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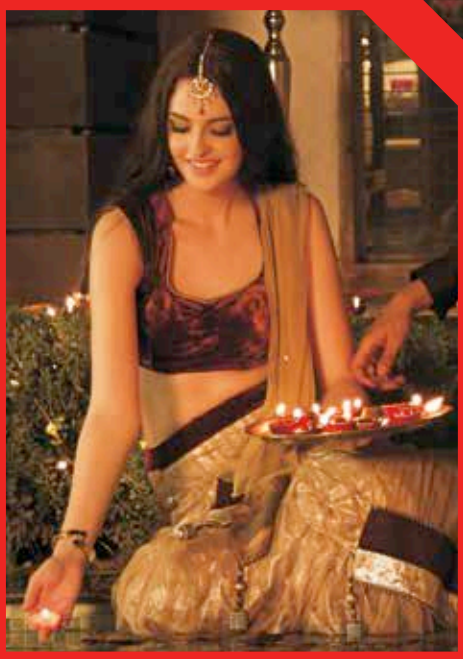
LIVE FREE OR SPY HARD

In the age of digital voyeurism, learn the tricks of the spy trade to really live free

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Fight fire with fire

When I was in college, a curious phenomenon seemed to sweep the country. Teenagers were huddling around in groups, on street corners, poring over their newly acquired semi-smartphones snickering, laughing and talking in hushed undertones. What were they looking at? Mostly grainy videos or images that were surreptitiously taken. All of which were were a gross violation of someone's privacy. This was the rise of the MMS phenomenon, and also the beginning of digital voyeurism in India.

Not much has changed since then – yes, those feature phones became smartphones, grainy images became crystal clear, but the basic human nature of wanting to snoop and access someone else's private content hasn't. Despite so much smut being available publicly, many are still drawn to voyeurism and get a thrill out of catching real people like themselves with their pants down; quite literally.

Think of the times you've snickered at some poor sod whose "hidden camera" footage you happened to chance upon in one of the many shady WhatsApp groups you find yourself being a member of these days. Somehow, you feel justified watching it. You say to yourself "if this guy/girl was stupid enough to not secure their private content, they deserved what was coming."

The funny thing though is that often, it's not with any malice that this media finds its way to the web and into your pockets. It's not always the result of a jilted lover seeking revenge that such things leak; it's more often just plain old carelessness. People seem to have an almost irrational level of trust in systems such as passwords or "the cloud". This was so evident recently when the whole world went into a voyeuristic tizzy during 'The Fappening' incident in which hackers got hold of compromising pictures of celebrities from their iCloud accounts.

As surprising as it may sound even regular people have, for the lack of a better phrase, self created naughty content on their phones. Who amongst us hasn't either clicked, sent or received a slightly raunchy selfie at some point in their lives? It's just a bit of innocent fun. But those with the right tools and know-how can easily extract this data from your phone, discarded pen drive and even email accounts.

A voyeur today is no longer the smelly creep with binoculars trained on your bedroom window. Spying and digital voyeurism now has reached new heights, thanks to technology. Even regular cameras today are the size that would once have only been seen in spy movies – so you can only imagine the kind of technological wizardry the CIA wields. In the non-commercial space, you have nano drones the size of common insects that can not just record audio and video, but also apparently collect DNA samples with a pin prick. Ouch. Talk about violations! How long do you think it will take for black market or consumer variants of these devices to become commonplace?

Now, I'm not saying you board up your windows and sit indoors wearing a tin foil hat, but you can certainly ensure your private moments stay private. How do you do that? By learning the tricks of the spy trade. Only when you know the techniques employed by these creeps and what their gadgets are capable of, can you properly safeguard yourself. Fight fire with fire, essentially.

This is where our three-part cover story this month comes into the picture. It's not your regular run-of-the-mill NSA-level (and therefore lofty) spying story. We're talking about real world things like gadgets that are (shockingly) freely available here in India. You can just order them online! We're talking about software tools that any person with a limited knowledge of computer systems can use to breach your privacy. And of course, we're talking about all the counter-measures you can take to construct a metaphorical digital fortress around your data. So write in to us, tell us if our story helped you in any way but more importantly tell us any tricks you may have up your sleeve. For science.



Siddharth Parwatay
Assistant Editor
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"Only when you know the techniques employed by these creeps and what their gadgets are capable of, can you properly safeguard yourself"

Got feedback about this column? Drop me a line at:
siddharth.parwatay@digit.in

Looking back on a milestone month of rich tech harvest



Jayesh Shinde
Manager – Test Centre
jayesh.shinde@digit.in

"The sheer longevity and long-term impact of certain products and services in our lives is a testimony to the vision of the people who played an instrumental role in their conception."

Got feedback about this column? Drop me a line at:
jayesh.shinde@digit.in

Last month had me contemplating several issues. The state of my expenses, for example, is a constant consumer of grey matter. Apart from practicing a Zen-like resolve to protect my bank account from relentless attacks by every online shopping website and their vivacious Diwali deal promotions, wondering about Elon Musk's "Mars or bust" attitude to colonizing the Red Planet if humanity's ever to survive long enough to escape our solar system (dgit.in/Musk_Mars), and global warming – seeing October Heat in Mumbai has been as bad, if not worse, than the summer months – I also came to reflect upon my sister's exclamation of how "ridiculously easy it is to install Ubuntu on a machine" when she installed it on her laptop recently. While it's true, that wasn't the case just over a decade ago, when the world of Linux distros and installations was a cesspool of frustration and strictly not for nOObs.

Until Ubuntu came along in October 2004 that is. Good golly, has it really been 10 years? How time flies! In the world of technology, where there's so much churning and constant upheaval of software and products, it's easy to get overwhelmed and lose track of things that matter. More importantly, it becomes increasingly difficult to appreciate some of the most used software and services as they become part of the great digital habit of our life. It's both a compliment and testimony of Ubuntu's ubiquity, user-friendliness, and longevity that it's not only remained relevant -- in the vast world of Linux distros -- but actually grown to gain a substantial share of Linux machines operating in the world.

According to Canonical, which made the popular Linux distro, there are a whopping 25 million users of Ubuntu worldwide. Not a huge number, I get it, but not something to wholly discount either. Especially when you consider the fact that Ubuntu's focused completely towards the conversion of ordinary, non-geeky users of Windows over to a world dominated by The Circle of Friends and Tux logos. And they've been fairly successful in their mission in making Linux less-intimidating and more user-friendly than any other distro ever. It's safe to assume that Ubuntu's going strong when compared to other Linux distros, if purely by their website's claim – in case you haven't read it before – The leading OS for PC, tablet, phone and cloud. There's certainly no lack of ambition there.

Something else I chanced upon last month (and left to contemplate upon) was the spreadsheet's 35th anniversary. That's right. While Microsoft Excel might be synonymous with spreadsheets today, long before its birth VisiCalc – the first spreadsheets program ever – debuted with the Apple II in October 1979 to widen the appeal of PCs from hobbyists and enthusiasts to mainstream business users. Since then, everything from grocery shopping lists to book keeping records of every large business on this planet, not to mention our monthly magazine storylist and comparison test tables, are maintained on spreadsheets. Apart from a web browser, a spreadsheet (either offline or cloud-based) is the second most important application I use on a daily basis. I'm sure it's the same for a lot of people around the world. It won't be an exaggeration to say the world runs on them. And to think all of this started from a program designed to be nothing more than a digital scratchpad really makes your head spin.

The sheer longevity and long-term impact of these products and services in our lives is a testimony to the vision of the people who played an instrumental role in their conception. And their ability to adapt with changing times, user tastes, market realities, and a million other factors to still remain popular. No easy feat to pull this off, believe you me.

The story of October and its tryst with technology breakthroughs doesn't just end at Ubuntu and Spreadsheets, as the month also witnessed the 12 year anniversary of Microsoft Windows XP and the 13th anniversary of the original iPod's release. How have these two products shaped the world, you think? Time to contemplate some more, looks like.



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Assimilation complete

Dear readers,
As the last remaining employee of Digit, it saddens me to send you our obituary, but it's hardly been unexpected.

Over the past few years, we at Digit have tried to warn you of the staggering rate of decline of individual and original thought amongst the masses, but we've been largely ignored. We were once popular for our non-conformist and fact-based stances, but now are hated for those very same traits. Still, we die with no regrets, and with heads held up high, and hope your assimilation is eventually reversible.

Many of you will not even see this email, since no one uses email addresses anymore except to sign up for a new service, and that's precisely why our last ever communication is in this format. If any of you ever awaken from your brainwashed slumber, perhaps you'll search for the Truth in the depths of your inbox, since the internet and social media are just mouthpieces, and there's no individuality left to be found anywhere else.

If you're searching for any answers in the distant future, remember, we warned you when fanboyism dawned that religions were changing and Gods were not unseen beings, but brands that were blindly followed.

Then came social media, and what started as a means to express oneself turned into a new and novel way to beat a minority opinion into submission. Evil and oppressive governments were toppled by social outrage, and that sent the world into a tizzy. It wasn't long before the power of social media propaganda was realised by other power hungry forces across the globe.

The loud majority were considered right by default, and this was how the assimilation began. What started as a few internet companies vying for your personal data for advertising money turned into a global consortium of governments and corporations taking over the general mindset of people using censorship and targeted news and views to dictate the actions of the masses.

No one ever thought that a search or social media company could influence enough people to vote a certain way in order to get a government of their choice, but even that started happening as early as 2016. It wasn't until 2022 that proof of this leaked, of course (which you'll find in public records because of the few legal cases against the companies), but it's not widely known – obviously, because the only source of news and discovery after 2020 was social media and search.

Under the guise of the Internet of Things we were all tagged and brought on to the grid. Even if you didn't own a device that was easy to snoop on, or a social media account, you still needed to be on the grid for most official things. Everything from a driving license and a citizenship card, to your bank card and your employer ID had a chip, which shared your digital data to the cloud. Money went digital in 2023 as a way of getting rid of bribes and corruption, and thus every member of the human race was made digitally dependent. Technology was all powerful, and all knowing, and always fair – or so we thought.

The ultimate problem with technology is that it's always controlled by someone (an individual, group, government or corporation) with a self-serving agenda. The human race has become a mindless, faceless group of consumers who buy what they're told to (not directly by their peers, but indirectly by companies), and only ever aspire to buy even more than they already have, or possibly should. Why? Because that's what a greedy few wanted, and pulled strings to get.

What's really sad, and was the final nail in the coffin of free speech as far as we're concerned, was the death of independent media – through mergers and takeovers, or just brute force, dissenters were silenced. Companies bought and made mouthpieces, backroom deals were made to read a pre-approved script to the masses, and up sprang a million voices singing the praises of a few brands drowning out any fact-based testing of products, or contrarian views.

The only reason we're not mentioning names here is because this email is drafted in a way to avoid the biased spam filters of today that flag emails with the names of certain companies.

Again, if you've stumbled across this email, we urge you to do a little digging in the Global Public Archive, where you'll find all that we've mentioned to be true. We leave it up to you to decide your next course of action – either attempt to raise awareness and spread the truth, or ignore as just another crazy email your spam filter missed...it's your choice that decides the next step in human evolution. No pressure.

We just wish there was a way to contact people in pre-2016 and warn them – maybe things wouldn't get so bad if more voices had spoken up against control and monopoly sooner.

Resist the assimilation!

Sincerely,
Agent 001



Agent 001
agent001@digit.in

"The ultimate problem with technology is that it's always controlled by someone (an individual, group, government or corporation), and that someone has a self-serving agenda."

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Samsung Galaxy Alpha

Sony Xperia Z3

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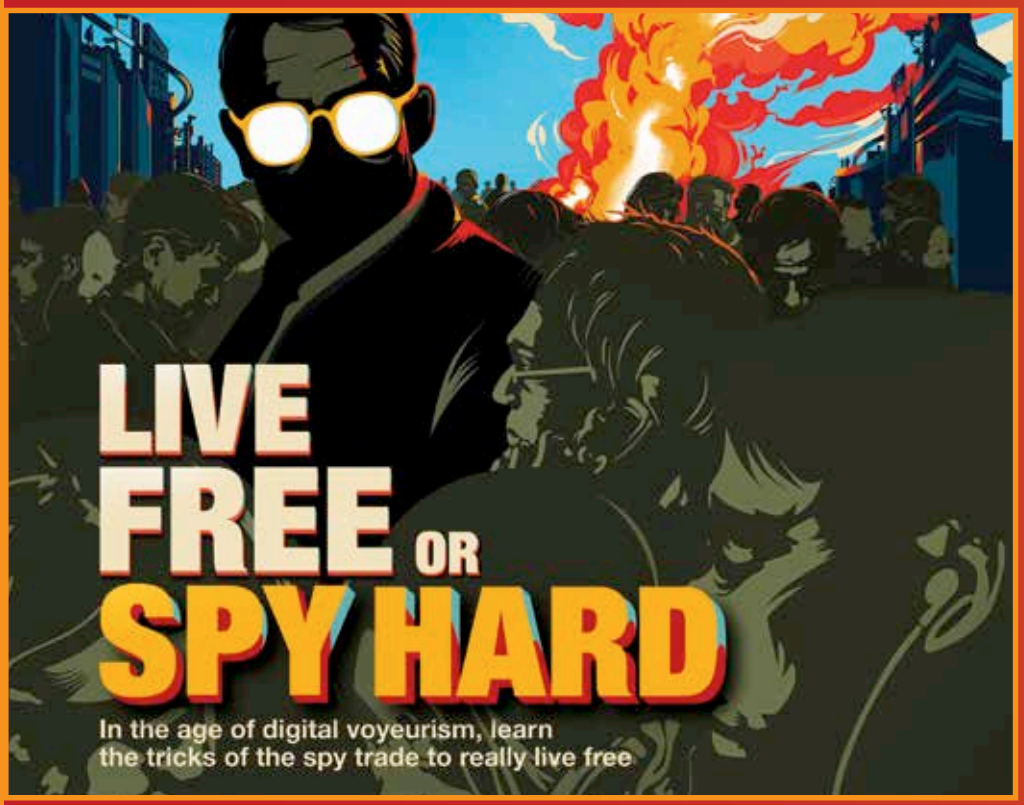
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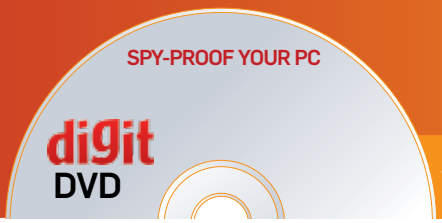
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Drivers
AMD APU Desktop Driver 64-bit
AMD Desktop Graphics Driver 32-bit/64-bit
NVIDIA Desktop Graphics Driver 32-bit/64-bit

Sponsored
Ashampoo Photo Mailer



16

Buzz
Launches galore, as it's raining products from HTC, Apple, Intel, Toshiba and more OEMs!



Planktons under attack
Phytoplankton which are responsible for keeping the carbon levels in our atmosphere low, are diminishing **http://dgit.in/PlanktonDying**

Feedback for the October 2014 issue of Digit



✉ Let me introduce myself: I'm Naveen Jain and have been reading your magazine since I was in Class 8. I know PHP, CSS, HTML and a bit of C++ and Java, and some hacking and terminal commands of Linux and Windows and much of it is due to you guys. Thanks a lot. I have much interest in computers and always buy at least a couple of your magazine before returning home. I'm addicted to computers and hence to your magazine. But I control this addiction as I'm currently preparing for IIT JEE.

This is my first time writing to you and I have just one word for you: "fabulous". While I don't want to criticise you, since you're the No. 1 technology magazine, everyone has high standards for you. So, here are some suggestions:

- Please avoid giving the poster in the magazine cover. I don't want to ruin my magazine by ripping out the poster and even if I do, then the hole of the staple pin ruins the look of the poster.
- I want to draw your attention to another good or maybe the best pay-per-click site. You listed NeoBux in the last issue, but not ClixSense. ClixSense is also a good option and not a scam.
- On clicking the Contact option on your site, I was taken to this link: http://www.digit.in/contact/contact. Please check if data has been posted by user (POST form) and if not, then redirect the user to another page. The contact form doesn't look good without any proper formatting.

Finally, I have just one thing to say: Keep rocking the world of technology with the best magazine. Thanks a lot.

-Naveen Jain

Thanks for the appreciation, Naveen, and the suggestions. We'll remember that bit about the poster – just bear with us this month, where we've included another nice cover in SKOAR! for fans who've been demanding it for a while. Your feedback about our website has been duly noted, and forwarded to our online team, and a fix for the contact form is on its way.

- Siddharth

✉ I've been an avid reader and lover of your magazine ever since I came to know about it. As I don't have proper connectivity where I live, Digit has been a brilliant tech guide helping me out in every way possible and has come a long way. Frankly, I used to buy your magazine in my earlier days only to get my hands on the software you include, but now as a serious tech geek, I closely follow the topics and informative articles you include, and read each line. The article "Opening the Gateway" in the last issue was very helpful as I wasn't exactly aware of how payment gateways operate. Another article that was an eye opener was "Money from Nothing". Even the rest of the magazine's contents ranging from "Smartphone Wars" to "Not so Powerful Nexus" was very good. I especially loved it as I was eyeing the Nexus as my next purchase.

I have a complaint regarding the 'Ask Me' section on your website, in which I posted two queries regarding an OTG pen drive and an LED TV, which haven't been answered till date. One more request: please provide a Fast Track on graphics cards, explaining everything in simple terms.

-Neeraj Kamal Jit

Glad to know our articles are well-received, and it's always good to know (from fans like you) what we did right, and where we could've been better. Keeps the team going! The Nexus issue was something I started experiencing in my own handset (which a lot of users were complaining about online) and I felt it had to be written about. As far as Ask Digit on the website is concerned, please bear with us as the section attracts a lot of queries (not to mention questions being asked on Facebook, over email, and forum). Apologies for the delay in getting your query resolved. Thanks for your letter.

- Jayesh

✉ I'm a regular reader of Digit since the past five years and this is my first letter to you. My friend, Shantanu Patil, introduced it to me when I was in Class 9, and now I'm a second year Computer Engineering student.

First of all, I'd like to congratulate you for your brilliant work. You guys are awesome. I read your magazine from start to finish. I like your articles and cover stories, which have many times been useful. So far, almost all the articles and DVDs have helped me. My general knowledge in technology has improved since I started reading Digit and I consider it my teacher. The October issue deserved to be a collectible – not just for the current generation, but next generation also. It was an awesome issue.

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Tap tap to call
Making things easier, a prototype heels Dorothy lets you tap your heels to call yourself with a fake number and many more **http://dgit.in/SmartHeels**



Webs of tech
Watch these diagrams of web circuitry which shows how we worship tech **http://dgit.in/TechWorship**

LETTER OF THE MONTH

✉ It's really difficult to decide where to start. My pen has been stalling since a couple of hours before getting into the flow.

Alright, firstly, a bear hug to each member of my Digit family. It's really emotional being adored now after this long time by my best friend, Digit. Thank you Siddharth for letting this beautiful string of friendship become more strong and memorable for me.

My journey with Digit began in a rural place called Nimapara in the Puri district of Odisha in mid-2001 when I first saw Digit at a roadside magazine stall in Bhubaneswar. It was instant magnetism. I could see it, but not buy it for lack of money. Being from a lower middle-class family, I couldn't afford it. So, I returned home, asked my father for money, went to Bhubaneswar the next day and bought it. I returned as soon as possible, sat in my room and read the entire magazine at a stretch.

As a tech enthusiast, I was always in search of information regarding technological advances happening throughout the world, but this was tough since I lived in a rural location. And then, Digit came to the rescue.

