like an ordinary factory process.

So there's this irony or paradox, that the frontier is much closer than you think it is. You think of the frontier as somewhere in the wild but actually, the frontier in farming is bringing it home.



Anna Holligan and Pavlos Kalaitzoglou, Wageningen: Building Frontier Farms

About the author: Award-winning journalist Adam Shaw is the host of Horizons, a BBC TV series that focuses on discovering the latest technologies and innovations that could revolutionize the way we live. During the first few seasons of Horizons, Adam has filmed in 18 different countries, visited 120 different companies and organisations and interviewed 150 industry and thought leaders travelling the globe searching for the brilliant ideas that have the potential to change millions of lives.

Video game woes, loose display cables and messed up filesystems

Our readers never fall short of hardware problems and we couldn't be happier to solve it for them

Q The Joker's too strong

I have been playing Batman Arkham Origins for a week and I have completed about 20 percent of the game. At 20 percent, I had just defeated Bane and received new mission to stop The Joker. After fighting with some of his cronies, I got to The Joker in some building like a church. After a few words between The Joker and Batman, the former takes out his gun and Batman stops it with counter button and then throws The Joker away. Batman hits him a couple of times and then proceeds to throw him through a window where The Joker picks up a few glass pieces. At this point combat ensues and there should've been a indicator to counter but none



A simple key remapping is all you need to do.

popped up and no matter how many times I tried, The Joker kills Batman. I've tried at least a dozen times and I've always failed. Can you help with this annoying problem?

–Ishant Joshi

A We understand your frustration with such incidences that occur at pivotal moments and we do have a solution for you. It turns out that this particular issue is a common occurrence with Batman: Arkham Origins and fixing it involves modifying your default keymap to add an extra option. Navigate to SteamFolder > steamapps > common > Batman Arkham Origins > SinglePlayer > BMGame > Config > DefaultInput.ini and then search for the term "NumPadThree" which should be around line number 150. Just under that add the following:

.Bindings=(Name="NumPadFive", Command="TriggerQuickStrike | QuickGadgetX | DebugMenuSelectX | CancelBatarangCamera | Button aQuickStrike")

Now, you've assigned NumPadFive to perform the counter action so when you're in combat with The Joker all you need to do is tap your NumPadFive key and you should be able to beat him. Happy gaming!

Q HDD corrupt?

In February this year, I purchased an external hard-drive (WD My Passport Ultra 1TB) from Amazon India. About a few days back, my external hard-drive is not being detected on my laptop or desktop computer. I checked WD's website and my drive is still under warranty. Then I rang up WD Warranty Support and after talking with the guy, I came to know that the filesystem on my external hard-drive had been corrupted because I was using my HDD on kUbuntu + Windows 7 (by the way, I have two operating systems on my laptop & desktop respectively, Linux + Windows). WD customer support guy told me to format the drive and not to use it on linux. The problem is I have around 500-600 GB of files on my external HDD, and if I format it I'll lose everything. Can you please suggest some good data recovery tools?

–Wanlamsuk Nongrang

A We've been running hard drives on both Linux and Windows for ages and we haven't come across your issue so far. The support guy was wrong to blame the Linux for your problem. However, you do need to follow simple practices like unmounting the drive in Linux or using the 'Safely Remove' option in Windows while handing external drives. If you can mount the drive in Linux then you can use TestDisk which is quite an advanced software for data recovery. You might want to watch a few YouTube videos before getting down to using it in the first place. If possible, if there are any other external HDDs then you might want to create a partition, put some dummy data on it and then format it. Practise running TestDisk on your dummy data before using it on your WD drive to recover your precious data. TestDisk can also be run on Windows.



TestDisk is a good data recovery software

Q Erratic laptop

My laptop configuration is: Sony Vaio, Intel Core i3-330M Processor 2.13 GHz, HDD 320GB, Memory 3GB, ATI Radeon Premium Graphics. The problem with this laptop is that it suddenly shuts up after doing computing work within half hour or one hour. Often it stops suddenly when playing movies on any dvd or media player as well.

Apps by Youmi pulled down!
Hundreds of apps were pulled down from App Store after getting caught in a major privacy breach
http://dgit.in/Nv15m

It freezes for a long time and then it suddenly blacks out. To revive it, I need to take the battery out, cool it and then put the battery back in. The problem repeats after an hour or earlier. Sometimes it works for an hour if it has not been used for three or four days but if run continuously then half an hour is the maximum that it'll work for before it conks off again. I used original Windows 7 Home Basic 64 bit, then Windows 7 Ultimate and now Windows 10 Pro. Could this be a problem of the hard drives? If so can I replace it with an SSD? How much would it cost to repair this laptop?

–Dominic M Sangma

A Since you've switched between multiple operating systems, we're going to rule that out. We're assuming that you had the proper drivers installed so it comes down to whatever other software you've installed, or the problem might stem from your hardware. We mentioned software because there are plenty of game profile managers which try to overlay their own OSD onto full screen programs and that sometimes causes programs to crash. The most obvious culprits behind your problem would be the hard drive or heating. Swap the hard drive out and put it into your PC and run a disk diagnostic software like HDTune to look for bad sectors. While this is going on, run a live USB Linux distro on your laptop and run a few exhaustive programs, all while running a temperature monitoring software. If you notice excessively high temperatures then you need to check the



Unclog the heatsinks

cooling vents on your laptop for dust clogs. Also, you might want to reseat the processor heatsink as well. All of this shouldn't cost more than ₹500. As for replacing your HDD with an SSD, yes you can do so if your HDD uses a SATA interface, however, for the same amount of money you'll not get a lot of storage space if you get an SSD instead. However, your OS boot time and general responsiveness will improve considerably.

Q Pink display

Dear team Digit, Firstly, I'd like to say that I love Digit! It has brought me on a long journey from a fiction reader to a tech reader. Coming to my problem, for the last two days, my laptop screen has turned pink with vertical lines at irregular intervals. Though I called the customer service center, their response wasn't satisfactory. My system configurations are as follows: Model: HP Pavilion G6 2301ax, 500gb hard disk, 2.5gb graphics, 4GB DDR 3 RAM, Windows 8 OS. The customer service notified



Replace your display cable

me of a possible hardware issue. And for a guy who likes tinkering with his laptop, I couldn't place my finger on that. Please clarify what steps I should be taking and the possible expenses to be expected.

–Anita Liquorvala

A This is a hardware issue. If you're seeing just discolouration and not visual artifacts then the problem is a loose connector or the FRC (Flat Ribbon Cable) that goes from your laptop's motherboard into the display panel has developed a slight crease or kink. Simply search eBay for a replacement laptop display cable for your Pavilion G6 and you should find plenty of units available for sale starting from about ₹400. Download the service / disassembly manual from the company website for your laptop (make sure you get the model absolutely right) and check if the replacement cable shown online has the same number of pins and is of the same length as the one currently hooked up to your display. If so, buy and replace your display cable and your problem should be resolved.





FB's Q&A in India!
Zuckerberg recently announced that he is going to hold his next Facebook Townhall session in Delhi **http://dgit.in/Nv15x**

Now FB lets you forget
Facebook's "on this day" now providing you to filter out specific dates due to being accused of reminding bad memories **http://dgit.in/Nv15aa**

Make Facebook Messenger more awesome

Follow these suggestions and you'll find Facebook Messenger working better than ever before

Tanmay Patange
readersletters@digit.in

Turn off read receipts

Nowadays, almost all mainstream Instant messaging (IM) applications replicate one another in terms of what they offer. Over time, only emojis and stickers have apparently differed from service to service. The foundation layer's been the same. For example, Person A sends a message to Person B. Eventually, Person B will open the message but may not read it. Senders receive an acknowledgment in the form of "read receipts" informing them that you've seen their message even if you haven't read it. This brings the conversation to an abrupt halt or premature end, sometimes escalating into an issue in the real world. While killing read receipts on mobile apps is difficult, it's super simple to do on your desktop. You have a couple of alternatives to deactivate the "Seen" messages in case you want to do this on your desktop. If you're a Chrome user, there's this extension called 'Facebook Unseen' (https://goo.gl/aFHed1). It simply blocks the read receipts any time you access Facebook or Messenger on Chrome. Alternatively, if you're using Adblock Plus (ABP) on your browser, go to `its Options > Filter lists > Add this URL to your block list: facebook.com/ajax/mercury/change_read_status.php$xmlhttprequest.` It works on all browsers that support the installation of ABP. To install it on Chrome, go to https://goo.gl/J0l3S8 or to https://goo.gl/KC0GhB for Firefox.



Adblock Plus allows you to block read receipts

Turn off notification alerts

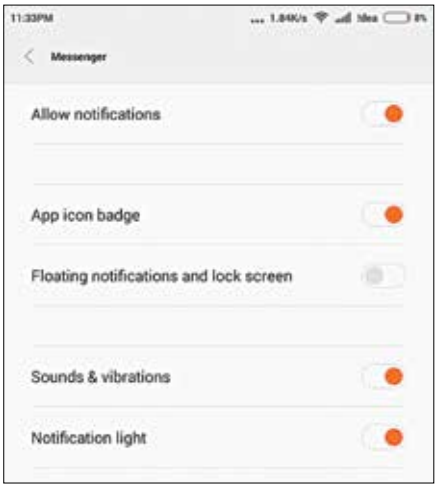
Do you like to be notified every single time you receive a new message? Your answer may vary based on the frequency and amount of messages you receive every day. Limited notifications are always fun. Nevertheless, imagine waking up from a deep sleep to those chirpy sounds a few chat heads are making on your phone. Won't it be disturbing? Of course. Especially if a group of, say, ten members are typing in simultaneously in a group chat, and you have no choice but to participate.

Such notifications can be turned off from within the app's settings. Go to `Settings > Apps > Messenger > Uncheck 'Show notifications'.` Facebook Messenger for Android has an advanced setting allowing you to choose from between 15 minutes, 1 hour, 4 hours and 24 hours until those notifications resume. If you want to hide chat alerts from only an individual or a group, go to `Messenger > Tap and hold the chat > Mute notifications > Choose how long you want to mute the chat for` and you're done! These steps can vary if your phone doesn't run stock Android UI.

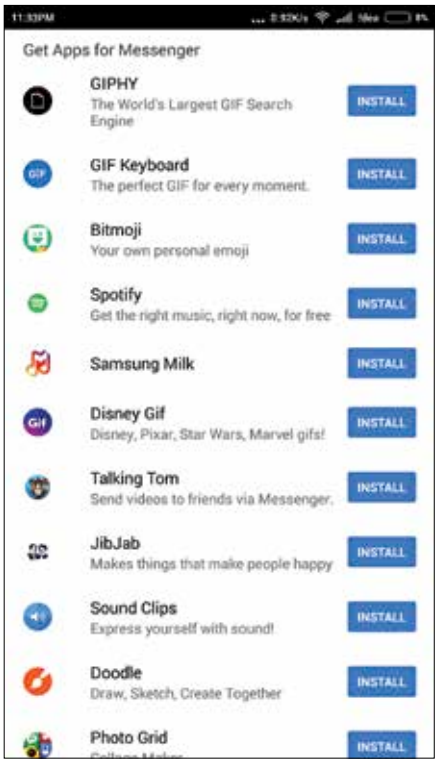
iPhone users can choose between killing notifications for an hour or until 8 a.m. the next day. Similarly, if iPhone users want to mute notifications for any particular chat, you can `swipe left on a conversation > Tap 'Mute' > Select for how long you want to mute the conversation` and you're done!

Get apps for Messenger

Facebook initially faced a huge amount of criticism for forcing us install its standalone app for keeping up with Facebook messages. However, it isn't as bad as we all had speculated earlier. Over time, Facebook Messenger has improved its overall service, fixed bugs and brought about many big-time changes to its offering. Additionally, keeping user's enthusiasm in mind, Facebook introduced new emojis, stickers and what not. But one thing which, according to us, has won billions of hearts is Messenger apps – Yes, the set of third-party applica-



Hide notifications if they disturb you



Third-party apps for Facebook Messenger

tions that can be used inside Facebook Messenger. Facebook cleverly extended its support for third-party app developers, who help to integrate different platforms and enable us to use their apps inside Facebook Messenger. One of the major benefits of using these third-party apps is having access to many exciting features we wouldn't otherwise come across in the app by default.

If you want to install these apps on Android, go to `Messenger > Open chat > Tap an icon showing three dots in the right corner > Choose an app > Install.` To install these apps on Messenger for iOS, follow the same steps.

Create a chat shortcut

All of us have those few important conversations happening at all times, whether it's over a phone call or in person. Sometimes, these conversations take place over chat. If there's a colleague or friend on Facebook Messenger with whom you need to be constantly in touch and don't want to go through the trouble of looking for them in your huge chat list, here's a simple solution: create a chat shortcut for them. To add a shortcut for a particular chat conversation, be it a group chat or an independent chat, go to `Messenger > Tap and hold the chat conversation > Tap 'Create a shortcut'` and that's it! The next time you want to access the same chat conversation, you don't need to go to Facebook Messenger at all. Simply go to your phone's home screen and you'll find the shortcut to that conversation there. Unfortunately, this doesn't work with Messenger for iOS.

Send GPS locations

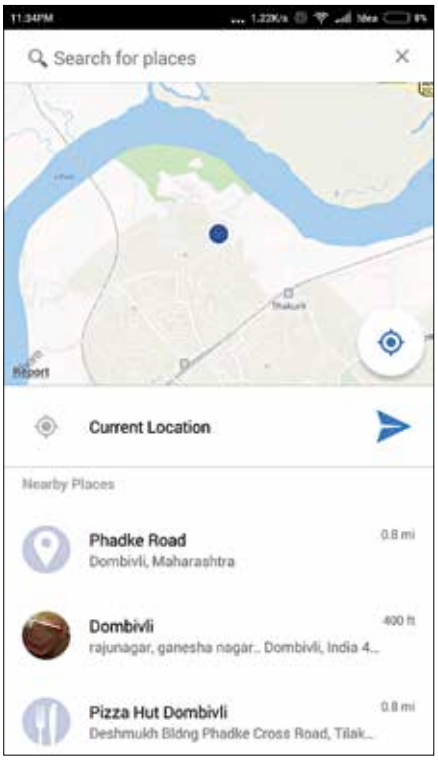
A few months ago, Facebook made it easier for users to send locations inside a chat conversation, and it wasn't just limited to the sender's current location. In fact, the social networking giant even enabled users to send locations irrespective of their present whereabouts. This feature comes in handy every time you want someone to reach the same location as yours or to guide someone to reach his/her destination over a chat conversation. If you're using Messenger on Android, go to `a chat conversation where you want to send the location > Tap the pinpoint icon > Choose the location > Hit 'Send'.`

Similarly, iOS users should `'Choose the conversation' > Tap the dotted icon in the right corner > Tap 'locations' > Choose the location > Hit 'Send'.`

Change the notifications sound

We've already seen so far how useful, yet annoying Messenger notifications can be. Sometimes the annoyance could be related to the notification tone. In case you're wondering whether the app allows you to change this sound, let us give you a simple answer: Yes, it does. To change the notification sound, all you have to do is tweak a few simple settings inside the application. To replace the current notification sound, go to `Settings > Notifications and Sounds > Tap 'notification sound' > Select the ringtone you want` and you're done!

Similarly, you can turn on/off vibration alert, change Messenger call ringtone and configure call vibrate on ring.



Send your friend directions to any location

Download pictures to gallery

Sending and receiving pictures on the Messenger platform has become a lot easier since it was first introduced. No matter where you are or what you are doing, all you need to do to send pictures over a chat conversation is take out your smartphone, click the pictures and share them directly over the Messenger application. If you're on the receiving end of the pictures over a chat conversation, you simply need to manually select the picture you want to download and save it to your phone's gallery. However, if you'd rather auto-download the pictures received on the app as soon as you receive them, Messenger is capable enough to automatically save all your incoming pictures, irrespective of your phone's ecosystem. Simply go to `Messenger > Tap 'Settings' > Select 'Data and storage' > Check the 'Save photos' option` and you're done!

However, Messenger doesn't save all your outgoing pictures or the pictures you click by default. To change the default setting, go to `Messenger > Tap 'Settings' > Select 'Data and storage' > Check the 'Save on capture' option.`

60 **Laptops**
Six sub-1.5kg thin ultraportable notebooks compared. Find out which one you should go for.

66 **Bazaar**
All the latest and greatest products tested and reviewed so you make an informed buying decision



SOUND UNWIRED

We take 14 Bluetooth speakers and pit them against each other to find the ones that deserve your attention and money.

LET THE DRUM BEATS ROLL!

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Bluetooth speakers today are offering consumers a variety of features to stay at the top of their game. We've seen speakers that can double up as power banks to charge your phone, even speakers that can be paired to offer multi-channel sound. There are speakers that are waterproof too, so you can literally take them for a swim with you. All these features are great, but at the end of the day, what matters is the sound output. Do these speakers deliver their money's worth? Are the features on offer useful enough? Does it make sense to purchase a budget speaker, or would you rather save up for the crème de la crème? Let's kick things off, with the build and design of the Bluetooth speakers and in the process build up towards answering those difficult questions.

HOW WE TESTED

To begin with, we looked at the build and design of the speakers. The materials used and the construction quality took precedence here. Being a Bluetooth speaker, the devices need to be portable too. Keeping the weight and form factor in mind, we put the speakers through everyday scenarios, to judge them on their portability. We also checked for weather-proofing capabilities of the speakers, the ones that claimed that were.

Moving beyond the build and design, we took a look at the connectivity options on offer. Going beyond Bluetooth, NFC and auxiliary input, we took a look at microSD card support, USB support, and any other input that the speakers supported. Some of the Bluetooth speakers double up as a power bank, and the ones that do, were put to test.

Some Bluetooth speakers also have dedicated applications available on iOS and Android. These apps help you pair the speakers with your smartphone, connect multiple speakers together, or simply help you control the volume and other features of the speakers. We checked the app for platform compatibility (iOS, Android and Windows Phone), along with checking how user-friendly the app is.

Coming to performance, we checked the number of Bluetooth devices the speaker could remember. This helps with ease of pairing, if you are using multiple devices with one Bluetooth speaker.

We also played a bunch of tracks such as Carnival of Rust, Instant Crush, Into the Night, Counting Stars and Carnival (from the movie, Whiplash) to see how the speakers performed. The speakers were judged, based on clarity, range, loudness and balance of the output audio.

Finally, for the price, we checked the box and product website for the maximum retail price, as well as online shopping portals for the best market operating price, to judge the price to performance ratio.

Finally, the best performer was decided purely based on the sound quality of the speaker. The best value was determined based on not only the audio output performance, but keeping in mind the price-to-performance ratio. The editor's pick was the speaker that appealed to the testers, the most.

BUILD AND DESIGN

Bluetooth speakers need to be light, compact and easy to carry. They must also be built to withstand a small degree of everyday torture, too.

The Frontech JIL 3906 is a small, compact speaker shaped like a landmine. Its biggest USP is that it's waterproof, so you can take the device swimming with you, if you wish to. We have dropped the speaker a few times too, and it works just fine. Continuing with the small and compact form factor, we have the Logitech X50. It is available in a variety of vibrant colours appealing to the visual palate, but sadly, no waterproofing. The buttons on this speaker are big, and easy to access.

Moving to the Logitech X300, the speaker has a design similar to the UE Boom. It has three physical buttons on the top, for volume and Bluetooth. The power button is located at the rear of the speaker. Available in a bunch of bright colours, the speaker has a rubberized finish, which makes it easy to grip, and comfortable to hold in one's hands. Sadly even this little guy isn't weather proof. If the design of the X300 was simplified, it would look like the Sony SRS X2, our next entrant. The speaker has a matte, rubberized finish and is by far the simplest-looking speaker that we have, and that isn't a bad thing. The buttons rest at the top of the speaker, and the AUX and USB ports are at the back. The SRS X2 is apt for a neat desk.

Moving to the JBL family we have the JBL Charge 2, Flip 3, Pulse 2, and the JBL Xtreme. Keep all the speakers together and it looks like the evolution of the *dhol*. One can also imagine Dudley Dursley's life at different stages by looking at these speakers. All the JBL speakers in this list have a similar design – on either side the speakers we have the drivers. The speakers themselves have a cylindrical design with rubber housings to keep them steady when kept horizontal. There is a slight issue with JBL's designing according to us, because, if you keep the speaker vertically, you might end up blocking one of the drivers.



Logitech UE Boom

The JBL Flip 3 is the smallest and narrowest of JBL's lot here. It comes with a flap that covers the USB and auxiliary ports. The speaker is splashproof. The Bluetooth button, volume controllers and call button are textured, and are a part of the speaker grille, making them easy to find without looking at the speaker. The textured finish to the grill is a lot like the UE boom. The JBL Charge 2, on the other hand, has a distinct rubber protrusion that acts as the base. You are encouraged not to keep the speaker vertically. All the buttons are neatly laid out on the top of the speaker (when kept on its intended rubber strip). The speaker has quite a simple design.

If jazzy is what you are looking for, the JBL Pulse 2 is

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	UNDER 10K					
Brand	**Frontech**	**Logitech**	**Logitech**	**Sony**	**JBL**	**Bose**
Model no.	JIL 3906	X50	X300	SRS X2	Charge 2	Soundlink Color
Price: MOP	₹1,100	₹1,900	₹4,995	₹6,100	₹7,750	₹9,900
Price: MRP	₹1,100	₹2,495	₹3,995	₹7,999	₹7,750	₹9,900
Features (of 30)	16.63	9.17	11.50	13.13	15.37	11.49
Performance (of 50)	18.06	31.36	39.86	32.89	37.17	37.36
TOTAL (of 100)	47.69	54.83	65.86	59.51	65.53	60.85
SPECIFICATION						
Weight (gm)	77	142	335	500	540	570
Dimensions	17.8 x 12.7 x 5.1 cm	97.5x85.7x38.3mm	66x152x71mm	171 x 60.5 x 56.5 mm	79x184x75mm	5.3x5.0x2.1 in
Frequency response	NA	132Hz - 20kHz	NA	NA	75Hz – 20kHz	NA
Power output in RMS	NA	3W	NA	20W	NA	NA
Rated battery life (in hours)	4	4	4	5	12	8
Rated range (in feet)	NA	30 feet	30 feet	30 feet	33 feet	30 feet
Battery capacity	300mAh	750mAh	NA	NA	6000mAh	NA
PERFORMANCE	**Audio Tracks**					
Carnival of rust	40	60	75	65	70	78
Instant crush	40	60	80	60	77	76
Whiplash (Caravan finale)	35	55	79	67	79	74
Into the night	35	60	75	60	70	75
Counting stars	40	55	75	60	68	70
22kHz to 20 Hz sweep	60	72	86	70	80	82
Loudness	20	70	80	70	75	75
Range	30	65	85	70	75	70
DESIGN						
Materials used / buttons etc	75	78	80	65	70	60
Aesthetics	55	65	65	70	60	60
FEATURES						
Can charge devices?	No	No	No	No	Yes	No
Daisy chaining (Connect multiple speakers)	No	No	No	No	No	No
Micro SD	Yes	No	No	No	No	No
Aux-in	Yes	Yes	Yes	Yes	Yes	Yes
Playback controls	Yes	No	No	No	No	Yes
MicroUSB charging	Yes	Yes	No	Yes	Yes	Yes
Playback via USB	No	No	No	No	No	No
Speakerphone call answer	Yes	No	Yes	Yes	Yes	No
Water resistant	Yes	No	No	No	No	No
Dedicated app	No	No	No	No	No	No
NFC	Yes	No	No	Yes	No	No
Battery level indicator (Physical or otherwise)	No	No	Yes	Yes	Yes	Yes

designed for you. This Bluetooth speaker offers an "interactive light show", which is to say that with the push of a button, you can see a light show from inside the grille of the speaker. It has a sensor called the JBL Prism color sensor lens. You need to point the lens on the speaker at the colour you want, and watch the Pulse 2 bring the colours to life. It's quite entertaining, even though it isn't really accurate. Last but not the least, we have the JBL Xtreme. This thing not only resembles a *dhol*, but also has a strap that lets you carry it as one. It is huge and heavy, weighing 2.11kgs. All the ports on this speaker are hidden beneath an inconvenient zipper, and even though it is waterproof, we recommend you don't take a dunk with it.

The Logitech UE Boom looks like a distant cousin of the JBL family, and comes in a bunch of interesting colours. The speaker is well built with a rubberized finish for a good grip, and you have to keep it vertical to get the most from it. The speaker is waterproof, and the only downside is that the flap covering the microUSB port and the auxiliary port can easily be misplaced.

The Creative Sound Blaster Roar looks like the ideal desk speaker. It is also the only speaker with the largest number of buttons and options at the back, and we will explain why this is the case in the features section.

Moving on to the Bose family, we have the SoundLink Color, SoundLink Mini 2, and the SoundLink III. The SoundLink Color, as the name suggests, is available in a number of colours and has a simple box design. Despite the colour options up for grabs, the design of the speaker may be too simple for

	ABOVE 10K							
	JBL	**JBL**	**Creative**	**Logitech**	**Bose**	**JBL**	**Bose**	**B&O**
	Flip 3	Pulse 2	Soundblaster Roar	UE Boom	Soundlink Mini 2	Xtreme	Soundlink III	BEOLIT 15
	₹8,990	₹17,990	₹14,000	₹12,999	₹18,000	₹18,990	₹22,388	₹35,000
	₹9,990	₹17,990	₹16,000	₹14,999	₹18,000	₹24,990	₹22,388	₹35,000
	19.85	19.51	19.77	22.11	12.87	18.23	7.73	11.67
	36.61	38.22	43.08	43.67	37.50	37.78	44.25	48.31
	72.46	74.73	79.85	82.98	66.87	72.31	68.48	73.97
	450	775	1100	540	670	2110	1370	2700
	64x169x64mm	84.22x194.4x84.2mm	57.0 x 202.0 x 115.0 mm	18 x 6.9 x 6.9 cm	2x7.1x2.3 in	126x283x122mm	10.1x1.9x5.2in	23 x 13.7 x 19 cm
	85Hz – 20kHz	85Hz – 20 kHz	NA	90Hz – 20kHz	NA	70Hz – 20kHz	NA	
	NA	NA	NA	NA	NA	NA	NA	240W
	10	10	8	15	10	15	14	24
	33 feet	30 feet	NA	50 feet	30 feet	NA	30 feet	NA
	3000mAh	6000mAh	6000mAh	NA	NA	10000mAh	NA	NA
	68	75	90	88	72	85	85	95
	70	72	85	85	75	85	85	92
	70	76	88	90	76		92	96
	65	75	82	84	70	86	90	98
	65	70	78	86	75	86	90	96
	78	80	90	89	82	92	95	100
	82	80	90	90	70	79	85	100
	80	80	85	86	80	85	88	95
	85	85	90	85	85	88	85	80
	75	85	80	87	80	75	80	60
	No	No	Yes	No	No	Yes	No	Yes
	Yes	Yes	Yes	Yes	No	Yes	No	No
	No	No	Yes	No	No	No	No	No
	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	No	Yes	Yes	No	Yes	Yes	No	No
	Yes	Yes	Yes	Yes	Yes	No	No	No
	No	No	Yes	No	No	No	No	No
	Yes	Yes	Yes	Yes	Yes	Yes	No	No
	Yes	Yes	No	Yes	No	Yes	No	No
	Yes	Yes	No	Yes	No	Yes	No	No
	No	No	No	Yes	No	No	No	No
	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes

some. All the buttons rest on the top of the device and have rubbery bumps to them. The SoundLink Mini 2 on the other hand has a rectangular design. The unit we received comes with an aluminum finish, making it appear elegant. There is an external base plate that comes with the device, but does not fit very well. The SoundLink III, on the other hand, has the most boring-yet-elegant design, being a rectangular desk speaker for the businessman. It's the speaker you'd find on Harvey Specter's desk. The buttons at the top feel very premium, though.