Since then, I never looked back. I remember travelling 50 kms by bus to Bhubaneswar only to buy my monthly dose of knowledge, information, and entertainment. Digit helped a 10th pass rural boy of India become a popular tech expert and guide among his family and friends. I drooled over the droolmaals, and the editorials by Robert and others inspired me to go on.

I have named the efforts of Team Digit as "technological inclusion". It is indeed required as dearly as the financial inclusion for the people of India. Why should a 6-year-old from the U.S. be able to develop a computer game of his own when an Indian counterpart has to wait for another five years to learn the basics of computers.

It all depends on people and their surroundings. When each Indian family is a part of the Technological Inclusion, the next generations will have a perfect environment to be technologically nurtured and be able to show their ingenuity.



It's been more than 12 years now. I'm now working with an Indian public sector company as an administrative officer. I've completed my B.Tech in Electronics and Telecommunication and MBA and worked with a couple of private firms before getting into this position. Even today, I grab a copy of Digit from the market with the same enthusiasm of that 10th pass boy in 2001.

Team Digit, it's a very arduous job to get, segregate, consolidate, make concise, plot and prepare a monthly copy of Digit, Fast Track and DVDs. I want to thank each member of the Digit family (right from ground level assistants to top level editors) from the bottom of my heart for their selfless service and dedication that make each copy of Digit so special and invaluable.

You're doing a great job. God Bless.

-Nirad Kanti Dixit

sniff sniff Who's cutting those damn onions!

No but on a serious note, thank you. The toil, the sleepless nights, the sacrifices... It all seems worth it just knowing *we touched your life in this way.*

-Siddharth

I have two things to ask of my favourite magazine:

- Why don't you provide TED Videos regularly?
- Please add more information, software and tutorials in DVDs focusing on developing. Thank you. Wish you all the best in the coming year and the year after!

-Parag Jadhav

Many thanks for the kind words, Parag. TED Videos are a great source of inspiration, and yes, they're always a part of our DVD offerings. Like last month, where we had a special section dedicated to them. A developer focused DVD may be coming soon. Stay tuned.

- Abhijit

✉ Hey guys!
This is my first letter to you guys. I love reading your magazine. It's been over 3 years now that I've been reading this magazine. Congratulations on your anniversary last month. I'm only 15 years old, but because of you guys, everyone in my family thinks of me as an expert on Computers etc., so I thank you very much. Keep up the good work, guys. I love the fact that you provide loads of stuff for a small amount of money. Digit Diary is amazing and reading DGT is also fun. You guys are awesome and after reading your "India's Fastest PC" article, I wish you guys could lent me anything from that PC (Just kidding). Your magazines are so resourceful to me that if I miss them any month, I'm left blank if someone asks me anything about a new product.

Here are a list of my suggestions to your magazines:

- Provide better games on the DVDs. Even providing demos of recent games such as FIFA would be great.
- Give game posters at least once a year with the special edition.
- The idea of an e-Gaming magazine is good, but it's very tough to read when you're on the go or on a vacation. So, I recommend providing the Skoar! magazine with/in the special edition of the magazine. I want to be a game designer and have created games on Unity.

Please consider my suggestions of your magazines/DVDs.

-Vibhansh Gupta

SKOAR! is a part of the main magazine, unless we have a busy gaming-filled month, which is when a special booklet for the same needs to be commissioned. Poster - check! More gaming content on its way.

- Anirudh

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Launches, launches, everywhere!

And some are really worth taking a closer look at. No, seriously!



The HTC explosion – Highlights

HTC has come out with all guns blazing by launching a whole host of innovative products at very attractive, aggressive pricing in India. Let's take a look at some of the big announcements:

The HTC One M8 Eye – ₹38,990

It showed off and officially launched its new flagship - the HTC One M8 Eye smartphone, equipped with a 13MP duo camera on its rear and a 5MP front camera with flash, which is on sale in India for ₹38,990 - starting today. Sporting an identical build and design of the HTC One M8, the newer One M8 Eye has slightly better hardware, especially the identical front-facing and rear-facing camera, both of which are equipped with dedicated flash (if needed). Part of HTC's Eye Experience, which has a host of software wizardry built-in to enabled you to do cool new things with your HTC phone camera. Things you couldn't do earlier. Take a look at this video to understand some of its features: http://dgit.in/htconem8eye

HTC Re Camera – ₹9,990

The uniquely designed HTC Re Camera is the company's first foray beyond the world of smartphones and tablets. It's akin to a GoPro, perfect for capturing high quality action video footage and still photos. The HTC Re has a innovative periscope design, intuitive buttons, 16MP CMOS sensor, ability to take 146-degree shots, good lowlight performance, and a host of other features.

It goes on sale on Nov 5, exclusively on Snapdeal.com, for a special introductory price of ₹9,990 - cheaper than its US $199 price tag elsewhere.

We spoke to Mr. Rengith Nair, Senior Product Marketing Manager, Emerging Markets, HTC, who gave us a quick rundown of the brand new HTC Re camera during the device's launch event in Mumbai, last night. You can check it out at http://dgit.in/htcrecam

HTC & Snapdeal going steady?

We also spoke to Faisal Siddiqui, VP & Country Head, HTC India & Tony Navin, SVP – Electronics & Home, Snapdeal.com, to understand how HTC's pumping out innovative products at attractive prices, the role of exclusive commerce tie-ups to sell products, what sort of big data insights are being leveraged by both parties, and what to expect from both HTC and Snapdeal in the coming months. See what they had to say: http://dgit.in/htcsnaptie

A talk with HTC's CFO

Finally, we couldn't pass off the opportunity to chat with Chia-Lin Chang, President of Global Sales and Chief Financial Officer, HTC Corporation. He spoke enthusiastically and gave us an insight on why India's such an important market for HTC, their legacy of delivering very well built product to customers, aggressive pricing, and what's new on the horizon in terms of future products. He was glad to talk to us: http://dgit.in/htcCLCint

Apple's back – again

Apple has launched a new 27 inch iMac with 5K display and has updated the Mac Mini with the latest 4th gen Intel chips. They also claim claim that their latest iPad has the highest pixel count on a screen at a 5120 x 2880 pixels but apparently Dell has already announced their 27-inch Ultrasharp display at the same resolution last month. Both displays has 67% more pixels than a 4K display that amounts to 14.7 million pixels.



Apple's new 5K display iMac

The new iMac packs a 3.5GHz intel Core i5 processor with turbo boost upto 3.9GHz, 8GB of RAM running at 1600MHz, 1TB storage space and a 2GB Radeon R9 M290X GPU. The new iMac runs Apple's latest OS X Yosemite with features like Continuity which lets you connect your iPhone and iPad to your Mac seamlessly.

Apple has also updated the Mac Mini lineup with new Intel Haswell chips, 4/8GBs of RAM, new Intel HD 5000 graphics or the Intel Iris graphics solution. The three variants of the Mac Mini come with 500GB HDD, 1TB HDD and 1TB Fusion drive respectively. The prices for the Mac Mini start at ₹36,990 and go up to ₹69,990 for the top model.

Intel's not far behind

Intel unveiled its new products including tablets, 2-in-1s and PCs at an event in Delhi. The chipmaker showcased devices running Intel Pentium processor and Intel Core processor from Acer, Asus, Croma, Dell, Flipkart, HP, iBall, Lenovo, Notion Ink, and Toshiba.

Some of the new products include Intel Core M and Intel RealSense with the new Dell Venue 87000 Series tablet, the first device that includes Intel RealSense snapshot. Intel also showed its RealSense 3D camera, which it claims to be the world's first integrated 3D depth and 2D camera module that matches depth much like the human eye. Other demonstrations included, wireless charging, voice assistant, as well as 3D printing. The YT2 8 comes with Voice Calling.



Thaine Creitz, Technical Sales and Architecture Enabling, Intel

With the new innovations, Intel promises of speed, improved graphics, larger battery life and higher resolution displays.

Thaine Creitz, Director, Technical Sales and Architecture Enabling, Intel, says, "Our vision is to strip away the complexity and friction of computing and enable an entirely new way of interacting with technology that's more intuitive, natural, and immersive. Today, we wanted to demonstrate this in action. We're making technology a truly personal experience – it starts with Intel Inside."

Thaine adds, "It's easy to become overwhelmed with the choice available when purchasing a new device – there are different screen sizes, connectivity options, features and operating systems. When it comes to getting great performance from your device, we believe success is determined by the quality of the technology inside and at Intel, we are focused on the quality of what goes inside your devices."

Toshiba Glass

Toshiba technologies showcased a wearable prototype namely Toshiba Glass at CEATEC (Combined Exhibition of Advanced Technologies) in Japan. Toshiba has managed to make the device lighter (42 grams approx.) than Google Glass as the eye mounted wearable has no computing power or battery of its own. The device can be mounted on any normal looking frame.

In essence the prototype which Toshiba unveiled is a tiny head mounted projector which projects the images coming through the connected device on a series of vertical prisms which reflect the light back to the eye to give the user an augmented reality display, whereas the Google Glass uses a prism over the lens to reflect the light on to the user's eye.

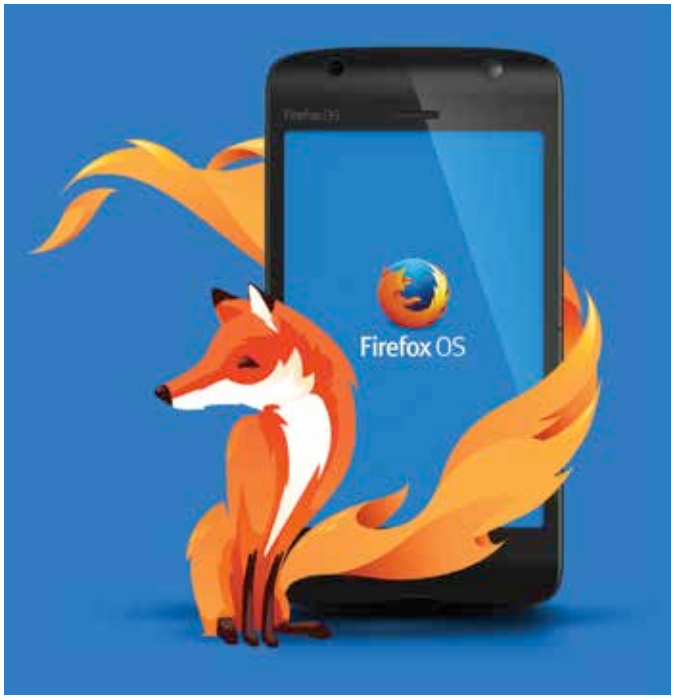
The Toshiba prototype did not have its own computing power or a battery and here the device relies on the smartphone in your pocket to power itself via a cable. Toshiba says that including a battery and a computing arm to the device would make it heavier to wear. Apparently Google has managed to stack a battery as well as a computing arm on the Google Glass itself.

Toshiba did not announce any price or availability of the device but company representative mentioned to a website that the consumer version of the product could hit the market next year and will cost less than the Google Glass. Seems like Google's getting some competition for its big release.



Curiouser and curiouser

Some out-of-the-ordinary phone launches have been announced this month



Firefox OS finds its place in Zen – inner peace, inner peace...

What does the fox say?

Nothing. It's in a state of Zen.

Zen Mobiles has launched U105- its first Firefox OS based smartphone. The smartphone is available exclusively via HomeShop 18 for ₹1,999.

The Zen Firefox U105 has a 3.5-inch display with 320×480 pixels resolution. It is powered by a 1GHz processor coupled with 128MB RAM. It has 256MB internal memory expandable via microSD card support to 16GB. The smartphone has dual cameras, a 2 MP rear camera with LED flash and a VGA front camera. It has in-built proximity, accelerometer, gyroscope and ambient light sensors.

The U105 has a 1,200mAh battery, which according to company claims can deliver up to five hours of talk time and 240 hours of standby time. The smartphone supports dual-SIM (GSM+GSM) functionality, FM radio, Wi-Fi, Bluetooth connectivity. The U105 is available in Black. With the launch of Firefox U105, Zen has joined the likes of Alcatel, Intex and Spice. Their Firefox devices are priced in the same segment. Alcatel's OneTouch Fire C is the cheapest smartphone priced at ₹1,990, Intex Cloud FX is priced at ₹1,999, and the Spice Fire One Mi-FX1 costs the most at ₹2,299.

Videocon's Flagship

Videocon has launched its latest flagship smartphone called the Infinium Graphite with a gesture control feature for ₹10,499.

Videocon Infinium Graphite has a 4.7-inch HD display with 1280×720 pixels resolution. The smartphone comes with one-glass solution (OGS) technology and Corning Gorilla Glass 3 protection. It has a 1.3 GHz quad-core processor and runs on Android 4.4 (KitKat). It has 1GB RAM and 16GB internal memory which is expandable upto 32GB – microSD card.

Videocon Infinium Graphite has an 8MP auto focus rear camera with LED Flash and a 5MP front camera. It also has an 88 degree wide angle lens and a BSI Sensor. Connectivity options include dual SIM (GSM+GSM) with dual standby, 3G, Bluetooth, USB and WiFi. The smartphone comes with a Touch Gesture Awake feature lets you gesture shortcuts to interact with your device. Predefined gestures 'C', 'M' and 'O' on the lock screen takes you directly to the Dial Screen, Music Player and Camera. Users also have an option to set up to 4 gestures of their own. The Infinium Graphite is backed by an 1800mAh battery and is available in Black.

Commenting on the launch, Jerold Pereira, CEO, Videocon Mobile Phones said, "With the Infinium Graphite we are pushing the boundaries of affordable flagship devices, with which we aim to capture the emerging budget smartphone market of the country. Today consumers are much awake to the fact that cutting-edge features can be experienced in budget prices, and thus are preferring devices which offer them this niche. With our Infinium range we are out redefining the Indian smartphone market which is now expanding from the Tier-I markets and is percolating into the Tier-II, III & IV markets."

Videocon announced a budget selfie-focused smartphone, the Infinium Z40 Quad, last month. The smartphone has a 5 MP front camera and a 3.2 MP front-facing camera priced at ₹5,490.

Master Yota is a two-faced Indian

Jumbo Electronics has tied up with Flipkart to launch the dual-screen smartphone – YotaPhone – in India. Priced at ₹23,499, the smartphone is available on Flipkart.

The YotaPhone, recently spotted on Flipkart, features two displays, an LCD primary display and an E-Ink secondary display. The second display is always on and can be used to show notifications, reminders, reading e-books and much more.

The Yota C9660 front display is 4.3 inches and 720p High Definition. The E-Ink back display is 4.3 inches with 640 × 360 pixels resolution. It has a 1.7 GHz Snapdragon dual-core processor with 2GB of RAM and 32GB internal storage. The smartphone has a 13 MP rear camera with LED flash and a 1MP front camera. It has an 1,800mAh battery. Connectivity options included in the YotaPhone are LTE support, Wi-Fi

Security watch
After Heartbleed and Shellshock comes the Poodle Bug. Read more about it in our Security Watch section.



One Handed Keyboard
If the iPhone 6 Plus is too big for your hands, type using the one-handed keyboard from Stonelight Pictures **http://dgit.in/1HandKeyb**



If one screen wasn't enough

and Bluetooth 4.0. It runs on Android 4.2.2 Jelly Bean.

"YotaPhone features an electronic paper display that would work as a second screen, making it possible to deliver an array of new and improved user experiences," explains Abdul Karim Sawan, Vice President for Yota Devices – Middle East and India. "It combines a smartphone and e-reader into one device for those who enjoy reading on-the-go even in the brightest sunlight. You can save images and information on the second screen, and it stays there, even if you lose battery power. You can save anything on the always-on display from a map to a boarding pass. Information, like a missed call or meeting reminder, stays on the always-on screen until it is no longer needed."

"Our partnership with Flipkart on behalf of Yota Devices marks a new milestone for Jumbo, as we go beyond the Middle East and offer our capabilities as a trusted distributor to a high potential market such as India. YotaPhone has proved to be a huge success in the Middle East region, and we expect Indian consumers to see great value in the device. Official figures show that online retail shopping is growing at 15% annually, with Flipkart being the largest and most visited e-commerce marketplace in India. We believe Flipkart will be a great platform to launch the YotaPhone, and reach a strong consumer base in the most efficient manner," says Ajay Pathak, Head-Mobility & Solutions at Jumbo Electronics.

Phone a Facebook Friend?

The recent meeting between Facebook CEO Mark Zuckerberg and Samsung Electronics vice chairman Lee Jay-yong in Seoul has triggered rumours that the two companies are in talks over possibility of a new Facebook phone.

According to rumours, Facebook is looking for a hardware partner to develop a new Facebook phone. Samsung is among top hardware partners the social networking giant is considering. Speculations also suggest Facebook may be looking for deeper integration on the Samsung devices. It can be noted that Facebook's last phone – the HTC First, which featured Facebook Home software layer on top of Android – didn't succeed. The HTC ChaCha, another Facebook-centric phone, featured a physical Facebook button for quickly posting to the social network. However, both the devices didn't take off.

It's not the first time Samsung and Facebook are working together. Samsung's much talked about Gear VR headset has been created in partnership with Oculus, which is now owned by Facebook. It will be really interesting to see what a Samsung-made Facebook phone will offer to users. Will it be competing against Google's Android One project?



Will the Facebook phone work out this time?

Xolo gets a lollipop

Xolo has launched a new budget Android smartphone. Priced at ₹6,599, the new Xolo One supports dual SIM, runs Android 4.4.2 KitKat (upgradable to Android 5.0 Lollipop) and is powered by a 1.3 GHz quad-core processor and 1GB of RAM.

The Xolo One has a 4.5-inch screen with 480×854 pixels resolution. It has a 5MP main camera and a VGA front facing camera. The smartphone comes with 8GB internal storage and supports additional storage up to 32 GB via microSD.

For connectivity, the Xolo One supports Wi-Fi 802.11 b/g/n, Bluetooth 4.0 and USB 2.0. The smartphone is powered by a 1700mAh battery.

The new Xolo One phone will be competing against the newly launched Android One smartphones as well as other budget Android phones in this price range. Like the Panasonic T40 and Huawei's Honor Holly.





Disney super render
Disney's upcoming movie Big Hero 6 was rendered using 55,000-core supercomputer spread across 4 geographic locations **http://dgit.in/DisneyRen**



Curving space/time
Space and time could be bent here on earth, according to a researcher at Cornell University **http://dgit.in/CurveTime**

War, peace and governmental organisation

The internet has been all a-buzz this past month



There's a war underway between hackers from India and Pakistan.

The Indo-Pak Cyber War

Hackers hailing from India and Pakistan have started a full-blown online war which has affected over a dozen websites in both countries.

Pakistani hackers defaced the website of the Press Club of India (PCI) with a message on the website's home page claiming Pakistani origin. Singer Sonu Nigam's official website and teammodi.in were also defaced by a group claiming to be "Pakistan Cyber Attackers". Two Punjabi news websites have also been hacked.

A hacker group calling itself "Indian Hackers Online Squad" hacked and defaced the website of the Pakistan People's Party (PPP). A hacker called Zukr@in, posted a message on Pakistan People's Party's stating: "To Citizens of Pakistan, Pakistan's Army, Pakistan Peoples Party and Specially Mr. Bilawal Bhutto- Zardari. Without any violence, let me tell you that Pakistan will never get Kashmir. This is the Truth. You have to accept it ."

Recently Malayalam films actor Mohanlal's official blog was hacked by a group called "Pakistan cyber crime"while an Indian hackers group called "The Mallu soldiers" defaced the website of Pakistan's National University of Modern Languages.

Apart from these, over a dozen websites were hacked by people from both sides, including the Pakistan Electric Power Company (Private) Limited (www.pepco.gov.pk) and National Manpower Bureau (www.nmb.com.pk).

The Indo-Pak friendship group Aaghaz-E-Dosti has urged netizens not to ignite the tension. In a statement the group said, "We must know that for both the countries, peace is of utmost importance and also our common need is being focused on development rather than spending huge money of taxes for arms and ammunition.. We believe that any dispute can be resolved only by talk and mutual negotiation and agreements and not with violence."

A recent CERT-In report says that the agency handled over 62,000 cyber attacks on Indian websites in the first five months of 2014. The report says "Most of the defacements were under '.in' domain, in which a total of 15,490 '.in' domain websites were defaced."

Tracking the Indian Government

The Indian government has launched a dedicated online tool to track the attendance of the government employees. The website – http://attendance.gov.in/ – is now live, and has 148 registered organisations with over 49,000 registered government employees.

The new online attendance tool requires an Aadhaar number. According to the website: "An Aadhaar number is essential for registering an employee in Biometric Attendance System (BAS). Government employees who do not have an Aadhaar number can enroll themselves for Aadhaar numbers in the special camps which are being held by UIDAI in various Government Buildings."

"Network connectivity will be essential for marking attendance. Therefore, two types of connectivity are being planned with each attendance terminal; one wi-fi connectivity on NICNET/broadband and other sim based GSM connectivity in the table," adds the website.

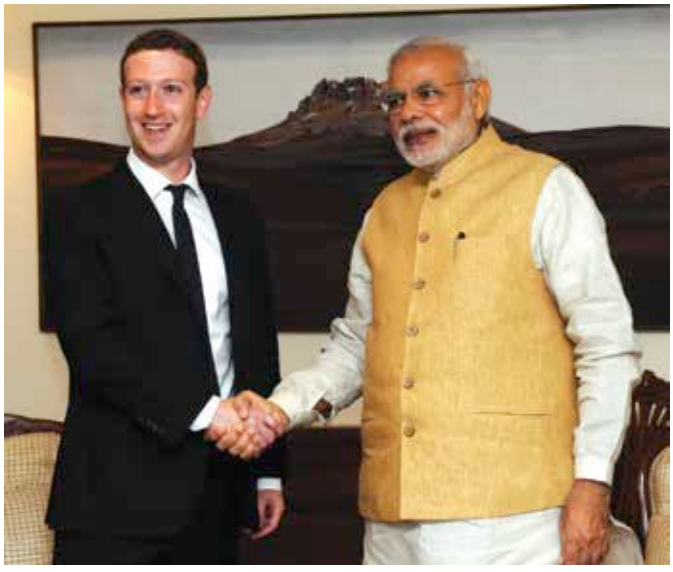
The new government website is said to be inspired from the attendance website of Jharkhand government (http://attendance.jharkhand.gov.in/) and the Department of Electronics and Information Technology (http://deity.gov.in/attendance).

The website is well-designed and has a very neat and sleek interface. The site works well on mobile browsers as well. The

desktop version has a dashboard on the top featuring number of registered organisations and employees. It also displays the number of employees present on that particular day. On the left, you have a set of tools for registering organizations, employees corner, reports, log in and FAQs.

Apart from showing the number of employees present, the site provides detailed information (with graphs) on attendance activity, authentication response and number of employees. Other features include the ability to search for employees, check out the department-wise attendance reports and the details of the nodal officer.

The new attendance tracking website is an overwhelming improvement over the other government websites we've seen, which are slow to load and lack modern design, owing to the fact that it's got basic html look and feel. We hope the government to come up with better and easy to use websites/online tools for other departments as well in the near future.



Zuckerberg meets Modi in Mumbai

Modi Zucked into cyberspace

Facebook CEO Mark Zuckerberg was took some time out of his busy schedule to meet Indian PM Narendra Modi on a two-day visit to India last month. They discussed Facebook's role in improving Internet connectivity and e-governance in India.

Zuckerberg came to India for the Internet.org summit which had discussions on increasing Internet penetration in developing countries with a focus on rural outreach and affordability.

Back in July, Facebook COO Sheryl Sandberg visited India and met with Ravi Prasad Shankar to discuss a partnership to facilitate education, healthcare and creativity among Indian youth. Is Facebook proactively turning its gaze to India?



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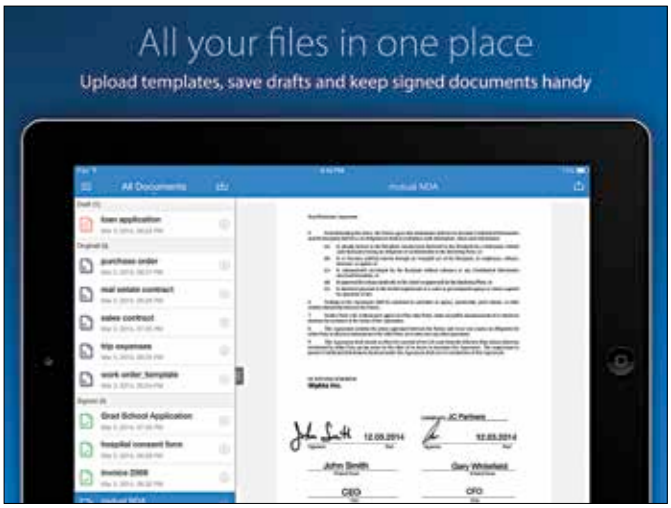
More focus on career
Facebook and Apple are offering female employee to freeze their eggs to delay having babies, focusing on their career **http://dgit.in/FreezingEggs**

Canva for iPad
To create layouts for the web, social media and print in an easy interface, Canva has now come to iPad **http://dgit.in/iPadCanva**

Apps to help you work hard, play hard

This month we look at apps that you can use in both your professional and personal life.

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SignEasy – Keep digitally signed documents wherever you go

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Signing documents digitally is not unheard of in the corporate world, but it's easier said than done. Enter SignEasy, an app from Indian developers, that utilises the iPhone 5S' Touch ID sensor to help you sign documents while on the go. The app requires the user to draw their signature or initials and then uses the fingerprint sensor to authenticate it.

You draw your signature once, after downloading the app and can use the Touch ID sensor from thereon. The app puts a small picture of your signature onto the document. This can then be resized and put at the place where the signature needs to go. SignEasy allows a total of three signatures to be put in the document, all of which are authenticated using the fingerprint that is registered to the phone.

There is a slight hitch though in the fact that your document has to be opened from the Mail app on iOS, where you get the option to open attachments in third party applications. So, you can't open a document in SignEasy directly from the Gmail app. Also, drawing a signature can be cumbersome if you have a long and complex signature. This would perhaps be solved by the S-Pen on the Galaxy Note 4 or other smartphones with styluses.

That being said, you can still use SignEasy for signing everyday documents, where your signature doesn't need to be absolutely perfect. Also, many people have alternate signatures for signing different documents. The app may not fit the bill if you're signing a sensitive document, though.

SignEasy is available on iTunes, Android, Amazon and BlackBerry World app stores and supports PDFs, Word documents, Excel sheets, HTML, Text and various other file formats. The fingerprint authentication is also limited to iOS 8 devices only.

Qik: Skype's new messaging app takes on Snapchat

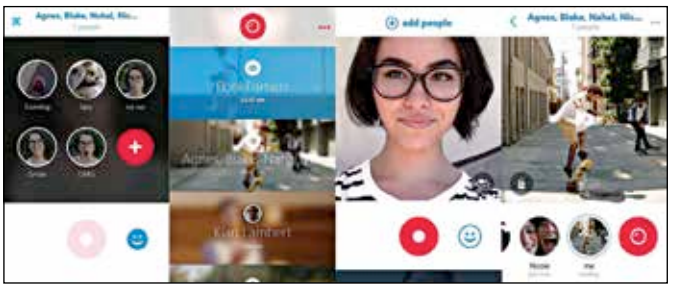
Available for: *Windows Phone (*http://dgit.in/1odLd4q*), Android (*http://dgit.in/1wORN0e*), iOS (*http://dgit.in/1uePOuz*)*

Skype has launched a new video messaging app dubbed Skype Qik. The app has been rolled out simultaneously on all messaging platforms and users can download it from Google Play, Apple's App Store, and the Windows Phone Store for free.

Skype's Qik allows people to sign up using their phone numbers similar to Facebook's WhatsApp and Rakuten's Viber. Users can share videos limited to 42 seconds length. They automatically disappear after two weeks. The app has some interesting features including one that allows users to toggle between both the front and back cameras while recording. To record users have to simply press the pink record button to record and then press that same button again to send. The users don't get an option to review the videos. They can delete the video anytime they want, however.

Qik has been launched as a companion app to Skype's video and audio conferencing software, which already has more than 300 million users. The mobile-only Skype Qik app is an important move by Microsoft which is trying to tap into the mobile market.

Skype describes Qik as "a totally effortless way to capture the moment, share laughs, and chat with groups of friends by turning short videos into



Qik – Snapchat's got competiton! And it's sporting video!



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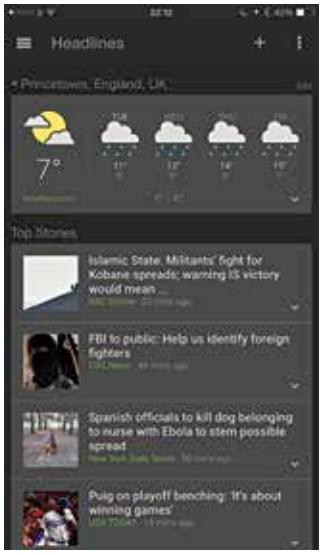
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conversations. The goal is to make video chats as spontaneous as messaging but as intimate as calling."

New messaging app from Google?

If reports are to believed, Google is working on an instant messaging service that will focus on emerging markets. The new service is supposed to take on the likes of WhatsApp and other emerging chat apps such as Line, Hike, Viber and WeChat.

According to an Economic Times report, Google's product manager Nikhyl Singhal had come to India to do a 'recce' of the messaging app ecosystem in the country. The site further says the new app will be a standalone product, doing away with the need to log in via Google. The app will compete against WhatsApp, which was recently taken over by Facebook.



Google's weather app for iOS

Not that Google doesn't have an instant messaging/chatting application. Hangouts is already integrated in Android, and offers features such as SMS integration etc. It's bit surprising that Google's working on a separate IM app.

iOS gets fresh Weather & News app from Google

Available for: *iOS (*http://dgit.in/ZHjBsG*), Android (*http://dgit.in/1wakLZ6*)*

Google has rolled out a News & Weather app on the iOS platform. The app presents local news and weather as well as headlines from a variety of categories and sources in one app. Google News & Weather 1.0 can be downloaded from the App Store for free on both iPhones and iPads.

The News and Weather app pulls stories from 65,000 publications, and has a dashboard-style layout. Users can get local news and weather based on their location, and the app lets you select your location from a list of 60 different countries.

The app joins a huge list of existing Google apps including Gmail was optimised for the new iPhone 6 display recently. The app is already optimized for the iPhone 5, iPhone 6, iPhone 6 Plus and is meant for iOS devices running 7.0 or later. Google says that The News & Weather app for iOS is "your comprehensive and personalized view of headline stories and local news and weather."

Google revamped the 'News and Weather' app for Android users in August along with a new Hangouts tab in Gmail. The updated app displays the weather information on the top of headlines and users can also access detailed weather data when tapped. The update was meant for devices running Android 4.0 or higher.

Xim is Microsoft's new cross-platform photo sharing app

Microsoft has decided to introduce a new cross-platform photo sharing application called Xim. The app, available for Windows Phone, Android and iOS, lets users share pictures with a group of friends nearby. The app functions very simply – it lets you share pictures from your device and cloud accounts.


Xim – Share photos

Only one person needs to download the application in order for everyone to participate. You can invite friends through your contact list, email or phone number. The app lets you select photos from your camera roll, Instagram, Facebook, Dropbox, or OneDrive. If your friends have also added the Xim app, they can add photos or people to Xim and easily extend the conversation. The images delete themselves after a certain time. However, you can save a photo with a long press.

Xim is currently available for iPhone, Android and Windows Phone 8 devices. Microsoft says the app works in most web browsers as well. The app will be initially rolled out in US and Canada only, but there are plans to add additional country support, shortly.

SimplEye: an Android launcher for the visually challenged

Available for: *Android (*http://dgit.in/1wd38Hb*)*

Kriyate, a Delhi-based company, has launched a new Android launcher application SimplEye, for visually challenged people. The application, available on the Google Play store, features an easy to use interface for the visually impaired allowing them to use take advantage of all the features of a smartphone like a person with normal vision.

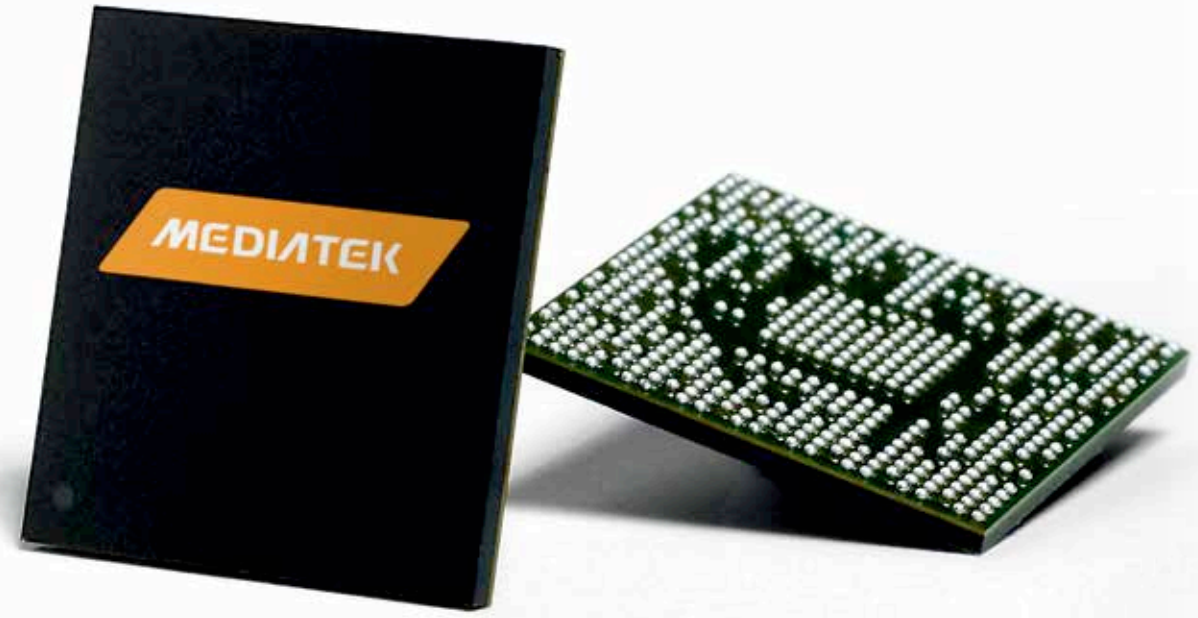
The application ensures the screen has one element at a time. A voice narrates the element that is on screen. It also allows users to interact with the element using simple gestures. "For example, swiping up/down scrolls through the elements in order. A single tap takes the user forward while a long press is for accessing options. A user can apply these gestures anywhere on the screen, freeing one from the need of seeing the display," says the app description.


SimpleEye

According to Sumit Dagar, founder of Kriyate, the company has already started working on an update of the app that will bring in new futures such as colour identification and location sharing.

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Poodle bug puts the internet on high alert

After Heartbleed and Shellshock, a new major security flaw has been discovered this year. Revelation of new security vulnerabilities stress the importance of more measures to make the Web more secure.



Google security engineers have uncovered a major vulnerability dubbed Poodle in Web encryption standard SSL 3.0. The bug makes browsers susceptible to hacking, but researchers state that it is not as harmful as Heartbleed or Shellshock bugs.

Google security engineers Bodo Möller, Krzysztof Kotowicz and Thai Duong stated in a report that POODLE is a new security hole in Secure Socket Layer (SSL) 3.0 that makes the 15-year-old protocol impossible to use safely and upgrading it will be difficult. "Poodle" stands for Padding Oracle On Downloaded Legacy Encryption.

Security experts stated that the bug could allow hackers to steal browser "cookies," but was not very serious. Ivan Ristic, director of application security research with Qualys and an expert in SSL stated, "It's quite complicated. It requires the attacker to have a privileged position in the network."

Jeff Moss, founder of the Def Con hacking conference and an advisor to the U.S. Department of Homeland Security, stated that hackers could exploit the bug to steal session cookies in browsers, social networks, taking control of accounts for email providers and banks that use that technology. However, they would need to launch a "man-in-the-middle" attack. A common approach used by hackers is to create a rogue WiFi "hot spot" in an Internet cafe, he added.

Moss advised businesses and computer users to stop SSL 3.0 technology on their servers and browsers. "It's not going to take out the infrastructure of the Internet. But it's going to be a hassle to fix," he said.

Rumors that a new bug in OpenSSL software had been circulating on Twitter and technology news sites in recent days. Earlier this year, researchers discovered the "Heartbleed" bug in OpenSSL, which affected nearly two-thirds of all websites and thousands of other technology products. The bug dubbed "Shellshock", however, was uncovered in a piece of Unix software known as Bash last month.

Security researchers publish BadUSB code

The malware code for the BadUSB security flaw discovered back in July has been published by security researchers. According to researchers, the move will put pressure on device makers to actually fix the flaw before millions of users have their USB devices and peripherals exploited.

The BadUSB flaw was first detected by Karsten Nohl and Jakob Lell and demonstrated at the Black Hat cyber security conference. Nohl demonstrated how BadUSB security flaw could corrupt any USB device with malware and is virtually undetectable. Now two security researchers – Adam Caudill and Brandon Wilson at Derbycon in Kentucky have discovered the same BadUSB flaw and published their proof-of-concept on Github.

The researchers justified their release and stated in a blog post, "Writing code for these devices is far from easy, especially when trying to patch



BadUSB in BadHands can be – bad



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Spotify cassette recorder
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Notification center
In an update on the technical preview, Windows 10 gets a notification center for Windows Phone on the desktop **http://dgit.in/WPNotiCen**

the existing firmware. It's not something that just anyone can jump into. While we have made it easier for people to apply simple patches and provided some insight to the process, these aren't the patches that will lead to a firmware based worm or something of that nature. These are the type of patches that will make small changes to existing features, or add simple new features," Wilson wrote in a blog post Friday. "So, to do anything still requires a lot of knowledge and skill - in general, as I said earlier, the kind of people that have what it takes to do this, could do it regardless of our release."

Wilson stated that publishing the code will force manufacturer to treat this issue seriously and will help raise awareness among ordinary users.

"Device manufacturers were quick to dismiss the "BadUSB" threat - on one hand, what was presented at Black Hat was possible via other means, so wasn't really a new threat – but they showed no indication of trying to address the issues under their control," he added. "While it will take years for any changes made by device manufactures to have an impact because of the number of devices in circulation now - if they keep ignoring the issue, then it will never be improved."

Apple issues security warning for iCloud

Apple has issues a new security warning to its iCloud online storage service users amid reports of a concerted effort to steal passwords and other data from people who use the popular service in China.

According to reports, some Chinese internet users have begun seeing warnings that indicate they had been diverted to an unauthorized website when they attempted to sign into their iCloud accounts. Security experts call it a "man in the middle" attack, this allows a third party to copy and steal the passwords that users enter when they think they are signing into Apple's service. The passwords can be used by hackers to collect other data from the users' accounts.