Last but not the least, we have the B&O Beolit 15. The speaker is huge, and comes with a leash attached to it (for the lack of better description), and looks like a picnic box. There is an in-unit box at the back of the speaker, where you can stow the charging cable, and this is really handy. The top of the speaker has Bluetooth, power and volume buttons. Minimalistic, and well placed.

All the speakers that we have in this list, even the low cost ones, bring good builds to the table. Its great to see that Bluetooth speaker manufacturers pay attention to the build, even if the design is kept simple. But, how feature-rich are these speakers?

FEATURES

There was a time when we'd be pleasantly surprised when a Bluetooth speaker boasted the ability to remember more than two Bluetooth devices. The number of features on offer on a Bluetooth speaker today, is insane. Here's how we tried to break it down for you.

Power Bank: Yes, some of these speakers house a USB port, and you can charge your

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smartphone using the speaker as a power bank. The ones that sport this ability are the JBL Charge 2, Creative Sound Blaster Roar, B&O Beolit 15 and the JBL Xtreme.

Some of the speakers have the ability to pair with another



Logitech x50

speaker (either from the same family, or the exact same model) to give you stereo output. The ones that support this are the JBL Flip 3, Creative Sound Blaster Roar, Logitech UE Boom and the JBL Xtreme.

Coming to other features of the speakers, the JBL Charge 2 has a Social Mode button, that allows up to three devices to connect to it via Bluetooth. Users can take turns playing music on the device, making the speaker a more social affair.

Never judge a book by its cover, and that's the best way to describe the features of the Creative Sound Blaster Roar. The company has thrown every feature possible in this speaker, except for AirPlay and the kitchen sink. The speaker works as a DAC. You can simply connect it to a PC through USB, and use this feature. Sure, it has Bluetooth, NFC and a microSD card slot, but did you know that you can record audio on it to a microSD card? Yes, you can. We found the feature online and tried it, and it works – the device can work as a microSD card reader when it is plugged into a PC. There is a button at the back of the Roar, that says 'alarm'. Press this for three seconds and a siren sound plays from it very loudly. Living in Delhi, there are a lot of reasons why we can recommend carrying this speaker around, for this one function alone.

Coming to the B&O, two devices can be paired with the speaker at once. This allows the user and a friend, to play music together.

Everything written above seems great but the primary function of a Bluetooth speaker is to deliver great sound output. Does it succeed? Read on.

PERFORMANCE

Kicking things off with the budget speakers, we have the Frontech JIL 3906. One annoying feature is that the Volume button, that, instead of controlling volume, changes the track. Controlling the volume is from the device (smartphone) only, unless you stop playing music, press the volume button a few times, and resume playback. Coming to the performance, there is practically no bass, but the vocals are clear. At its highest volume, the audio is still quite soft. Since the vocals are clear, the speaker is good for receiving calls. For the price you pay, it can not really be tagged 'bad'. This is the speaker you get your kids, because you won't be worried about them losing it.

Moving to the Logitech X50, the speaker is loud, clear, smooth, and can connect to two devices at the same time. There is a big jump in quality and loudness, when compared to the Frontech JIL 3906. The vocals are comparatively clear too, on the speaker. On the downside, the mids are subdued, and overall, the output audio has a lot of distortion. There is a distinct lack of bass in the speakers. The speaker is loud and good enough for a small party, but if you want crisp detail in your audio, you will need to look elsewhere.

Coming to the Logitech X300, the speaker has very clear mids, and has an overall good range. When you expect the sound to become loud and deliver a punch, the speaker auto-levels the bump of the highs. This works well in some cases, while in a number of cases, the punch is vividly missing. This feature of the speaker is subjective to how you like your music. It has good stereo separation. This is the first budget speaker where there is considerable semblance of bass, which is good at this price point. The speaker has warm texture of audio notes, and details of the drum's beat are clear and balanced. Overall, the audio from this speaker is quite good, especially considering its price.



B&O Beolit 15

The Sony SRS X2 sounds flat, but it is clear. The speaker has very high treble, to the point where it screeches at full volume. When there are a lot of instruments playing, the speaker sounds chaotic more than clear. Instruments aren't balanced with the vocals making the sounds too muddled. The SRS X2 is only good enough for casual listening nothing more.

Coming to the JBL Charge 2, the speaker is well balanced, and has pronounced mids, leading the cue of well balanced audio performance. The speaker delivers the relevant punch when it's needed in the song, and that's a very good thing. The bass sounds a little 'dirty', but is distinct, nonetheless. To put things into perspective, distortion levels on the Charge 2 are higher than the X300. It does not completely destroy the experience, but it still is there. At maximum volume, this is not the loudest speaker we have, but it is loud enough, nonetheless. At high volumes, the speaker is tuned to favour bass and attenuates other frequencies. These speakers are excellent for outdoor listening.

The Bose SoundLink Color has really good range, especially in the frequency test. There is slight bass distortion but the speaker has very clear audio while listening to the snares and the hi-hats of Carnival. Put simply, it delivers reasonably balanced audio. On the downside, the mid-range frequencies are compromised. Although the overall audio output is clear, the audio delivery is unidirectional,

making the speaker restricted in terms of overall soundstage.

The JBL Flip 3, to begin with, has very sharp audio clarity. The output is relatively loud, even at lower volumes. The treble is on the higher side in terms of audio balance. The speaker does have good, powerful bass, courtesy the dedicated bass drivers. The guitar riff in 'Into The Night' is shrill (owing to the higher treble), taking away some of the elegance of the original patch on Santana's Les Paul. This speaker is best heard at 65-75% volume to get the best audio fidelity. At 100% volume, the auditory experience is not the best.

Coming to the JBL Pulse 2, the vocals sound pristine but the bass isn't all that much. Listening to Counting Stars felt somewhat hollow. The speaker is good for outdoor listening, or a small party. The bling lights won't be out of place in the latter scenario.

Moving on to the Creative Sound Blaster Roar, let's get the worst out of the way – a thin strip of the speaker gets muffled when placed on a table, which restricts the outflow of reflected audio from within the mesh. It has very clear audio, and is very loud, as the name suggests. Highs, mids and lows can all be heard clearly, but the speaker favours treble. Once you press Roar, get ready to be blown away. The speaker gets really loud once you hit the roar switch, although it somewhat loses out on timbre. In our listening test, we felt that the speaker was too bass heavy with Counting Stars. The acoustic sound output is incredibly pleasant on the ears though.

The Logitech UE Boom has good bass, considering its size and design. The treble side is slightly sharp, though. Despite this, it has clear and balanced audio, and slight amounts of audio distortion at the highest volume level. Overall audio quality is very warm, clear, rich, and the vocals sound crisp and levelled. The mids are very well pronounced, too, which lays the foundation stone for the overall-balanced audio. Overall, the speaker gives you clear and balanced audio.

The Bose SoundLink Mini 2 has slightly distorted audio, at full volume. Additionally, the audio sounds a little restricted because of the small drivers, and the narrowness of the speaker. The highs and mids on the speaker are good, though. The bass, however, is a little overpowering. Overall, the timbre is good.

EDITOR'S PICK digit NOVEMBER 2015



Bose SoundLink 3

As it looks, so does it sound! That's the best way to describe the JBL Xtreme. To begin with, the speaker is loud, really loud. The treble is clear, and the mids are good as well. The great fidelity of the audio comes at the cost of the dimensions and weight. Portability takes a hit. The audio fidelity, however, is really good. Bass is on the heavier side. The device is more like a boombox for electronic, Dubstep or EDM lovers. If you are having a party and need to bring the house down, then this is the speaker for you.

Coming to Harvey Specter's speaker, the Bose SoundLink III – we found the speaker really loud, a marginal distortion at high volumes, but the mids are pristine. Considering the price of the speaker and the fact that it is up against JBL's *dhol*, the bass felt relatively subdued, but somewhat clearer and balanced. The audio output is somewhat unidirectional, unless you are listening to it from within a range of one foot. The speaker is ideal if it is kept in a corner, and not the center of the room. What exemplifies the SoundLink III is the rich timbre. Despite the vocals being overpowering at the highest volume, the audio is crisp and pristine. While this does kill bits of extreme detail off the instrumentation in certain tracks, you can still distinctly tell the difference between a snare and a tom tom, and this is where Bose is Bose.

Last but not least, we have the B&O Beolite 15. The best way to describe the audio from this speaker is – this is what Santana was meant to sound like; this is what Carnival was meant to be. We fell short of words to describe how the speaker sounds. The worst thing to say about it is that it looks like a tiffin box – Tupperware met Bang & Olufsen somewhere, maybe. It won't appeal to an audience that likes stylish speakers, but it will certainly appeal to the audiophile.

So, who wins this Bluetooth shootout?

WINNERS
Best performer

The award for the best performer goes to the B&O Beolit 15. Even though the speaker looks like a tiffin box, it sounds exceptionally good. The Beolit 15 hit every note perfectly, and it sounds like a dream. This is how music was intended to be heard, and the fact that the speaker boasts of 24 hours of battery life ensures that you don't run out of juice. Oh, and did we mention that it charges your phone too?

Best buy (under ₹10,000)

Logitech X50

When you are on a tight budget, there are a lot of places where you will have to make a compromise when purchasing a budget speaker. It is here that the Logitech X50 attempts to bridge the gap. It is loud and clear for its size. The speaker may lack bass, but what you get is a budget speaker that's good for those small, family picnics.

Best Buy (above ₹10,000)

UE Boom

Waterproof, colourful, brilliant audio and durable – all of this, at a great price point. You can literally take this speaker swimming with you, and it will still work. The speaker hits all the notes, and has clear and loud audio.

Editor's pick

Bose SoundLink 3

The speaker not only sounds good, but is ideal as that elegant showpiece you have in your house, which shows how elegant you really are. If simplicity, class and good sound is what you are looking for, then the Bose SoundLink III is the weapon for you.



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Nintendo turns 30!
The venerable NES celebrated its 30th anniversary last month since its first launch! Feeling old? **http://dgit.in/Nv15o**

POCKETABLE ULTRAPORTABLES



We compare **11-INCH** thin and light **LAPTOPS** from Acer, ASUS, Dell, Lenovo and HP, selling under **50K** to recommend the right fit for you

Ashish Panigrahi
& Jayesh Shinde
teamdigit@digit.in

It was only a matter of time. Less than a decade ago they started to miniaturize laptops to a whole new level. Then in the face of insurmountable smartphone and tablet demand, the mission was interrupted. But like a phoenix rising from its ashes, the second coming of netbooks was inevitable, and they've definitely come a long way.

To begin with, they're no longer referred to as netbooks anymore, just thin and light laptops. They're no longer restricted to a 10-inch form factor, with almost all thin notebooks now gravitating to a 11-inch form factor. Their specifications, features and designs have also evolved with changing times – depending on your price budget, you can buy a 11-inch ultraportable for as little as 15k, for a touchscreen device you can spend anywhere between 20k to 30k, and for a 2-in-1 tablet-notebook hybrid the asking price is as low as 25k.

The trend of shrinking laptop form factors finally being available at an affordable cost is a breath of fresh air, especially in the ultraportable laptop category – where traditionally OEMs tried to focus their efforts in the premium segment. That's no longer the case. Another market reality adding to the growth of 11-inch laptops or 2-in-1s is the shrinking tablet space – tablet sales have seriously nose-dived over the past 18 months, and this has given manufacturers added impetus to refocus their energies on perfecting tiny laptops once again.

If there's one thing we realized from this comparison test, by looking at candidates from Acer, ASUS, Dell, HP and Lenovo, is that despite shrinking laptop dimensions, their hardware performance has marginally increased (as compared to the netbooks of old) but battery life has shrunk a bit – make no mistakes, this is still a lot better than main-

HOW WE TESTED

Initial setup: We tested these 11 inch thin and light laptops much like any other laptop we benchmark. All laptops to be tested were first examined and everything about them is catalogued, including bundled software, accessories, etc. We then delete the antivirus and other 'bloatware' from the system to ensure minimal performance impact on the devices. Drivers and essential software are updated. Finally, the devices are set to run in performance mode in the BIOS as well as in the power options. All performance inhibitors are turned off, as much as possible – stuff like hard drive idling to sleep, screen switching off, screen dimming on battery mode, etc. After this, the laptops are ready to go into the grinder of our performance benchmarks.

Performance tests: We conduct a whole series of tests on the devices to measure the impact of every aspect of the system on overall performance – tests that stress the laptop's CPU, RAM, GPU, hard drive, screen, thermals, battery, and more. These tests include industry standard benchmarks including (and not limited to) Futuremark's PCMark 8 and 3D Mark, MAXON Cinebench, and others. We use PCMark 8's Creative test suite to evaluate battery life of each laptop, as well. Results are carefully catalogued.

Screen brightness and contrast ratio is measured using the DataColor Spyder 4 Elite test unit – a color calibrator. It's essential to calibrate all laptop displays before objectively testing them, and we do just that. In dark rooms with little or no ambient light, the laptops are tested with Datacolor Spyder Studio. Brightness and contrast is tested at different luminance level, and an average of multiple readings is taken as the final score. We also test the screen's gradient through DisplayMate and Lagom.nl.

A series of subjective testing is also conducted that scores aspects such as a laptop's keyboard, touchpad, palmrest, screen readability, onboard speakers, look and feel, watching movies, playing games (if the laptop is meant for gaming), among others. These tests help complete the gamut of objective benchmarks with real-world test scenarios, allowing us to take a fairly homogeneous look at the laptop's overall pros and cons.

The final performance score is arrived at which includes the weighted sum of all the scores catalogued. Weights are assigned based on the perceived importance of the components. For example, since gaming doesn't really matter or all that important on a business laptop, gaming benchmarks and scores from them are of lesser importance here than they would be on a home entertainment or gaming laptop. Stuff like battery life, screen brightness, CPU performance will be of significantly greater importance in a business setup.

Features score: The features present in each laptop are tabulated and given weighted scores depending on perceived importance. For example, dedicated multimedia keys and volume keys are given more weightage than those that are shared with Fn keys. An important note on features, we don't rate CPU, GPU, RAM characteristics any weight here, because we feel those characteristics already surface in the performance part of our testing. Example - Whether a laptop has a dual-core or quad-core laptop doesn't get lesser or higher points because both of these laptop's performances take those aspect into account. Features that directly impact performance are not counted or scored here.

Design and Usability: The scores for this parameter are largely subjective as they indicate our experience with the device. Items such as quality of the keyboard, responsiveness of the touch-screen, etc. are weighted and scored.

Final score: The final score that we arrive at is the sum of the performance, features and design scores with a variable individual weightage. This is not a fixed weightage, and depending on the category of laptops we're testing, these weightages can be different. For this particular comparison, we gave performance, features, design and price 40%, 20%, 30% and 30%, respectively.

A note on winners: The Best Buy laptop is awarded to the device with the best price to performance ratio based on a predetermined formula. This is the ideal, value for money product in the test. The Best Performer award is awarded to the device with the highest overall performance score. The Editor's Pick award is awarded to the device that the reviewer feels is the best product that offers something extra or unique that none of the other laptops have. The Editor's Pick is an entirely subjective award, the decision for which is based on the reviewer's experience while testing the products.



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Android Marshmallow has a basic file manager built right in. Check out how it looks and behaves right here: **http://dgit.in/Nv15r**

stream 14 or 15 inch laptops. And in terms of design, the 11-inch laptop segment also has hybrid tablets on offer, so consumers are much better off in terms of choice than they ever were before.

What do all these laptops we've compared have in common? They are all ultraportable, smaller than most laptops you've looked at all your life, they offer better battery life than larger-screened laptops, and some of them can double up as convertible tablets as well. What more do you want from fully-functional laptops that weigh less than 1.5-kg apiece and cost significantly lesser than other mainstream notebooks out there? Find out more about the contenders and their individual highs and lows.

ACER ASPIRE E11 E3-112M-C2CZ

The Acer Aspire E3 112M is a decent example of the species. Its all-plastic shell is quite thin and the whole thing only weighs about 1.3 kg – extremely easy and convenient to ferry it around! It can easily disappear inside a backpack or a medium-sized hand purse without anyone's notice. Trudging the slim Acer notebook is no problem whatsoever, and its construction or build quality isn't bad either but it isn't spectacular – it does dip on the keyboard deck and its screen vibrates a bit too much while typing, but they're nowhere close to a deal breaker. However, in the company of other better built notebooks, the Acer Aspire E3 112M doesn't feel stellar. However, expectations need to be managed, as after all it's the second most inexpensive machine in this comparison.

Depending on how you look at it, one of the design aspects of the Acer Aspire E3 will either have you sing its praises or pull your hair out in frustration. We are referring here to the placement of almost all the ports on the back spine of the laptop. Except the SD card reader slot, earphone combo 3.5mm port on the left and the security slot on the right, all the USB, power, and Ethernet port are on the back side of the laptop and difficult to fiddle with while you're in the blind. The first thing when we booted up this machine is the horde of pre-loaded applications which Acer had bundled with the laptop, which slows down the system quite a bit.

More than its chiclet-sized keys, we like the Aspire E3's large and wide touchpad. Its matte screen is a breath of fresh air to use, not suffering from reflection issues that plague most glossy screens on laptop these days. For someone who's going to be looking at non-multimedia content on the Acer's screen all day long, its matte screen is a true champion for that cause.



Acer Aspire E11 E3-112M-C2CZ



ASUS EeeBook X205TA

Sound from the laptop's speakers was good with very less distortion at upto 80% the volume, second only to the HP's better-than-average B&O speakers. And its battery life is its only boast worthy highlight, we clocked over 5 hours on our benchmark, which easily translates to over 8-9 hours on a conservative power plan. This was second only to the ASUS EeeBook X205TA, so you know which notebook to pick if you desire one of the best battery performance we've seen in a 11-inch notebook this year.

To re-emphasize, what we didn't like on the Aspire E3 is all the preloaded software that slows down an already humble performer. After deleting quite a few unnecessary apps, the performance of the tiny, slim notebook did improve a bit, but it still doesn't compare to some of the other laptops thrown into the mix of this comparison. Multitasking beyond two apps easily slows down this machine, and speed is clearly not its forte. If anyone should be buying this machine then it should be for its ultra portability and very good battery life.

ASUS EEEBOOK X205TA

The lightest and thinnest laptops of the bunch we tested for this comparison test, the EeeBook's a true featherweight at just under 1 kg – easy to carry around and work on. But compared to all the other higher-priced laptops in this comparison, this EeeBook isn't the best built – its keyboard deck wobbles a bit too much while typing on its otherwise comfortable, isolated keys, and touchpad doesn't inspire too much confidence either. The mouse buttons were extremely soft to press, though. Another limitation was the mini HDMI port, rather than a full sized HDMI port which would have been better.

But it's with its performance that the EeeBook X205TA redeems itself. It offers over 6 hrs of battery time in our syn-

thetic, that's easily over 9 to 10 hours on a conservative plan. And also its screen brightness and color gamut is very good at its price. Due to the 32 eMMC the user only gets 23GB of actual storage, and its 500GB of cloud storage is largely meaningless as it's restricted by the speed of your Internet connection, and we're aware of the poor Internet connectivity from the Indian context. Speakers were also average and its output was similar to the Lenovo which also has Dolby Digital. Watching movies, listening to music, working on a few basic apps, that's all you can expect from the X205TA. And of course, exceptionally long battery life.

One of the biggest highlights of this notebook is its truly inexpensive price. Its finish isn't glossy so it doesn't leave any fingerprints around, and it's the lightest notebook in the mix with the best possible battery performance. Not a bad choice at all for someone who's interested in spending less than 20k on a thin and light notebook to carry around while commuting in the city or a cash-strapped student who wants to invest in a laptop for use at college. This is definitely one of the machines worth recommending, and you'll read more about it in our winner's section towards the end of this write up.

DELL INSPIRON 11 3148

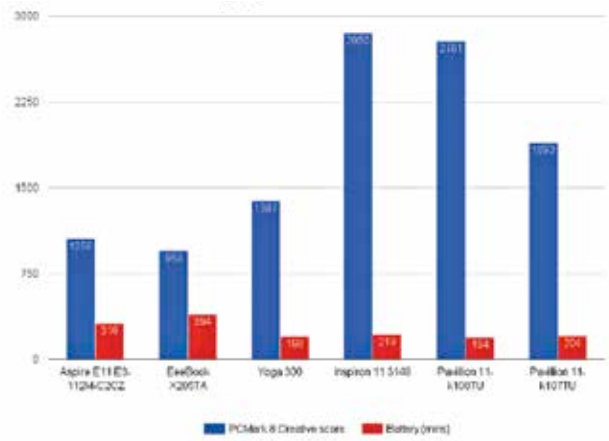
The design of the Dell is probably the best among all the convertible machines we received for this comparison. It has a silver aluminium coloured finish all around its screen lid, palmrest and bottom panel – it looks and feels premium, and certainly money well spent if you are easily swayed by good-looking gadgets. Its overall build felt quite bulky, though, despite weighing just 1.4 kg.

Open it up and you're instantly drawn to its glossy screen, which apart from being quite good is also a huge fingerprint magnet. The Dell Inspiron 11 3148's keyboard claims to be spill-proof with a chiclet-style key arrangement and it slightly bulges out at the center – we don't know why. Is it supposed to aid typing inadvertently? Overall, the keyboard was very spacious and the palmrest area is also very comfortable due to the curved end.

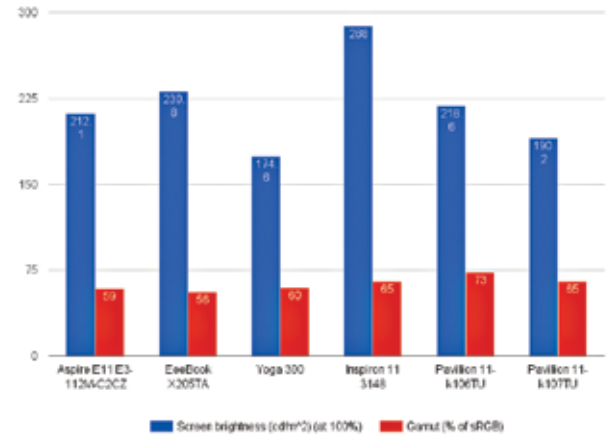


Dell Inspiron 11 3148

PC MARK 8 AND BATTERY SCORE



SCREEN BRIGHTNESS AND GAMUT COMPARED



The exhaust heat vent position on the Dell Inspiron 11 3148 is very bad at the center near the hinges which tends to attract quite a bit of heat, and especially if you're holding the notebook in tablet mode it becomes a little difficult to hold on to for long. In terms of the touchscreen response and usability, the performance was fast but not so precise out of all the four notebooks that support tablet mode here. Another major gripe we had with the Inspiron 11 was the positioning of its power button couldn't be any worse, as it's located on the front edge, so you unintentionally press the power button without realising it. Dell also has a dedicated physical windows button, a rubber one at that too, placed just the lower side of the display on the hinge plate, which is very convenient. We also liked the small rubber strips placed around the keyboard deck to ensure the deck and palmrest doesn't get scratched when you place the device in tablet mode – very good design.

In terms of performance, the Dell easily outperformed every other machine in this comparison test, executing every task we threw at it with great aplomb. It's obviously not meant for gaming and it can't run 3D applications, but it's a nice machine to use for

Brand	Acer	Asus	Lenovo	Dell	HP	HP
Model	Aspire E11 E3-112M-C2CZ	EeeBook X205TA	Yoga 300	Inspiron 11 3148	Pavillion 11-k106TU	Pavillion 11-k107TU
Price (₹)	₹19,299.00	₹14,999.00	₹30,490.00	₹40,690.00	₹42,990.00	₹35,990.00
Warranty	1	1	1	1	1	1
Performance (of 40)	21.38	22.79	19.66	27.52	27.43	23.35
Features (of 20)	7.33	7.23	11.03	10.75	11.73	11.13
Build and Design (of 30)	7.59	8.63	16.56	15.98	16.51	16.39
Overall (of 100)	59.62	68.64	62.02	65.30	66.14	63.37
Features						
CPU	Intel Celeron N2840	Intel Atom Z3735F	Intel Pentium N3540	Intel Core i3-4030U	Intel Core m3 6Y30	Intel Pentium N3700
RAM	2	2	4	4	4	4
Graphics	Intel HD Graphics	Intel HD Graphics	Intel HD Graphics	Intel HD Graphics	Intel HD Graphics 515	Intel HD Graphics
HDD	500	32	500	500	1024	500
Bundled OS	Windows 8.1	Windows 8.1	Windows 8.1	Windows 8.1	Windows 10	Windows 10
Screen Size (Inches)	11.6	11.6	11.6	11.6	11.6	11.6
Touch Screen? (Y/N)	No	No	Yes	Yes	Yes	Yes
Screen Resolution (Pixels) (1080p=2, 768p=1)	1366X768	1366X768	1366X768	1366X768	1366X768	1366X768
Weight (kg)	1.3	1	1.39	1.41	1.46	1.46
No of USB 2.0	2	2	2	2	1	2
No of USB 3.0	1	1	1	1	2	1
Connectivity (LAN / Bluetooth / Wi-Fi)	LAN | Bluetooth | Wi-Fi	Bluetooth | Wi-Fi	LAN | Bluetooth | Wi-Fi	Bluetooth | Wi-Fi	LAN | Bluetooth | Wi-Fi	LAN | Bluetooth | Wi-Fi
DisplayPort / VGA (Y/Y)	NA	NA	NA	NA	NA	NA
HDMI out	Full size HDMI	Mini HDMI	Full size HDMI	Full size HDMI	Full size HDMI	Full size HDMI
Headphone/Mic/Combo	Combo	Combo	Combo	Combo	Combo	Combo
Wireless Keyboard & Mouse?	NA	NA	NA	NA	NA	NA
Memory Card Reader (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes
Fingerprint scanner?	NA	NA	NA	NA	NA	NA
Optical Drive (Y/N)	NA	NA	NA	NA	NA	NA
Inbuilt Webcam (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes
Recovery Discs/Media	Recovery Disc | Media	Recovery Media	Recovery Media	Recovery Media	Recovery Media	Recovery Media
Docking port?	NA	NA	NA	NA	NA	NA
Benchmark						
PCMark 8 (Creative)	1056	953	1387	2850	2781	1893
3D Mark (Ice Storm)	15099	14894	20683	35227	38808	22050
WinRAR (KB/s)	1242	1618	2117	2877	3005	1442
Battery (minutes)	316	394	198	219	194	204
Screen brightness (cd/m2)	212.1	230.8	174.6	288	218.6	190.2
Contrast ratio (X:1)	80.00	90.00	80.00	730.00	840.00	650.00
Temperature (average temp.)	50	48	52	46	48	55
Build and Design						
Keyboard (out of 15)	7.5	7.5	9	8	9	9
Touchpad (out of 15)	13	13	14.5	13.5	14	14
Tablet Mode?	No	No	Yes	Yes	Yes	Yes

day-to-day usage which offers 3 hours 40 minutes of battery backup on high performance mode – expect over 7 hours of battery life on a more conservative setting. It was a good 10-15% faster in all aspects of its overall performance compared to the rest of the competition.