Apple declined to comment on the allegations but has updated its technical support page to provide advice on how to protect against such attacks. Apple's post did not mention China or provide any details on the attacks. However, the post stated that Apple's own servers have not been compromised.



Is iCloud security any better after recent events?

Apple stated in a blog post on its support website, "We're aware of intermittent organized network attacks using insecure certificates to obtain user information, and we take this very seriously."

Apple warns people that iCloud users should never enter their iCloud password if they get warnings about invalid digital certificates when visiting www.icloud.com. The blog post also mentions procedures which users can use to verify they are connected to Apple's legitimate site when using any of the various available browsers.

"If users get an invalid certificate warning in their browser while visiting www.icloud.com, they should pay attention to the warning and not proceed." Apple warned iCloud users.

Last month hackers had attacked iCloud accounts of celebrities and stolen photos. The tech giant stated after an investigation, that the hackers had obtained the users' passwords through "phishing attacks" or by guessing at the answers to security questions that allowed access, thus stating that its servers were not breached.

Government's security by March 2015

The Indian government will start using its own secure email by March 2015 as it plans to ban use of popular email services like Gmail and Yahoo! in its official communication. A step taken as a preventive measure, to safeguard critical and sensitive government data.

The government has approved the proposal moved by the Department of Electronics and Information Technology (DeitY) to establish a secure and encrypted email service for government officials. If all things go as planned, 5 million officials will be using it by March 2015.The project has already been allocated a budget of ₹100 crore. This huge sum of money includes an increased infrastructure and additional security of servers that will be used to store the aforementioned emails.

According to reports, the government communication, excluding the communication of the Ministry of Defence and External Affairs, will be done using the NIC platform. The Defence Ministry has its own separate secure email server and the External Affairs ministry may also follow soon.

"We are in the process of implementing this. At present about a million officials have been covered by it and we need to scale it to cover a total of 5 million employees. This process will be completed by March 2015," DeitY Secretary R S Sharma told PTI.

"We need to scale the infrastructure of the National Informatics Centre (NIC) to accommodate this large number of officials. Also there will be a state-of-the-art security for the service to ensure nothing happens," he said.

What caused this sudden move towards internet security? One can make a highly educated guess and say that it is the result of the five million usernames and passwords of Google were reported to have been leaked online by Russian hackers earlier this month. Governments world wide have been trying to secure their official communication post Snowden revelations about NSA surveillance, and India isn't the kind of country who will be left behind.

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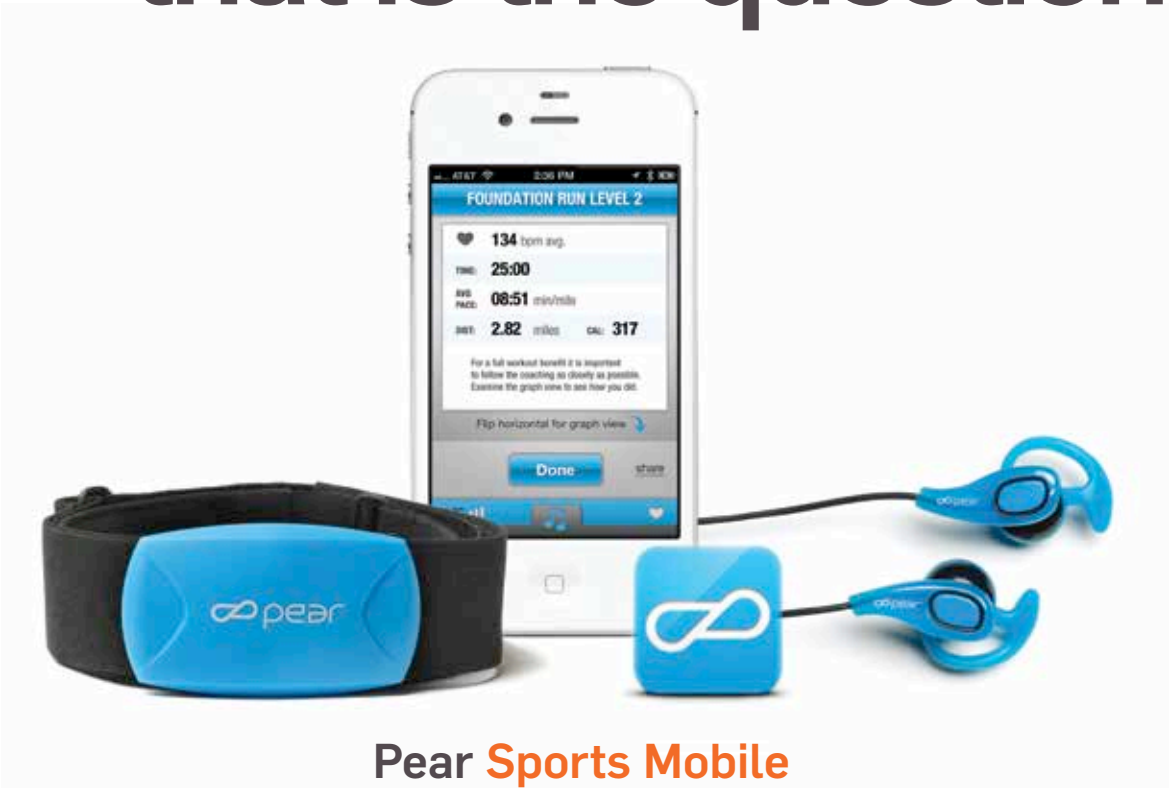
42 **Geek Life**
Windows 10 – take a look at what it has to offer and whether or not this latest offering met our expectations



Basis Peak

An Intel offering, the Peak from Basis, calls itself the ultimate fitness and sleep tracker. A tall claim, no doubt. However, equipped with smart sensors that tracks your body temperature, perspiration levels, and other key data points, this always-on wristband intelligently knows if you're sleeping, walking, running, jogging or cycling, and how many calories you're expending. Gamification is built into the platform, as the device lets you track your fitness chart on a supported smartphone app. It's sleep analysis feature seems pretty cool as well, at least based on the early demos.

To wear or not to wear, that is the question!



Pear Sports Mobile

There are plenty of fitness trackers out there in the market, but how many actually train you like a personal trainer? Pear Sports' mobile kit excels in this unique service, offering a level of fitness coaching that is tough to deliver. With a armband, earphone, and a mobile app, this system not only tracks your heart rate and its response to exercises (thereby tailoring the experience on the fly), but also chimes in motivational phrases in your ear, and populates an in-depth history of your fitness regimen and your vital stats.



PS4 2.0 coming
PS4's new firmware update is bringing in new themes, better dashboard organization and much more **http://dgit.in/PS4v2**



GearVR competitor
Archos VR headset will compete with GearVR selling at $40, compatible with any smartphone between 5-6 inches **http://dgit.in/ArchosVR**

Ring

A camouflaged jewellery item, the Ring aims to be your "shortcut to everything." The developers of this cool, wearable accessory want to let you do "Gesture control, text transmission, payment, and more," through the metallic ring, which you adorn your finger with. And the gestures are all immensely simple and easy to execute. All this involves an inordinate amount of finger-waving. So if you aren't used to dexterity, you'll have a tough time trying to interact with the digital world around you at your fingertips.





Pavlok

This is a habit-forming wristband that shocks the wearer into instant submission if he or she doesn't observe self-restraint. How about that, eh? For an initial US $250 (and later, at a much cheaper price), you can get your own digital guardian, right there on your wrist, shocking you into becoming a better person by form constructive, good habits that will have a lasting impact. Something tells us that this Pavlok's going to fly off the shelves as New Year gifts to all those people out there who struggle with their New Year's resolutions.

Netatmo June UV

This is a piece of wearable tech made by women for women. Attached to a leather or silicone strap is a piece of jewel that is more than just an ornament. Camouflaged within it is a clever sensor that detects harmful UV radiation present in sunlight and alerts the user of its intensity. Why? To protect your UV-sensitive skin, of course, dah'ling! The chic wristband can ping you, advise you to apply sunscreen, and stay on for a month without recharging. For US$ 100, this is one toy that will be a big hit with the females, needless to say! Watch out boys, hide those credit cards!!





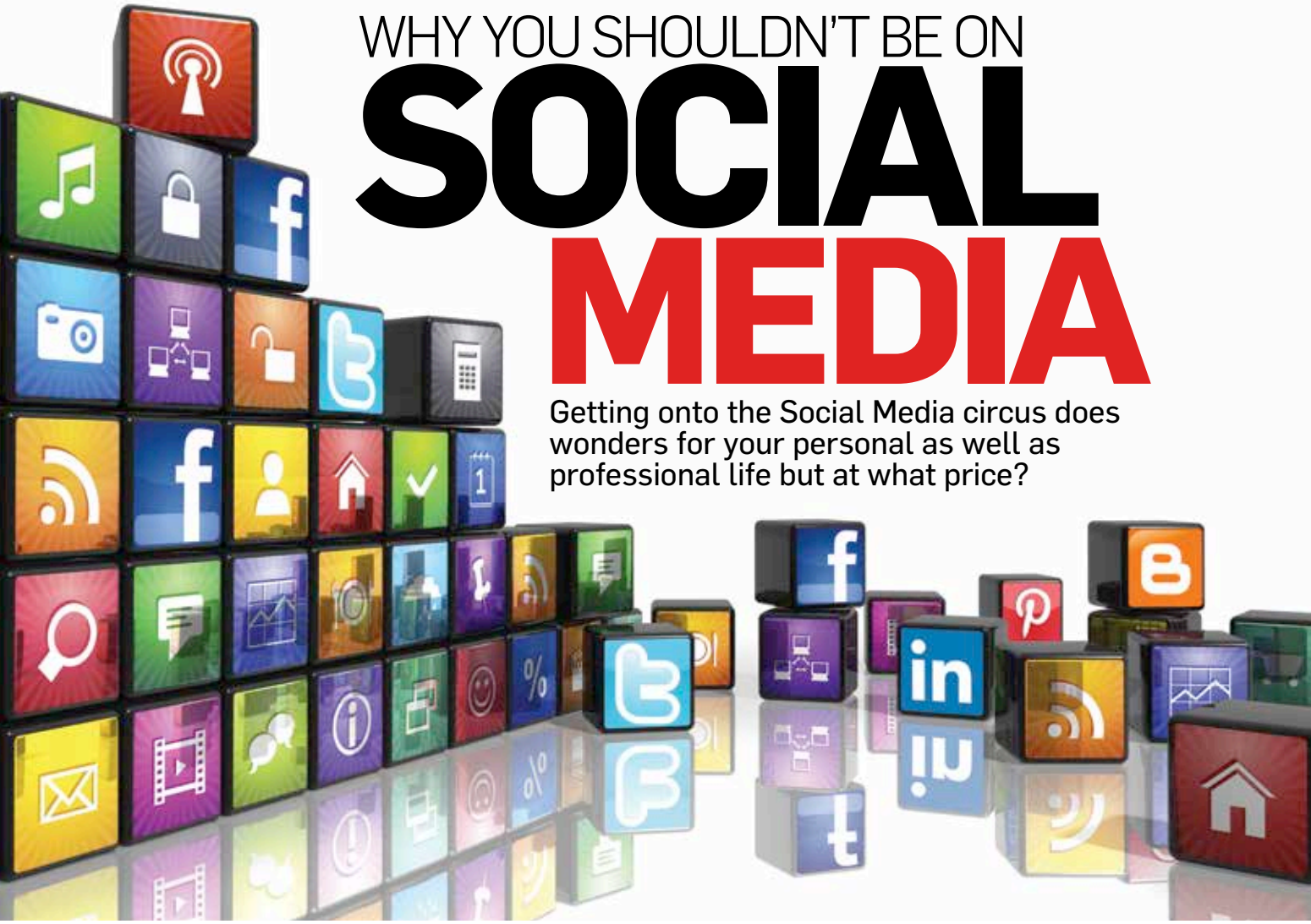
Real-life Snapchat
A printer that self-destructs the printed photo within moments after you view or read the photo **http://dgit.in/SelfDes**



Smart deodorant
A kickstarter campaign of making a smart deodorant that reminds you of personal hygiene **http://dgit.in/SmartDeo**

WHY YOU SHOULDN'T BE ON SOCIAL MEDIA

Getting onto the Social Media circus does wonders for your personal as well as professional life but at what price?



Avinash Kothuri
readersletters@digit.in

Let's kick off this article with a small question: How many people do you know who don't have an account on any social networking site? Hah! We bet most of you couldn't come up with even one name. Makes you think about the grip that social networks have over people these days, doesn't it? While Facebook, Google+, Twitter and Instagram are some of the popular social networking sites, there are numerous such sites across the globe, in more than 70 languages. To say that our world today revolves around social networking wouldn't really be a harsh exaggeration. If you disagree, just take a look at these numbers:

- Number of people on Facebook: 1.31 billion
- Average number of tweets/day: 190 million
- Number of users on Chinese micro-blogging site Sina Weibo alone: 500+ million users
- Average time spent on social networks per month: 15 hours and 33 minutes
- Percentage of teenagers on social media: 98 percent

All statistics sourced from Statistic-Brain.com

These jaw dropping statistics are just the tip of the iceberg. One out of 5 teenagers logs in to social networks more than 10 times a day, and about 1 of 2 teens checks their social accounts first thing upon waking up. Sure, majority of the users are under the age of 30, but thanks to sites like LinkedIn, this age group is also slowly catching up. What's more, not only is the adoption not restricted to certain age groups, the uptake is high across social classes as well – even your paanwala and sabjiwaala are on Facebook. Though that observation may come across as elitist, it's just proof that almost no one can escape the clutches of social networking.

Now that you're aware of the magnitude of something that's become synonymous with our existence, it's probably a good idea to think about the effects it has

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on us, and whether you should encourage it. Wait, what? It must sound like we're joking, right? Why shouldn't anyone encourage social media? – Everyone you know is there, and it is THE place to get the lowdown on the latest in everything. Yeah well, it isn't as amazing as it sounds. There are several risks associated with being glued to our computers/mobiles in pursuit of social networking nirvana. Here are some arguments detailing why you should not be on social media.

Privacy? What's that?

Considering the amount of information we share, and on a public platform to boot, our lives are constantly on display for everyone to see. And as proven time and again, the internet isn't the safest place if we aren't careful. The need for privacy on social networking sites can be undermined by many factors including insufficient steps to adequately educate the user about the level of personal information being disclosed. Then, there's the issue of control over data. Information that's been removed by the user might just be retained and passed on to third parties – something similar to what social network Quechup did when it harvested email addresses of users for a spamming operation.

Cyberbullying, trolls and stalkers

As we've already established, a majority of social media users are youngsters, which in turn means that many parents and governments alike are extremely concerned about the misuse of social networks – specifically by sexual predators and cyber bullies. Social media provides the perfect platform for pedophiles to lure naïve young children into their trap. Profiles are viewable by everyone, and the victims' likes/dislikes can easily be found out by a poser trying to chat them up. Children wouldn't take the same amount of precautions online that the average adult would, and hence are extremely vulnerable to predators.

Cyber bullying/hate speech is the other main problem that kids and teenagers face online. Social networking sites allow individuals to freely express themselves without any sort of filter and not worry about serious consequences for doing the same. The internet bestows a false sense of bravado on people giving them the courage to say things they wouldn't dare say in person. In this way, rumours are spread, and very rapidly at that, often causing groups to gang up on one another and terrorise individuals in front of their peers. Parents are often unaware of their children's predicament, and in the event that they do find out, the situation has already escalated and it's too late to help their kids. The devastation of these attacks can leave deep scars, and in several well publicised cases, victims have even been driven to suicide.



Those are IQ points flying away

Professional vs. Personal: Where do you draw the line?

This is a dilemma that many of us face while sharing information online. "Do I really want my colleagues to know I was on a weekend getaway?" is the kind of question you often find yourself asking. The social media landscape is vast and can get intimidating for those who choose to mix their social and professional lives online. There have been numerous cases of employees losing jobs because their opinions painted their companies in bad light. For example, in April 2011, a bank employee was fired for making a sarcastic post about the higher salary of her boss with respect to hers. It can be quite tricky to achieve the right balance while posting personal information on social media sites without offending a colleague.


TODAY

TUESDAY, 9 OCTOBER 2012

US House calls for curbs on Huawei, ZTE

Sacked less than 24 hours after offensive remarks

Amy Cheong's online rant over her dismissal by NTUC rebuked by the Prime Minister

Guess who's snooping? HR! That's who.

Sites like LinkedIn encourage workers to leave as big a social media footprint as possible in order to open up more opportunities in terms of career paths for them. However, doing this might in fact work against the user in terms of employability. Since the employers have access to their prospective employees' profiles, they can judge prospective candidates based on their social behavior. In fact, according to a survey conducted a couple of years ago, 1 in 10 people were rejected for a job because of their comments on an online profile. A similar number of candidates were rejected for posting inappropriate photos and/or content about drugs/alcohol. And though it may seem that most of the job opportunities lie online, a major chunk of job vacancies are never posted online. Therefore, expanding a social base on just the internet might be counterproductive in your pursuit for a job, if you aren't putting in the right amount of effort offline as well.

Psychological effects

Social networking has its fair share of psychological effects on regular users, which cover (but are not limited to):

- **Addiction:** The increasing usage of social networks has led researchers to study internet addiction as a very

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Unreal Engine 4.5 updated
Epic games has updated the Unreal Engine to 4.5 bringing in around 40 new features and a tutorial system **http://dgit.in/UnrealEngineUp**



Goodbye webOS
HP will be shutting down app catalogs and cloud services support for webOS devices in 15 Jan, 2015 **http://dgit.in/EndOfwebOS**



Your social history is a factor during hiring

real clinical disorder. One could argue that spending three hours a day reading random tweets from strangers doesn't necessarily indicate that you're addicted to Twitter. You could merely be news reading to stay updated, right? However, research conducted in 2012 by Chicago University's Booth Business School concluded that Twitter is harder to resist than cigarettes and alcohol. If that isn't a sign of addiction, what is? There has actually been a case of a Korean child starving to death because the parents were too engrossed in games on the internet!

- **Low self-esteem:** All of us look at each other's social network pages, admire lifestyles, relationships and clothes. More often than not, this leads to us wishing our lives were as great as others. People thus often end up feeling miserable about themselves, which can at times even lead to low self-esteem or depression. In fact, a recent German research study concluded that one out of three people felt worse after Facebooking, often due to perceived inadequacies when comparing themselves to friends. Children, especially, are susceptible to depression and anxiety as they feel they have an image to maintain and cliques to fit into.
- **Loss of Independent thinking:** Speaking of cliques, social media users are often more vulnerable to peer pressure than the average person. People are usually found changing their minds about "liking" certain things (One picture over the other, for instance) if enough time had passed and they found the other side even moderately more popular.
- **Change in spending habits, hunger...:** New study actually suggests that heavy social media use might just be correlated to lower self-control, which according to marketing experts leads to higher spending. Also, the 'food porn' photos that we so often see on Instagram or Facebook can actually activate the brain's reward center and compel viewers to overeat! In fact, even looking at food images after a meal can trigger hunger.

Clearly, being active on social media possibly has negative implications for our mental health, and is pretty scary to imagine. However, the list of ill effects doesn't end here.

Effects on productivity

While many businesses use social networks to find and communicate with clients, the platforms also prove to be a great distraction to employees. Many of us can't go an hour without checking for updates, and this can distract us from the tasks we're hired to do. Studies from 2010 say that productivity decreased by around 2 percent thanks to Facebook, accounting for a loss of around £2.2 billion per year in Britain alone (Source: Nucleus Research and Morse). A later study conducted in 2012 and reported by Mashable puts the loss at $650 Billion in the US alone. You can see how this trend progresses. While there are establishments willing to embrace the obsession, many other offices are taking measures to block social networking in their premises. However, these access-blocking technologies are spotty and can usually be bypassed with ease.



Social presence is indirectly proportional to privacy

How many of your "friends" are real?

Although social networking helps us maintain old relationships and forge new ones, people nowadays are content scrolling through an endless list of bite-sized snippets of personal information, and interacting purely through chat or comments. Social media sites can make it difficult for us to distinguish between meaningful relationships we foster in the real world and the many casual relationships formed through social media. And many people who are friends online are unable to carry out a face-to-face conversation amiably. By focusing so much of our time and energy on these less meaningful relationships, there's a chance that our more important real life connections are being ignored. Also, many of these friends might not even be real people. They could be bots with believable fake profiles or pages – such as a page dedicated to Robin Williams' death as a recent example – which eventually lure unsuspecting people to a phishing site/blog.


You just picked the blue pill!

Social networking sites have already changed the way we think, experience, interact, make friends etc. But as we've seen, there are many adverse effects to social networking, giving you good reason to stay away from it. However, a complete boycott seems implausible, as social networking is clearly here to stay. Therefore, it's time we reconsider some of our social networking habits before we lose ourselves in this madness.

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The VP from Heaven?
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Windows 10 First Look

(What we wanted Vs. What we got)

If Windows 8 was a disaster, Windows 8.1 was its saving grace and Windows 10 is set to be the messiah. But has Microsoft really been listening? Can it really meld the functionality of Windows 7 with the power of Windows 8?

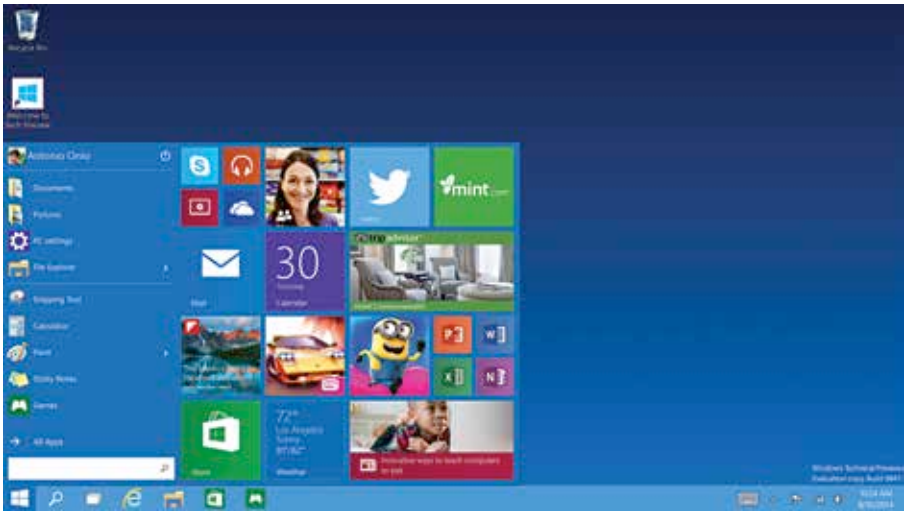
Siddhant Sharma
readersletters@digit.in

Introduction

It's no secret that every alternate version of Microsoft's poster boy - the Windows operating system, bombs miserably. But this time, in a weird twist of fate or rather numbers, Microsoft decided to ditch Windows 9 and directly jump to Windows 10 (please leave numerology out of this). The explanation that they gave for this was that "since there is so much more that the next iteration has to offer, it would be appropriate to name it a complete 10". Not that we care about version numbers, as it's always about what the OS has to offer in general that piques our interest.

We last spoke about what we would like to have in the next version of Windows not too long ago in these very pages, in the April 2013 issue to be precise. Back then, there were quite a lot of loose ends in the OS which made users feel that they weren't exactly working on an OS designed for PC's.

There we covered the gripes that we had with Windows 8 and how Microsoft should go about fixing things in order to make the OS a more complete experience. We were curious to know what changes Microsoft implemented with Windows 10, ensuring that we, the pure PC users, were happy and not feel cheated like we did with Windows 8 and its poorly handled interface. This is why we used our quick ninja reflexes (and a a 15Mbps broadband line) to download, install and test the Windows 10 Technical Preview as soon as it came out. So let's find out if the new and upcoming Windows is a perfect 10 or a lonely zero. Is it the game changer that we want it to be?



The new start menu in Windows 10. Oh yes. It's back! How we all missed it, no?

1 To "Start" or not to "Start", that is the question

What we wanted

The major issue users had with Windows 8 was primarily with the "Start" menu and the general behaviour of the user interface. The reaction of everyone, including industry pundits, was one of pure horror. This reaction is due to the decision that Microsoft took regarding the UI's design, where they settled for a compromise between a touch-friendly and Desktop-friendly UI. While the idea was alright in theory, in practice it was a horrendous mess with users ending up with the worst of both worlds. Windows itself couldn't decide on which UI it prefered and Desktop users spent more time juggling with the two UIs than actually using the PC. To add to the confusion, the Metro UI featured different apps from the Desktop UI, making the juggling an even more complex task.

The layout of the start screen was a big turn-off, especially because users wouldn't instantly get what they want as the familiarity of clicking buttons was lost among a grid of tiles which weren't truly intuitive at first.

All we asked of Microsoft was that the OS should focus on a single UI instead of differentiating itself into Desktop mode



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And the winner is...
Dark Souls II walks away with the Golden Joystick award for GOTY. Find the full list at:
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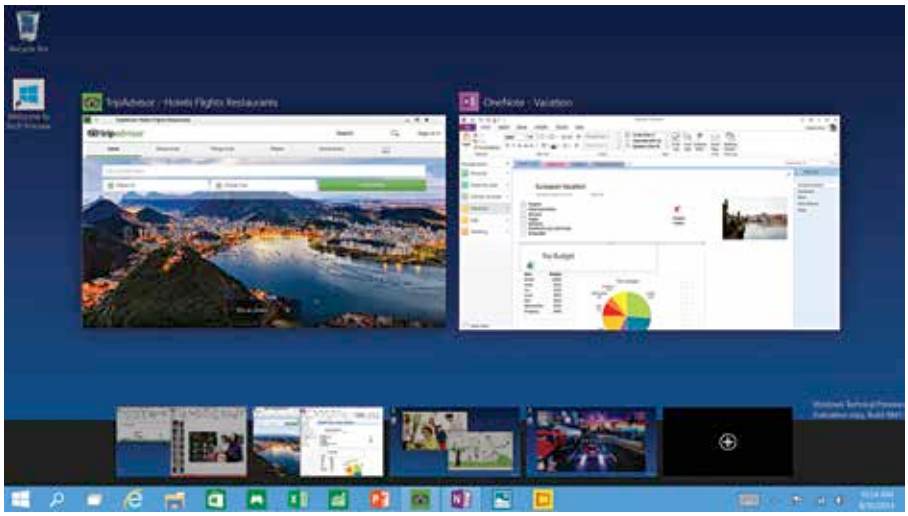


Run by code
An interesting infographic on the rise and fall of the PC. Check it out at:
http://dgit.in/1tUFi6q

and Modern mode thereby, easing the confusion among users.

What we got

It's back! The venerable "Start" button is back at the corner where it belonged which when clicked (or touched) brings a shrivelled up Windows 7 like Start menu that succeeds in merging the Windows 8 Start Screen wth Windows 7's Start menu.



The new app-switcher in Windows 10. More of the same but flashier presentation?

It includes traditional Windows 7 desktop elements to the left while live tiles sit at the right-side of the menu. Finally, the menu can be resized to accommodate the entire screen, although we would suggest otherwise. Another change for the better has been made by improving Modern UI and its elements and making them work well together with the classic design or format of the desktop. This has been achieved by making both UI's work well and co-exist together depending on whatever form of input the user is using, be it a mouse or a touchscreen. This only points to the fact that Modern UI is here to stay, at least according to Microsoft, but this time they've worked on it to make things less confusing and more intuitive.

2 Enough of Touch it Vs. Click it!

What we wanted

Instead of getting a mixture of an OS suited for the mobile platform and PC, we wanted it to behave, look and work according to the platform that it's on and not force users to use an interface that they're probably never going to be completely comfortable with. Why would you want your OS on the desktop to have touch based elements even when you don't have a touch screen? We're better off having multiple variants of the OS instead of having to do with the same OS for multiple devices like smartphones, tablets, hybrids, laptops and desktops. The best way to think of a work around for this is by having multiple modes like touch and type within the OS itself. Thereby showing pure PC users that Microsoft isn't taking them for granted.

What we got

Touch based UI elements do stay on as we are now seeing a variety of touch-enabled PCs that can take advantage of the UI. But it seems like Microsoft has finally grasped the boundary between touch and click. We say this because according to the tweaks that we've seen in Windows 10, Microsoft has addressed the issues that PC users had with Windows 8, where users were forced into using a desktop designed for mobile devices, by adding buttons for important actions such as task-switching, among others. Although touch still plays a big part in Windows 10, it doesn't hamper the functionality of regular or classic desktop apps. Not only that, touch based devices get the modern UI based Start Menu and apps by default, while Desktops or laptops without touch based interface options get the classic UI out-of-the-box. We hope Microsoft continues down this road because this is what we've asked for time and time again.

3 Gestures for a change please. Thank you!

What we wanted

The good old married couple that is the keyboard and mouse are still lovely for interacting with a PC and despite this fact, it wouldn't hurt to try and innovate a bit by adding gesture support within the OS. Considering Microsoft already has a good enough foundation in the form of the Kinect for the Xbox. Gesture support would be the real ticket to the future.

What we got

Although more touch gestures have been added, not much has been said about getting Kinect like functionality for the PC. If Windows has to become an OS for everything digital, Microsoft will have to think of other ways of interacting with the PC and here is where Kinect can help for sure. According to recent reports, Microsoft released a Kinect adapter for Windows 8 and 8.1 for $49 (or ₹3,200) which allows the Kinect's sensors to work with Windows by making use of USB 3.0. This news is genuinely exciting and we hope to see the final build of Windows 10 have it.

4 Merger of PC settings and Control Panel

What we wanted

The existence of the desktop style Control Panel and Modern-style PC settings differently within the same OS made it difficult to search for a particular setting. In many cases, users were left scratching their heads about which menu between the two would have the particular setting that they wished to change. This made it extremely frustrating when users wanted to change a setting and they were left searching for it between two different settings menus.

What we got

It's sad to know that Microsoft still hasn't fixed the annoying existence of two separate settings menus for a single device. You'll still find "PC Settings" and "Control Panel" separate in the Start menu which make it difficult to hunt down a setting.

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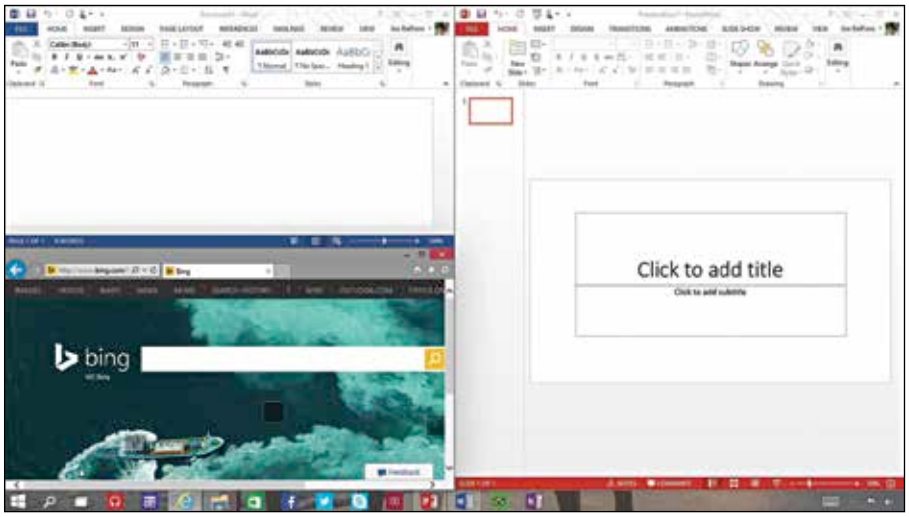


An AT-AT in New York?
Thomas dagg shows us what it'll be like if Star Wars spilled over into our galaxy.
http://dgit.in/10tkvtT

What's new?

Task View

Almost every PC user knows the ALT+TAB combo, Windows 10 takes that a step further by using Task View. Now, pressing on the Win+TAB combo using the keyboard or clicking on the Task View button on the taskbar opens up a grid of virtual displays. Users can add multiple desktops for multiple projects and swap between each of them for segregating projects using Task View. This is a boon for users with a single screen and will improve their productivity. A nice and surprising addition by Microsoft. But, we would've liked if they provided the functionality to change things like wallpapers and icons on different Virtual Displays.



Snapping four windows into place is now a possibility

Snap Assist

Remember the ability to snap windows and arrange them side-by-side in Windows 7? Well, Microsoft has added something called "Snap Assist" that allows users to snap and arrange a maximum of four windows or apps on a single screen. This makes it easy to see multiple relevant windows while working on a single display.

Improved Command Prompt

In spite of the fact that users made use of third-party apps like Console, PowerCMD and others for having an advanced Command Prompt in Windows, Microsoft has finally listened to PC users and upgraded the Command Prompt. The good old command prompt now supports keyboard shortcuts. What this means is that you can select text and use copy-paste commands within Command Prompt directly now.

No more segregation

Finally, Windows store apps and regular desktop apps open in a window instead of the store apps going fullscreen.

Continuum

It is an instant change of interface options in case of connection or disconnection of an I/O device. So, if a keyboard is suddenly disconnected from the system, the UI changes to show touch elements on the screen that the user can interact with.

Universal Windows apps

Universal Windows Apps is an app model which is a collective sum of Metro, Modern and Windows Store apps. You can read all about them in the Devworx section pg. 95.

Improved Security

Since two-factor authentication is a great way to secure your accounts and devices, Microsoft revealed its plans to add this popular feature to all devices using Windows 10, thus making phishing attacks and password breaches more ineffective.

One-click upgrade

It didn't take long for Microsoft to release an update christened Windows 10 Technical Preview build 9860, and with that they added a host of new features with one of them being One-click upgrade. The steps involved to upgrade are minimal and n00b proof, so just about anyone can now upgrade the OS.

What we didn't like

Still no tabs in explorer

Windows Power users have been asking for tab based functionality for the Explorer from a long time now and it's still absent in Windows 10. We hope that Microsoft listens and adds it in their next build.

No Cortana yet

We were actually surprised to not find Microsoft's Cortana - their intelligent personal voice based assistant – in Windows 10. After digging for it in Explorer, we did find a few files named Cortana which points to the fact that Cortana may be coming with the final build of Windows 10.

Immovable buttons

All the buttons on the taskbar are movable or removable, except the "Search" and "Task View" buttons and we hope that Microsoft addresses this in their future builds of this OS.

End Note

After testing it out ourselves, all we have to say is that Windows 10 is the way Microsoft should have gone with Windows 8. Which essentially means that Microsoft didn't need to unnecessarily change how users use the PC just for the sake of changing it which they did with Windows 8. We can't help but feel a little sorry as this has always been the case with Microsoft. They do create some wonderful things, but somehow miss out on the bigger picture. If the developers fix some of the major niggles with Windows 10 and add some features which the users have been demanding, they may have a winner on their hands. Is this an OS we're looking forward to? Most definitely. Will it replace Windows 7? We won't know till we test the final build.

Write to us and tell us of your expectations for Windows 10. And if you haven't already downloaded Windows 10 Technical Preview, pop-in the Digit Omega DVD and get cracking.

50 **Smart SoHo**
Here's how you power your small business with specialized software to take it to the next level

52 **Industry connect**
This month we sat down and spoke to representatives of Epson and AMD to see where their respective industry's heading



Clean up the planet with tech

This month, let's look at how technology is being used to scrub clean the planet we call our home

Nicole Anklesaria
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Technology has advanced the world today in ways we could have not even dreamed of. Unfortunately, it's also the cause of many of today's problems – global warming, rising pollution levels, health issues...the list goes on. However, the increasing awareness of its vices has egged on scientists, engineers and people from all disciplines really, to look for solutions to these environmental problems using technology. These solutions are proving to be effective as well as economical, so we're well on our way to a cleaner and greener tomorrow.

Organic batteries

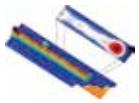
Wind and solar energy sources have tremendous potential as alternative energy sources. However, they're expensive and difficult to harvest and store for prolonged periods of time. Solar power, for instance, is only available during the day. Storing this energy efficiently costs more than the output it gives.

A team of Harvard engineers have been working on a new type of technology – a 'grid-scale' battery, with which they hope to transform the way in which energy is stored.

This battery is described as a metal-free, flow battery made up of molecules called 'quinones'. Quinones are carbon-based, organic molecules that store energy in animals and plants. They're inexpensive and abundant, not to mention safe, since they're dispersed in a water solvent. Large cheap water tanks can be set up to store energy with the



Video game room
With RoomAlive, you can turn your living room or any room into a video game level **http://dgit.in/RoomAlive**



The Majorana Particle
Researchers have imaged a newly discovered particle that exhibits both, matter and antimatter properties **http://dgit.in/MajoranaPar**

help of quinones. Still in the process of overcoming some fundamental limitations such as low energy and power density, these Harvard geniuses are close to creating something near magical in as soon as three years.

Theoretically, these flow batteries should be capable of storing one kilowatt-hour of energy using chemicals costing one-third of the price of existing systems – $27, or ₹1,652, to be precise.

Thermal-Depolymerisation

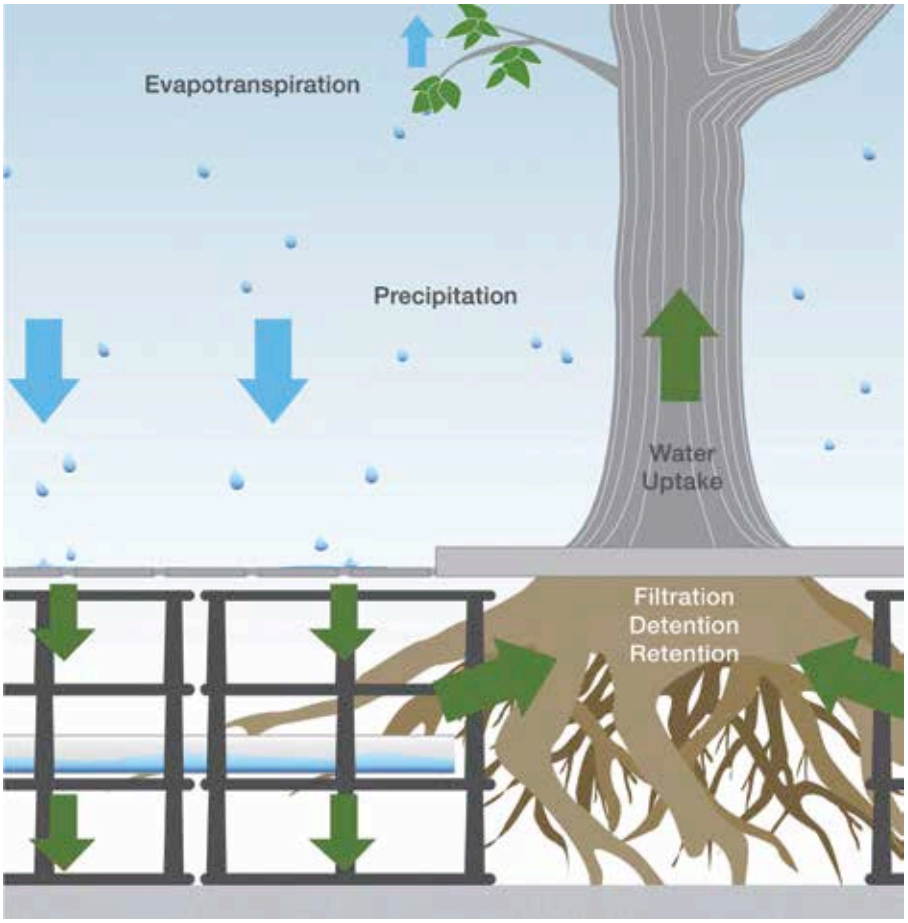
Oil – the liquid gold, over which wars have been fought and because of which countries seek separation. Up until now, it has been a purely geographical resource. Now imagine being able to mass produce oil from waste in any location. A process called 'thermal-depolymerisation' is able to convert any carbon-based waste – from turkey guts to used tires – into oil. According to sources, a ton of turkey waste can be used to produce about 600 pounds of petroleum. The waste is subjected to high pressure and heat, which decomposes long-chained polymers of hydrogen, oxygen and carbon into short-chained petroleum hydrocarbons. The process is very similar to how oil is naturally produced, except that it is fast-tracked by about a million years. It mimics a natural geological process, responsible for creating fossil fuels.