HP PAVILION 11 (K106TU AND K107TU)

Out of the bunch of laptops we received for this comparison, we managed to get two almost identical 11-inch ultraportables from HP. Why do we say that? Because they look exactly the same, right down to the tee. The design of the HP convertibles is a fusion between the Dell notebook in terms of its hinge and the Acer E3 a little. Both of them have silver grey premium exterior and black keyboard deck and screen bezel that houses a glossy display. If we keep them side by side, they look exactly the same, and the minor differences only start to emerge when you look at its spec sheet (please refer to the table).

Both the machines excel at audio performance, thanks to its superior Bang & Olufsen speaker housed inside them,

that really hits the ball out of the park in terms of reinforcing your belief in the idea of better-than-average audio off laptops in the coming years.

The main difference between both the HP units lies in their processor and HDD capacity. The HP Pavilion 11-k106TU has the latest 6th gen Intel Core M3 6Y30, while the Pavilion 11-k107TU has an Intel Pentium N3700 model. And while one comes with 500GB of internal storage, the other packs in a whopping 1TB – not bad at all for an 11-inch form factor ultra-portable notebook.

The HP Pavilion 11-k106TU screen brightness and the colour reproduction was better compared to the Pavilion 11-k107TU, which dulled a bit on side by side comparison. So after turning on the laptops the first thing that pops out is the HP Assist registration which is a bit annoying and would come up every time you turn on the laptop screen. We really liked the placement of the Windows button on the Dell machine which was very favourably positioned (at the centre of its bottom screen bezel), but the Windows button in the HP model requires a little getting used to as it is placed on the right side, a very inconvenient position to place the button which takes some getting used.

There is no vents in these laptops, but the heat output from the heat patch is too much in the Pavillion 11-k107TU, making it too difficult to work on while keeping on the lap. But that's about the only gripes we have with both the HP machines.

Also unlike the Dell Inspiron 11, the touchscreen experience was very precise in the tablet mode on both the HP Pavilion 11 notebooks. During sound comparison the Bang & Olufsen speakers really proved to be best in the bunch. Entertainment and other activities went off pretty well on the HP machines, and even their battery life is pretty good. If you have the money to purchase them, we definitely recommend the HP laptops as they're well worth the money – especially the Pavilion 11-k106TU which comes with the latest 6th generation Intel Core M processor. You're definitely getting your money's worth here, especially as both the HP machines also double up as convertible tablets with very good touchscreen feedback.

LENOVO YOGA 300

Out of the box, the Lenovo YOGA hybrid notebook looks pleasing on the eye and feels tightly packed together. Unlike the Dells and the HPs, the YOGA 300 doesn't appear to be a class apart just by looking at it. The two parts of the hybrid laptop are held together by a solid metal hinge, which lets the screen lid and bottom panel rotate up to 360 degrees without feeling anxious or fearful – the build quality exudes a lot of confidence. Even though it's less than 1.5kg in weight, the YOGA 300 feels a touch bulky. It maybe due to the excessively curvy seashell design of the laptop.



Lenovo YOGA 300

As is the case with many Lenovo laptops through the years, the YOGA 300 excels and remains unmatched in terms of input devices. Its curved keys are a joy to type on and the trackpad feels rock solid. Its touch screen is precise in the tablet mode unlike the Dell's. A unique feature among the host of buttons provided on this laptop is the accompaniment of a dedicated key to reset, next to the power and volume rocker which starts the Windows recovery launcher.

The sound quality wasn't as good on the YOGA 300 as compared to some of the HPs and other laptops in this comparison. Even at 50% volume the sound from the speakers got distorted when playing heavy metals. But we encountered a bunch of good pre-loaded software on the Lenovo YOGA 300 – phone companion, management, etc – which was a thoughtful addition. Unlike the Acer preloaded apps which slowed the processing, this one didn't and actually proved useful, especially with phone companion to access mobile devices easily.

WINNERS

For its overall impressive performance, the Dell Inspiron 11 won the Best Performer Award, and the HP Pavilion 11-k106TU gave it a very good run for its money, finishing up almost equal in terms of score. But the Dell was the fastest overall in terms of CPU performance, had the brightest screen, highest screen readability score, and lowest operating temperature at full load. A deserved winner.

The ASUS EeeBook X205TA is a very good deal at its price, edging out the Acer Aspire E3-112M by winning the price war and the Best Buy Award. It was slightly better than the Acer in terms of performance and build quality and sold for 25% cheaper.

The HP Pavilion 11-k107TU won our Editor's Pick Award, closely edging out the Lenovo YOGA 300 for largely offering better audio performance than the YOGA and doing a generally very good in most departments, performing way better than its Lenovo competitor.



HP Pavilion 11 (k106TU and k107TU)

Bazaar

THE LATEST PRODUCTS REVIEWED FOR YOU

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

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

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



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Samsung Galaxy S6 Edge Plus

Style and substance

The Galaxy S6 Edge Plus has a design very reminiscent of its sibling, the Galaxy S6 Edge, with the biggest difference being that the smartphone has a larger display, which is curved on both the sides. There is a larger battery and more RAM as well, but that's all under the hood. This gives edge-to-edge design a whole new meaning and feeling when you hold the phone.

Hold the device for the first time and you will feel odd, very odd. Usually smartphones have a flat display and a curved back. This adds to the ergonomic design of the phone making it comfortable to hold and more importantly making it easy to lift off a table. Here however, the roles have been reversed. The display of the smartphone feels curved because of; you guessed it, the curved edges. And the rather stiff flat back of the smartphone makes it uncomfortable to hold and use at first. Even a simple task like picking up the smartphone from a table feels different because the back is so flat and the curved glass is so slippery that it's an effort to just pick up the phone.

Coming to the phone's back, the metal body is overlaid with glass and it is a fingerprint magnet. The rear panel also houses the camera which protrudes slightly but that's ok.

One would imagine 2K resolution to be overkill on smartphones, but that's not the case here as the Super AMOLED display looks stunning. Watching videos is a visual treat on the phone. Despite the fact that you can tell the difference between a low resolution and high-resolution video, the low-resolution videos still looked good.

The only downside here is that the edges are more of a distraction than an addition while watching videos. It's distracting to see the black bars on videos curve around the display and moving images along the curved edges look a bit distorted.

Coming to the curves there is no practical use for it. Not yet anyways. Sure, you can see your notifications pop up on the curve or you can simply swipe the right side of the display to bring up your favourite contacts and apps but I can do this by simply installing a third party app on any Android phone. Just like Samsung's Note devices took a while to define the utility of the S-Pen, we think it will be quite a while before we can justify the utility of the curved display.



Interactive review

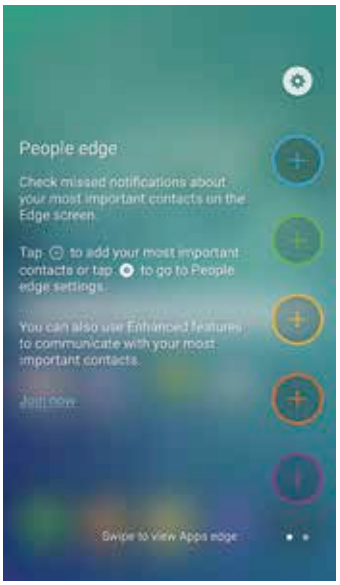
Moving on to the battery life of the smartphone, in our continuous video playback test the device lasted for a whopping 16 hours. Coming to everyday use, the device has enough juice to get through a day and if you aren't a power hungry user, you can eke out even more battery life.

The phone's gaming performance is great. The smartphone ran every game I played on it with great aplomb. The only downside here is the location of the speaker. I would inevitably end up covering the speaker with my hand during gaming muffling the audio, which isw loud and crisp.

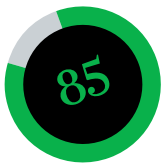
Last but not least, we have the camera. The rear has a 16MP camera that is brilliant. There are some pictures that I clicked in low light and people did not believe that it was clicked in low light. Let the image gallery speak for itself. Put simply, the camera of this smartphone is just awesome.

If you are looking for a state of the art Android smartphone, the Galaxy S6 Edge Plus is the one for you. It has a brilliant camera and display along with good battery life. The curved display has little utility and the smartphone feels fragile. If you want a smartphone that will turn heads wherever you use it, then this is the flagship for you.

Sameer Mitha



Edge UI or Windows Charms?



Features 81
Performance 90
Design 88
Value 62

Specifications

Display: 5.7-inch 1440x2560 pixel resolution; **Processor:** Exynos 7420 Quad-core 1.5GHz & Quad-core 2.1GHz; **RAM:** 4GB RAM; **Storage:** 32 GB; **Camera:** 16MP rear and 5MP front; **Battery:** 3000mAh; **OS:** Android 5.1.1

Contact

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Micromax Nitro 4G

For the offline budget buyer

Last year, the Micromax Canvas Nitro had turned out to be a brilliant little budget phone in the sub-15K category. This year the Nitro is back in a new 4G avatar. The phone has a very likable design and like many other Canvas branded phones we have seen recently, a well built body. The 720p display on the Nitro 4G is not bad either. The display offers true to life colours and saturation. The UI on the other hand is same old same old and almost stock like.



Price ₹11,000

This is the first phone to bring the Qualcomm Snapdragon 415 to India. The Canvas Nitro comes with 2GB of RAM and handled day to day tasks without hassles. Moreover, heavy games like Asphalt 8 were also dealt with reasonable ease. It is only when we brimmed the RAM with background apps, that the phone started to stutter slightly. The phone managed to give us about 6 hours of screen on time, which is above average, although we have seen better. Also, The 13MP rear camera takes good pictures and images taken feature good details. Images taken by the camera are slightly oversaturated, but the dynamic range is decent and we believe Micromax can fix it with a software update, unless of course it's a conscious choice, since many users prefer oversaturated colours.

While phones like Xiaomi Mi 4i or the ASUS Zenfone 2 will give you better performance at a similar price, to people against offline buying, the Micromax Canvas Nitro 4G will be served up as an option at the retailer's counter and it's good for average users.

Hardik Singh



Features 71
Performance 50
Value 62
Design 81

Specifications

Processor: Qualcomm Snapdragon 415; **RAM:** 2GB; **Internal Storage:** 16GB; **Display:** 5-inch 720p; **Camera:** 13MP rear, 5MP front; **OS:** Android 5.0.2 lollipop; **Battery:** 2500mAh

Contact

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ASRock Beebox Mini-PC

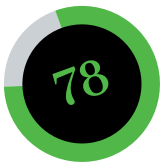
Beebox's Braswell beats Bay Trail-M



Price ₹17,999 (+Tax)

With everyone getting on the mini-PC bandwagon ASRock has gone ahead and launched yet another Mini PC series under the brand name Beebox. Centered around Intel's Braswell architecture these Mini-PCs pack a little extra power than their Bay Trail-M competitors and that too for a lower TDP thanks to the newer 14nm manufacturing process. The unit we'd received had a flashy gold finish making it quite the attention grabber. There are plenty of ventilation grooves all over the device and the SoC has a small fan which channels hot air through a small plastic shroud straight out of the casing. The external gold chassis is made out of plastic and feels sturdy thanks to the reinforcement provided by the inner metal chassis. For an MRP of ₹17,999 they've included a USB Type-C port on the front and an IR remote which you'd have had to purchase separately in most of the cases. Performance wise it performs better than the ECS Liva and the Gigabyte BRIX N2807 and with mini-PCs it's purely down to the SoC which in this case happens to be a generation ahead of the other two. However, this particular unit costs a lot more than the competitors that we'd tested earlier and this fact underlines the performance increment. The price-to-performance argument needs to be re-evaluated considering the street price to paint a better picture.

Mithun Mohandas



Performance 78
Features 76
Build 80

Specifications

Intel Quad-Core N3150; **Memory:** 2GB DDR3L 1600 MHz; **Expansion Slot:** mSATA + 2.5-inch HDD; **Storage:** eMMC 32GB; **Audio:** Realtek ALC283; **LAN:** Gigabit Ethernet; **Ports:** 1x USB 3.0, 1x USB 3.0 Type-C; **Dimensions (LxWxD):** 110 x 46 x 118.5 mm; **Warranty:** 1 year

Contact

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Website: http://www.asrock.com/

Apple iPhone 6S

A touch of change

Interactive review



Price ₹62,000 (16GB)

The iPhone 6S looks almost identical to iPhone 6, with only the small 'S' below the iPhone logo on the back indicating the difference. That is, unless you bought the metallic pink version, or Rose Gold, as Apple calls it. It took me a while to realise this, but the Rose Gold version actually looks golden under some lights, especially halogen bulbs, perhaps why Apple chose the name.

What you see is also what you get here. The iPhone 6S is slightly thicker, to accommodate the new 3D Touch and, as the new alloy that Apple has used to avoid bendgate issues. It's also heavier than the iPhone 6. While the weight is pretty apparent with this one, the thickness is something that only an iPhone 6 user would be able to tell on first look. What the thickness and added weight does is help you to get a better grip of the phone and make it feel sturdier.

What's changed though is the performance. If you're a gamer, you would love this phone. The new hexa-core PowerVR GT7600 GPU achieves frame rates that are higher than what the refresh rate of the display is. That is something few phones, if any, can boast today. While the best performing Android phones achieve about 950-1000 frames on the GFX Bench Manhattan OnScreen test, the iPhone 6S goes well over 3,000. If you had any questions about whether this phone is a beast for gaming, this fact alone should answer those.

Day to day performance of the 6S is also good. The A9 processor inside does well, but it's nothing out of the ordinary for Apple, and nothing that we haven't seen from iPhones before. It's more powerful yes, but not really as visibly as you would want it to be. My unit hung when opening the camera quite often, but that should be a glitch in iOS and not a performance issue.

The new 12MP camera is also better than Apple's earlier 8MP iSight cameras. That said, it's one department where, for the first time, Apple needs to improve. Android OEMs have caught up, if not surpassed the iPhone's camera. While the iPhone 6S does very well and will not disappoint even the most camera savvy users, from a purely comparative point of view, it needs to do better. Photos taken from this one are true to source and reasonably good on details, but low light performance falters against the LG G4.

Coming to the 'new' feature in the iPhone 6S, the 3D Touch. It's new indeed, but frankly, it's not as impressive as suggested. I was used to it after the first two to three tries, but I don't really find it making a big difference in terms of usefulness just yet. In addition, 3D Touch doesn't work inside Spotlight or the new Google Now-like screen either, meaning I still have to search for my apps and then pressure press, instead of just press.

The good thing though is that quite a few apps, like PayTM, Zomato etc. have added the feature, which means it's only a matter of time till someone truly innovates with 3D Touch. It's a new feature, yes, but not one that really adds functionality right now. We've learned to trust Apple to get developers excited though, haven't we?

Moving on, Apple also reduced the battery capacity of the iPhone 6S by about 100 mAh compared to the iPhone 6. That doesn't really make a difference in the battery life though, and if you found the iPhone 6 to be lacking battery life, this one would do the same. On a regular work day, the phone can last you for just about a full day, while heavier usage and extensive gaming would mean you'll have to charge the phone more often. On the first day of using the phone, we lost 50% battery in three hours, thanks to quite intensive usage, including streaming videos for about 30 minutes, playing games for a little longer and lots of calls. The new Low Power mode kicks in at 20% battery, and helps the phone last a bit longer than it otherwise would.

Overall, the Apple iPhone 6S is definitely a good phone, as long as you're upgrading from an iPhone 5 or below. While iPhone 5S users can consider it too, we would suggest sticking to your phone for another year for a more worthy upgrade next year.

Prasid Banerjee



Features 69
Design 96
Performance 85
Value 59

Specifications

Processor: 1.84GHz Apple A9 Dual-Core; **Operating System:** iOS 9.0.2; **Display:** 4.7 inch, 750x1334 pixels; **Battery:** 1715 mAh; **Camera:** 12MP rear, 5MP front; **RAM:** 2GB; **Storage:** 16/64/128 GB

Contact

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Website: www.getsupport.apple.com

All about Adobe Update
What does the new Adobe Creative Cloud update bring to you? Learn about it all here.
http://dgit.in/UpdateAdobe

Patreon hack.
Ancestors taught us to listen to good advice. But Patreon apparently didn't take it so resulted in a 'Hack'
http://dgit.in/PatreonHack

Sapphire Nitro R7 370 4G D5

A great lower mid-range card



Price ₹16,000

Competitively priced to counter NVIDIA's GTX 950, Sapphire's NITRO R7 370 certainly has one clear advantage over its counterpart – four gigabytes of RAM. This extra RAM lets you experience games in the highest visual fidelity but given that this is a mid-range card, you should expect a drop in FPS as well. While this drop will vary from one game to another, it shouldn't be that pronounced if you're running a Full HD setup. If you are the type to wait it out for a few months or years before starting off with AAA games then this card would be ideal since you'll not only have enough juice to get 40-50 FPS but also more RAM so that you can try out all the mods that must've come out since the game's launch. We say this because even lightly modded Skyrim can eat up around 3 GB of VRAM at 1080p.

The Sapphire NITRO R7 370 has a pretty decent build quality and is compact enough to fit in small form factor cases which is a plus point for mid-range cards. And with two cooling fans, it isn't a hot head at peak workload though it could have been a tad cooler while idling. Performance wise the R7 370 is better than the R7 270X and is neck and neck with the GTX 760 so it comes as a good candidate for the mid-range segment. The only problem is that of availability on mainstream e-commerce sites.

Mithun Mohandas

64

Performance.....71
Value.....60
Build.....60

Specifications

Chipset: Pitcairn; **Base clock:** 985MHz; **Memory clock:** 1400MHz; **Stream processors:** 1024; **Texture Units:** 64; **ROPs:** 32; **Manufacturing process:** 28nm, PCIe 3.0, 4096 x 2160 digital resolution support, 4 GB Memory; **DirectX support:** 12; **OpenGL support:** 4.5; **Power Connectors:** 6Pin; **TDP:** 150W; **Warranty:** 2 years

Contact

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Samsung Galaxy Note 5

Note that style

Interactive review



Price ₹53,900

Having reviewed three of Samsung's four flagship phones this year, there's not much we can add about the Galaxy Note 5. The device continues Samsung's newfound love for attractive design, complemented by uncompromised performance.

The Galaxy Note 5, just like the S6 and the Edge devices, has the Exynos 7 Octa processor. It performs better than any other Android flagship in the market right now, and when combined with 4GB of DDR4 RAM and top of the line NAND performance, takes things a step further. With all that, the phone lasts for a full day, which is good.

The 16MP camera on the back is also as good as Samsung's other phones in the market, and barring the LG G4, there's really no camera out there that's better, and that includes the iPhone 6 Plus and iPhone 6S Plus as well.

Perhaps the only real complaint about the Galaxy Note 5 is that its glass body makes it slippery, and with glass on both front and back, it demands more care. The phone does tend to slip out of your hand quite easily. Not expected off a 50k device.

The S-Pen is also somewhat improved and feels really good to write with. Writing is of course limited on a 5.7 inch display, but the ability to add other apps to the Air Command menu is useful.

Prasid Banerjee

81

Features.....74
Performance.....87
Design.....82
Value.....63

Specifications

Processor: Exynos 7 Octa; **RAM:** 4GB DDR4; **Camera:** 16MP rear, 5MP front; **Display:** 5.7 inch QHD; **Operating System:** Android 5.1.1 Lollipop; **Battery:** 3,000 mAh

Contact

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HP Envy 14-J008TX

Gamer in a suit

75

Features 64
Performance 68
Value 80
Design 89

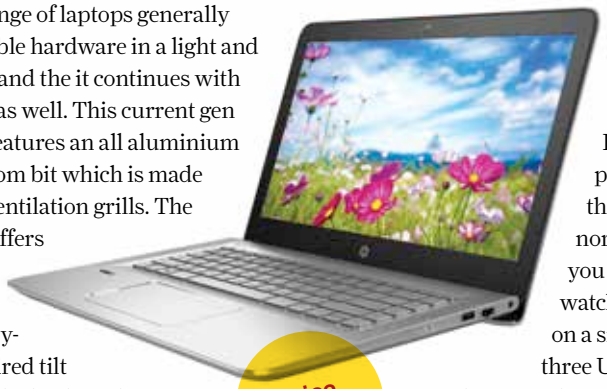
Specifications

Processor: Intel Core-i7 5500U; **GPU:** Nvidia GeForce GTX 950M DDR3 (4GB); **RAM:** 12GB; **Internal Storage:** 1TB; **Display:** 14-inch 1080p; **Keyboard:** Chiclet type (backlit); **OS:** Windows 8.1; **I/O:** 3 x USB 3.0, 1 x HDMI, SD card reader, 1 x RJ-45, 1 x Headphone/mic jack combo

Contact

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The HP Envy range of laptops generally bring dependable hardware in a light and robust chassis and the it continues with the new range as well. This current gen HP Envy 14 - J008TX features an all aluminium body except for the bottom bit which is made of plastic and host the ventilation grills. The 14-inch 1080p display offers very good viewing angles. Opening the lid, slightly raises the keyboard giving it the required tilt for typing. The keys on the keyboard are aptly spaced, except the arrow and function keys which do feel a bit congested.



The performance of this HP Envy 14 is more than enough to take care of office work and games like Witcher 2 run quite well, albeit, not on full settings. This year HP has a new audio partner 'Bang and Olufsen', but the speaker system is barely loud enough. Even with four speakers and one subwoofer on-board, the laptop is not able to pump out audible sound. There is a 3-cell battery on the HP Envy 14, and it supports the laptop for upto three and half hours on normal usage. That means, you can browse the web, watch a movie, write mails on a single charge. There are three USB 3.0 ports, one HDMI, one ethernet jack, and one mic and headphone combo jack. It's thin profile doesn't allow for a DVD drive, which is just about acceptable since the laptop weighs just 2kg.

The HP Envy 14-J008TX is a multipurpose laptop with good looks. It can work both as your office machine as well as a pretty good gaming laptop.

Hardik Singh

Jawbone UP2

The best fitness band to buy

Interactive review

81

Features 84
Design 89
Performance 72
Value 81

Specifications

Weight: 20 gram; **Battery:** 38 mAh; **Dimensions:** 220mmx11.5mmx3-8.5mm; **Connectivity:** Bluetooth 4.0; **Waterproof:** No, but Splash Proof

Contact

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You want a fitness band to be trustworthy, never failing to track your movement. While both Fitbit and Jawbone bands can be trusted, only one can be worn regularly. And that's what makes the Jawbone UP2 the best fitness band to buy. Yes, it doesn't have a heart rate sensor, but you really don't need that unless you're really hardcore into weights, etc.



What the Jawbone UP2 excels in is fitting in. You can wear a regular watch, and wear this band next to it, just like any accessory. It's light, and you forget you're wearing it, which is really good. The fact that you don't have to choose between a watch and the band is a big plus.

It's further complemented by the best fitness app out there. The UP app with its Smart Coach feature is really useful. The coach gives you good information and guidance, even though it's just an algorithm. In addition, the app is easy to use, with the only problem being that it's always on and keeps syncing with the UP2.

The company's 10 day battery claim also turned out to be true and the magnetic connector for the UP2 makes it pretty easy to charge. The device takes about an hour to charge from zero to 100 percent. In addition, it can detect when you're sleeping automatically, without requiring any manual changes. While some other bands have also done that, the UP2 is much more accurate.

The only real flaw in the UP2 is that it's not water-proof, but can only resist splashes. This means you can't take it out for a swim, or wear it while taking a bath. Otherwise, all good here!

Prasid Banerjee



Forget 4Ks now.
Are 4Ks the future? Apparently not, behold the all new 8K displays.
http://dgit.in/8KDisplays



DSLR Contender?
Too bored with chunky DSLRs and SLRs? Check out the new refreshing Light L16.
http://dgit.in/NewCamType

MSI GeForce GTX 950 GAMING 2G

All you MOBA fans, this is for you

Interactive review



Price ₹13,800

67

Performance..... 82
Value 60
Build 60

Specifications

Chipset: GM206; **Base clock:** 1127MHz; **Memory clock:** 1663MHz; **Stream processors:** 768; **Texture Units:** 64; **ROPs:** 32; **Manufacturing process:** 28nm, PCIe 3.0, 5120 x 3200 digital resolution support, 2 GB Memory, **DirectX support:** 12; **OpenGL support:** 4.5; **Power Connectors:** 6Pin; **TDP:** 95W; **Warranty:** 3 years.

Contact

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Rumours had many guessing as to what would follow the NVIDIA GTX 960 and the GTX 950 was one of three contenders. Based off the same GM206 chip, the GTX 950 has a two of the eight Streaming Multiprocessors lasered out to land 768 CUDA cores. Like all Maxwell GPUs, this too is power efficient with a moderately high base clock to start off with. MSI's GTX 950 GAMING 2G brings with it the signature MSI build quality and NVIDIA's performance prowess.

The MSI GTX 950 GAMING 2G is a dual slot graphics card like almost every card on the block. To improve upon its cooling capabilities, the MSI GTX 950 GAMING 2G comes with a few noteworthy modifications which isn't exactly new if you've had an MSI card from the 900 series. For starters, the fan has plenty of blades of which every alternate one is a little flatter than those beside it. These flatter blades with lower inclination angles results in greater static pressure which really goes well with the greater fin density of the heatsink underneath the fans. So you have the best of both worlds with high air-flow and static pressure combined. Previous implementations in the same vein had double blades with notches or separate fans altogether – one for high air-flow and the other for greater static pressure. As far as cooling performance is considered, the fjtemp seems to be quite similar but there are more modifications to the cooling system so the isolated impact of these new fan blades is yet to be clearly discerned. In the pursuit of improving the cooling system, the card has ended up being a little taller than most card in the lower mid-range segment, thus, making it a little difficult to squeeze into small cases.

Even though two Streaming Multiprocessors have been lasered out, the bandwidth has been retained which is a plus point but without more memory to take advantage of the extra bandwidth, you're left in a quandary. You can either go for the similarly priced R7 370 and get four GB of VRAM which will tide you over when it comes to AAA games with high detailed textures or you can pay a little extra and go for the GTX 960 whose variants include SKUs with four GB of RAM. This is obviously not critical at this juncture but it does go a little way into getting more returns from your investment. Compared to the R7 370, it performs better not only in current generation of AAA games but even in OpenGL and OpenCL computational workloads it tends to score higher. Both NVIDIA and AMD have been advertising cards in the mid-range segment to be ideal for MOBA games which happen to dominate the e-sports scene currently. MOBA games aren't exactly texture heavy since they're optimised for fast reactions, so the developer takes great effort to make the game look good on mid-range systems without compromising on latency. With this in mind, NVIDIA drivers come with optimised profiles for these MOBA games. These profiles ensure reduced latency between a physical action being committed and its appropriate response on your screen. The simplest way to describe how this is achieved is as such. In order to best utilise the memory bandwidth, video frames are kept in the buffer before being pushed, so a higher buffer queue will result in greater latency. With the newer drivers, this queue has been reduced to the extent that fewer frames have to wait in the buffer. This improvement in latency is as low as 35 milliseconds but in the world of competitive gaming, it's just one factor of many that tilt the scales of balance.