'Water ATMs' by Sarvajal

We live in a country where millions of people still drink contaminated water, simply because it isn't feasible to build water purifying infrastructure in villages. 'Sarvajal', a charitable initiative by the Piramal Foundation, has deployed solar-powered 'water ATMs', which dispense clean water simply with the swipe of a prepaid card. The water ATMs are supplied with water by filtration systems built in larger villages. The machinery, which is scattered all over India, is maintained remotely using cloud computing and mobile technology. The company keeps tabs on water supply and demand, thus keeping the system as transparent as possible.



Learning to use the Water ATMs



'Tis the circle of business life, explained in a way that even 7-year-olds can understand

TerraPower's Travelling Wave Reactor

TerraPower's Travelling Wave Reactor (TWR) is a highly advanced nuclear reactor that offers a safe and economic form of low-carbon energy. TWRs can theoretically run self sustained for decades without refueling or removal of the spent fuel. Often called 'breed and burn' reactors, they run on depleted uranium fuel.

Travelling Wave Reactors are not only a greener energy path, but also a safer one. Typically, nuclear reactors are fuelled by uranium enriched by its natural form. This process of enrichment is almost identical to the process of creating nuclear weapons. So, having an enrichment plant opens up the possibility of having nuclear weapon capabilities. Nuclear plants also need a reprocessing facility to function. This is also a potential path for nuclear weaponry. TWRs require minimal enrichment and no reprocessing and are hence completely safe from a political standpoint.

Silva Cells

'Silva Cells' are a new technology that will help us bring the forests into the cities ensuring that our concrete jungles have enough greenery.

Silva Cells are modular pavement system frameworks. They offer a structural soil alternative.

Each silva cell is made up of a frame and a deck. It's 48x24x16 inches in size and can hold about 10 cubic feet of soil. The structure is such that water drainage is easy. The cells can be layered on top of each other, thus forming a compact structure which allows trees the rooting zone and soil quality they need to grow.

Silva cells will make cities cleaner, greener and more sustainable. They'll help battle rising temperatures, improve air and water quality, reduce pollution, flooding and erosion.

FishNET technology

Illegal, Unreported and Unregulated (IUU) fishing may not seem like they have a direct impact on the environment. But these crimes lead to ecosystem corruption, illegal dumping, pollution and trespassing on protected areas. The FishNET Project allows the concerned authorities to easily track offenders by concentrating on targeted regions. FishNET uses simple technology and communication methods. It depends on timely and accurate reporting. It is a web-based information system that captures and analyses crowd-sourced data on exploited areas and fishing vessels. With increased community participation, the FishNET database has been drastically improving leading to effective enforcement of ocean policy and security. It's a powerful tool to fight IUU fishing activities.

Supercritical carbon dyeing

The textile industry uses lavish amounts of water to dye fabrics. Almost 25 litres is used to dye a single T-shirt. Besides this water wastage, most textile plants are located in Eastern Asia, where the resulting chemically polluted water is sometimes dumped into local rivers. A recently discovered technology has made it possible to substitute water with carbon dioxide. 'Applied Separations' is an organisation that manufactures this supercritical carbon dioxide which takes up the dye. A supercritical fluid is basically a highly compressed gas. It exhibits properties of both, gas and liquid – being able to move through solids as well as dissolve substances. Color dissolved in carbon dioxide penetrates fabrics easily. There's no need of salt, water or harmful chemicals. Since the fabric emerges from this process dry, the dyeing time is reduced to about half the normal amount. And of course, less carbon dioxide in the air is a major plus too.

Salt water air conditioners

This is a new technology based on non-toxic, salt water solution. It dehumidifies and cleans the air indoors while saving energy. Conventional air conditioners chill the air to its dew point and then reheat it to a comfortable temperature. By passing air through a 'liquid desiccant' i.e. a non-toxic, fluid, salt water solution, this process dehumidifies air without the need for reheating. It also reduces energy consumption by up to 40 percent. This process naturally disinfects the surrounding air freeing it from micro-organisms and bacteria. These ACs are currently being used in Hawaii, Toronto and Sweden.

Solar roadways

Imagine a smart highway with solar-powered road panels instead of the regular asphalt and concrete. A road that could generate renewable energy and, in the long-term, pay for itself. This idea can be extended to parking lots, driveways, footpaths, houses etc. The solar roadways consist of greenish hexagonal tiles. Each of these tiles has a solar cell with a sheet of hardened glass above it. The roadways could even be used to power electric cars with the excess energy generated.

Zooniverse

'Zooniverse' is a citizen science web portal headquartered at Oxford. It has 1.1 million volunteers called 'Zooites'. The projects are both, environmental and scientific. The 'zooites' perform computing to complete research tasks. This crowd-sourced scientific research is used to keep tabs on data pertaining to the environment, from melting ice in the Arctic regions to detecting oncoming cyclones.

For example, 'Plankton Portal', one such Zooniverse project classifies plankton distribution at different ocean depths from images gathered by the In Situ Ichthyoplankton Imaging System (ISIIS). Using plankton as a valid indicator, ocean carbon dioxide levels can be diagnosed and we can be alerted to unusual rises in carbon dioxide.



We'll soon have solar-powered highways





Phone charging booth
The red phone boxes in UK are being replaced by green ones to charge your phones using solar power **http://dgit.in/Solarbox**

Easier lyrics search
Bing would soon have lyrics showing up in your search results without clicking links further **http://dgit.in/BingLyrics**

Take your business to the next level

Power your small business or cooperative concern with special purpose software tools and a suite of web/ mobile applications

Videep Vijay Kumar
readersletters@digit.in

If you're the sole proprietor of a family owned business, a professional, consultant or treasurer of your flat owner's association, chances are you are on the lookout for software that'll help you manage your work better. We've come up with a list of custom software to help you take it to the next level.

Housing society accounting and management

Manual ledger maintenance bogging you down? Can't remember if Mr.Chopra paid his maintenance fees this month? Has the common recreation facility been double-booked for the ninth time in two weeks? Fret not, because ApartmentADDA is here to make your life a whole lot easier. A web based solution for all housing society and association requirements, ApartmentADDA allows for seamless communication between the management committee, residents and even staff. In addition to essential financial and accounting functions, ApartmentADDA allows residents to communicate with each other via discussion groups, post notices and polls, as well as create common vendor lists. Even for the full feature set, the cost works out to an astonishingly low Rs.25 per flat per month. That's less than what you tipped the pizza delivery guy last Thursday.

A payment gateway can also be set up for a one-time cost of Rs.5,000, enabling residents to make payments online through credit and debit cards, as well as net banking (additional transaction charges apply). The paid plans (Rs. 10 and Rs.15 per month without add-ons) both include an SMS gateway as well — perfect for sending out broadcast messages to residents (grouping is possible, of course) or to maintenance staff for critical complaints. The most basic plan is free (add-ons are available), so head over to www.apartmentadda.com and check it out. Don't forget to download the Android and iOS apps as well.



Manage the day-to-day affairs of you society with this web app

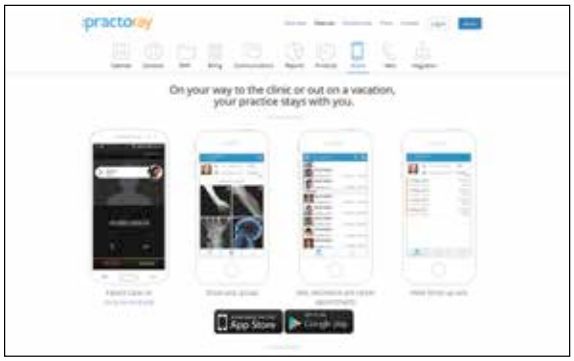
Practice Management

While Doctors do their, erm, doctoring in their clinics, somebody needs to do everything else. This 'everything else' for that 'somebody' involves maintaining appointments, medical records, billing, communication and a lot more. Needless to say, that free diary you got from your vehicle insurance company is not going to cut it anymore. Enter Practo Ray, a comprehensive practice management web and mobile application suite for clinics and medical centres. Practo Ray is a product from Practo (www.practo.com), a web based search tool which helps you find a doctor based in your city by specialty, name or clinic.

It is not short of features. Full SMS integration means that clinics can send alerts to both patients and doctors about their appointments, easily reschedule using the clean, modern calendar interface, maintain patient records with doctors' notes and document all communication. EMRs (electronic medical records) can be stored online and viewed in a timeline format to track patient progress as well. A free trial is available online at www.practo.com/ray, while there are two paid plans for Rs.999 and Rs.1,999 per month.

Internet/Gaming café management

You don't need to look much further than Smartlaunch to manage your entertainment centre, gaming or internet café. Basic timekeeping tools are available aplenty online, but there's nothing quite as feature-rich as this little trio of client, server and administrator applications — for gaming cafes in particular. Basic features include setting up variable



Get mobile with Practo Ray

pricing by day, hour, weekdays and weekends, conditional customer and employee user access, point of sale functionality, booking system, remote management and reporting, but Smartlaunch takes to it to another level with its personal user files, license and console management.

Personal User Files in particular are quite interesting — you will be able to set up the server to store a particular user's files (by application) so that when the user logs back in the next time, work, saved games, browsing history and more are retained. You can even set up Application Profiles, which allows you to offer discounted rates on certain applications — charge less for F2P games like League of Legends/DOTA 2 and more for Counter-Strike: Global Offensive, for example. You can try Smartlaunch for free by heading over to www.smartlaunch.com and downloading the free trial — pricing starts at US$79 per month (or just over Rs.4,800 for a maximum of 25 clients).



Smartlaunch features an interesting license management feature

Universal retail store management

Thanks to the advent of eCommerce, most local business owners are already selling their products on Flipkart, Amazon, eBay or Snapdeal in addition to operating their own online stores. It wouldn't be particularly difficult to set up online operations today, but solutions like Shopify (www.shopify.com) aim to make the process even simpler, and with Shopify POS, the solution becomes all-encompassing for your store. At an additional cost of US$49/Rs.3,000 per month (over and above your Shopify plan which could range from US$29/Rs.6,000 to US$179/Rs.10,800 per month in addition to hardware cost of tablets and accessories), Shopify POS lets you use an unlimited number of in-store 'registers' (yes, you guessed it, these are iPads). Store inventory is synced as transactions are performed online and offline, while user management lets you set up staff accounts with unique PINs for access. Let's face it: if you're not taking your business online in 2014, you're well behind the curve. Shopify POS compatible hardware is sold in India by Mumbai-based GetSetSell (www.getsetsell.in).



Shopify reckons that it has reinvented the cash register

All-in-one business cloud apps

If you're someone who renders professional services such as consulting or are a small business owner looking for a low cost, web based ERP solution, you should be looking at apps such as Intuit QuickBooks (www.quickbooks.in) and myERP (www.myerp.com). While both offer multi-user support, the latter appears to throw focus on comprehensive accounting, billing, lead generation for sales, CRM, project and inventory management as features. Intuit offers an app store for plugins ranging from full-feature inventory management (SOS Inventory) to multi-channel commerce suites (AGILIRON), in addition to mobile apps that work with QuickBooks.

Both applications sport clean, modern responsive UI (don't judge QuickBooks by its homepage — the app's user launch journey and user experience are top notch) which are a breeze to navigate no matter what device you're using. I found QuickBooks to be easier to set up and use of the two, but myERP's feature set is a draw as well. Trial versions of both are available on their respective websites — QuickBooks features annual plans from Rs.4,999 (single company) to Rs.11,999 (12 company pack), while myERP will cost you anything between US$19 (Rs.1,200) and $169 (Rs.10,200) per month.

The Web Advantage

By removing the need for a local client install, and as a result, stringent hardware requirements, browser based apps have grown in numbers. Cloud storage, cross-platform compatibility (by way of either mobile apps or mobile optimised/responsive websites), web based analytics and plugin compatibility are all huge bonuses — a single web app supplemented by a variety of specific use plugins are sure you give your business a huge advantage. This might not be possible in all cases, but with business requirement-specific web apps becoming available across industries, chances are that you will find something suited to your business (and budget) that works with nothing more than a Google Chrome install.



myERP takes your business to the cloud



Glass for Dubai Police
After expensive cars to pursue criminals, the Dubai Police will be getting Google Glasses **http://dgit.in/DubaiGGlass**



Insomniacs rejoice!
A sleep-inducing cap, Sleep Shepherd will make you fall asleep and help you in waking up too **http://dgit.in/SleepCap**

In conversation with Epson

He not only commands the deck at Epson, but possesses a rare trait to grasp technicalities and talk about them at great length. On his recent visit to India, we spoke to Minoru Usui, President & CEO, Seiko Epson Corporation, on a brand new printer technology that's helping Epson gain mileage, the death of print, and new challenges waiting in the wings. Excerpts:

Jayesh Shinde
jayesh.shinde@digit.in

You're the person credited with Epson's micro piezo print head technology. What's the basic difference between this and other (thermal inkjet) printing technologies deployed by your competitors?

The biggest characteristic that differentiates our technology from others is that Micro Piezo doesn't use heat for ejecting ink. Because heat changes the nature of the ink, Epson printers can fire a much wider variety of inks – in principle we can fire any type of liquid from our printers.

This characteristic has helped us expand the application of printers from consumer use to business, commercial and industrial applications such as labels, outdoor signs and textiles that require special types of inks. A recent example of how we have been able to leverage the advantage of our Micro Piezo print head is in our hugely successful InkTank inkjet printers. Our micro piezo technology has allowed us to do away with expensive and inconvenient ink cartridges found in thermal inkjet printers. This is because Epson's Micro Piezo print head is built in to the printer whereas competitive thermal technology used in consumer printers are compelled to build the printhead into the cartridge. Our InkTank inkjet printers using Micro Piezo technology are changing the printing landscape completely with the lowest cost per print ever, the unique convenience of refilling ink and the reduced power consumption consequently reduces environmental impact.

Any disadvantages of the micro piezo print head technology?

You could say that it was technically very difficult to create and manufacture. However, we have conquered all the technical difficulties as we have refined the technology over the years and recently launched PrecisionCore, which takes the technology to even higher levels.
In terms of performance, we believe Micro Piezo has a lot of advantages over the competition.



Minoru Usui
President & CEO, Seiko Epson Corporation

Innovation is Epson's unique trait, with patented tech driving its core business offerings. And this is not just restricted to printers, right?

As you say, innovation is at the heart of all Epson products. We have very strong patents related to our core businesses. For example, we were ranked no. 1 or 2 for patents related to printers, projectors, quartz devices, and gyro sensors in Japan and US every year from 1994 to 2013.

How is Epson's smart glasses different from competition?

Epson's Moverio smart glasses are binocular and see-through. This means that in addition to offering the ability to enjoy big screen entertainment and acquire information from the internet they are especially suited to AR applications. This could be used for gaming or for a multitude of work applications.

Making printers is an art, I remember you saying at IFA couple of years ago. Why do you say that? And how is it an art?

We design our products with a strong belief that they should perfectly meet customer needs, and we go to a lot of effort to ensure that they solve genuine issues that our customers are facing. We sincerely hope that these products bring pleasure to our customers or help improve their work processes.

In addition, while many companies outsource manufacturing, Epson has a vertically integrated manufacturing system. We strongly believe in the Japanese concept of "monozukuri," which translates as "the art and science of manufacturing."

What this means is that we design and manufacture our products from the ground up, including the core devices at the heart of the products. This gives us control over the whole manufacturing process, and enables us to make ongoing improvements as we seek to create truly excellent products that exceed the expectations of our companies.

You can check out some ways in which Moverio can be used below:
Virtual guide: http://dgit.in/bt200sg
Opera subtitles: http://dgit.in/bt200sds
Disaster relief: http://dgit.in/bt200drs

You can read the rest of the interview online at **http://dgit.in/epsonminoru**

AMD's David Bennett on gaming, competition & India

David Bennett, Corporate VP, APAC Region, AMD tells Digit why he loves to talk about the competition and where AMD's headed.

Nikhil Pradhan
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Rory Read (AMD CEO) recently said that the current AMD chips could not match against Intel's and the new chips were a year away. Your comment?

I can't speak for Rory but it's no secret where we position our products. We do not position our CPUs against an i7 and when it comes to pure x86 performance, Intel is the leader. If we lived in an x86 world, Intel would be on all of the consoles and they'd be no room for an AMD APU. I admit we have a lot of work to do with our x86 products but if you look at the way our products are performing in the channels, we're doing very well. But, when it comes to my mind, we are not focused on x86 compute, we're focused on Total Compute. And the adoption of OpenGL, OpenCL and HSA is a big indicator that we've made the right move. Look at the amount of die space we've dedicated to our GPUs and compare that to our competition. Haswell, Broadwell both have increased GPUs now but we already did that ages ago.

Overall, how much of AMD's revenue comes from gaming?

Okay, that relates to something Rory said last year. He made a commitment last year that by end of next year, that 50% of AMD revenues will be generated from new business, as opposed to 64% from traditional PC centric business right now. So, what qualifies as new? Embedded, servers and semi-custom like the consoles. I've made a personal commitment that the APAC region's going to be the first to reach this 50% goal. Gaming, by itself, is a little harder to break down but as per our new diversification, we're on track with our goals. If you look at the numbers



David Bennett
Corporate VP, APAC Region, AMD

from the consoles, both Microsoft and Sony have gone on record to state that this has been the fastest selling launch for new consoles, so obviously that's driving a huge percentage of our revenues. If you look at our strategy for the next couple of years, it's gaming and VR that we are also focused on.

Why is AMD missing from the mobile SoCs segment? Both your competitors (Intel and NVIDIA) are there, so what could be the reason?

When it comes to tablets, we're absolutely there in Windows tablets and we make the best Windows tablets on the planet, bar none. I hope Windows tablets continue to grow and the better they get, the stronger we'll get. We've spent the last couple of years designing products with the customer in mind and what I mean by that is that we used to focus on core CPU and pure speed but a couple of years ago we adopted a refreshed design philosophy where we said that let's design stuff that actually gives better real world performance. And that's what our APUs do. In the same price bracket, plus or minus $100 - $200, you put our product next to a competing product and we're going to perform better. We're also focused on graphics and gaming. What we're not interested in is an $8, bottom of the barrel, really low-end processor that provides just good enough or sub-par experience. We're very interested in leveraging our assets and our IP to provide high-performance graphics and gaming in mobiles and tablets. If you look at the market, it's really focused on the low-end and that will change. So, what we've announced with ARM or in Project Skybridge, is us very clearly stating that we will have the best ARM processor and as ARM and Android step-up, there will be a place where we'd like to play.