A stock GTX 950 is clocked at 1024 MHz but the MSI GTX 950 GAMING 2G ships with a huge increment of 103 MHz under the OC profile which translates to a noticeable bump in performance. The graphics card is priced conservatively for what it brings to the table but you won't see the GTX 750 and GTX 750 Ti disappearing anytime soon since they can run without external power. Overall, it is a pretty decent card that should slowly end up being the favourite in budget PC configurations.

Mithun Mohandas

Meizu MX5

A tough competitor

Interactive review

76

Features 77
Performance 83
Design 82
Value 61

Specifications

Display: 5.5 inch 1080p; **Processor:** 2.2 GHz octa-core MediaTek Helio X10; **RAM:** 3GB; **Camera:** 20.7MP rear, 5MP front; **Battery:** 3,150 mAh

Contact

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The Meizu MX5 is an able performer, with only one real weakness. The phone has a MediaTek X10 Helio octa-core processor, clocked at 2.2 GHz, which performs well. In fact, compared to other Helio X10 powered devices, this phone is better in terms of graphics intensive activities, like gaming.



The MX5 is also pretty well built, with a metallic finish on the back and rounded corners. It looks a lot like older Samsung smartphones, especially with the oval fingerprint sensor cum back button on the front of the phone. Despite its 5.5 inch display, Meizu has kept the size pretty small, making it easy to use.

The only real weakness the Meizu MX5 has is its camera. While on paper 20.7MP sounds great, it's not really as good as the Moto X Play or the ZTE Nubia Z9 Mini. While the Nubia Z9 Mini is miles ahead, the Moto X Play is also a better camera. The Meizu MX5 can take respectable shots, but pales in comparison. It does well in sunlight, but noise is pretty high in low light conditions. The camera also lacks details.

If you're looking for a powerful smartphone in the sub-20k smartphone though, the MX5 is a good option for heavier users. If you're looking for a more camera and customer support friendly phone though, then the Moto X Play is the way to go.

Prasid Banerjee

ASUS ROG GL552JX

Born to game, and nothing else

82

Performance 84
Features 85
Design 80
Value 80

Specifications

Screen: 15.6-inch Full HD LED display; **CPU:** Intel Core i7-4720HQ 2.6-GHz; **RAM:** 8GB DDR3; **HDD:** 1TB 7200rpm; **GPU:** Intel HD 4600 + NVIDIA GeForce GTX 950M; **Connectivity:** 2xUSB 3.0, 1xUSB 2.0, HDMI, Ethernet, SD Card, VGA; DVD Writer; **Wireless:** Wi-Fi 802.11n, Bluetooth 4.0; **Webcam:** HD 720p; **Weight:** 2.6 kg

Contact

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The ROG G55L2 notebook is a notable addition to ASUS' gaming lineup. It has been built with a single-minded focus – mobile gaming on a laptop.



The laptop's shell is all-black, with its screen lid having a finely textured mesh surface that feels nice on touch. Inside on the keyboard deck and palmrest, the notebook has a smooth matte finish with a patterned design near its hinge. The ROG GL552JX feels to be very well built with a tight hinge, and weighs about the same as any other 15-inch notebook.

Apart from a quad-core CPU, oodles of RAM, fast-spinning hard drive, the GL552JX has a discrete NVIDIA GeForce GTX 950M GPU with 2GB DDR3 memory. The GPU is certainly one of the better ones we've encountered on a notebook all year long, and gives this ASUS ROG machine some serious gaming chops. In synthetic benchmarks, it was similar to the ROG G551J, while real-world gaming benchmarks with Bio-Shock Infinite and Hitman Absolution were marginally better.

As per our Datacolor Spyder calibrator, the ROG GL552JX screen brightness is at 273.2 cd/m^2, contrast ratio sits at 840:1 and the display encapsulates 99% of sRGB color gamut space, which is quite good. No complaints with the notebook's backlit keyboard, touchpad, but it has mediocre onboard audio, unspectacular battery life of 1 hours 49 minutes only. However, this is a very good deal at the price.

Jayesh Shinde



Hoverboards illegal in Uk!
Uk has banned usage of hoverboards in streets. Beware if are planning on buying one.
http://dgit.in/UKillegal

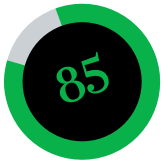
Visual CMS.
Is CMS too boring and difficult to use? So here's an easier way: Visual CMS.
http://dgit.in/CMSType

Samsung 65-inch SUHD TV

Curved display dazzles the eye



This 65-inch UHD TV from Samsung is making us reevaluate our stance on curved displays. The TV set is beautifully constructed and easy to assemble. It has attractive silver bezel and shirring design on its back panel, no connectivity ports or wires, giving it a minimalist appeal.



Performance.....90
Features.....90
Design.....85
Value.....70

Specifications

Model: UA65JS9000; **Screen:** 65-inch UHD (3840x2160); **Engine:**Octa-core processor with SUHD remaster engine; **True Refresh Rate:** 120Hz; **3D:** Yes, glasses included; **Connectivity:** 4 x HDMI, 3 x USB, Composite, Component, Digital Audio in/out; **Smart TV:** Yes; **Remote:** Yes; **Other:** Screen Mirroring, Voice Control, Motion Control, Upscale to UHD; **OS:** Tizen; **Wt:** 33 kg

Contact

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Turn the set on and its wireless motion-controlled remote lets you setup the TV within minutes, along with demos for tasks like turning on 3D, voice recognition or connecting to Wi-Fi internet (if required). We watched Videocon 4K UHD DTH, Blu-ray movies, 1080p content off USB drives, and gamed on the PS4.

We saw the TV's color gamut encompass 100% of sRGB color space, which is very good, and have a maximum brightness of 302.9 cd/m^2 and 1100:1 contrast ratio – all these numbers are some of the best we've ever recorded on a TV. This is no OLED TV, but it comes pretty darn close to matching its near excellent black levels. Watching 1080i and 1080p content natively upscaled to UHD resolution and gaming on the PS4 was great, no judder or response lag issues. 3D also behaved pretty well. Screen mirroring off compatible Samsung phones also worked well.

If you're sitting on a pile of cash, in need of a 4K UHD TV soon, we highly recommend you buy this set.

Jayesh Shinde

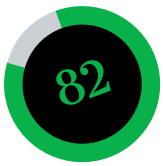
Samsung Galaxy A8

Phabulous performance



The Samsung Galaxy A8 has the typical home button in the middle like most Samsung phones but this one comes with a fingerprint sensor. The metal sides are tapered at the edges to retain the slim factor. The only disparity in design is in the volume keys, that are placed a little higher on the left side. The metal build is seamless, and there are no loose ends to the A8's finesse.

The phone packs in a vibrant 5.7-inch AMOLED screen, with a resolution of 1080x1920 pixels. The S-AMOLED display shows richer colours and higher contrast levels than a lot of QHD displays in the market. The colours on the display can be best defined as 'pleasing'.



Features.....80
Performance.....86
Design.....80
Value.....77

Specifications

Display: 5.7 inch, Full HD, Super AMOLED; **Camera:** 16 MP (rear), 5 MP (front); **SoC:** Exynos 5430 octa-core; **RAM:** 2GB; **GPU:** Mali T-628 MP4; **Storage:** 32GB (expandable to 128GB); **Connectivity:** Wi-Fi, 4G, 3G; Bluetooth; Micro USB; 3.5mm; **Dual SIM:** Yes; **Battery:** 3050 mAh; **OS:** Android 5.1.1; **Weight:** 151 gm

Contact

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The Samsung Exynos 5 octa-core 5430 chipset clocked at 1.8GHz, along with Mali T628 MP6 GPU, provides fluid performance with good graphic renders. While 2GB of RAM might sound low in a segment where phones like the OnePlus 2 house 4GB of RAM, the processor optimises applications, managing resources to provide seamless multitasking. The touch response on the Galaxy A8 is good, and the fingerprint scanner is also quite responsive. The only issue performance I had with the Galaxy A8 is the audio.

The 16-megapixel Samsung LS13P3 ISOCELL sensor with f/1.9 aperture produces really decent photographs, even in very low light situations. On our battery test, the Samsung Galaxy A8 lasted 20 hours.

Souvik Das

LG Watch Urbane

A gadget for the early adopters and enthusiasts only!

Interactive review

67

Features 70
Performance..... 60
Value 55
Design 80

Specifications

Screen size: 1.3-inches; **Display resolution:** 320x320; **Processor:** Snapdragon 400; **RAM:** 512MB; **Internal Storage:** 4GB; **Battery capacity:** 410mAh

Contact

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The LG Watch Urbane's build and design is a welcome change to the childish watches I've been wearing and reviewing so far. The device has a stitched leather strap similar to what we've seen on normal mechanical watches, and it fits really well on wrists. It has a metal body, and weighs 91 grams. It's relatively light, and yet, you feel a presence on your wrist – very nice. The shiny metal makes it look premium, too. From the looks of it, the LG Watch Urbane looks like a normal watch, and that's a great thing to see once and for all.



The face of the LG Watch Urbane has a 1.3-inch P-OLED display and one button resting at the 3-o-clock position. The base of the device has the heart rate sensor and the charging point. Android Wear now supports iOS, so pairing it with an iPhone is easy. Once the device is synced to your smartphone, you are all set to use your glorified notification machine. In all my time with the LG Watch Urbane, all I did was answer or reject calls and messages from the comfort of my watch. It's also pretty cool to command the watch via voice command to do small day-to-day tasks. The battery life is appalling and dies even sooner if set to the "always on". The fancy charger, is equipped to charge in less than two hours, for less than a day's use. As far as utility is concerned, there is little value for money here. Overall, it's a very well-built smartwatch, one of the better ones that I have tested.

Sameer Mitha

Panache Air PC

Another inspired Stick PC!

68

Feature 59
Design 75
Performance..... 65
Value 72

Specifications

Processor: Intel Z3735F (Quad-Core Processor, 1.33GHz); **RAM:** 2 GB DDR3; **Connectivity:** Wi-Fi 802.11 b/g/n, Bluetooth 4.0, USB 2.0, Micro USB, HDMI, Micro SD; **Storage:** Internal 32 GB, Expandable 128GB; **OS:** Windows 10

Contact

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The Air PC, an Intel Compute Stick inspired thumb PC from Panache, is the newest entry to the the growing trend of miniature computers. Although, the Air PC runs on a full-blown quad-core Intel Processor, similar to what we saw on the Compute Stick, its performance is unexpectedly better – albeit slightly – when compared to the Intel Compute Stick we reviewed in the month of August.

It has 2GB of RAM, which isn't great for multitasking with multiple browser windows, streaming videos and local video playback simultaneously. But it is adequate for most tasks like document editing, web browsing, spreadsheet and video streaming individually. And frankly what else do you expect from a PC that's as small and pocketable as your USB pen drive?



The microUSB slot on the Panache Air PC supports OTG which is also included in the packaging, along with an HDMI extender. The local video playback on the Air PC was quite seamless, although it did stutter a little in online video playback. The design is pretty slick, but the surface attracts fingerprints. The best part about the Air PC is it runs on a full licensed version of Windows 10.

Our verdict is for a price of ₹8,981 the Panache Air PC may not be such a strong contender to the existing devices in the form factor, but it can still woo users owing to its licensed Windows 10 and the extra USB support via the OTG. The other alternatives to try out are the Intel Compute Stick and iBall Splendo which are priced around the same range.

Ashish Panigrahi

CPU Coolers

The October heat has been brutal on our machines

Agent 001
agent001@digit.in



Let's get one thing out of the way. Very few scenarios actually require that a CPU cooler be installed in your system, the majority of us should do just fine with stock coolers. That being said, enthusiasts need them and so do people building Skylake rigs that no longer come with stock coolers.

Cooling technology hasn't come a long way because the onus was always on the processor manufacturer to keep temperatures within bearable limits. Of course, this is in context with CPU coolers and not cooling technology in general. Over the years we've seen passive coolers which only had huge chunks of metal sitting atop the CPU. As things got a little hotter, they decided to slap a fan onto the metal chunk and push more air through. It worked...for a while. Then came the era or heat pipes, i.e. hollow metal pipes with fluid in them. This did cause a little apprehension among early adopters of the new technology since circuits and liquids don't get along. Pipes then gave way to vapour chambers which seem to be the hottest thing or rather the coldest thing(lame joke, I know) on the market. Parallely, enthusiasts had long ago shifted to liquid cooling and to this day, a custom liquid cooling setup is only for those with deep pockets. The rest of us would rather stick with ready made closed loop systems.

So as some of us in the Test Centre were discussing the next upgrade to our systems we started looking at CPU coolers. A quick look at temperature diagnostics would reveal that most of our machines had its CPUs running somewhere between 49-56 degrees celsius at room temperature while the computers were running a few browser windows, Steam clients and maybe a video player here or there. We wouldn't term this the ideal idle but our machines would remain in this condition for most of the time so it was as close to idle temperatures that it would have been. We'd all migrated to an SSD+HDD+NAS combo long back so there wasn't a huge amount of heat emanating from an HDD cluster from individual machines either. And lastly, the major source of heat was graphics card. And even those generate a lot less heat than the graphics cards of yore.

We then decided to crank up our machines and spend a few minutes trying out different games just to see how much heat they'd cause the CPU and the graphics card to generate. We've tested quite a lot of CPUs and graphics cards but those tests were on an open test bench. Running the same things inside regular cabinets was bound to raise temperatures by a teensy bit and after a few hours of gaming we noticed that CPU heavy games with a lot of moving elements would send CPU temperatures all the way up to 70-73 degrees celsius and the graphics card topped out at around 76 degrees. This was normal but one thing we noticed was that the graphics card took next to no time to come down from peak temperatures while the CPU took a lot longer. Nothing out of the ordinary but overkill is fun so we decided to get ourselves some spanking new CPU coolers.

We wanted the same things that any user would have wanted from their CPU coolers – good performance and silent operation. Two things that had quite a troublesome past of being together. I generally prefer air-coolers over liquid-coolers. Fewer the moving parts, the better I feel. So even a push-pull configuration would only be implemented if it was really warranted, i.e. if temperatures weren't low enough with one fan or if the two fans were silent. We went along with a couple of guys from the office who simply couldn't let go of an opportunity to go for components shopping. It wouldn't come as a surprise to many of you if I said that I went for a Noctua NH-D15 – a solid performer for the price. One of other guys had done his own research and come down looking for a Kraken X61. He had a beefy Corsair 900D to fit the massive cooler and was already getting tired of looking at the stock cooler. But unfortunately, he couldn't land himself an X61 since they're a little hard to come by and nearly every place we looked seemed to have been out of stock. So he went with the next best AIO-liquid cooler – the Corsair H100i. It has a double 120mm radiator instead of the double 140mm radiator that the X61 had. But with really similar performance it hardly felt like a compromise. After all, the H100i is smaller, lighter and performs just as well. The last guy wanted something really flat and short, a cooler that would easily fit into his slim chassis. He was using the cooler that came with the chassis since even stock coolers ended up being a little too tall for it. So it had to be lesser than 50 mm after installation. After much searching, he ended up buying the Noctua NH-L9i. It turned out to be much better than the included chassis cooler and with a height of 36 mm, it even had better clearance. All in all, it was yet another worthwhile shopping trip.

Gaming laptop for 42K

I am big fan of you and the whole of your team. And I want your help in buying a gaming laptop under 42,000 INR. Please give me as many options as possible in the form of a ranked list in order based on their gaming performance if possible. But please give their prices also in India. I have tried a lot of ways to find the right choice but I ended up getting more confused. You are my last hope.

– Avinash Kadam

A Instead of coming up with a list of our own, we decided to help out Bobby in generating this list on his own. We wanted to "teach him how to fish". So we asked Bobby to look at various review sites and told him how search filters work on these sites so that he could short list a bunch of laptops based on his criteria which we helped refine. He came up with about 11 laptops of which a majority of them matched his criterion i.e. a sufficiently powerful CPU for gaming and a good discrete graphics card.



Most of the options in his budget sported 5th Generation Intel Core i5 processors, the highest performing SKU of which turned out to be the Core i5-5200U which is quite sufficient for gaming and has a turbo clock of 2.7 GHz at peak load. When it came to storage space and memory, most of the laptops had a 1 TB hard drive and 4 GB of RAM. So the final parameter left was the graphics card. While the majority of the options came with the NVIDIA 820M which is a Fermi based GPU with 96 CUDA cores clocked somewhere between 719 MHz to 954 MHz depending on the model. One lone ranger came with a NVIDIA 920M which can either be based on the older Fermi architecture or the newer Kepler if you're lucky. Though, either SKU should be good enough since they both feature 384 CUDA cores with the one based on Kepler being clocked slightly lower and thus will run slightly cooler while delivering the same amount of performance.

At the end of a really long email thread, we recommended Bobby to go for the Asus X555LJ-XX130D which not only featured the Core i5-5200U and the NVIDIA 920M. The only downside is the 15.6-inch display which has a resolution of 1366 x 768 and that's what all models had. You really can't get more for the price without making compromises in some aspect or the other. Aside from the ASUS laptop, two other laptops stood out from the crowd, both of which happened to be from HP – the HP Compaq 15-s104TX and the HP 15-r007tx. These are essentially the same laptop based on the hardware.

Upgrade suggestions

Hey guys, here's my PC configuration:

- **Processor:** Intel Core i7 920 @2.67GHz
- **Motherboard:** MSI X58 Pro-E (USB 2.0)
- **Storage:** Samsung 850 Pro 256Gb SSD + WD 2Tb HDD
- **RAM:** Corsair 8GB DDR3 @534 MHz
- **Graphics Card:** XFX Radeon HD 5750
- **SMPS:** VIP 600W
- **Optical drive:** Samsung DVD RW
- **Cabinet:** Cooler Master CM 690 II
- **OS:** Windows 7 Ultimate (x64)
- **Addons**: PCIe USB 3.0 card, Ex-HDD

A. Please suggest the best motherboard available for my processor, up to `20K

B. Please suggest a good UPS for my config. I don't have frequent power cut problems & will buy it for the safety of my PC components & HDD data.

C. Please suggest top 3 mid-range graphics cards for my config. For serious gaming, is it better to install a single amazing graphics card or two good graphics cards in Crossfire/ SLI ?

D. Is my RAM configuration good enough for high-end gaming ?

– Manish Modi

A Hey Manish,

A. Unless you're experiencing some problem with the existing motherboard, it's advisable to not go for a new motherboard. And the X58 boards are already EOL so it's quite unlikely that you'll find a replacement online or in stores. You're limited to whatever they have in hand.

B. Your current configuration runs up around 390 W or so. So you'll need a 1000 VA UPS. APC UPS are known for their quality and since your power supply doesn't require a pure sinewave output, the BR1000G-IN should be sufficient.

C. There's another question that needs to be answered here. Is this serious gamer price conscious? There have been



incidences when an SLI configuration would provide a lot better performance than a single flagship card but there are quite a few games which don't work properly on multi-GPU configurations and you have to wait for a driver update for it to work. Since you can't predict which game might have an issue with multi-GPU configurations, there is a possibility that you might have to disable a GPU every once in a while to play some game or the other. As of now, two 960s in SLI are better than a 980. The problem arises when textures are huge and require more video memory. SLI doesn't effectively double video memory so that remains an issue. You didn't mention the price point that you are looking at. So it would be best to go for a GTX 960 or GTX 970 based on how much you game. Two GTX 960s are also good but you might want to upgrade your power supply in that case.

D. Again, your RAM should be sufficient if you reduce draw distance in games if they end up eating too much RAM. But then again, if you're into simulators like ARMA where a higher draw distance gives you the tactical advantage then you might want to increase RAM as well.

Star Wars in GIF!
What the StarWars trailer, scene by scene, put together in GIFs. Check it here! **http://dgit.in/Nv15aj**

Tweet poll
Twitter now gives you an option to conduct polls or ask questions and interestingly, the voters data is kept secret! **http://dgit.in/Nv15ak**

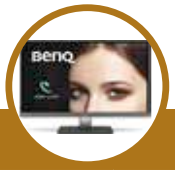
SPEND SMART

This month we have SSDs, LED Monitors, Laptops and more. Use this price guide and prevent anyone from cheating you on market prices.



SOLID STATE DRIVES

Brand	Series	Model ID	Type	Capacity	Interface	Form Factor	Usage	Price (in ₹)
Silicon Power	S60	SP120GBSS3S60S25JB	2.5" SATA	120 GB	6Gbps	2.5"	Laptop, Desktop	3,599
Crucial	BX200	CT120BX100SSD1	SATA III	120 GB	6Gbps	2.5"	Laptop	4,190
Sk Hynix	Rectangle	Sk Hynix Ssd Canvas Sc300	SATA III	128 GB	6Gbps	Rectangle	Laptop, Desktop	4,940
Sk Hynix	Canvas	Canvas Sc 300	2.5" SATA	128 GB	6Gbps	Bar	Laptop, Desktop	5,099
SanDisk	SSD Plus	SDSSDA-240-G25	2.5" SATA	240 GB	6Gbps	Rectangle	Laptop	6,159
Silicon Power	S60	SP240GBSS3S60S25JB	2.5" SATA	240 GB	6Gbps	2.5"	Laptop, Desktop	6,200
Micron	C400	MTFDDAK256MAM-1K1	2.5" SATA	256 GB	6Gbps	2.5"	Laptop, Desktop	6,370
Plextor	M5S	PX-128M5S	SATA III	128 GB	6Gbps	2.5"	Laptop, Desktop	6,505
Transcend	SSD 2.5	TS256GSSD370	2.5" SATA	256 GB	6Gbps	DIMM	Desktop	7,350
Corsair	LS	CSSD-F240GBLS	SATA III	240 GB	6Gbps	Rectangle	Desktop	8,230
Samsung	850 Evo	MZ-75E250B/AM	SATA III	250 GB	6Gbps	2.5"	Laptop, Desktop	8,399
RDP	NA	SSD	2.5" SATA	256 GB	6Gbps	2.5"	Desktop	8,834
Crucial	MX200	CT250MX200SSD3	mSATA	250 GB	6Gbps	mSATA	Laptop	8,990
Kingston	Hyper X	SH103S3/120G	SATA III	120 GB	6Gbps	2.5"	Laptop, Desktop	9,480
SanDisk	Extreme Pro	SDSSDXPS-240G-G25	2.5" SATA	240 GB	6Gbps	Rectangle	Laptop	10300
Chiprex	Business	S10T480GB	SATA 3.2	480 GB	6Gbps	2.5"	Laptop, Desktop	14,000
Samsung	850 Evo	MZ-M5E250BW	mSATA	250 GB	6Gbps	mSATA	Laptop	14,054
Samsung	850 Evo	MZ-75E500BW	SATA III	500 GB	6Gbps	2.5"	Laptop, Desktop	15,990
Plextor	M6e	PX-G128M6e	M.2 PCIe	128 GB	6Gbps	PCIe	Laptop	16,573
PNY	Optima	SSD7SC480GOPT-RB	SATA III	480 GB	6Gbps	2.5"	Laptop, Desktop	21,098
Chiprex	TLC	S10T3960GB	SATA 3.2	960 GB	6Gbps	2.5"	Laptop	24,990
Chiprex	Business	S10T960GB	SATA 3.2	960 GB	6Gbps	2.5"	Laptop, Desktop	27,000
Samsung	850 Evo	MZ-75E1T0B/AM	SATA III	1 TB	6Gbps	2.5"	Laptop, Desktop	27,619
Plextor	M6e	PX-G256M6e	M.2 PCIe	256 GB	6Gbps	PCIe	Laptop	28,325
Plextor	M6e	PX-AG512M6e	PCIe	256 GB	6Gbps	PCIe	Laptop	50,823



LED MONITERS

Brand	Model	Panel	Size	Tilt (down/up)	Input Connectors	Brightness	Response Time	Price (in ₹)
BenQ	GW2255	VA	21.5 inches	-5/15	D-Sub, DVI	250 nits	6 ms GTG	7,500
Dell	E2215HV	TN	22 inches	-5.5/22	VGA (HD-15)	200 nits	5 ms BTW	7,940
Dell	S2240L	IPS	21.5 inches	-4/21	VGA, HDMI	250 nits	7 ms GTG	9,844
LG	22EA53V	IPS	22 inches	-5/15	D-Sub, DVI-D (HDCP)	250 nits	5 ms GTG	11,099
Samsung	S22D390Q	TN	21.5 inches	-3/18	D-Sub, HDMI, Headphones	250 nits	5 ms GTG	11,500
BenQ	VZ2350HM	AH-IPS	23 inches	0/20	VGA, HDMI	250 nits	5 ms GTG	11,998
LG	23M45D-B	TN	23 inches	-3/20	D-Sub, DVI-D	250 nits	5 ms GTG	13,000
AOC	i2369Vm	IPS	23 inches	NA	VGA, HDMI	250 nits	5 ms GTG	13,790
Dell	E2414H	TN	24 inches	-5/21	DVI-D (HDCP), VGA	250 nits	5 ms BTW	13,999
Samsung	S24D390HL	TN	23.6 inches	-3/18	D-Sub, HDMI	250 nits	5 ms GTG	16,500



Drone Origami?
Orizuru, a remote control drone that's the size of an origami crane and is made of paper:
http://dgit.in/Nv15al



Synaptics' ClearForce
Pretty much the same pressure sensitive technology we've seen on the iPhone 6S
http://dgit.in/Nv15am