What are the trends in India with respect to GPU sales?

I'll be completely honest. When I came on, everybody told me, don't bother with India, there's no market for GPUs. But I've seen my GPU sales increase every quarter since I've had this job, over the last three quarters. If you look at our competitiveness against NVIDIA, we've never been more competitive. Card for card we offer better value, at a better price, hands down. We've got Mantle, we're on the consoles, we've got a lot of momentum. So, as the Indian middle class expands, and it has more disposable income, coupled with the fact that a majority of the population is young, all of that is going to be huge for gaming. A lot of it will depend on broadband infrastructure, but I see both PC and console gaming expand here and that'll be good for AMD.

You can read the rest of the interview online at **http://dgit.in/XSSUA7**



ARE YOU READY TO PLAY SPY?

Always aspired to play a real-life spy? Let these dirty dozen gadgets help you metamorphose your role in style...

Jayesh Shinde

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58 Can you get hacked to death?
62 Spy games: Securing your privacy at any cost

We've all seen a million spy movies, drooled over the jaw-droppingly fantastic and equally futuristic gadgets James Bond totes in all his action thrillers besides his trusty old Walther PPK – the character's equally famous sidearm. While we can never fully understand the covert, double lives that most spies lead and the mysterious ways in which they help shape the events of our world, we lust after their techno-wizardry equipped gadgets all the same. We know that's part of their allure and mysticism, that these technology wonders aren't just glamorous good-for-nothing toys but actual weapons (lethal, non-lethal and tactical) that give covert operatives an obvious edge over the bad guys. Take away Lucius Fox's advanced prototypes from Bruce Wayne, and Batman is essentially reduced to just a rich industrialist with the mere knowledge of martial arts. What would be the odds of a gadget-stripped Batman taking on the dark underbelly of Gotham, and coming out on top every single time? Not very good, we're afraid. And such is the story of good guys who are equipped to do great things – which are often difficult, complicated things – under the constant shadow of secrecy.

Spying is an oft-abused word in a post-Snowden world. But not all spying is bad, especially if it's at a personal level. For e.g., if you're a shop owner who wants to attach a hidden security camera (not an openly visible CCTV camera, which is different) in your store to keep a watchful eye over the premises, or an investigative journalist (or alert citizen) trying to expose a corrupt politician by covertly video-taping him with a camera and microphone hidden inside your pen cap (nestled in your breast pocket). Such instances of spying or surveillance can actually do a world of good, and in many cases, deliberate spying sets a precedent and serves as a deterence to criminals.

In this article, we won't be telling you how to become a master spy or detective. Instead, we'll be highlighting gadgets that are easy to conceal or disguise for the purpose of gathering information, which otherwise would have been very hard, nay, almost impossible to get your hands on. Before embarking on your own Sherlock Holmes adventures, make sure you aren't invading anyone's privacy, trespassing or breaking any law that could otherwise land you into unnecessary trouble. Our only purpose here is to educate and alert, not to deceive or corrupt.

After getting a taste of the sort of gadgets real-life professional spies get to play with, let's take a look at some of the gadgets that most consumers can get their hands on. Time to get into Sherlock Holmes mode, aye?

FROM THE CIA'S PERSONAL STASH

In a rare privilege, just last month science and nature magazine, the Smithsonian.com was allowed to go through the CIA's museum of spy relics located at its headquarters in Virginia. Needless to say, a treasure trove of cutting-edge spy gadgets (with most of their technology still classified) were revealed. Here are a few interesting highlights.

In the 1960s, the CIA's Technical Services Division designed two sub-miniature cameras for photographing documents. They resemble long cigarette lighters, and can indeed be operated with one hand. They used Minox cassettes loaded with Kodak 3410 thin-base film. (For camera buffs: The shutter was fixed at 1/100 of a second and each camera had an 8.2mm f/3.6 lens.) The first camera had a capacity of 100 pictures, the next generation 200. How the picture capacity was doubled without making the camera bigger is still classified, according to the CIA.



During the Vietnam War, according to the same Smithsonian article, the CIA recruited Laotian trail watchers to count troops, weapons and supplies moving south from North Vietnam along the Ho Chi Minh trail. Agency technical experts developed a hand-held counter for them called 'HARK'. It was about the size of a present day tablet and could transmit data to an airplane overhead. But since many of the watchers could neither read nor write, the CIA technicians used icons to represent soldiers, weapons, vehicles and even elephants.



Then there's this dragonfly-sized eavesdropping bug, which was quite ingenious for its time. Here's what Smithsonian tells us about it: Developed by CIA's Office of Research and Development in the 1970s, this micro unmanned aerial vehicle (UAV) was the first flight of an insectothopter (an insect-sized vehicle). It was intended to prove the concept of such miniaturized platforms for intelligence collection. The Insectothopter had a miniature engine to move the wings up and down. A small amount of gas was used to drive the engine, and the excess was vented out the rear for extra thrust. The flight tests were impressive. However, control in any kind of crosswind proved too difficult.

To read the rest of the Smithsonian article on CIA artefacts, go here: **dgit.in/SmithSpy**

WEARABLE SPY GADGETS

Spy Watch

There's nothing better than a gadget that offers more than what meets the eye. To the untrained eye, this may look



like just an ordinary watch, but it has some hidden spy features that only its wearer knows about. There's a camera hole within its dial (where the number 6 would be) to shoot pictures or video. It's a 2MP 30fps camera that records in 1280x960 pixel resolution and comes with 4GB of built-in flash storage. Whether you're recording audio, video or photos, this watch's pinhole lens ensures that you go unnoticed during any of these covert recording sessions. You can play back all your recordings on a computer with no need for a driver.
Buy it here: http://dgit.in/1pGBq1C

Mono Spy Button Camera

Most of the hidden footage exposés we've seen of people sitting in front of other people (across a table) are usually shot on a button camera. The device's USP is its incredibly tiny size and disguisability.



When was the last time you really paid attention to someone's buttons, for crying out loud? The only thing that's going to give this tiny little bug away is if its wearer shows any anxiety or nervousness. The camera is useful for shooting continuous footage, but you have to be realistic – most of it will be grainy. What else do you expect at this price? Activate detective mode.
Buy it here: http://dgit.in/ZKLe3D

Spy Pen Camera

If the button camera is too unnerving, here's a camera that's embedded in a pen. The on-off switch for the pen to start shooting is placed right on top of the cap's crown, while the pinhole camera is situated right at the edge of the metal pen strap that anchors into any front breast pocket. You'd be hard-pressed to find anything suspicion-inducing about this spying tool, unless, of course, you were to examine it from closer. The pen's cap can be opened to reveal a miniUSB port to transfer all the hidden camera footage



onto a PC. It can shoot at a resolution of 1280x960 and supports memory cards with upto 16GB inside it.
Buy it here: http://dgit.in/1uNMgok

Glasses Camera

While we still await Google Glass to hit our shores and become a bit more affordable, we can always make do with simpler spy



glasses to record whatever we see through them. Check this specimen out for instance. It has a nice hipster look and relatively simple frame, but that's where its similarity with just another pair of glasses ends. With its camera, you can shoot 1080p videos with two hours of non-stop footage, thanks to its 280mAh Li-ion battery.
Buy it here: http://dgit.in/1rspujX

SPECIAL GADGETS

DJI Phantom 2 Vision+

In the world of non-military, consumer quadcopters and aerial drones, it doesn't get better than the new DJI Phantom 2 Vision+. It captures 1080p HD video, thanks to a built-in camera without any stutter (owing to its built-in gimbal with 3-axis electronic stabilisation). It's an



intelligent flying machine that flys itself, has a GPS receiver, and offers bird's eye view real-time footage through an iOS or Android app-enabled smartphone. The phone is hooked to the gadget's remote controller that's constantly in touch with the quadcopter through its local Wi-Fi network. If you ever needed a top-notch RC quadcopter purely for the sake of launching it upto 1,000 feet vertically and over 2,000 feet in any other direction and capturing breathtaking video, this is for you. It's great for surveying an area from the air before undertaking a spy mission.
Buy it here: http://dgit.in/1DGREAm

Nano Wireless Earpiece

To be able to have covert communication with someone on your espionage team, and that too in plain sight of everyone, there's no better device than this tiny earpiece. It's so small that it's not visible to anyone who tries searching for a earpiece by peeping into your ear lobe. How? It only works when you place it on your eardrum. A magnetic strip helps remove it safely. It produces sound that's clear, but not as loud as a normal earphone, hence not for use in a loud area. Plug it into a mobile phone or hide it inside your shirt or trouser pocket, and you're good to go.
Buy it here: http://dgit.in/1wteGGz



HIDDEN GADGETS

Portable Alarm Clock Spy Camera DVR with Motion Detection

Imagine placing this unsuspecting table clock in a room that you want to monitor. Obviously, this home surveillance device doesn't look out of place. This is a great



spy tool, that lets you record "months of video" in a 640x480 pixel resolution. It claims to record 40 minutes of video per GB and has a motion-activated recording feature. It comes with a cute little remote, which lets you trigger any of the four features this spy alarm clock is capable of pulling off.

Buy it here: http://dgit.in/1nBCNTF

Mono Socket Spy Camera

Another great camouflage camera to have if you're planning to monitor your office cubicle or specific room in your house. It's essentially a hidden video camera embedded into a power plug. The power plug spy camera runs on the A/C circuit



and all you have to do to get it to start working is plug it into a power socket – that's it, no batteries needed. It has built-in motion detection and can be set to record video only when the power plug detects motion. The camera will then record the videos into the micro SD card, which can be retrieved for further viewing at a later time by connecting it to a PC or laptop through a card reader slot.

Buy it here: http://dgit.in/1vWpZJg

GSM Audio Bug

Say, you wanted to place an audio bug that worked through the GSM network to snoop in on audio conversations. How would you do it? Try this device. This two-way GSM audio spy device calls you from anywhere in the world when it detects sounds around its vicinity. Just insert a GSM SIM card and program it to call you on your desired phone number. That's it! It only works on the following quad-band frequencies though: 850MHz, 900MHz, 1,800MHz & 1,900MHz. Great to leave in your car, and whenever there's a break-in



attempt, the sound will trigger the device to call you within seconds.

Buy it here: http://dgit.in/1toQrKH

USB Keylogger

Forget bugging someone's computer with a keylogging software, what if you needed access to someone's computer without letting them know of your "evil" designs? In such a case, you can insert the target computer's keyboard into a small USB plug, which will record up to 2,000 pages of text in 4MB of built-in flash storage. No software or drivers required. When you



connect the same USB plug into your PC without a connected keyboard, you can download saved keylogs and go further with your plan of action.

Buy it here: http://dgit.in/1uNZZeN

USB Flash Drive Voice Recorder

To the untrained eye, this is just an uninteresting USB flash drive, nothing to



bother about. But it's an ideal companion to have during covert meetings, since the flash drive is actually a disguised voice recorder. You need no software to install it, and its one-touch operation lets you record voice clips for upto 6-8 hours. Small and portable, this tiny device can capture voice during meetings, seminars, personal protection and other spy excursions. Good luck!

Buy it here: http://dgit.in/1ti7lvM

Car Keychain Spy Camera

Another inconspicuous looking spy camera is embedded in this keychain. Its



pinhole camera, definitely camouflaged to perfection, has a night vision mode (but only upto one or two feet), ability to detect motion, record video upto 2 hours, and capture stills with 1280x960 pixel resolution. Hang this on a key rack in your home or leave it in your car to detect suspicious activity. Gives you ideas, doesn't it?

Buy it here: http://dgit.in/1nEhBMT

CAN YOU GET HACKED TO DEATH?

The Internet of Things makes it incredibly easy for a hacker to gain complete control over you and your life and there's not much that you can do about it.

Mithun Mohandas

The alley is dark and the smell of nicotine coalesces with the pungent odour emanating from the bhelpuri stall on the corner. Clad in a trench-coat, he makes his way towards a dingy cyber cafe across the street - 'Pervesh Internet Kafe', says the neon sign up front. The 'esh' part's all blown out.

"How appropriate"

He finds an empty stall and waits for someone to come along and sign him in. A few impatient knocks get the attention of a young kid who'd been sitting right next him. The kid doesn't even bother with the formalities, the trench coat gets admin access and he immediately starts off an incognito session. He logs into a WebIRC client and sends off a feeler. A few minutes pass, slowly private channels start popping all over his screen. He sends each of them the same paste. It contains the twitter ID, Facebook ID and a few other links to identify the mark.



A little dramatic, we admit, but you get the picture

It only takes a few seconds and he gets what he wants ... nude images of a popular celebrity along with the message, "There's more from where that came from". The kid sitting in the next cubicle tries to peek but he can see nothing, the dim monitor gives away nothing but a sly smirk on Mr. Trenchcoat's face.

"Excellent".

T minus 4 days to 'The Fappening'.

You're the mark... and a rather easy one.

Hacking ... or Cracking (the appropriate term) is a very common occurrence. There are numerous tutorials all over the Internet to achieve a wide variety of results via a plethora of means. Often, it

is an activity which is focused towards gaining credibility amongst one's peers. Malicious intent is not always the case.

The Fappening, which is the term being used to describe the massive leak of celebrity nude images, was an unintended blowout according to some reports. What really happened was that these images were not obtained in one single attack, but a series of attacks that had been taking place over a period of years. An underground trading circle had come into being, where these images were treated like a game of trading cards.

There are collectors who pay insane amounts of money for each image and maintaining exclusivity of images only garnered a higher value for the said images. One of these traders tried selling outside the circle and resulted in the happening of 'The Fappening'. What has seen the light of day is but only the tip of a much bigger set of nudies.

What's interesting about the fappening, from a hacker's point of view, is that the majority of the attacks weren't even complex hacks. All it took was a bit of stalking and social engineering. Creepy as that may sound, this is how easy it is for you to get hacked.

What if they're out to get you?

Let's say you're an average guy living in the city with a steady job and you stay with your significant other in a pretty good neighbourhood. The house has a neat electronic security system in place, one of the top brands available. A really good wireless router ensures uninterrupted Wi-Fi access to every corner of the house. You always travel with your smartphone and your smartwatch. It's relatively new but you're one of those early adopters. An 8-inch tablet is always within reach, you never know when boredom could strike. You're pretty much laden with electronics all around you, there's even a Spinal Cord Stimulator implant to relieve you of the mind-numbing pain that resulted from an injury a few years back.

Somewhere out there is a person who wishes to cause you harm. A cracker has been contracted and you couldn't have made it any easier for him by surrounding yourself with all sorts of electronic gadgets. Why don't we go through



Paid top dollar for security? Doesn't matter!

everything that the cracker can manage with current gen technology? This ain't the Matrix, everything mentioned in this article is possible, as has been demonstrated in multiple security and hacking related conferences.

Compromise your property

So you've got a nice car with remote GPS lock and it also upgrades its firmware on the fly thanks to GSM technology. This is where the cracker uses something called an IMSI (International Mobile Subscriber Identity) catcher. Researchers who came up with the GSM standard in the 80's were under pressure to make encryption really weak. However, encryption doesn't even come into the picture here since all GSM handsets are designed to follow instructions sent by the GSM antenna to which they are linked. So all the IMSI catcher has to do is tell your GSM device or your phone to disable A5 encryption and your phone does it without your approval. Now the cracker has free access to not only your smart car but also your mobile phone and can listen in on every conversation. Even if the cracker has to break the encryption, the KASUMI and MISTY1 algorithms, which are the most prevalent in networks worldwide, they have been cracked since 2010 so it's just a matter of minutes for the attacker.

So what would you need if you were to do the same? A pair of RFX900 daughterboards which cost $7.90 each, a synchronisation device for GSM antennae called ClockTamer that is priced at $250 and a laptop with Debian installed along with OpenBTS and Asterisk. This setup is enough to capture voice and SMS data where time isn't that big a factor.

With all of this in hand, not only can the attacker take over your identity but also put your life at risk in numerous ways. Your home security system's fire safety module can be turned off, your vehicle could be made to shut down while you're on the expressway (With driverless cars, just imagine the carnage!). The attacker could masquerade as you and ask any of your loved ones to meet up at any place and kidnap them. The possibilities are endless, with each one being more shocking than the former.

Compromise your portable devices

Once your property has been taken care of, it's time to target your gadgets. Your



Doesn't matter what kind of encryption is used if you use weak passwords like "iloveyou"



"Please turn left into the alley where four kidnappers lie waiting!"

phone's already been compromised by means of the IMSI catcher which can listen in on your conversations and intercept all data. But if you were to shut off your 2G/3G/LTE data connection and switch to Wi-Fi, then the attacker has an all new problem to deal with. Worry not, it won't be long before that too is compromised.

Here's what he'll likely do. Every consumer router has backdoors built into it at the hardware level. This might seem like the beginning of a conspiracy theory but there have been numerous occasions when such backdoors were widely talked about in the mainstream media. The most recent would have been in January, where the infamous TCP-32764 vulnerability was all over the Internet. Basically, sending an encoded packet at a router with the above vulnerability would cause it to give admin access to an attacker. But this involves getting in between the router and the ISP.

There are other ways to obtain access. Let's take a look at a simple method. This involves having a computer with any linux distro designed for penetration testing (eg. Kali). You need Aircrack and oclHashcat installed. Lastly, you'll need to buy a Wi-Fi dongle that is compatible with Aircrack. When you are in the vicinity of the target, simply fire up Aircrack and start monitoring the Wi-Fi in the area. With a few seconds every station, including the ones that have their SSID hidden, will be logged. The attacker now picks out each SSID one by one till the target router is found. Another simple way is to send an email to the to-be-victim and a simple response gives the attacker the route that the email took. The IP obtained can then be used to perform a port scan using Nmap to look for a way into the network.

Wi-Fi connections perform an action that's known as a handshake, which is a way for devices to identify themselves. This handshake involves sending a data packet with the Wi-Fi password in the header. This packet is obtained using Aircrack and is encrypted. However, using oclHashcat or its more specialised variants, the attacker can easily start a brute force attack. We keep reading about all these major hacks with millions of passwords being stolen. These aren't actual passwords but encrypted hashes and a good portion of these hashes are decrypted to obtain the actual passwords which in turn are added to online word lists. This makes these wordlists very accurate and passwords are cracked all the more easily. By now, the attacker has obtained access to your phone, your home security system, your smart car and your Wi-Fi.

Now the attacker has multiple paths to infect your system so he gets onto the task at hand. The first step is to get backdoor access to your computers. A simple Google search for "Zero-day attacks" gets you plenty of lists where vulnerabilities present in commonly used software are disclosed with ample detail. Zero-day attacks are, by definition, so recent that security companies

BUT IF IT'S LEFT LYING AROUND?