WINDOW 10 LAPTOPS

Brand	Series	Model ID	RAM	Screen	Graphics	Processor	Capacity	Price (in ₹)
HP	Pavilion	15-af114AU	4 GB	15.6 inches	Radeon R5 Graphics (1GB)	AMD A8-7410M APU	1TB HDD	26,990
Acer	Z Series	One 14 Z1402	4 GB	14 inches	Intel HD Graphics 5500	Intel core i3-5005U	500 GB HDD	27,890
Acer	R11 Series	Aspire R3-131T	4 GB	11.6 inches	Intel HD Graphics 5500	Intel Pentium N3700	500 GB HDD	28,400
HP	Pavilion	15-ac173TU	4 GB	15.6 inches	Intel HD Graphics 5500	Intel Pentium 3825U	1TB HDD	31,452
Asus	NA	A555LA	4 GB	15.6 inches	Intel HD Graphics 4400	Intel Core i3-4005U	1TB HDD	32,790
HP	Pavilion	15-ac119TU	4 GB	15.6 inches	Intel HD Graphics 5500	Intel core i3-5005U	1TB HDD	33,550
HP	Pavilion	15-ac120TU	4 GB	15.6 inches	Intel HD Graphics 5500	Intel core i3-5005U	1TB HDD	33,800
HP	Pavilion	15-ac121TU	4 GB	15.6 inches	Intel HD Graphics 5500	Intel core i3-5005U	1TB HDD	34,499
HP	Pavilion	15-ac101TU	4 GB	15.6 inches	Intel HD Graphics 5500	Intel core i3-5005U	1TB HDD	34,899
HP	Pavilion	15-ac116TX	4 GB	15.6 inches	AMD Radeon R5 M330 (2GB)	Intel core i3-5005U	1TB HDD	39,159
Lenovo	G Series	G50-80	4 GB	15.6 inches	AMD Radeon R5 M230 (2GB)	Intel Core i3-5010U	1TB HDD	39,250
HP	Pavilion	15-ab125TX	4 GB	15.6 inches	AMD Radeon R5 M330 (2GB)	Intel Core i5-5200U	1TB HDD	44,099
HP	Pavilion	15-ab123TX	4 GB	15.6 inches	AMD Radeon R5 M330 (2GB)	Intel Core i5-5200U	1TB HDD	44,919
HP	Pavilion	15-ab124TX	4 GB	15.6 inches	AMD Radeon R5 M330 (2GB)	Intel Core i5-5200U	1TB HDD	45,450
HP	Pavilion	15-ab125AX	8 GB	15.6 inches	Radeon R7 M360 (2GB)	AMD A10-8700P APU	1TB HDD	46,700
HP	Pavilion	15-ac126TX	8 GB	15.6 inches	AMD Radeon R5 M330 (2GB)	Intel Core i5-5200U	1TB HDD	49,640
Lenovo	G Series	G50-80	4 GB	15.6 inches	ATI EXO PRO R5 M330 (2GB)	Intel Core i5-5200U	1TB HDD	49,999
HP	Pavilion	15-ab219TX	8 GB	15.6 inches	NVIDIA GeForce 940M (2GB)	Intel Core i5-5200U	1TB HDD	53,900
Asus	Zenbook	UX305FA	4 GB	13.3 inches	Intel HD Graphics 5300	Intel Core M-5Y10	256 GB SSD	54,900
Lenovo	Yoga	Yoga 500	4 GB	14 inches	Intel HD Graphics 5500	Intel Core i5-5200U	500GB HDD	60,799
HP	Pavilion	15-ab221TX	8 GB	15.6 inches	NVIDIA GeForce 940M (2GB)	Intel Core i5-5200U	1TB HDD	61,600
Lenovo	Z Series	Z51-70	8 GB	15.6 inches	AMD TROPO XT2 (4GB)	Intel Core i5-5200U	1TB HDD	66,954
Lenovo	Ideapad	Z5170	4 GB	15.6 inches	AMD Meso XT (2GB)	Intel Core i5-5200U	1TB HDD	68,998
HP	Pavilion	15-ab214TX	8 GB	15.6 inches	NVIDIA GeForce 940M (2GB)	Intel Core i7-6500U	1TB HDD	74,000
Lenovo	Yoga	Yoga 500	8 GB	14 inches	NVIDIA GeForce 940M (2GB)	Intel Core i7-5500U	1TB HDD	76,293
MSI	GE Series	GE62 2QL	8 GB	15.6 inches	NVIDIA GeForce GTX 950M (2GB)	Intel Core i7-5700HQ	1TB HDD	103,900
MSI	GE Series	GE62 2QF	8 GB	15.6 inches	GeForce GTX 970M (3GB)	Intel Core i7-5700HQ	1TB HDD	135,000
MSI	Dominator	GT72 6QD	16 GB	17.3 Inches	NVIDIA GeForce GTX 980M (3GB)	Intel Core i7-6700HQ	1TB HDD	183,900



POWER SUPPLY UNITS

Brand	Model	80+ Rating	Sleeved Cables	Modular	3.3 V	5 V	12 V	EPS	4-Pin	PCI	SATA	Price (in ₹)
					DC Output Rating			Connectors				
Antec	HCG-900	Bronze	Low-Profile, All Black	Fully	25 A	25 A	70.8 A	1	1	4	9	10,199
Seasonic	SS-460FL2	Platinum	NA	Fully	20 A	20 A	33 A	1	5	2	6	11,000
Cooler Master	Silent Pro M2	Silver	Non-sleeved	Smart	30 A	30 A	80 A	2	5	6	12	16,990
Corsair	AX760i	Platinum	Low-Profile, All Black	Fully	25 A	25 A	63.3 A	2	8	6	12	18,250
Antec	HCP-1000	Platinum	Low-Profile, All Black	Fully	25 A	25 A	100 A	2	7	6	9	18,950
Corsair	HX1000i	Platinum	Low-Profile, All Black	Fully	25 A	25 A	83.3 A	2	12	8	12	19,871
Cooler Master	V1200	Platinum	Non-sleeved	Fully	25 A	25 A	100 A	2	9	12	12	21,985
Seasonic	SS-1200XP3	Platinum	NA	Fully	25 A	25 A	100 A	2	5	10	14	23,000
Corsair	AX1200i	Platinum	Low-Profile, All Black	Fully	30 A	30 A	100.4 A	2	12	8	16	37,988
Corsair	AX1500i	Titanium	Low-Profile, All Black	Fully	30 A	30 A	125 A	2	12	10	20	41,150

digit KILLER RIGS

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

Basic rig = ₹21,027 | HTPC = ₹30,682 | Entry-level gaming = ₹54,580 | Mid-range gaming = ₹71,756 | Ultra high-end = ₹2,74,828 | Digit Test Rig= ₹3,89,133

BASIC RIG

Mini-PC	ASRock Beebox N3000-NUC Barebone	9,959
SoC	Intel N3000	0
Connectivity	802.11ac + Gigabit Ethernet + Bluetooth 4.0	0
Audio	ALC283	0
USB	1x USB 3.0 + 1x USB 3.0 Type-C	0
OS	Windows 10	0
Power Supply	Adapter included	0
Mouse	Logitech MK220 Wireless Combo	929
Keyboard	Bundled	0
RAM	Gskill F3-1600C11S-4GSL	1,639
HDD	Toshiba 500 GB	2,750
Sub-total	(Excluding Monitor)	₹15,277
Monitor	Dell E2014H 19.5 inch LED	5,750
Total		**₹21,027**

HTPC

Processor	AMD A10-7700K	10,000
Motherboard	ASUS A88XM-A	6,197
RAM	G.Skill RipjawsX DDR3 4 GB (2 x 2 GB) PC RAM (F3-12800CL9D-4GBXL)	2,137
HDD	Western Digital WD30EZRX 3TB	7,899
Graphics Card	None (IGP HD4400)	0
PSU	Corsair VS450	2,340
Speakers	None	0
Optical Drive	ASUS DRW-24D3ST	990
Mouse	Logitech MK220 Wireless Combo	1,119
Keyboard	Bundled	0
Sound Card	None	0
Monitor	None (your TV)	0
Cabinet	Cooler Master N200	3,550
Total		**₹30,682**

ENTRY-LEVEL GAMING

Processor	AMD FX8320	10,950
Motherboard	Gigabyte GA-970A-DS3P	7,300
RAM	ADATA Premier DDR3 4 GB (2x 2 GB) 1600 MHz RAM	1,998
HDD	Seagate Barracuda ST1000DM003 1TB	3,591
Graphics Card	ASUS R7 360 2GB	10,206
PSU	Cooler Master Thunder 450W	3,119
Speakers	Philips MMS4040F - 2.1 Channel	2,899
Optical Drive	ASUS DRW-24D3ST	990
Mouse	Logitech MK200 (Bundle)	929
Keyboard	Logitech MK200 (Bundle)	0
Sound Card	None	0
Sub-total	(Excluding Monitor and Cabinet)	₹41,982
Monitor	Dell S2240L	9,848
Cabinet	Antec X1-T Gaming	2,750
Total		**₹54,580**

MID-RANGE GAMING

Processor	Intel Core i5-4460	11,490
Motherboard	ASUS B85M-G	5,390
RAM	Kingston (2x 8 GB) HX318C10F/8	5,900
HDD	Toshiba 1TB DT01ACA100	3,450
Graphics Card	ASUS GTX 960 STRIX-GTX960-	17,499
DC2OC-2GD5	15,290	5,950
PSU	Seasonic S12II 620 Watts	6,350
Speakers	Logitech Z523	6,999
Optical Drive	ASUS DRW-24D3ST	990
Mouse	CM Storm Devastator (Bundle)	3,299
Keyboard	CM Storm Devastator (Bundle)	0
Sound Card	None	0
Sub-total	(Excluding Monitor and Cabinet)	₹59,158
Monitor	Dell S2240L	9,848
Cabinet	Antec X1-T Gaming	2,750
Total		**₹71,756**

ULTRA HIGH-END GAMING

Processor	Intel Core i7-6700K	27,000
Motherboard	MSI Z170A Gaming M7	19,999
RAM	Corsair Vengeance (2x 8 GB) CMK-8GX4M1A2400C14R	9,810
HDD	WD WD30EZRX 3TB + Samsung 850 Pro 256GB SSD	18,548
Monitor	ASUS PB279Q 4K UHD	62,500
Graphics Card	MSI NVIDIA GTX 980 Ti GAMING 6G	56,700
Cabinet	Corsair Obsidian Series 750D	11,199
PSU	Antec HCP-1000 Platinum 1000W	16,750
Speakers	Logitech Z906 5.1	18,899
Optical Drive	LG Blu-ray WH16NS40 RW	5,999
Mouse	Logitech G502 Proteus Core	4,825
Keyboard	Corsair Vengeance K70 RGB	13,400
Sound Card	ASUS Xonar D2X 7.1	9,199
Total		**₹2,74,828**

PRIMARY DIGIT TEST RIG

Processor	Intel Core i7 - 4960X (Extreme Edition)	71,950
Motherboard	ASRock X79 Extreme 9	27,846
RAM	Corsair Dominator 2133MHz (8GB x 4) (CMD32GX3M4A2133C9)	48,500
HDD	Toshiba DT01ABA100V	3,704
SSD	SanDisk Extreme II 240GB (x2 for HDD testing)	24,078
PCIe SSD	Kingston HyperX 480GB	28,999
Graphics Card	NVIDIA GeForce GTX TITAN X	85,099
Cabinet+ Cooler	Cabinet (NA) + Intel RTS2011LC - Stock AIO	NA
PSU	Corsair HX1050	16,059
Monitor	ASUS PB279Q	62,500
Optical Drive	NA	NA
Mouse	Razer Ouroboros Elite	9,899
Keyboard	Tt eSPORTS Meka G1	10,499
Total		**₹3,89,133**

digit RECOMMENDED BUYS

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



TOP 3 CPU LIQUID COOLERS

Brand	Model	Price (in ₹)
NZXT	Kraken X61	14,959
Thermaltake	Water 3.0 Ultimate	12,778
Corsair	H100i Extreme	14,092



TOP 3 EXTERNAL 4TB HDD

Brand	Model	Price (in ₹)
Seagate	Backup Fast	20,890
Wetern Digital	My Passport Pro	33,999
Seagate	Backup Plus Desktop	12,152



TOP 3 KEYBOARDS

Brand	Model	Price (in ₹)
Razer	Blackwidow Chroma	13,899
Corsair	Vengeance K70	19,932
Logitech	Illuminated K800	8,599



TOP 3 PROJECTORS

Brand	Model	Price (in ₹)
Epson	TW8200	1,89,050
Benq	W1070+ 3D	93,000
LG	PF80G	1,24,000



TOP 3 IEMS

Brand	Model	Price (in ₹)
Bose	QC 20	25,200
Logitech	UE 900	37,990
RHA	T10i	14,999



TOP 3 UHD TVS

Brand	Model	Price (in ₹)
Samsung	HU9000 65"	4,25,000
LG	55UF950T 55"	2,79,900
Philips	Ambilight Spectra 3 58"	4,49,990



TOP 3 FITNESS TRACKERS

Brand	Model	Price (in ₹)
Jawbone	UP2	9,999
Fitbit	Charge HR	12,990
Xiaomi	Mi Band	999



TOP 3 HEADPHONE AMPLIFIERS/ DAC

Brand	Model	Price (in ₹)
FiiO	Kilimanjaro2 E11K	4,099
FiiO	Mont Blanc E12	8,999
Audinst	HUD MX-1	12,000



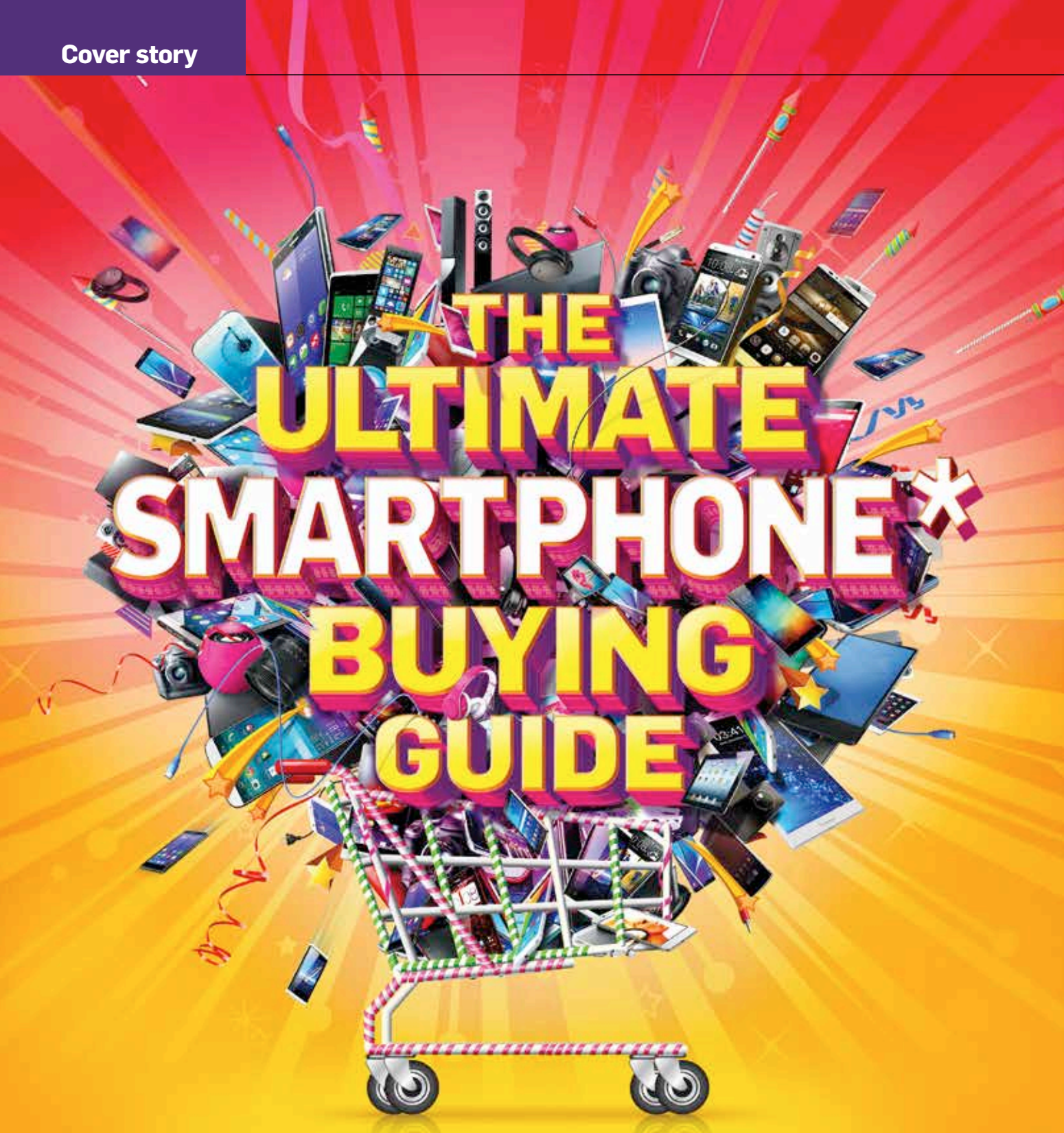
TOP 3 SOUND CARDS

Brand	Model	Price (in ₹)
Asus	Essence STX II	21,999
Asus	Xonar Essence STX I	10,990
Creative	Sound Blaster X-Fi Titanium HD	16,999



TOP 3 MINI PCS

Brand	Model	Price (in ₹)
Gigabyte	Brix GB-BXi7H-5500	40,699
Intel	NUC 5i7RYH	36,299
ASRock	Beebox N3000/B	9,959



THE ULTIMATE SMARTPHONE* BUYING GUIDE

FOR THE FIRST TIME EVER, A GUIDE THAT QUANTIFIES RESALE VALUE, DEPRECIATION, UPDATE FREQUENCY, REPAIR COST AND MORE TO GIVE YOU THE MOST PRECISE LONG TERM ADVICE

BY **PRASID BANERJEE**

BUT WAIT... THERE'S MORE

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As much as we like playing with the newest smartphones, with each new review, we realise that there's little separating one phone from the other in a particular price segment. When you readers ask us for phone buying advice, we give you our recommendation based on the tests we have performed till date. But what's evident to us is that each question will invariably be answered with a set of 3-4 devices per price segment based on the buyer's requirements. There are some very important aspects that are often not covered in our reviews ratings though, and these can change our ratings drastically. Things such as service, support, updates and many others.

So, when we call this the ultimate buying guide for smartphones, it is because we factor in all these parameters. What we're doing here is taking all these parameters into consideration, and using the same to alter our ratings. These results will answer a bunch of questions that we often get from our readers.

HOW WE TESTED

Our review ratings are usually based on a scale of hundred that's further divided into four categories. Broadly speaking, that's amounts to 25 percent weightage each to performance, design, features and price. Of course, we break them down further in order to accommodate aspects such as camera, battery and many others, but that's basically it. So, when a phone gets 80 out of 100, it's amongst the best we've seen, while 60 and below would range from mediocre to worst. What's surprising though is how many phones lie around the 70-80 mark; satisfactory, but not very good.

This time though, we added six categories to our ratings, making the final score out of 200. The new parameters considered are screen repair cost, update cycles, return on investment, depreciation, availability of accessories and availability of the phone. While the update cycle includes how likely or quickly you will receive the next big update on your phone, return on investment is what you can get by reselling the phone after a year of using it. Availability covers things such as online, offline, flash sales and the infamous invites. We'll explain more as we go along.

We went around calling company service centres, tallying prices online, checking with phone buyers and so on and so forth. After adding these six parameters to our rating system, we saw a sea change in the new scores that emerged. A phone that was once marked 85 out of 100, suddenly dropped to a measly 76, while phones that were already in the 70-100 category, dropped to the 60-70 mark. As a result, we had a clearer idea of what phone would serve users the best, and we sincerely hope you would feel so too. The table ahead should give you an idea of how the scores change after adding each parameter.

WHY DID WE DO THIS?

When a consumer buys a phone, he's spending his hard earned money. Yes there are those who didn't work as hard as others, but it's still money that's yours and you tend to give it considerable thought. With the hordes of phone manufacturers in the market today, the consumer makes a very difficult choice when buying a smartphone, and more often than not, ends up buying the wrong phone and suffering as a consequence.

Furthermore, India is the hottest market in the world right now and everyone wants a piece of it. Needless to say, there are a bunch of companies that simply want to get a piece of the action, and spare little thought for after sales support and other aspects that, as Indians, we tend to hold in high regard. In addition, the trend for a while has been to sell products that the consumer will scrap in a year or less, in the name of 'upgrades'. In other words, planned obsolescence.

To be very frank, this is simply wrong. A smartphone today is a powerful device and one should buy a phone that he or she needs, not because there's a sale happening somewhere on the Internet. Yes, sales are opportune moments to make purchases, but most consumers don't realise that their smartphones can last much longer than what they have been led to believe.

One of the main reasons for people buying phones when they don't need to is that prices have come down. But a more important reason is because they probably made the wrong choice when buying phones the first time around.

BEFORE WE BEGIN...

It's important to introduce some of the phones that are currently amongst our top rated smartphones. We usually distinguish them based on price, but for the sake of this shootout, we'll sort them into phones that cost ₹5000-7000, 7000-10,000, 10,000-15,000, 15,000-20,000, 20,000-30,000, followed by flagship phones. This covers the most popular phones in the market, and presents an ideal scenario for the reader to make his or her own judgement for the phone that he or she is buying.



Samsung Galaxy S6 Edge

Furthermore, before we start talking about the new elements that we took into consideration, it's important to note some of the top rated smartphones we have right now, based on the tests we have performed in the past.

For the flagship segment, this includes the Samsung Galaxy S6, Apple iPhone 6 and the LG G4. In the ₹20,000-30,000 segment, phones such as the OnePlus One, Honor 6 Plus, Asus Zenfone 2 (4GB RAM) and the Moto X (2nd Gen) were considered. Next, the ₹15,000-20,000 segment consists of phones such as the Asus Zenfone 2

SCORE SHEET

	Depreciation	Return On Sale	Screen Repair Cost	Availability	Official Accessories	Update Cycle	Added Score	
Flagships								
Samsung Galaxy S6	2	14.05947856	9.35625	15	10	16.67	67.08239523	
LG G4	2	8.784640523	8.866481224	15	10	20	64.65112175	
iPhone 6	16	11.8631746	4.984177215	15	10	20	77.84735182	
20k-30k								
OnePlus One	16	10.9975796	9.856714286	1	6	16.66666667	60.52096056	
Honor 6 Plus	16	10.41349624	9.856714286	5	6	10	57.27021052	
Moto X (2nd Gen)	16	7.075235841	13.06081633	5	8	20	69.13605217	
Asus Zenfone 2	2	8.670433522	10.52578947	5	8	16.66666667	50.86288966	
15k-20k								
Honor 6	16	5.631531577	4.49975	7.5	8	10	51.63128158	
Asus Zenfone 2	16	6.502825141	7.017192982	7.5	8	16.66666667	61.68668479	
Xiaomi Mi 4	16	6.922221111	4.424557522	7.5	6	10	50.84677863	
10k-15k								
Xiaomi Mi 4i	7.5	9.691130087	6.368936796	12	16	12.5	64.06006688	
Asus Zenfone 2	15	6.534602307	5.262807018	7.5	16	12.5	62.79740932	
Moto G (3rd Gen)	15	11.02200169	5.1996	7.5	16	15	69.72160169	
7k-10k								
Lenovo K3 Note	8	2.126212621	4.49955	5	9.6	25	54.22576262	
Yu Yureka Plus	1	4.657799113	4.9995	1	7.2	25	43.85729911	
5k-7k								
Xiaomi Redmi 2	5	3.977711102	2.333	8	9.6	25	53.9107111	
Yu Yuphoria	10	2.742296519	2.51964	1	7.2	25	48.46193652	
Moto E (2nd Gen) 4G	5	5.634037588	2.117382353	10	9.6	30	62.35141994	

(1.8GHz SoC, 4GB RAM), Honor 6 by Huawei and the Xiaomi Mi 4. Lastly, the ₹7000-10,000 and ₹5000-7000 segments consist of phones such as the Lenovo K3 Note, Yu Yureka Plus, Xiaomi Redmi 2, Yu Yuphoria and the Moto E (2nd Gen) 4G.

While some of these phones are still amongst the best and most popular in the market, some will perhaps be replaced by the time you read this story. It should still be useful to you, as a reader though. Especially, considering that you can follow the methods discussed here in order to judge newer smartphones.

The table included above should tell you the original ratings for these devices, and also how they changed after the new parameters were added.

DEPRECIATION

When you're buying a flagship smartphone, you're spending what, for the lucky few, is a full month's salary, which means you're making a pretty substantial investment. So, if in a year's time, you want to change your phone, you would hope to get good resale value out of it. This is only possible if the phone's worth hasn't depreciated by a big margin. In the current state that the market is in, the more expensive smartphones lose their value pretty quick, which means you may not get the resale value you hoped for. We calculated the percentage drop of each product on our top ten list to determine by



OnePlus 2

	Review Rating	New Rating/200	New Rating/100
	85	152.0823952	76.04119761
	73	137.6511217	68.82556087
	84	161.8473518	80.92367591
	86	146.5209606	73.26048028
	81	138.2702105	69.13510526
	86	155.1360522	77.56802608
	81	131.8628897	65.93144483
	82	133.6312816	66.81564079
	81	142.6866848	71.3433424
	77	127.8467786	63.92338932
	77	141.0600669	70.53003344
	78	140.7974093	70.39870466
	60	129.7216017	64.86080085
	75	129.2257626	64.61288131
	74	117.8572991	58.92864956
	78	131.9107111	65.95535555
	75	123.4619365	61.73096826
	63	125.3514199	62.67570997

how much their price has depreciated in the time they've spent in the market.

If you've followed the market to any degree, you'll realise that Apple's iPhones drop prices slower than Samsung's flagship devices. This automatically makes the iPhone's resale value higher than most Android flagships. For example, in less than a year, the price of the Samsung Galaxy S6 has fallen by about 22 percent which is about 5 percent per month. Additionally, a phone such as the LG G4 has depreciated by about 6 percent. The iPhone 6 on the other hand, depreciated by about 2 percent per month.

However, depreciation counts less as you go down the price ladder. This is because when you spend smaller amounts on your smartphone, you're already looking to get less when selling it. For example, you won't really be looking to resell a used sub-₹7000 smartphone and get a lot of money would you?

What's worth considering though is that when a device such as the Moto E (2nd Gen), which has a history of being a real value-for-money device, depreciates by 5% per month, it is a sure shot sign that it's not really selling very well. And one has to wonder why. The Moto E (2nd Gen) 4G was launched at ₹7,999, but it's currently selling for ₹1,000 lower in a matter of about four months.

Furthermore, products such as the OnePlus 2, tend to stay at their launch price longer than many others, considering that the company has already come up with a pretty competitive price, cutting its margins dearly. As a result, the price of a OnePlus One has depreciated by only about 18% in the eight-odd months that it's spent in India. With the OnePlus 2, the company has held strong for the first couple of months, and we don't expect the pricing to drop permanently any time soon. The Xiaomi Mi 4 on the other hand had met with tough competition in the market and the company drastically dropped its price pretty soon. That's not good for someone who bought the phone at the original price, considering that the 16GB Mi 4 currently sells at only ₹14,999, down from the original pricing of around ₹20,000. Note that we're considering only official and permanent price drops here, and not temporary offer prices.

Apple iPhone 6 has dropped to sub-₹40,000 after almost a full year of being in the market, while Samsung's Galaxy S6 did so in less than six months. This gave the iPhone a lot of points over the Galaxy S6.

RETURN ON INVESTMENT

There are two reasons why return on sale is important. The first is a continuation of what we discussed about depreciation above, but the second is arguably more important. At the rate at which people dispose off their smartphones these days, e-waste is a genuine problem. So, selling your smartphone to a refurbishing unit is the best way to go. We considered Reglobe.in and Atterobay, two of the best known companies in this business. We verified the prices they offer for one year old units of our top ten smartphones, when they're in reasonably good condition.

Of course, many would prefer selling their current phone to someone instead of recycling, which is also not a bad idea. Therefore, we considered an average of the prices these two websites offered, thereby obtaining an adjusted sale price for each product. The idea being that you will use your phone for at least a full year before thinking about buying your next smartphone.

Of course, the higher the price that you can get, the better. Like depreciation, the return on investment is also more important for the more expensive products. When you're spending above ₹30,000 on a smartphone, that's a substantial sum, and you would hope to get as much of your money back as possible.

A surprising fact that we came across here is that Atterobay seems to be willing to pay more for a one year old Galaxy S6 in good condition, than a similarly aged iPhone 6 (16GB) also in a similar condition. If you bought a Galaxy S6 at its launch price of nearly ₹50,000, you may be able to get back nearly 40 percent of your money by selling it a year later. The iPhone 6 came a close second with 36 percent.

Note that we're only trying to draw examples here, of how things happen, and what you should consider. When buying an inexpensive phone, you should check websites like Reglobe and Attero to gain an idea of what you can expect later. While it will be difficult to determine these aspects for phones that have just been launched, checking what happened with older devices is a good idea to know the company's history. For example, the iPhone 6 serves as a good proxy for the just launched iPhone 6S, while the OnePlus One does the same for the OnePlus 2.

AVAILABILITY

Do you know how often we see angry consumers writing the choicest of words for OnePlus and its invite system on our Facebook page? The same also happens for the flash sales model introduced by Xiaomi, and followed by many now. A good phone should be available right? Not just that, there's also the online vs offline factor. You may be comfortable spending ₹7,000 on a smartphone online, but when it comes to spending ₹60,000 for an iPhone, you'd prefer to physically see the phone before you buy it. No?

Further, what happens when a phone you really want is available only on one e-commerce website and that website doesn't deliver to your location? The online vs offline debate is a long one,

but when combined with flash sales and exclusives, it creates a real conundrum for a buyer.

There's not much that we can say about this aspect either, since it's a straightforward choice. If you can't get a phone on a flash sale or invite, or dislike them, you'll not buy it, and the company loses one prospective buyer. There's a reason big companies such as Samsung, Apple and Sony have spent crores of rupees to build brick and mortar stores, and booming as the online business may be, it's nowhere close to pushing these retailers out of the market, especially in a country like India.

SCREEN REPAIR COST

Perhaps the one aspect of a smartphone that uniformly affects all buyers, is the screen repair cost. We see people talking on smartphones with broken and battered displays regularly. While keywords such as Gorilla Glass and Dragontrail Glass are often thrown about, it's still glass, and glass breaks. Period.

So, what happens when the glass on your smartphone breaks? Think back. How many times has a friend of yours bought a new phone because it was going to cost too much to repair the display on his device? It's one of the areas where Samsung seems to excel. As expensive as AMOLED displays are, the company seems to be subsidising the cost, charging around ₹12,000 to fix a Galaxy S6 display, while Apple's Retina displays will cost you nearly ₹23,700. Remember the story of the guy who broke his iPhone 6 screen the minute he walked out of the store with it? Yeah, he probably cursed hard. In addition, companies such as LG and Samsung are providing a one-time free screen replacement offers on some of their flagship devices, which is good for a buyer.

SCREEN REPAIR COST

	Screen Repair Cost	Original Launch Price	Percentage of Cost spent on Screen Repair
Flagships			
Samsung Galaxy S6	12000	49900	24.0480961924
LG G4	12942	51000	25.3764705882
iPhone 6	23700	52500	45.1428571429
20k-30k			
OnePlus One	7000	22999	30.4361059176
Honor 6 Plus	7000	22999	30.4361059176
Moto X (2nd Gen)	7350	31999	22.9694677959
Asus Zenfone 2	5700	19999	28.5014250713
15k-20k			
Honor 6	8000	17999	44.4469137174
Asus Zenfone 2	5700	19999	28.5014250713
Xiaomi Mi 4	9040	19999	45.202260113
10k-15k			
Xiaomi Mi 4i	4082	12999	31.4024155704
Asus Zenfone 2	5700	14999	38.0025335022
Moto G (3rd Gen)	5000	12999	38.464497269
7k-10k			
Yu Yureka Plus	1800	9999	18.00180018
5k-7k			
Xiaomi Redmi 2	2700	6999	38.5769395628
Yu Yuphoria	2500	6999	35.7193884841
Moto E (2nd Gen)	3400	7999	42.5053131641



Xiaomi Mi 4i

Repairing a broken screen can cost you as much as 50% of a smartphone's original price, and that's a big deal. So, researching on this before you buy a phone is a good idea. The information is readily available too. Take the direction we took for example. We have access to all the companies, but we simply called each company's service centre and asked how much a broken screen would cost to fix. The calls lasted about a minute each and we had our answers. Easy peasy.

Xiaomi VP, Hugo Barra, once said on stage, that the cost of a smartphone can be doubled by simply going from a HD to Full HD display. And that's perhaps the best way to explain why the cost of screen repair is an important part of your buying decision. The top end phones will have expensive displays, while lower end phones should have comparatively cheaper displays, when compared to the original price. The idea is to figure out what percentage of the phone's original cost is accounted by the screen, and whether a broken screen would force you to buy a new phone.

From our research, we find that both Samsung and LG score big in this depart-

ment by subsidising screen repair cost down to ₹13,000 and offering a one time free screen replacement option. Apple on the other hand, charges big for both buying the phone, and fixing its screen.

UPDATE CYCLE

This is an area where Apple's iPhones were unparalleled until very recently. The company delivers the newest updates to its devices for two years, easy, and in the case of iOS 9, it's a year more since the update is smaller in terms of changes. Android, on the other hand, suffers due to the fragmentation it has to face in the industry.

It's an open source system, which allows OEMs to make whatever changes they want to make to their own devices. As a result, Google delivers the update to OEMs, which then work on their own interfaces and then deliver it to the consumers. The Android updates are one of the main reasons why Nexus fans swear by their devices.

On the other hand, companies like Samsung, LG, Sony and Motorola have done pretty well too. The Moto X (2nd Gen) got the Lollipop update before the Nexus phones last year, and that's saying something. It's important to note that even with a near-stock Android interface, Motorola does make changes to the OS in some ways. Greater the changes an OEM makes to the OS, the more work it has to in order to deliver updates.

The LG G3 was another phone that got the Lollipop update pretty quickly, while Sony and Samsung had announced updates for their top-end devices quite fast. Both these companies though, faltered when it came to delivering updates for their lower end smartphones, which irked a lot of users. Such information can be obtained quite easily from sources such as the Digit forums and many others like it online.

Additionally, companies such as Micromax, Intex and others are notorious for not delivering speedy updates on many of their devices. While they've all started picking up the pace, they still lag behind. Custom UIs involve more work for manufacturers while porting updates to their devices. The Chinese manufacturer Xiaomi for example, deals with weekly MiUI updates, while its flagship Xiaomi Mi 4 is still running on Android KitKat here. That's a deal breaker for many of us.

AVAILABILITY OF ACCESSORIES

Last but not the least, the availability of accessories for your smartphone is also quite important. We took to three well known brands for this purpose – Mophie, Otterbox and DailyObjects. The three are well known for making cases and covers for smartphones, and many don't mind spending to get the quality delivered by these companies.



iPhone 6

Protecting your device using a well built case can often decide whether your smartphone lasts a year, or two. Pankaj Garg, CEO and Co-Founder of DailyObjects, tells us that Apple and Samsung devices are by far the most popular amongst its buyers. The company also makes both thin and tough cases for iPhones and Samsung's Galaxy devices.

Garg told us that OEMs are chosen entirely according to the consumers' buying habits, and that devices from companies such as Xiaomi and OnePlus have received much appreciation.

Having third party manufacturers such as DailyObjects, Mophie and OtterBox is a good idea for phone manufacturers. But for some of them also develop cases in-house. So, while flagships from Apple, Samsung and LG get full marks for having accessories made by most of the third parties and in-house as well, Xiaomi, OnePlus and Huawei also get some marks for making them in-house only. The difference though is in the fact that while phones such as the OnePlus One, Xiaomi Mi 4 and some others were

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LG G4

still available on DailyObjects, with a phone such as the Yu Yureka Plus, the only option we found was the company's own range of accessories. As a result, the above mentioned phones got one point over the Yu Yureka Plus, while accessories for the Samsung Galaxy S6 and iPhone 6 got them four extra points.

THE TRADITIONAL BUYING GUIDE..

Now that you've understood the new parameters that need to be considered, think from a traditional buying guide point of view. This is where the performance to price factor comes in, and it varies based on the amount of money that you're spending on your smartphone. Note that by performance we mean the overall performance of the device, and not just the absolute processing power. The table on the next page should give you an idea.

If you're spending ₹40,000 and above, uncompromised performance is what you're looking for. So, the most powerful processor in the market is what you must have. While a quad-core processor can, in theory, beat an octa-core processor, barring exceptions such as the iPhone, it is always better to go with octa-core processors, clocked at above 2.2GHz. The camera should be 16MP and above, while the phone should provide at least 3GB of RAM. You must read reviews and research if you're buying a phone in this range, because even the high-end phones falter sometimes. For example, the Moto Turbo has a 20+MP camera, but it still can't take match the Galaxy S6 camera.

Moving down the price bracket, the ₹20,000-30,000 and ₹30,000-40,000k price brackets have been pushing the boundaries for what you can expect. With phones such as the OnePlus 2, Honor 7 and others in play, one can expect very good performance here. That said, compromises are often made on account of the user's preference. So 3GB of RAM is a reasonable expectation, while a good Full HD display, 3000 mAh battery and 16MP camera are also what you want. You can make an exception for a 13MP camera that is known to perform well, as in the case of the OnePlus 2.

The ₹10,000-15,000 and ₹15,000-20,000 segments are where you must make steeper compromises. Here, you should choose based on which aspect of a smartphone you need the most. If you need a camera, a 13MP is minimum, while 2GB of RAM is a reasonable expectation. If you're buying a phone with a 5-inch or smaller display, then 720p can often be enough, while larger displays should be at 1080p at least.

You have to make even more compromises when it comes to sub-₹10,000 smartphones. Even here you can expect at least an 8MP camera, while a 13MP will also be a reasonable expectation if you're spending more than ₹7500. Moreover, the processor here can be around 1.2GHz quad-core, while RAM should be 1GB minimum for a sub-₹7000 device, and 2GB of slightly higher priced smartphones.

Furthermore, except in the sub-₹10,000 price brackets, never go for a phone that has less than 32GB of storage. In the ₹10,000-15,000 price range, a 16GB smartphone, with SD card support is still acceptable. But as far as possible, go for a 32GB storage option. Remember, the internal storage of your smartphone is what performs best, and SD cards can throttle a phone's overall performance. In addition, over time, your apps will take a lot of space, and you don't want to buy a new phone because you can't clear any more space on your device. If you ask us, 16GB storage with no SD card support is what you call planned obsolescence. Phones are made that way so as to force you to buy new ones in a year. With the advent of music streaming and all the other media that you consume on your phone, 16GB storage is simply a joke, unless you're buying a sub-₹10,000 smartphone, that you anyway don't plan to use for very long.

Two other things to consider are connectivity and battery capacity. For connectivity, your phone should be 4G capable, no matter what the budget. In addition, you can expect OTG support in most price brackets, except the sub-₹10,000 segment. And even there, some phones do offer USB OTG support. Furthermore, the battery capacity of your smartphone must never go below 2,000 mAh and it should increase based on the



Moto G (3rd Gen)

MINIMUM SPECS YOU SHOULD LOOK FOR AT DIFFERENT PRICE POINTS

	5k to 10k	10k to 15k	15k to 20k	20k to 30k	30k to 40k	40k above
Processor (64-bit architecture must)	1.2 GHz quad-core and above	1.5GHz quad-core and above	1.5GHz quad-core and above	1.5GHz, quad-core	1.8GHz quad-core min.	2.2Ghz and above, octa-core minimum
RAM	1GB or more	2GB or more	2GB or more	2GB and above	3GB and above	3-4GB
Screen	720p	FHD if above 5 inch, HD is 5inch or below	FHD if above 5 inch, HD is 5inch or below	FHD	FHD or above	QHD
Design	Plastic, any kind	Matte plastic	Matte plastic	Metal/Glass	Metal/Glass	Metal+Water Resistant
Camera	8MP and more	13MP and more	13MP and more	16MP and above	16MP and above	16MP and above
Battery	2000 mAh minimum	2600 mAh and above	2600 mAh and above	3000 mAh and above	3000 mAh and above	3000 mAh and above
Connectivity	4G	4G, USB OTG	4G, USB OTG	4G, USB OTG	4G, USB OTG	4G, USB OTG
Storage	16GB min	16GB+SD Card or more	32GB and above	32GB and above	32GB and above	32GB and above
Operating System	Last but one	Newest	Newest	Newest	Newest	Newest possible

price you're paying (see table). While battery capacity isn't directly proportional to battery life, it is a good indicator of what you can expect.

You can also consider things like water resistance and the material used to make the smartphone. While metal bodies are considered to be the best, they don't explicitly mean quality. Apple's iPhones and some HTC phones really premium metal designs, while there are other metallic phones in the market that aren't really up to the same level. The design aspect depends on looks, usability and sturdiness. While looks are subjective to the user, usability and sturdiness are something only reviews can tell you. Look for keywords such as 'curved back', 'thin bezel' etc. Glass is also a very premium material to look at, but you must consider the fact that it can break easily.

WITH THAT SAID...

The interesting part about the results here is that no phone really came out of this test with a rating that was higher than its original score. What it does show is how much the overall buying decision can change.

For example, the Samsung Galaxy S6, which was earlier rated at 85 dropped to 76, while the iPhone 6, which was originally rated at 84, dropped to only 81 despite the new parameters. The LG G4, on the other hand, dropped from the original rating of 74 to 69. This means that in our flagship range, the iPhone 6 suddenly takes a higher preference over the Samsung Galaxy S6.

On the other hand, in the sub-₹30,000 segment, the Moto X (2nd Gen) scores big due to its return-on-sale value, update cycles etc., and despite the fact that it costs a lot to repair it's screen, the phone edges out the OnePlus One.

The most interesting outcome though is perhaps in the ₹10,000-15,000 range. The Xiaomi Mi 4i closes the gap and becomes almost as desirable as the Zenfone 2 despite being a lower performer overall. The even slower Moto G (3rd Gen) also comes closer to the Zenfone 2, thanks to superior service.

In the sub-10k segment, the Lenovo K3 Note, which was already a better performer than the Yu Yureka Plus, becomes a much better choice given its higher resale value, accessory availability and return on sale. On the other hand, the Moto E (4th Gen) comes much closer to the Redmi 2 and Yu Yuphoria because of its superior update cycles, accessory availability and the fact that it's available offline.

TO CONCLUDE...

It is clear that taking stock of all these aspects can change the way we choose a smartphone. Given the fact that smartphones today are deeply personal devices, and ones that should be used wisely, it seems fair that such emphasis be put on the buying decision. The comparison also shows that all these parameters become all the more crucial when you're considering a phone that is priced higher, while you can perhaps afford to make a simpler, uncomplicated decision, based on performance alone, for a sub-₹10,000 smartphone.



HOW TO BUY A TV

DON'T LET YOURSELF GET INTIMIDATED BY A LONG LAUNDRY LIST OF ACRONYMS AND TV JARGON. SIT BACK AND RELAX AS WE SHOW YOU HOW TO GO ABOUT MAKING AN INFORMED CHOICE WHEN IT COMES TO TELVISIONS

BY **SOHAM RANINGA**

Upgrading to a bigger screen TV is perhaps the most common temptation that most of us face this Diwali. The constant bombardment of offers along with newer, better models makes it almost impossible to ignore the lure to buy a new TV. I certainly succumbed to it and here's my advice on how to go about the buying process.

Assuming you are already aware of the bigger picture in terms of display types, resolution options and features on offer, your buying process will largely boil down to three factors apart from your budget – the screen size, smart TV or standard TV and of course the 4K dilemma. Let's start with the first and the most important factor – the screen size.

SCREEN SIZE MATTERS, MATTERS THE MOST

The golden rule to buying a new TV is to get the largest possible screen for your budget and viewing distance (more on viewing distance later). The sheer impact of a bigger screen will overshadow all finer elements and enhancements combined together. Having said that, the compromises you make shouldn't sway heavily towards the image quality aspect of the TV. Coming back to the screen size, I suggest going one step further than your original plan, assuming you plan to upgrade from a 32-inch LCD TV to a 42-inch LED TV, you should ideally move a notch higher and get yourself a 48-inch or 50-inch LED panel. The same logic would apply as you move higher unless you already own a 65-inch TV, in which case you should be considering buying a home theatre projector next.

SCREEN-SIZE VS VIEWING DISTANCE

The viewing distance for a TV comes into play once you move beyond the 42-inch screen size. Viewing distance is primarily governed by the content resolution and



Unless you live in a matchbox, bigger is better when it comes to screen size



Opt for a 4K TV if you plan to stick to it for 5-8 years

quality. For HD (720p) content and beyond, a minimum viewing distance of 5 feet between the screen and the viewer is fine for a 50-inch TV. Visit this link (http://dgit.in/Nv15bz) for THX's guide to calculating viewing distance precisely. The real issue comes-in when you switch to SD (standard definition) content. SD content on a 50-inch panel will appear pixelated. The non-wide (4:3) aspect ratio of most SD content channels will make things even worse. So, if your primary usage for a TV is limited to SD content, going beyond a 42-inch screen size will compromise picture quality and experience. Bottom-line: sacrifice on some features if you must so you can buy a larger screen size that supports at least 1080p native resolution.

A SMART TV MIGHT NOT ALWAYS BE THE SMARTEST OPTION

Spending more on a Smart TV might not be the best option today. Sure a Smart TV will offer wireless connectivity, giving you access to more content over the web. But, why spend more when you can convert your standard TV into a Smart TV? You can connect a Chromecast dongle, an Apple TV or a Google Android TV based device to your TV using the HDMI port and convert your TV into a Smart TV. The UI, content options and overall experience offered by these devices easily matches and even surpasses the best of Smart TVs in the market today. The Google Nexus player based on Android TV or an Apple TV can be purchased for less than ₹6000 via online stores. Chromecast will cost you less than ₹3000 and will offer benefits of seamlessly beaming content from your smartphone, laptop or a desktop PC to your TV. Smart TVs do command a premium and in most cases the premium is upwards of ₹10,000. Spending the extra cash on getting a bigger screen and investing on separate devices is an option that you should explore. The only real downside to this approach is that you will end up using-up an HDMI port to connect the device, whereas the features are in-built in a smart TV. A compromise you should be aware of, if you are planning to connect multiple devices to the TV.

SHOULD YOU GO 4K?

Yes, 4K is now affordable. While content is still an issue, you could still consider opting for a 4K TV, assuming you would stick to it for 5-8 years. However, please be wary of those ultra low-cost 4K TVs that tease you with their unbelievable price tags. A lot has been said on how one cannot make out the difference in image quality between a 4K TV and a 1080p TV at standard viewing distances (5-9 feet). We humbly disagree with those opinions. You will most certainly realise the difference in terms of image quality between a 4K TV and a 1080p TV, provided both are playing the same content in the native resolution of the TV. Though, the maximum impact of 4K or UHD resolution is felt on larger screen sizes (55-inch and above). For anyone considering a 42-inch panel, we recommend buying a good quality 1080p LED TV with local dimming and save that cash to upgrade to a 4K TV in the next 3-5 years. Especially, if you're going 4K is up for consideration, but does not figure in the 'must-have' features list.

INEXPENSIVE 4K TVs CAN BE EVIL

Low-cost 4K TVs often come with crappy panels that only support 4K at 30 Hz, that is basically limiting the video playback to a 30 Hz refresh rate per second. And, these TVs suffer from awful judder when playing fast action content (sports channels or anything that contains rapid panning). What's worse, many of them come with default up-scaling, so when they are set to 4K, they upscale SD and HD content to 4K and hence force the 30hz refresh rate on regular content as well. Thereby adding the same awful judder to every-



VU TVs give a lot of bang for your buck

TVs TO BUY UNDER 50K

- **Vu 55K160GAU:** Bang for the buck, get a 55-inch panel for less than 50K.
  Full HD, 1920 x 1080
  3 x HDMI, 2 x USB
- **LG 40UF670T:** Going 4K on a budget, supports local dimming and offers 4K@60fps.
  Ultra HD (4K), 3840 x 2160
  2 x HDMI, 1 x USB
- **LG 43LF6300:** Feature rich, plenty of connectivity options, runs on Web OS 2.0.
  Full HD, 1920 x 1080
  Smart TV
  3 x HDMI, 3 x USB
  Wi-Fi Direct, Ethernet

TVs TO BUY UNDER 1L

- **Sony 50W900B:** Excellent image quality, feature rich, good sound quality, offers local dimming.
  Full HD, 1920 x 1080
  3D TV, Smart TV
  4 x HDMI, 3 x USB
  Built-in Wi-Fi, Ethernet
- **LG 49LF540A:** Inexpensive, IPS panel, great value.
  Full HD, 1920 x 1080
  2 x HDMI, 1 x USB
- **Samsung 48JU6470:** Big screen UHD 4K TV with all the bells and whistles under 1L.
  Ultra HD (4K), 3840 x 2160
  Smart TV
  4 x HDMI, 3 x USB

thing. The minimum refresh rate that you should settle for on any LED TV you buy should be at least 50/60 Hz at all resolutions supported.

DON'T BOTHER WITH 3D

Yup, nothing much to say here, unless the 3D feature comes at no extra cost, don't go hunting specifically for a 3D TV. Content is sparse, implementation is sub-par and 3D is best left and experienced in theatres.

CURVED AND OLED SCREENS

OLED TVs do offer the best picture quality in terms of colours, contrast, black levels and also response time. If you are sitting on wads of cash, go ahead and splurge on that OLED TV. It will definitely give you the best visual experience.

Curved screens on the other hand are more of a technological achievement rather than a market need. The impact of curved screens is limited to 55-inch screens and upwards in our book, the impact itself isn't substantial enough to justify the price difference. Having said that, curved TVs do look awesome and will go a long way in enhancing the aesthetic value of your room. But if you want the best value for your money, curved and OLED TVs aren't recommended at their current price points. Even though they do offer the best overall picture quality, OLED TVs are expected to get cheaper and better over the next two years.

SOUND

The race towards slimmer, lighter, TVs has resulted in slimmer, lighter TVs that sound like crap. And, in most cases the sound quality from big screen TVs will be adequate at best. There are certain exceptions, the Sony W950C series for example offers pretty good sound quality out of the box. But, it also demands a heavy premium for doing that. If you aren't going to attach extra set of speakers/home theatre to your TV, we strongly recommend you to thoroughly test (more on this later) the sound quality of the TV at the store before making your final decision. Poor sound quality can heavily mar the final experience of a big screen TV, we've come across numerous examples of frustrated buyers who are in utter disbelief of how the sound output from their big screen TV is weak and highly suppressed in terms of quality and sound stage.



The downsides of slim panels is poor sound

ALSO CONSIDER

BUYING FROM GREY MARKET CAN BE SUICIDAL

Don't, just don't get lured by those crazy good deals offered in the grey channels. Those TVs might be new and absolutely genuine, but should something go wrong with them, you will end up paying through your nose to fix them. Modern LED TVs can't be fixed at your local repair shops and official sales and support folks will charge you a bomb to fix any panel related issues. The only math that works in favour of buying from the grey market is if the price you pay works out to be 70 percent lower than the best price you get via the official retail channel. And, that will never be the case. Therefore, stick to genuine, official stuff that comes with manufacturer warranty.

DEPRECIATION AND RESALE

Given the relatively long upgrade cycles for TVs, you don't really have to worry about depreciation. In case you do find a need to upgrade within two years of buying a new TV, don't expect more than 30 percent of the purchase price in return. Many online retailers like Flipkart and Snapdeal do offer some pretty good exchange deals during their overly-hyped online sales.

CLICK BAIT

WITH THE FESTIVE MOODS AND SEASONS KICKING INTO TOP GEAR LEADING TOWARDS THE END OF A FABULOUS YEAR, WE DECIDED TO GIVE YOU A COMPREHENSIVE BUYING GUIDE OF CAMERAS, AND HOW TO PICK UP THE RIGHT ACCESSORIES THAT WILL ENHANCE YOUR PHOTOGRAPHY SKILLS

BY **SOUVIK DAS**

As much as smartphone cameras may advance in clarity, controls and resolution count, standalone cameras will forever rule the world of imaging. And there are accessories that will aid your photography pursuits.

What you would need, and want, is dependant on the amount of money you are ready to spend, your use cases, and your skill level in photography. Let's break it down for you.

TYPES OF CAMERAS

Broadly, the consumer segment is divided into three types of cameras – point-and-shoot (or, compact), mirrorless, and digital single lens reflex (DSLR) cameras. Speaking on general terms, a compact camera is the easiest standalone imaging product to operate. They, however, give restricted options to play around with. With the passage of time, the compact cameras have grown in stature, nowadays providing decent image quality, along with more controls to toggle with. There is a new sub-range of cameras, termed as advanced point-and-shoot cameras. These cameras mostly include lenses of high zoom capabilities, and are ideal for beginners for getting used to high telephoto imaging. However, at the end of the day, these cameras are mostly for parties, vacations, and other casual occasions that don't require photography know-how.

Mirrorless cameras offer an upgraded imaging mechanism, fast focusing, and the option of getting interchangeable lenses for a compact, lightweight camera body. However, these mirrorless cameras are packing in large sensors and DSLR-grade builds.



More control than everything else!

The digital SLR cameras of the present day, along with a host of automatic/semi-automatic shooting options, have complete manual shooting capabilities, coupled with support for a wide range of accessories.

HOW EACH FARE

Compact cameras are lightweight no-frills devices that you can easily stow away in your satchel purse and a number of them run on the power of pencil batteries, which many find convenient.

The mirrorless cameras have advanced mechanisms, and their performance is close to that of DSLRs. This, with the added advantage of being lightweight, makes them a formidable offering. The mirrorless cameras are for you, if you have your mind fixed on a considerable upgrade over your existing smartphone/compact/basic DSLR cameras. Also, most of them use contrast-based focusing, which is considerably slower than the phase-detection autofocus used in DSLRs, which also happen to be more accurate. Alongside, battery life is yet another section where the DSLRs triumph over the mirrorless cameras, seeing that the live viewfinders of the mirrorless cameras consume a lot of power, while DSLRs can survive without live viewfinders. The presence of a bigger body on DSLRs also allow companies to put more buttons and dials, which further aid usability.

Having spoken about the differences, mirrorless cameras and DSLRs provide almost equal photograph and video quality, employing bigger and more advanced sensors than compact cameras. The issue here boils down to the range of interchangeable lenses and their qualities, where DSLRs have a clear upper hand. It is for this reason that most professionals choose DSLRs over the mirrorless.

THE BRAND DILEMMA

While it is hard to reason against personal preferences, here are a few factors that you need to consider. Canon has a wide array of lenses but Nikon has its own unique advantages that doesn't only extend up to its popular F-mount.

From what we have seen, Nikon's colour reproduction in photography is better than Canon.

Canon, on the other hand, has been known to have better video recording capabilities, aided by its range of video-oriented lenses, better than Nikon's range of DSLRs. This is true in some circumstances, and shouldn't be treated as gospel truth.

But, when the top-of-the-lines are considered, the Nikon D810 is a phenomenal camera, and is quite possibly the best in its class, but you will need to tune every setting to perfection to realise its true power. The Canon 5D Mark III, that has been succeeded by the Canon 5Ds, had superior assistance, and a very powerful sensor, that has been teamed up with an equally easy interface, which makes using the camera easy in itself.

WHICH ONE SHOULD YOU PICK?

Choosing your camera should completely depend on your major areas of photography, and how adept you are at photography. For the festival-focused tourist or casual shutter-crazy camera buyers, the point-and-shoot cameras provide excellent value for the money. The mirrorless cameras are for the more evolved user looking for a lighter, smaller alternative to DSLRs, but with the power of interchangeable lenses. DSLRs are the perfect tools of photo execution, and professionals will stick to the large bodies, seeing that along with everything else, DSLRs can also pack in a mirror-up mode, making the camera function as a mirrorless unit. We advise you to hit the store, and try out various cameras by different brands, before choosing your final product.

A COMPLETE RANGE OF ACCESSORIES

Choosing the right camera is not the end of the game. Enter accessories, an equally important component of your new camera to help you support it. Breaking accessories down into sections, we have lenses, lens hoods, tripods, camera bags, memory cards, filters, battery packs, maintenance, card readers and camera straps.

To select the right lens, ensure that you know which type of lenses are compatible with the lens mount on your camera. The f-number will give you an indication of the size of the opening that allows light into the sensor and the depth of field that the lens is capable of shooting at. Most telephoto lenses have f-numbers of 4-5.6, which gives scope for wider depths in photographs required in landscape photography. Macro, close-up lenses like 50mm, 35mm and 60mm have f-stops of 1.4, 1.8, 2 and 2.8, creating shallow DoF.

Tripods are crucial 'stands', literally. Multiple forms of photography, like slow shutter speed, time lapse, steadicam emulation and the likes need a tripod to be teamed up with a camera. While brands like Vanguard and Manfrotto almost always guarantee excellent stability and fluidity of movement, these tripods are somewhat expensive. When picking a tripod ensure that it has individual spirit levels. Considering these factors, the Benro T-880EX is a decent tripod that you can take.

Memory cards are yet another section that you would be better off investing a little more on. A 'fast' memory card, with fast read and write speeds, is crucial in ensuring that continuous shots (during time lapse photography) or movie recording does not get interrupted. If you're serious about photography, a filter kit is a necessity. Hoya is known for manufacturing ultraviolet, polarizer and neutral density filters, available for many different lenses. Other components of your ideal camera kit may comprise maintenance kits (Lenspen has many, ranging from singular cleaning cloths to the SensorKlear Loupe kit), extra battery packs (crucial, if you're going on a hike where electricity will be scarce), camera straps and accommodating camera bags.

Bags are yet another massive choice hub to pick from. If you own compact body cameras, you can opt for smaller ones that can be clipped on to your belt, side-sling bags for larger bodies and DSLR kits with one or two lenses, and large backpacks that come with separate slots for laptops, tripods, and small sections for every accessory. Consider the extensive range by Lowepro for different needs.

With page loads of photography advice hence offloaded, it is now time to cash in on festive deals, and pick up the camera that will suit your lifestyle the best. Happy shooting!

DON'T FORGET TO CONSIDER

Buying a second-hand camera:The second hand DSLRs are a point to consider, too. Many professional photographers upgrade their units when new cameras are launched, so you may find a large number of second hand cameras to choose from, if you do not mind using a second-hand camera, and happen to be looking for a better camera within a restricted budget. In this segment, major things that need to be considered include warranty check, how long has it been used for, the physical condition of the camera (which is often an apt reflection of the camera's state), and a check on its internals. For second hand cameras, experiencing its state for yourself is imperative. Point it to a bright source of light, and look for any aberrations within the frame (like dust, foreign particles, etc.). Ask the dealer when the camera was obtained by him, and take a few shots in the surroundings to ensure that all elements, including the shutter, all buttons, viewfinder and the entire body is working perfectly fine. If the product has been refurbished, ensure to ask for all servicing details that were carried out on the camera. Also, ensure that all lens elements are working smoothly (autofocus motor, zoom and focus ring, lens mount). To be doubly sure, find a friend who is familiar with the camera that you intend to purchase, for a second take on it.

Online vs. Offline: While purchasing new cameras online are okay (although not recommendable, unless you are absolutely sure about which camera you want to buy), second hand cameras should never be purchased online. Imaging products may vary from what you see on the internet (refurbishing the body is easy, what matters is the condition of the sensor, mirror and all other elements inside), and as a result, you might be left thoroughly dissatisfied with your purchase, in case things do not turn out the way they were stated. There are, however, numerous photo forums, where many photographers put their used equipment up for sale. In such cases, try finding out more about the photographer himself/herself. Chances are, most photographers worth their profession will have taken extreme care of the device, and are only selling it because they've run out of space to keep more equipment at home. Even then, try meeting in person to see how the camera is working, before making a decision.

ONE DEAL TO STEAL THEM ALL

LEARN HOW TO GO ABOUT MINING FOR KILLER DISCOUNTS AND SCHEMES AND HOW TO GAME THE SYSTEM TO KEEP YOUR WALLET HAPPY.

BY **NACHIKET MHATRE**

The human proclivity for deals and bargains stems from the same kind of evolutionary conditioning that makes the literal act of hunting release a heady mix of feel good chemicals. It's little wonder why the universally popular act of scouring the markets for great deals is described as bargain hunting. Because like the bloody and visceral practice of hunting, the act of scoring an excellent deal triggers the same sort of satisfaction associated with outsmarting and overpowering prey. No matter how civilised we get, the atavistic instincts ingrained in our lizard brain will always reward the act of dominance, which also applies to dominance of the economic kind.

It's one thing to joke about women and their almost pathological addiction to sales, but at the end of the day it's a phenomenon rooted in reality for both genders and not just an exaggeration. The extent of its economic ramification is apparent when you pay attention to the raw numbers. According to a 2009 Harvard Business report, women earn $18 trillion annually the world over. Incredibly, they end up spending a whopping $28 trillion. This is as great a validation of the effectiveness of sales as it can get. And it's not just the women either. Take one glance at the spending habits of geeks and the way Steam discounts mercilessly drub poor gamers' wallets, and you'll realise that men aren't all that immune to the arresting guiles of sales.

It becomes even harder to resist this sales business, when every single online retailer worth its salt bombards ridiculously attractive deals across every conceivable product category on newspaper, TV, and internet. But like a good hunt, scoring a genuinely great deal (as opposed to one that looks good only on paper) isn't as easy as it seems. The odds are stacked against patrons in a casino, and online retailers are no different. Most discount schemes offered don't make much monetary sense once you work out the mathematics. Just like a casino, the only smart and calculated hustlers have the means to beat the system. This guide is intended at getting you, the consumer, up to speed with all the information you need to transform you from the proverbial sheep to a veritable hustler dreaded by the Flipkarts and Amazons of the world.

TIMING AND ECONOMIES OF SCALE

Your chances of finding good deals increase dramatically once you get the timing right. The anatomy of a discount is largely dependent on the economy of scale. Larger the number of buyers, slimmer the margins that the seller can afford to sustain, which in turn translates into greater discounts. That means, you're more likely to find killer deals during major festivals, where everyone from the online retailers to product manufacturers themselves are keen on pushing out their inventory at generous discounts. But before you go about buying products just because they are priced attractively, it's your cue to slam the brakes and ask yourself a few pertinent questions.

GOING MOSSAD: PLAN EVERYTHING

For starters, do you want the product or do you need it? More often than not, we are suckered into buying cool gadgets

that otherwise aren't put to any good use. These purchases serve no other practical purpose than to massage our egos for scalping a good deal and just end up gathering dust in the attic. The smart shopper doesn't let discounts dictate his purchases, but rather sniffs the markets for discounts on the products that he expressly needs. The best way to achieve that is by getting organised. Make a list of your needs and choose products accordingly. That way, you know what to buy instead of committing the virtual equivalent of window shopping on e-commerce portals. The true mark of a smart shopper is that their online shopping excursions are akin to a Mossad covert operation. Fast in, fast out and they're done before anyone knows what's happened.

CHOOSING THE RIGHT E-TAILER

When you get down to deal hunting through web searches, you'll find plenty of obscure e-commerce websites. It goes without saying that patronising these websites over established giants such as Amazon, Flipkart, Paytm, and Snapdeal is risky. But what if the deal is too good to pass off? I personally would dismiss this as something being too good to be true. However, you can perform a web search for the reputation of the e-commerce portal and ascertain if there are any complaints against it. Any web search that throws up a lot of negative results should be treated as a red flag. As a thumb rule, it's safer to stick to established players since these e-tailers have the necessary infrastructure to make your online shopping experience fast, pleasant, and risk free.

Having said that, it's not just down to the reputation of the e-commerce portal. If you pay attention, these portals essentially serve as marketplaces for smaller sellers, distributors, and even companies selling their products whilst bypassing the intermediaries. So when buying something, it pays to perform a quick check on these sellers themselves. From Amazon and Flipkart to eBay, each e-commerce portal has a rating and feedback system set in place to encourage quality service. So the next time you scour through the list of sellers offering the best price for a particular item, be



Flipkart's Big Billion Day. Where hype doesn't always translate into great deals

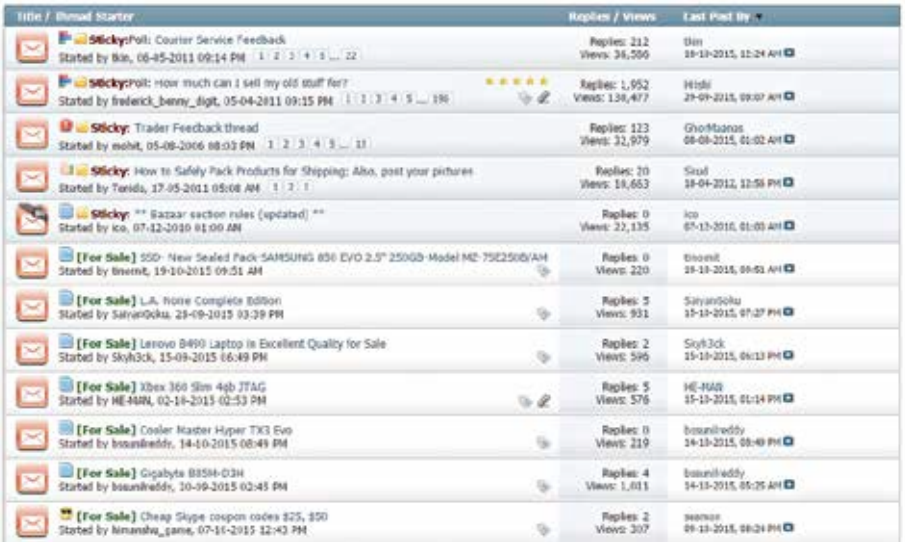
mindful of the seller's rating as well. It helps with making a value judgement on whether it's prudent to save a few bucks and go for a three-star rated seller instead of the five-star rated one.

The more experienced and consistently well performing sellers are distinguished by special badges that serve as a stamp of approval. For example, Amazon India identifies them as Fulfilled by Amazon, whereas Flipkart dubs them as Flipkart Advantage retailers. It's basically a sign that these sellers stand scrutiny to the high standards related to shipping, returns, and other policies dictated by the portal. Also, pay attention to sales fulfilled by the e-tailers themselves, as that's the most reliable option when returns and shipping are concerned. Flipkart sells stuff through its own portal as WS Retail, whereas Cloudtail is the same for Amazon India. Buying products from these sellers is the safest option by far, as you're assured of the authenticity of the product, smoother returns experience, as well as quick shipment and delivery.

KEEPING TABS THROUGH WISH LISTS

What good are personal lists if all they're going to do is languish in an excel sheet or a piece of paper? This is where wish lists come into play. Any online shopping portal worth its salt will have this feature implemented within its UI. The purpose of having wishlists on these websites isn't restricted to folks mooching gifts off desperate pleasure seekers. When used right, it not only serves as a means for friends and family to have an informed opinion on the ideal gift for you, but it can also be used to keep track of excellent deals on the products that you want to buy. That sure beats grabbing just any odd product just because it's marked down heavily on account of a promotional offer.

Wish lists on e-commerce portals such as Amazon tell you exactly how the price of the product you're watching has changed, by how much, and in what direction. Websites with more dynamic and flexible approach to pricing such



The marketplace on Digit forum is great for finding group deals from distributors themselves

as eBay even allow you to watch certain items to give you real time alerts to price fluctuations, so you can pounce on a deal as soon as it happens. Another upside to keeping a watch on a particular product through a wish/watch list is that you are well appraised of its normal cost. That way, when unscrupulous e-tailers advertise some bazillion-odd percent discount on a product you've been watching, you are well aware and cognisant of their deceptive tactics.

HUNT SMARTER WITH AGGREGATORS

While it's smart to keep a tab on product prices on different e-commerce websites through wish lists, there's a limit as to how many items you can manually track that way. Using e-commerce aggregators and price comparison websites is a much more efficient way of achieving the same. Websites such as Junglee, MySmartPrice, PriceBaba, 91mobiles allow you to quickly look up the best prices for a particular product instantly and zero in on the e-commerce portal selling it. Also worth checking out are browser extensions such as *buyhatke*. It's not just down to price, most of these tools also allow you to find discounts and offers that make your purchase that much cheaper and value added affairs.

Comparison websites such as MySmartPrice have tie-ins with other portals, which allow them to offer reward points that can be redeemed for vouchers and gifts. These websites also make it easier for singling out products according to the discounts/prices offered across e-commerce portals. It's handy for, say, someone who isn't sure about which particular smartphone to buy, but is open to go for one in a certain price range if it's a good deal. The division of products according to various categories comes in handy to dig up excellent deals.

IT'S PAYBACK TIME

Gone are the days of brick-and-mortar stores, when socialist economic policies existed and consumer products were crappy, unreliable, required lining up in long queues, and were sold at the MRP. Then capitalism happened and that made the consumer king and spoilt for choice. In the digital age, the options are endless and even go to the point of giving consumers money back for their purchases. The credit card companies are desperate for you to use their services and mire yourself in a debt trap, with cashback schemes. However, the discerning consumer is too smart to default on his payments and instead makes the best of these offers which can go up to fifteen percent and sometimes even more. Some of these offers are instant, and put money back into your account immediately, whereas others take a month or two or even more to refund the money.

The cashback offers are generally tied to credit cards offered by certain banks. If you don't have a credit card of the requisite bank for the offer, it pays to have friends willing to let you use their credit cards to avail the benefit. What good are friends if they can't put their money where their mouths are. Just make sure you follow the good etiquette of transferring money into your friends account in a timely manner. Or not, if you don't mind losing friends and/or teeth for a few thousand rupees. And speaking of getting the poop kicked out of you, make sure you thoroughly read the fine print before opting for the cashback offer. Any establishment that employs loan sharks isn't exactly worth trusting, so pay attention to the cashback clauses.

For example, if you're ₹300 short of being eligible for a cashback offer to the tune of 15 percent, make it a point to do the math and figure out if spending extra to meet the eligibility threshold works out better for you. Do the math and you'll find that adding 300 bucks worth of products to your cart to meet the ₹5,000 mark involves spending ₹4250, as opposed to ₹4700 if you don't add items worth ₹300 more to your cart. In a nutshell, keep an eye out for good cashback deals and do the math to figure out if it's worth meeting the minimum purchase criteria.

KEEP YOUR EYES OPEN

It's one thing to come up with innovative means to look for deals, but often times we tend to fixate on a tree and miss the entire forest. Any e-commerce portal worth its salt has presence on social media networks, which run all sorts of special audience specific schemes and offers all the time. Its therefore prudent to follow big e-tailers on Facebook, Twitter and other social media platforms to keep updated with many exclusive offers, contests, and discount coupons that are open to subscribers quite often than not. For example, eBay sends excellent customised discount coupons from time to time, which makes a lot of difference to purchases that would otherwise be out of your budget.



Follow the right Twitter accounts and keep an eye out for such tweets

Scouring for discount coupons on the typical coupon websites is generally futile since a vast majority of those don't work at all. However, deal websites such as DesiDime and Twitter accounts such as https://twitter.com/DealsForGeeks have actual people curating deals that are verified and guaranteed to work. This is essentially reaping the hard work and serendipitous discoveries of real people aggregated to give you a wide choice of excellent offers that really work. The hardcore hardware and audio geeks amongst you would serve well by scouring the forum marketplaces such as Digit forums (digit.in/forum), Erodov and TechEnclave for direct/group deals from the distributors themselves. Well, that's about everything you need to hunt deals and know exactly how to maximise the benefit by using the system to your advantage. Happy hunting.

(with inputs from @ameyadalvi)



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Know Steve Jobs
We all knew Steve Jobs on the stage, but did we really know him?
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Intel in the house

We got a chance to catch up with Anuj Dua, at the Intel 6th Generation Experience Summit held at the sprawling Sydney Opera House. Skylake was center stage and made for some interesting conversation.



Anuj Dua, Director for Marketing, Intel Asia Pacific Japan

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Talking about Skylake, we tested the 6700K recently and noticed that over Devil's Canyon (4790K) the performance upgrade was about five percent. Do you think we are hitting the proverbial brick wall when it comes to performance?

Anuj: No, not really. Actually for the 'K' series, in the desktop we basically skipped a generation of upgrade. We had a big jump with Haswell. Skylake, from a micro-architecture standpoint is re-architected. It's a "tock" as you know, and it was built to be scalable and give you a big performance boost with a focus on the media engine – 4k playback etc. If you look at the notebook space, there is a double digit jump in performance, between generation to generation. When you think of the last product of an old architecture and the first product of a new architecture, typically the delta isn't that great. If you compare end of life to end of life, there is a huge gain. So think of it as you start off the chute with an improvement and over time as you start you get the process technology figured out. At the end of the day, these gaming SKUs are all about clocking, so having faster IPC – instructions per clock gain – is one piece of it, but as the GHz start going up, as the process technology starts maturing, as you implement a lot of circuit fixes, the GHz gives you a big benefit in terms of gaming performance. So, out shoots a very mature architecture that is end of life and the new architecture having a 5-10 percent gain in the gaming series, that doesn't surprise me.

Right, like you said it's a "tock" so the process is still the 14nm Broadwell process. Ivybridge brought in the trigate 3D transistors to enable a shrinkage. What will be the next technological breakthrough which will change things like the three transistors did?

Anuj: One thing I can tell you is that there is a lot of physics and material science research involved at Intel in continuing the Moore's Law as projected. We've always said that we never know the roadmap beyond 10 years. We have visibility for 10 years at any given point of time and even at this point of time, we have visibility till 10 years as well. Through it all it requires reinvention of the transistor structure, the dielectric, the materials that are used and a host of different things. Who had ever thought or had a notion that a 3D transistor would come to life right? So, I can't tell you what exactly is planned. Part of it is that I don't know all the details, and the other is even if I knew, I wouldn't be in a position to tell you. But that's essentially the IP that we have. People who are involved in the R&D at Intel, invest a lot of time and effort and money to find those breakthroughs. And so we will see the evolution that plays out but that's certainly part of the 14nm maturing process.

You said that a lot of R&D is going on and you guys are trying to approach the problem from the efficiency point of view. The rationale is that in order to make our devices last longer the processors are becoming more and more efficient. In effect you are hacking away at the silicon but does Intel by any chance do any R&D into battery tech?

Anuj: Oh sure, we have a microprocessor technology team, we also have an ecosystem and a infrastructure technology team that looks at everything from cables to battery technologies to camera technology and all those things. When you think about something like Type-C connectors, and the thunderbolt connectors – those all came out of research at Intel. Because at the end of the day of you think about it, your microprocessor is becoming very fast, now the bottleneck has moved to memory subsystem. So if you don't have a well balanced memory plus processor capability, you end up crunching up all

the numbers but you're waiting for the data to be processed. In this regard you might have heard our CEO talk about 3D cross point technology which is revolutionary nature. Its innovation in cost per bit of a storage cell and its innovation in speed and density is great. So, we take a very systems approach to everything we do from a compute standpoint because at the end of the day the process technology is one trajectory, but you need to have a whole system balance to come along to give you the best computing experience.

Since you mentioned Thunderbolt, I'm curious about adoption of cutting edge technologies. When can we see mainstream adoption of things like Real Sense, WiDi, or even Thunderbolt. Is there no pull from the market, or is Intel is not pushing these technologies aggressively enough?

Anuj: No, I think it's an evolution. Like every new technology has sort of an adoption curve and the rate of adoption depends on many different factors: computing standard, how much marketing went behind it, what the ecosystem looks like. Look at Wi-Fi, circa 2003, when we packaged it as a part of the Centrino kit, it took off. Right after that you saw a high spike in notebooks. That was consequence of obviously engineering at the platform level, but more importantly I would say working within the ecosystem like hotspot vendors ensuring that for every centrino – one way of connecting data vs another. Our approach is primarily that if you standardise, you get the scale and you can get a lot more partners to participate. But sometimes you do have people who have different views of different standards. I think as far as your Real Sense is concerned, as far as Thunderbolt is concerned, those will all have different adoption curves. It will be a function of how easy the technology is to use and how cost effective it is to use. So I can't predict exactly how fast or how slow it will go. What I can tell you is that we are working with all our partners on all those technologies and everyone is on board. Sometimes you need an operating system to come along that helps speed things up... that was Windows 10 with RealSense integrated enabling breakthrough user interface experiences such as actually unlocking your PC with your face. This is of course a step. Now it has to get more consumer awareness and utility and if that catches on it'll scale faster.

Regarding the whole Microsoft demo where we saw the Surface Book and other products unveiled. What kind of involvement did Intel have?

Anuj: I can tell you that Intel has collaborated very closely with Microsoft. It's been true in the past and particularly true with the launch of Windows 10 as well. So everything from speech algorithms

"Our approach is primarily that if you standardise, you get the scale and you can get a lot more partners to participate"

there was a Wi-Fi infrastructure that we now take for granted. And the same is true for things like Thunderbolt. By virtue of it being a bleeding edge technology, it tends to be expensive when it first comes off the chute. This makes for a bit of a chicken and egg problem. You find few partners that are willing to invest in a technology that's at the bleeding edge of innovation, and over time as the waterfall happens it becomes more scalable. At the same time there are certainly competing standards for Cortana and the DSP and processing that's required to make sure that makes a really fluid interface. Some of the data transfer and the recognition of those third party devices – those don't happen magically. Those require deep engineering collaborations from the operating system and silicon manufacturer. So yeah, whether it's the voice assistant, or it's the WiGig technology, or it's graphics optimisation, or 4K videos algorithms, there's a lot of collaborations all the way through.

What was the HoloLens? They say that some custom silicon HPU (Holographic Processing Unit) was used. Was that Intel or is that ARM?

Anuj: I'm not that familiar with the HoloLens specifics, we collaborated for RealSense but I don't know specifically if we did anything for HoloLens.

So we are witnessing tablets, convertibles and phones converging. The lines are blurring between devices and their intended purposes. We've have got PCs on a stick and NUC boxes now. As chipmakers, what is Intel's game plan in the portable space, specifically Core M and the Atom SoCs?

Anuj: So we have a roadmap for all of these. Skylake is a scalable architecture. The same microprocessor architecture can be taken all the way down to a compute stick, you can take it to a thin and light notebook, you can take it to a mobile workstation, you can take it to a gaming desktop – so that's the one architecture that spans the full gamut. There are some devices that are purpose-built and low powered. So the Atom processor line caters to those kinds of devices, typically in the, lets say 8 inches and below screens size category. Because the higher you go in screen size, the higher power it requires and you need performance as well. So think of that as we got the Atom line, we got the Core line. Now the Core M is sort of a line which is focused more on mobility, mobile computing, so you think of the thinnest and lightest notebooks where mobility is an everyday concern. But if you want performance and you don't want that hourglass to happen when you're video editing, then you can have a Core i-series.

Think of it as one being more mobile focused, one more performance focused, and within those you would have good, better and best segments. So it's Core M3, Core M5, Core M7 and Core i3, i5 and i7. So that segmentation has worked really well for us. Even in the end user's mind also, they first have to make a simple decision like do you want an exclusively performance oriented device that pushes the envelope, or do you want a device that's a lot more mobile. Once you make those decisions you go with a good, better and the best.



Biometrics on the rise!
Was it not enough for the passports to have our fingerprints, France demands to have it at airports. **http://dgit.in/BioFrance**



Soviet Spying demistified.
Keyloggers are not a new thing. See how Soviets used it to spy in the cold war. **http://dgit.in/SovietSpy**



Wireless all the way

Interactive page

Our chats with NETGEAR's CEO unravel new perspectives about the wireless industry and how the IoT will improve our lives by huge margins.

Patrick Lo, CEO, NETGEAR

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From a global perspective, what are some of the business opportunities for networking brands in the next years to come? And what are some of the challenges and roadblocks that need to be overcome to fully realize these opportunities?

Patrick: The IoT smarthome creates the biggest of the opportunity for any home networking companies because right now, not only that you are talking about connecting in not tens, but hundreds of devices in the house to the internet, so you need the bandwidth, you need the speed and the throughput and you need the ease of use, ease of connection. So that's one. The second one is that the speed alone is not going to be enough because in order to make a smart home real, you have to provide the ease of use and management, so software is super important. Software not only pertaining to the devices itself but software related to the router, the camera, the light bulbs and all that. Even the cloud back-end as well as the apps, everyone realizes that it's all about the software. So I would say that going forward, the challenge is way beyond just feel and speed but is also software.

Technology is changing the way we get work done, both at the personal as well as company level. And how are networking brands enabling or adapting to the change?

Patrick: I think the most drastic change of getting the work done is that, one, it's a lot more efficient. For eg. I remember there is a new battery technology just invented by Stanford but I don't know when it is going to become commercialised. Earlier, you needed to go to the library and/or make ten phone calls to learn about something and now all now you need to do is to pick up your mobile phone, Google it and boom, you have the answers. So that's what is called productivity.

The second one which is also drastically different is that it's just like what we do at NETGEAR. We have about 300 R&D engineers of whom a lot work from different places. A lot of them work from home. This was totally impossible previously without this mobile technology, so today people could work at the beach or from home and they could still be staying in contact with our colleagues. A month ago in Australia, we demonstrated our mobile router with the latest employment of 4G LTE technology. It can actually achieve a download speed of 550 Megabits per second which is quite a lot.

Now what is the matter? The matter is that the people are happier. We have tested so many times in the US and concluded that a happier workforce is a flexible workforce. Flexible in terms of work hours and work places. So when you want to work, you need the high-speed internet and you need powerful mobile devices, but without the internet speed, life is just going to be tough. You had to choose between working or taking care of the kids and going to soccer matches. Now you don't have to make that choice.

The networking industry is not just about connecting devices to each other or the internet anymore. It's so much more. Almost everyone is in a reinventing mode. Is it a natural evolution or an industry struggling to not be commoditised and keep itself relevant.

Pattrick: All that is true as you said. As you have seen it, any hardware, without software is going to get commoditised in no time. So that's why you see, if you are just making a pair of jeans, just blue denim, no design, you racing to the bottom. It's the same thing for technology products. The major differentiation of technology products is software. Innovation is about how to add value and we all know in this business world, the added value of a product, is equivalent to the profit margin of the product. If you do not add any value, there is absolutely no reason why you should make a profit.

Indiegogo launches 'generosity'
The charity crowdfunding platform of Indiegogo has rebranded to 'Generosity' and is a standalone site now. **http://dgit.in/Nv15aw**



Instagram's ad increased!
Instagram' has seen a huge influx of advertisements and 50% of its biggest fans seem to be unhappy with it. **http://dgit.in/Nv15ax**

3D printing in medical applications

We chat with Srinivas Shastri of Altem Technologies about the recent trends in 3D printing and the upcoming materials used in the process.

Interactive page



Srinivas Shastri, Technical Director, Altem Technologies Pvt. Ltd.

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We have seen that 3D printed materials don't have a smooth polished finish, so, how is it improving?

Srinivas: 3D printing has evolved a lot in the last decade. I completely agree with you, when initially the parts were printed maybe 10-12 years ago, the finish was not so great or it was just one material that was used, the consumer didn't have much of a choice. Some of them were really concerned about that aspect but with the new materials and technologies getting better, it's improving. It all depends on what technology you use and for what application. Some application may not need a completely smooth surface but only requires it to be functional for a mechanical application on a shop floor or on a vehicle where the external surface doesn't really affect performance. The printing technology has really evolved over the years. Current printers don't just use one material, you can now have multiple materials which are transparent, flexible and colourful. There is an acrylic based resin which is photo curable, so this resin is jetted out and exposed to UV light into a hardened state. Definitely technology has evolved a lot in the last ten years and now you can get almost 1,800 combinations using only 14 basic materials.

Can complex assemblies with moving parts be 3D printed?

Srinivas: Moving parts are all done in a single print. 3D printers are capable of printing parts with a moving assembly. 3D printers come with an option of having a support material, which provides support to any overhangs or any voids which are there in the system. So, basically the void is filled with a temporary material called a support material. The 3D printer software decides the location of the voids, then the software fills it up with the temporary material. Eventually when the part is built, it is dropped into water or washed away with a jet.

Other than industrial products for what other applications can 3D printers be used?

Srinivas: All these years, it was mainly in the engineering domain that 3D printer was being used, but in the last couple of years there has been a lot of attraction in medical and dental applications. There are a lot of 3D printed organs printed as pre-surgical models. So, if someone has to be operated upon, they are scanned and the data obtained is converted into a 3D model, then printed to analyse the problem. So, the doctors can use the same model which is a replica of the patient's organ and then they will be able to diagnose the problem better since they now have access to data which they are definitely gonna miss using MRI or CT because it's always a 2D view. Using an actual 3D printed part reduces the time spent on planning and analysing the operating. Another application is in the dental industry. There can be implants or ridges which are 3D printed metal using your prosthodontics and orthodontics. All the corrections can be modeled with a 3D printer and the entire workflow is digitised. That's where we see a major growth, in fact, Stratasys has a range of dental portfolio printers just addressing the dental market. We are moving away from steel braces to a clear 3D printed material so, you don't even notice the braces. I think this is where the future lies other than engineering applications, automotive and aerospace where it is already being conducted. The upcoming 3D printers are more likely to have life changing applications in medical applications.

So, in a few years will we have 3D printed organ transplants?

Srinivas: That's the future everybody is thinking about but then I am thinking we are far away from that because we would need materials which are very biocompatible and doesn't really damage your other organs. For now, I don't think we're close to achieving this but maybe in the future we will accomplish 3D printed organs.

106 **Unwind**
We have plenty of festivals of which some are a little weird so here's a list of some similarly weird ones from around the world.

108 **Community**
You've probably heard the word API far too often so here's a little primer on how to go about using APIs.

The Ultimate Smartphone of 2016



We try to assemble our dream smartphone together by borrowing software and hardware aspects from existing technologies, combining them to form the ultimate smartphone of 2016.

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Smartphones are rapidly evolving in terms of both hardware and software, and every year, all the manufacturers leave no stone unturned to bring out the very best. However, we hardly get to witness manufacturers hitting the right notes due to compromises that are unavoidable. The outcome of this disruptive race to build the most powerful smartphone is that newer technologies and innovations being incorporated. What if we had complete freedom to pick the right specs and features that eventually emerges as the ultimate smartphone of 2016. We won't be going on an unrealistic tangent in terms of hardware but our aspirations will echo what every enthusiast wants from a smartphone.This is our take on Digit's Ultimate Smartphone for 2016.

Design

We're basing the design of the front panel heavily on the LG G4, the screen will extend all the way to the sides as if no bezels exist. The same will be done with the top and bottom of the display panel as well except we will be a little more forgiving here, enough to accommodate the dual-front facing speakers reminiscent of the Moto X Style. Two capacitive buttons will be placed on either sides of the bottom front-facing speaker while the top panel will be fashioned like the Moto X Style. The back panel will have the camera along the centre line with the LED flash right below it, as seen on the OnePlus 2. Moving on to the sides, the right side will consist of the power button (doubling as a fingerprint scanner), volume control buttons and a camera shutter release like the one on the Xperia Z5. The left side will house a dual-SIM hot swappable slot similar to the one on the iPhone 6S. A USB Type-C charging port will be seated in the bottom and a 3.5 mm headset jack on the top edge.

As for the chassis our ultimate smartphone will be constructed using Liquidmetal or Liquidmorphium and will feature a removable battery, leaving room for replacements/upgrades in the future. You'll be able to customise the device using interchangeable back covers. The knurled hardware buttons (except the power button) on the device will offer better grip and a satisfying tactile feedback.

Display

Smartphone sizes are rising where once 5.5-inch screen mobile devices were termed as phablets the very same form factor are now considered staple for flagships. However, phones this big

make it difficult to ensure a seamless single handed usage and that's why we opted for a 5.2-inch screen. The display on Sony's 4K smartphone is overkill since it's really difficult to distinguish the difference between 4K and Quad HD displays, depending on the type of screen coating used. The Quad HD Super AMOLED display on the Samsung Galaxy S6 definitely looks brilliant which automatically makes it our choice for the ultimate smartphone. Force Touch essentially broadens the scope of functionality on apps which makes it a must have feature. For the display surface, we can't think of any material other than sapphire crystal owing to its extraordinary hardness and resistance to scratches. We can't leave it just that, the screen will be topped off with oleophobic and hydrophobic coating, practically making it smudge-proof and a fingerprint repellent.

Processor

Our ultimate smartphone is highly dependent on the processor and if the rumours are true then the next greatest from Qualcomm will be the best choice. The Snapdragon 820 is a quad-core processor with a core reduction owing to the fact that Qualcomm will be using their custom 'Kyro' architecture rather than Cortex's ARM. The 820 is said to be 50% more powerful than the Exynos 7420, Samsung's current flagship chipset thanks to the heterogeneous capabilities of the new architecture. Samsung's Exynos 8890, which is slated for release next year is a good contender as well which is why we are considering about releasing two variants with the Snapdragon 820 and Exynos 8890.

RAM

Smartphones had been shipping with LPDDR3 memory chips for a while and as manufacturers shifted to Qualcomm's Snapdragon 810 and Samsung's Exynos 7420, LPDDR4 memory are not supported. There are already a few smartphones with LPDDR4 memory, and we expect upcoming flagship devices to adopt the same standard because they enable higher data rates and consume less power. Samsung recently announced their 12 Gb (Gigabits) LPDDR4 DRAM chips. They're supposed to be faster and more efficient, making it possible for mobile devices to pack 6 GB of RAM which will definitely be included in our ultimate smartphone. Although LPDDR5 has been announced it will certainly take some time for the top SoC manufacturers to incorporate its abilities into their design which is why we'll be skipping it until 2017 or 2018.

Camera

There can be no doubt when it comes to the camera, so we picked Sony's Exmor RS CMOS sensor which was first seen in the new Xperia Z5 lineup. Its strengths include the ability to capture 23 MP images and record videos in 4K (30 fps), 1080p (60 fps) and 720p (120 fps). Sony's plane phase detection autofocus will allow us to capture high-speed moving objects and essentially improve the image processing capabilities while Optical Image Stabilisation (OIS) sweetens the deal. Similarly, the front camera will have a 13 MP sensor with autofocus and OIS. Of course, the device will feature dual-tone LED flash on the front and the back.

SPECIFICATIONS

Screen Size: 5.2-inches; **Display type:** Super AMOLED (Force Touch); **Screen Resolution:** 1440 x 2560 pixels (~565 ppi pixel density); **Screen Protection:** Sapphire Crystal, Oleophobic and Hydrophobic coating; **OS:** Android Marshmallow 6.0; **Processor:** Snapdragon 820/Exynos 8890; **RAM:** 6 GB LPDDR4; **Internal storage:** 128 GB; **MicroSD slot:** Expandable up to 200 GB (Hot swappable); **Rear Camera:** 23 MP, Sony Exmor RS sensor, Phase detection autofocus, OIS; **Front Camera:** 13 MP, OIS, Dual-LED flash, Autofocus; **Video:** 2160p (30fps), 1080p (60fps), 720p (120fps); **Battery capacity:** 4,000 mAh (Silicon-graphene battery); **SIM:** Dual hot-swappable Nano-SIM card slots; **WLAN:** Wi-Fi 802.11 ac, dual-band, Wi-Fi Direct, DLNA; **GPS:** A-GPS, GLONASS **Bluetooth:** v4.2, A2DP, aptX, LE; **USB:** v3.0 (MHL 3.0), Type-C reversible connector

Battery

Battery technology in current mobile devices seems to have plateaued. Either manufacturers are selling devices with huge batteries or compromising on capacity for a compact form factor. It's time we forayed into new territory with better battery technology, something similar to Samsung's upcoming silicon-graphene battery. This new technology essentially increases the battery density, claiming to double battery life. Higher density means you can get more capacity in the same size so with all things considered a battery capacity of 4,000 mAh should be enough to power the QHD screen, the audio DAC and the flagship SoC.

Features

The device already has 128 GB of internal storage, and will additionally support hot swappable, expandable storage of up to 200 GB. Certain manufacturers such as Vivo, Marshall, Axon, etc. are installing their smartphones with DACs and amplifiers, that's why we're also going to equip our device with Hi-Fi audio hardware. Aside from the DAC on the SoC, we'll feature an addon module which can be accessed by popping the battery cover. These swappable modules will consist of a dedicated DAC and operational amplifier(s) allowing you to change the audio signature to your liking. Equipped with IP68 certification, the smartphone will have complete protection against dust and survive an immersion in water beyond 1m. It's no wonder that the device will come with a micro-USB v3.0 Type-C port. This cable will also support the MHL 3.0 standard to boost data transfer, stream 4K video output and 10W of power to charge your device. The device will be compatible with the latest standards of Qi Wireless Charging and the recently announced Quick Charge 3.0, said to be 38 percent more efficient than Quick Charge 2.0. The power button doubles as a fingerprint scanner on the right side of the device which works the same way as the one on the Xperia Z5 devices, where pressing the power button with the registered finger only unlocks the phone. The latest version of Android Marshmallow 6.0 will be running on our smartphone offering more control and enhancements over the mobile OS without hampering the stock Android experience.



Be up to date with A9!
Unlocked HTC's One A9 will recieve updates for newer Android versions within 15 days of Nexus line
http://dgit.in/Nv15ab



Xiaomi's mini 'scooter'
After acquiring Segway, Xiaomi is all ready to launch its ninebot mini scooter in China.
http://dgit.in/Nv15a

Farcical Festivals

While most feativals might have reasons deeply rooted in mythology, there are some that were estabilished purely to attract tourists and there are some that make you wonder how bored our ancestors really were. We bring you some of the ridiculous festivals from around the world.



La Pourcailhade

La Fete du Cochon or as the rest of the world calls it, that other weird thing the French are into, is an annual festival dedicated to porcine pursuits. It involves plenty of weird events like eating contests, pig races and the most popular of them all is "Le Championnat de France du Cri de Cochon" wherein contestants try their best to mimic pig squeals. Deliverance anyone?

Hadaka Matsuri

This one's for those who're interested in watching grown-up naked Japanese men frolicking about in hopes of ensuring they have a lucky year. We might have exaggerated on the naked part, but a loin-cloth akin to what Sumo wrestlers wear is a little too risque for the most of us. Generally held in February, the festival's origins can be traced back a few hundred years.





Entroida

Lent brings a deeply religious period to the residents of Laza, Spain and it involves making a few sacrifices. So how do these Spaniards prepare for what's to come? By slinging rags dipped in mud at each other. Not just that, they run through the streets carrying flaming torches and when they get tired, they just barge into any house and help themselves to whatever they get.



Burning Tar Barrel Festival

Remember, remember the fifth of November or the folks from Devon, England will ensure that you do. Held every year to commemorate the antics of Guy Fawkes, hundreds of people run through the streets with huge flaming barrels of tar. And what do they do when they get tired? Throw the barrel? No Sir! They pass the flaming hunk to another ~~poor~~ brave soul.

Satere-Mawe initiation rites

When young Satere-Mawe boys attain the age of maturity they aren't thrown a party with a huge cake, rather they're given a pair of hand gloves laced with bullet ants whose sting is one of the painful ones in the animal kingdom and they have to have it on for quite a while. It might not be a festival in its truest sense but initiation rights are good enough to be featured here.





El Colacho

The Spaniards are really gunning for this lister. Held in the Spanish village of Castrillo de Murcia, El Colacho involves placing babies who were born that year on a mattress in the middle of the street and then men take their turns jumping over them. The shocking part is that there are injuries every year, thankfully, it's only the jumpers that tend to get hurt....most of the times.

How we unwind



Sandbaggers and Mulligans

The sudden appearance of a golf ball and a putter in the Test Centre did take some of us by surprise but not for long. Jayesh and Mithun started their putting practise much to the annoyance of those downstairs who had to bear the constant grinding noise of the golf ball rolling across the wooden mezzanine. Mithun might be a sandbagger.

Narcos

First it was Breaking Bad and now it's Narcos. The only difference here is that Narcos is based on true events so it feels a lot more believable than the antics of Heisenberg. Going by how everyone's slowly getting hooked onto the series one by one, the formation of the Digit cartel in the near future should not be a surprise.





The Martian

With more and more scientifically "accurate" movies coming out these days, the residents of the Test Centre couldn't have been any more happier. Alas, accuracy went for a toss in the first few minutes of the movie. However, the rest of the movie was fine. Our condolences go out to Marvin, whose Google cred got stolen.

digit DIARY

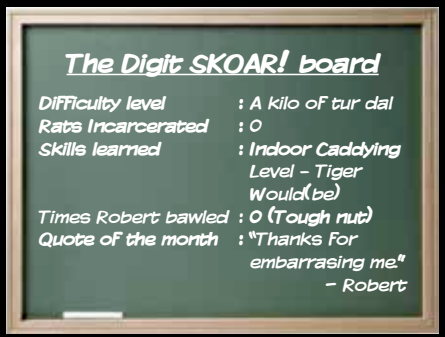
One of the interns we have at the moment is the innocent and hard-working Panigrahi. Or so he led us to believe with his repeated over-night stays under the pretext of work. Well, he did work, but we began noticing huge jumps in our internet usage stats for each night he spent at the office. Turns out he's a fan of anime and binge-watches it at night. We're not cribbing about being FUP'd, but it's just that the anime he prefers is of the silly kind. Come on kid, get some taste!

Speaking of interns, we've got another who's been two-timing us for quite a while. Nikhil teaches kids on the side and not just any kids, hopped-up-on-hormones college teens! And he's just finished his first semester of teaching. What's troubling is that he's upbeat about continuing to teach which makes us wonder if the normally timid lad is a tyrant who dominates the classroom.

Right in the middle of the month, Siddharth disappeared from the Test Centre and took off to Australia. For what purpose you ask? He was scoping out locations, studying the local flora and fauna (read: women) and mapping the lay of the land for something much bigger that was going to happen... read on to know what. And right in the middle of Siddharth's trip, even Jayesh mysteriously disappeared. We only came to know later that the folks from Cupertino had whisked him away to Delhi for the super secret launch of the latest iPhones. When we say super secret, we mean it. None of the attendees knew who else was in attendance till all the news stories came out. It seems like Cupertino residents are akin to the KGB when it comes to keeping secrets from the world.

Navratri – or as Abhijit calls it, that one night in the year when he gets to mack on as many bengali women as possible – went by without much furore as most of us were holed up in the Test Centre through all nine days. We didn't get to have any of the sumptuous Navratri sweets, but Siddharth came to our rescue with some funky Australian mint chocolates. They couldn't stand up to our traditional Bengali sweets but it was still memorable.

It's literally the end of an era as our fearless leader Sir Baldalot (Robert/Raaabo) embarks on a personal and professional quest unlike any other he's undertaken for about twelve and a half years. He's moving to Australia to become a competitive kangaroo kick-boxer and fly Digit's flag high Down Under. The Test Centre saw a line of ex-Digitians coming to bid adieu to Robert. But worry not Digitians! You haven't seen the last of this balding beauty just yet. He will continue to be Digit's guiding light from the other side of the world. Plus, he will finally be awake in the morning (India time). We could embarrass him further, but we'd better not because he's totally capable of catching the long flight back just to kick our arses.



Now FB lets you forget
Facebook's "on this day" now allows you to filter out specific dates after it brought up bad memories **http://dgit.in/Nv15aa**

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digit SQUAD

Every month we recognise the best article written by our community members and publish it here. Keep up the good work, Digitians!

Get started with APIs

So you can create websites but don't you wish you could expand your skills to combine different APIs to create something awesome? Let us help you



Praneet Sah

Ever wonder what goes on behind the button that says "Sign up with Facebook" that logs you into any of your favorite websites without having to type a word? With just a few clicks, your favorite website automatically gets all your details. Or how about that travel website which fetches your travel dates from different airlines and presents you with the available flights with their pricing. Obviously, there must be something that allows one website to access details from another website without jeopardising your security.

It's the magic of API, which stands for 'Application Programming Interface'. Consider API your personal assistant who brings you all the relevant information you need from other websites (that have an API) as per set conditions. So take a guess at what "conditions" would be set up behind the button "Sign up with Facebook"? Well, it depends on what details are required by the external website you're trying to log in to, however, things like your name and email address are usually conditions that would be set up. And then the external site sends an HTTP request (with access token for authentication) to Facebook's API. Facebook then asks you whether to provide the details or not. If you select "allow", the website obtains the required details and stores them in its own database.

This clearly minimises the need for repetition. Every time we register on a new website, we don't need to re-enter our name and email address (and at times, tons of other fields). After all, our personal details won't change from site to site. And since repetition is minimised, it saves our time.

APIs further enable third-party apps to improve user interaction. So, if you're sick of Candy Crush notifications, blame APIs - they're the reason why your friend 'x' constantly sends you game invites and requests. In this case, the Candy Crush application asked user 'x' to let Candy Crush control his notification and since user 'x' agreed, Candy Crush can now send any friend of user 'x' a notification whenever the app wants to.

An API is basically a mechanism that allows you to talk to other websites with the help of requests made over different protocols such as HTTP and SMTP. In fact, it's almost like opening any other web page on your browser. The only difference is that with APIs, you need to code the part played by the browser, i.e. sending requests over HTTP and getting the relevant data back.

SOAP and REST

APIs are further classified into two groups: 'SOAP' (Simple Object Access Protocol) and 'REST' (REpresentational State Transfer). Despite the fact that 'S' stands for 'simple' in SOAP, it isn't actually very 'simple' and this is because it's heavily dependent upon XML, and its responses and requests look way more cryptic than REST API's. Moreover, SOAP need not always use HTTP protocol and could be seen using FTP or SMTP also. However, it's better to start off with the REST API, because, after all, it's what most websites use and the better bet when you can't decide between REST and SOAP based APIs.

Earlier, when we talked about making HTTP requests, we were using the REST API. It accepts HTTP requests and generally returns a JSON (JavaScript Object Notation) formatted result, which is easy to work with and less cryptic than XML. Before you



dive into sending the HTTP request from your own website, let's take a quick look at what GET and POST method means and how you can experiment with them.

Understanding GET and POST

A website called www.APIGee.com/console allows you to test different APIs without needing to write any program. Just say "what is required" and the "how to do it" part is handled by 'APIGee' itself. Similarly, you can also try https://developers.

facebook.com/tools/explorer, which is specifically built for Facebook's API and is quite user friendly with its extensive documentation. However, there would be one thing in common for all APIs. Fields that ask you to choose "method type" generally show you two options, 'Get' and 'Post' methods.

As suggested by its name, the 'Get' method is used when you simply want to retrieve any information using the API; E.g. Using Facebook's API to retrieve the status updates made by user 'x' or his personal messages, which he should have given you permission to access. On the other hand, the 'Post' method is used to update any data; E.g. Using Facebook's API to update the latest status or to send a private message to another user 'y' from profile of user 'x', for which user 'x' has given the required permission.

Sending your first API request with GET

Now that you're familiar with request types, let's get started with sending your first HTTP request.

1. Open up 'Graph API Explorer', which is available at https://developers.facebook.com/tools/explorer (or any other similar service). Let's suppose you want to check your recent status updates (you can check someone else's too, but you'd require their access token and that button "Sign up with Facebook" is a way to obtain it). Since we only want to retrieve some information, we'll use the 'GET' method.
2. Most APIs need authentication (to reduce misuse of information) and similarly Facebook requires an Access Token. It can be obtained by clicking on Get Token > Get Access Token > Choose relevant data permissions (For now, choose "user_posts", "user_status" and "publish_actions" under User Data Permissions and Extended Permissions)
3. A pop-up will appear asking for your permission to allow it to view your details.
4. Click on 'OK'.
5. Your access token is now updated. You'll use this token for your own account, hence treat it like your password in cryptic form and don't share it publicly.
6. Now, in the below field, choose 'Get' method and the latest API i.e. v2.5.
7. In the text field, put "me" and click "Submit".
8. You just made your first API request! The result will show your name and user ID. Now copy that user ID and paste it in the same text field.
9. Add "/feed" at the end. It should look something like "708603782516433/feed".
10. Click on "Submit" and voila! All your status updates will appear.

Wasn't that pretty easy? Now, try doing that using a simple URL (and yeah, it's possible!). In URL form, it would look something like: https://graph.facebook.com/708603782516433/feed?access_token=your_access_token Notice how it has borrowed most of the content from the Graph API Explorer itself.

Sending a request with POST

Now, let's use the POST method by updating your status utilising Facebook's API.

1. Let's return to the Graph API Explorer and choose "POST" method this time.
2. In the text area, at the end of "708603782516433/feed" just add "?message=customise_this_line" and hit the "Submit" button.
3. A cryptic 'id' will be returned, which is actually the ID of your status update.
4. Check your timeline and sure enough you'll see that your status has been updated!

Alternatively, you can use a plug-in called 'Postman' for Chrome to experiment with POST requests.

Putting APIs to work

So that's basically how POST and GET methods work. Next you'll want to put their functionality to work in your web applications. This could be daunting at first, since almost all API services differ in their way of implementation. However, an API's access token and a basic library provided by the website are usually common. Unless you want to mug up Computer Science, it's better to read the documentation of each API separately and understand how they get the work done. Armed with this basic knowledge, you can now get started and implement it on your own websites. As an assignment, head over to https://developers.facebook.com/ and implement your own "Sign up with Facebook" button on your website to get users signed up. Happy coding.



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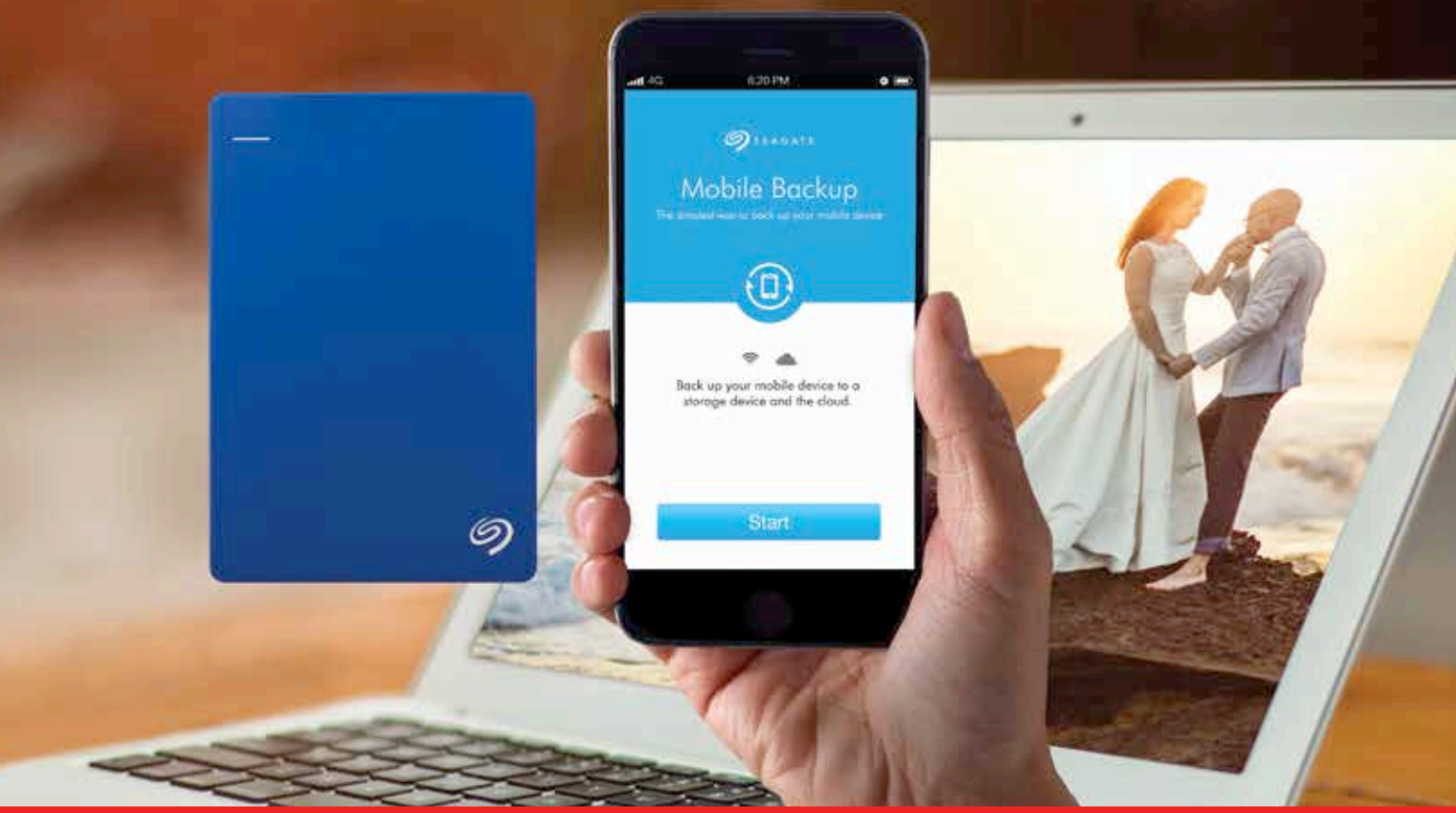
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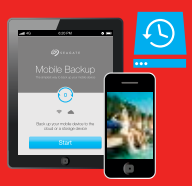
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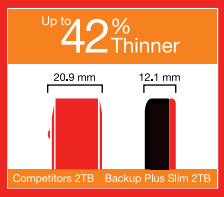
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