We're assuming you wouldn't leave your devices lying around unattended because that's pretty much akin to hammering nails into your own casket. Here is a simple keylogger for instance - Ardamax - one of the best commercial keyloggers available. Now normally an antivirus program will have heuristics algorithms which will be triggered if any software tries to log every keystroke or attempt sending files or text to an unknown or random IP address. But you forget the golden words... physical access. That felt much more dramatic in our heads but let's try to outline what all can be done. Apart from a keylogger, which by the way can be programmed to send out weekly / daily reports for certain catch phrases such as userid / password or it might simply be triggered whenever an HTTPS page is accessed (read banks, email services, etc.), there are other spying tools that can be installed and even hidden from your task manager. Your antivirus too can be made to give all of these software an exception rule. Software that'll take screen shots periodically, software that'll stream video from your laptop's webcam, etc. So in effect every website visited, every credit card transaction, every user id and password combination and every action performed just got uploaded to an attackers botnet. Even your social media image can be altered. You'll suddenly find your Facebook profile liking pages that immediately raise flags that every security agency is looking at. For the NSA, you could go from being a soccer mom to a cold-blooded ISIS activist trying to recruit innocent kids on the Internet. Your user ids and password could be offered up for sale to terrorists or much worse

haven't already patched them, which means the attacker now has a path to your system provided you have that particular software installed.

It doesn't matter whether you're on Windows, Linux or OS X, every platform is vulnerable. Using Metasploit and Kali Linux the attacker can create a backdoor in as little as four steps. This is just a backup in case the Zero-Day vulnerability gets patched, there will always be another way into your computers. The attacker can then simply monitor the incoming and outgoing traffic using Wireshark. This versatile tool is capable of analysing and generating detailed reports which means your entire online activity is now in the grasp of someone who wishes to cause you harm.

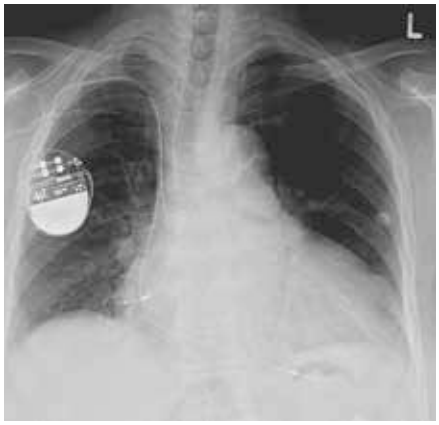


Why bother hacking when these equipment have simple hardcoded passwords like '1234'?

Internal implants, pace makers

If you haven't already started, now's a great time to start wearing a tin foil hat and a body suit lined with lead plates because what you're going to read next will push you over the edge (maybe literally).

Advancements in medical science have not only vastly improved the standard of living for millions of people worldwide, they're also opening the doors to hackers,



Pacemakers are hackable too!

potentially giving them access to your very life. Pacemakers and drug pumps have featured wireless connectivity since 2004 (yep, that's 10 years), ostensibly, to give doctors direct access to the device and to enable them to monitor the state of your health.

Unfortunately, in 2008, a team of researchers and hackers managed to gain control of one such device in a laboratory environment and managed to deliver jolts of electricity and also to shutdown the device. Of course, they required about $30,000 of lab equipment and a whole team of experts, but this was in 2008. A lot can happen in six years, and what about 10 years hence?

If this little tid-bit of information wasn't enough to send a chill up your spine (with that spinal implant, which might actually be a real chill), hackers have demonstrated their ability to hack insulin pumps from certain manufacturers. This gave the hackers complete control over the dosage of insulin in every machine in a 300m radius and the consequences can be quite chilling.

But this is still not the scary part. A 2014 article in *Wired* showcased an investigative story where a security analyst inspected a hospital, only to come back shell-shocked at the utter lack of any form of security in crucial equipment. Everything from drug pumps to X-ray machines to defibrillators and myriad other equipment was completely compromised and if even that wasn't bad enough, it turned out that passwords like "1234" were hard-coded into the devices. Attackers with the right know-how can literally manipulate medical records, remotely access X-ray data and other such information.



A typical IMSI catcher

Some of these implants don't even need to be hacked. They are often vulnerable to microwave bursts and that too on frequencies commonly used in Wi-Fi and cordless phones. Microwave Hyperthermic Lipolysis is a procedure by which fatty tissue is liquefied using a wireless RF antenna set to 5.8GHz. This is a very common frequency band that is also used in cordless phones. Even DBS (Deep Brain Stimulation) implants are vulnerable to bursts of microwave energy.

Pwned

It's shockingly easy to get hacked to death, in the right (or wrong) circumstances and the worst part is, it'll be incredibly difficult to prove. Imagine sitting at your home and having your PC suddenly catch fire (http://dgit.in/1nGFt2t), or your printer start spewing out burnt pages (http://dgit.in/10tMcTd, in HP's defence, there's not much meat on that proposition), how would you be able to separate coincidence from malicious intent? We're living in a world where anything and everything is connected to the Wild Wild Web, and you're at the very heart of it. The Internet has you, and you're nothing but a mere pawn.

SPY GAMES: SECURING YOUR PRIVACY AT ANY COST

We take a look at how you can secure yourself against those seeking to invade your privacy

Samir Alam



We live in a world that has lost the concept of privacy. And in a constantly connected digital world, that illusive concept of privacy is fighting a losing battle to stay relevant in our psyche. International governments, corporate businesses, criminal syndicates and intrusive individuals are coming up with new and more innovative ways of spying on us. The news of the United States' National Security Agency's PRISM program from a few years back was just the tip of the iceberg. Numerous governments are allegedly doing the same thing to their own citizens on a daily basis. Usually we would only be concerned of criminals using our personal information for fraudulent gain but corporations are no less sinister. Corporations have been accused of acting against their consumers as well with incidents of data mining user information becoming all the more apparent.

This is an all out war and the side of the citizen and consumer is woefully under-armed. But all hope is not lost. Not yet.



Spies, the secret service kind or even your local peeping tom variety are always lurking

There Is This Machine That Spies

In India the idea of mass surveillance isn't discussed very often. So it isn't likely to have a fiery conversation about CMS, NATGRID or NETRA with anyone since there's a great chance that they wouldn't know what any of these acronyms mean. Unfortunately that's exactly what they want people to do – not talk about it. So let us begin our journey of self-defence with a little briefing on what's out there in our own country.

Using the power of the Indian Telegraph Act of 1885 the Indian government successfully deployed its version of PRISM within India. By taking advantage of the broad and unfettered boundaries of this law the Indian government was able to establish and build the systems necessary to conduct mass digital surveillance without any parliamentary approval. The unholy trinity that is the Central Monitoring System (CMS), the National Intelligence Grid (NATGRID) and Network Traffic Analysis (NETRA) programs went live in 2014 and are projected to grow over time. The three different systems work in unison to track, record, monitor, analyse, intercept, data mine and store the communications of Indian citizens.



NETRA also includes unmanned UAV drones for enhanced monitoring.

By using indigenously produced technologies from scientists at the Indian Institute of Sciences and the Center for Artificial Intelligence and Robotics – a Defence Research and Development Organisation (DRDO) unit, we now live in a country where citizens lack basic privacy in their communications. Nearly eleven government agencies have access to this data the biggest of which being the Indian spy agency – the Research and Analysis Wing or RAW and India's domestic intelligence agency – the Intelligence Bureau.

Conceived as a defensive system in the wake of the 26/11 Mumbai terrorist attacks this system was intended to help security agencies prevent future tragedies. Since India doesn't have a legal history regarding privacy laws there has been little wide scale public outcry. The activist agencies that have worked to stop and criticise these measures have met with little public support. And now perhaps it is too late.

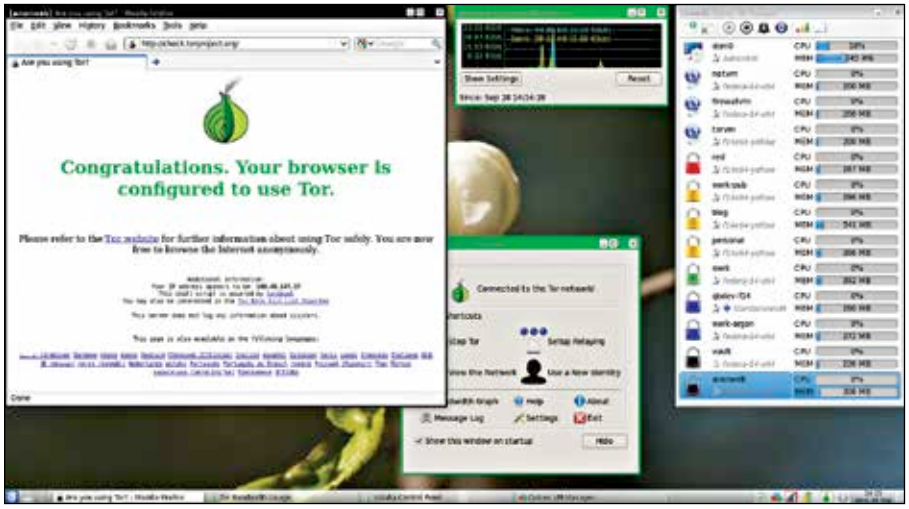
The abilities of this system include the means to access the entire Indian telecommunications network and listen in and store calls made on mobiles, landlines satellites and even the internet (VoIP). It also extends towards reading private emails and messages all the while maintaining a real-time location monitoring of the sources. The system is also designed to monitor content on major social media websites and even track a user's Google history. The program uses predictive algorithms, pattern recognition and real time voice analyses to seek out the content of its target subjects. All of this without a single court order being necessary or a vote being passed to allow this intrusion. These systems were started in the name of national security. Now that you know about their existence do you feel any safer?

Anonymizing Yourself

There is a common argument offered in defence of government run surveillance activities – that government agencies are only interested in terrorists and dangerous individuals. Normal law abiding citizens have nothing to fear – anyway if you haven't done anything illegal then you have no reason to be worried. But that isn't the point – as citizens and individuals we are entitled to our privacy. And even if we can somehow get the laws to change who is going to tell the criminals who use technology against to follow the rules? The only sane thing to do is to protect yourself on your own since, in this instance, both the authorities and criminals are pretty much against the interest of your privacy.

Let's not forget that what we know is just about the activities of the government. The activities of criminal agents and others isn't even available for review and criticism – it can range from social engineered hacks to malicious spyware on your computer or mobile device. The idea of being yourself online and even on your cell phone can now seem like a risk. Perhaps it would be easier in the old days where anonymity online was a given.

There are a few simple and a few complicated ways of protecting yourself against the intrusion of others. Amongst



TOR or The Onion Router uses network relays to conceal your location and usage.

the easy ways is to change the way we use the Internet. For instance consider the necessity of the use of social networking sites at all or at least limiting it for only professional uses. The amount of personal data divulged in the form of videos, photos and text is just overwhelming to consider but not for diligent programs which crawl through it all. By minimising your exposure on social media platforms you can limit the extent to which your activities and information is accessible to anyone.

"MOST SPYWARE APPS REQUIRE YOUR DATA CONNECTION TO SEND ACROSS INFORMATION, SO KEEPING AN EYE ON YOUR DATA USAGE CAN ALSO HELP DETECT SPYWARE."

Another technique useful in protecting the security of your online browsing is to use a secure protocol. Normally we surf on using the Hypertext Transfer Protocol or HTTP unless we are on a secure portal such as those on banks or governments websites which uses HTTPS. By using a simple browser extension like EFF's "HTTPS Everywhere" add-on (http://dgit.in/HTTPSeverywhere)we can ensure that our communications with websites is secure and encrypted all the time.

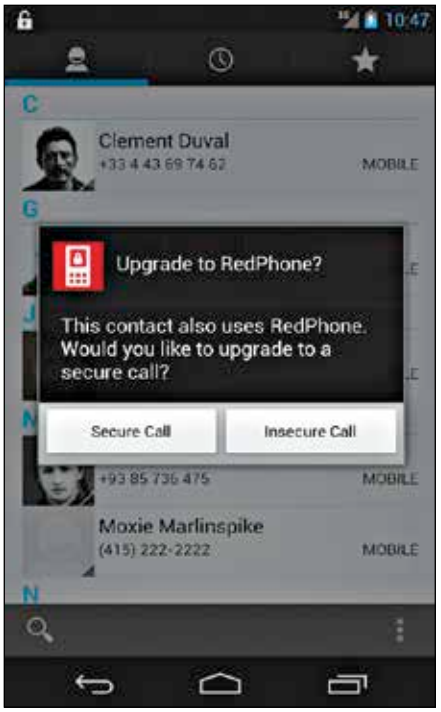
Normally we would tell you to take advantage of VPN or proxy servers to prevent anyone from tracking your activities but that only goes so far towards hiding your physical locations. An alternative means that is a far more proven and secure means of conducting your online activities is known as TOR or The Onion Relay Project. By conducting their online activities on TOR users can avoid being tracked by websites and snoopers of any type, along with use of the accompanying email and chat options. As a bonus it even allows you to access websites that might be blocked by your service provider or restricted due to your geographic location.

If using a new system like Tor is too much to handle you can try more over-the-counter approaches such as browser extensions. A useful extension to have is Ghostery which gives you more control over how you want to protect yourself (dgit.in/Ghostery). You can either block based on tracker sourcer or websites or a mix or block them all completely with a simple click. Other companies also offer extensions to further your privacy like Abine Do Not Track or reinforce your current browser with AVG's Do Not Track.

A secure browser like Abine's MaskMe browser can also be used to create disposable and fake online identities that include phone numbers and credit card information that act as a red herring between your real data and the internet. A variety of temporary email services can also help in sending and receiving critically private emails for short durations such as Guerrilla Mail, AirMail and 10 Minute Mail that can be used and disposed off so there is nothing left to track.

Securing Your Phone

The most intimate technology used by most people today is their mobile phone. It's the central nexus of work, social, personal and communication activities and is therefore the most vulnerable and valuable link to your data and identity. But luckily it is also one of the most trickiest gadgets to hack by outsiders. Keeping the basics such as a strong alphanumeric password (forget Face Unlock and those Pattern Locks) is a good start to ensuring that if it is stolen or "borrowed" there is some delay in accessing the files. But the occurrences of spyware is an ever growing concern and more advanced hackers can infiltrate your device without even getting their hands on it using wireless connectivity. To detect if any spyware has been loaded is easy to tell if your phone is acting erratically such as screen unlocking by itself or it's battery being drained faster than usual. Most spyware apps require your data connection to send across the information gathered so keeping an eye on your data usage can also help detect spyware. On certain phones you can even install anti-spyware



VoIP calls between RedPhone users is completely secure. For now.

apps such as F-Secure which can work as a spy-guard. If you're still uncertain there is always the option to backup your data and restore the phone to its factory settings or run an OS upgrade.

For phone calls whether using the telecom network or the internet, the options are far more limited. The prevalence of burner phones in India isn't that common but it is still possible to obtain disposable prepaid SIMs for private calls in some parts of the country. It's best not to hold on to the numbers and not give them out – only use them to make the necessary phone calls. However it is worth noting that voice analysis is already in the works so the only solution to remain untracked is to turn to voice distorting tools that make it harder (and perhaps impossible) for an automated system to detect and locate you.

A few mobile apps have also come to the rescue such as the open sourced project RedPhone Beta which aims to be an alternative on Android devices for making calls. The app routes all the calls via its own VoIP network which is fully encrypted but can only work between RedPhone Beta phones. The app is currently in development and is still working out its glitches but remains a solid option for those who need privacy. The sister application from RedPhone is called TextSecure that performs the same role but for messages. An added benefit of TextSecure is that is encrypts the messages on your device as well. In the case of the device being attacked for information the messages remain protected.

Real World Vulnerabilities

Digital spying can only go so far. Tracking your online habits, email and social media messages, along with the occasion over hearing of your phone conversations can often times not yield the kind of information some perpetrators are looking for – that can only be gained through real world intrusions. So if you feel like you may be under direct surveillance then your options are even more limited. To begin with, the most likely device you're likely to find are listening devices or GPS trackers. In many cases both of these are a singular item placed inside your phone physically. They can appear to be like a small memory card and are placed adjacent to the battery of your mobile device. If you find one there you know you're being tracked for real.

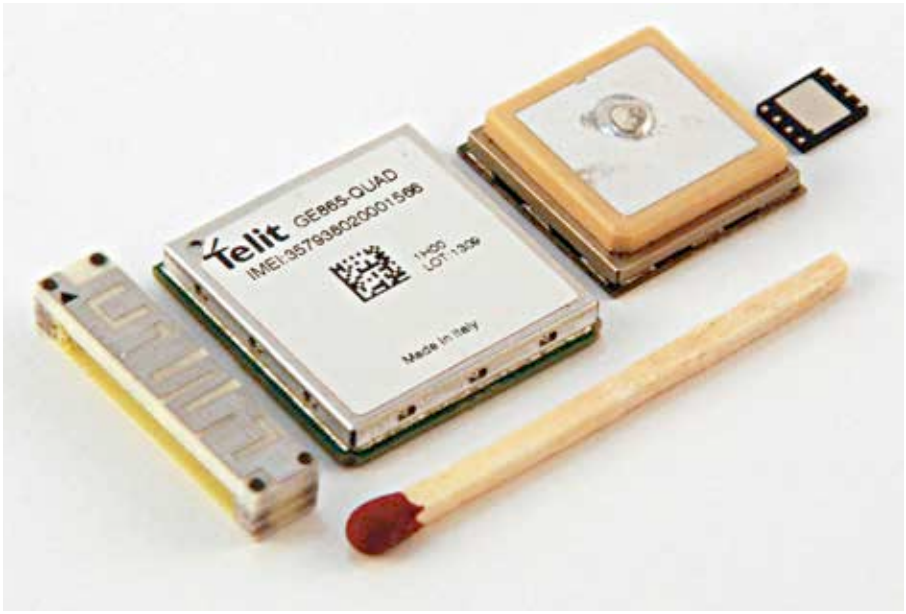
A good tool to keep on hand to detect such spying devices is a bug sweeper. Since bugs used to track people operate on a wireless frequency you can purchase a professional wireless radio frequency bug detector which can alert you to any listening devices in your environment. Although you should know that in the case of serious professionals they don't even require a physical bug. Using sound-wave patterns that resonate in objects people can listen and record conversations using just ordinary cameras. And similarly the lightwave patterns on an LED screen can be used to mirror an active screen. Any form of direct line-of-sight visual between you and a tracking agent can leave you at risk of being bugged. But these latter technologies are extremely high end and only found being used by government agents.

The simplest recourse in the real world to avoid surveillance is to keep a watchful eye out for unusual changes in your environment. The occasional bug sweeping can help but with certain intermittent signal pulse sensors it's very likely that some bugs wouldn't be active at the time of the sweep. The habit of keeping your sensitive and private activities in a secret, undisclosed and completely controlled environment is the best way to ensure hundred percent privacy from the eyes and ears of others. But remember, if you've been singled out for pursuit there is very little you can do to escape.

Paranoid Existence

The irony is that the technology we embraced decades ago, with the promise that it will connect us, has in turn left us exposed, naked and vulnerable. It is no longer possible to envision a world where we no longer use the internet or have mobile devices accompanying us everywhere. After all the benefits imparted to us through them enrich our lives by making access to education, entertainment and each other more easier than ever. But on the other side of this technology are vicious criminals and insidious governments intent on using this technology against people. It is a war between us and the invisible purveyors of our privacy in some distant corner of the world. So is this a war worth fighting? Are we truly helpless in the defence of ourselves?

Perhaps not against in our very own nation. Here in India all we need to do in order to fight back isn't to just download a bunch of apps and buy a bunch of gadgets, but to reach out to our elected officials and hold them accountable for their actions. Demand the change we need and curb the over-arching reach of these systems. That is in spirit the way of democracy and it begins with you.



Surveillance devices come in many shapes and forms and can be impossible to detect unless you're really looking.

PC cooling issues, Ubuntu installation woes, missing HDD, using a locked phone in India...

These are some of the choicest questions we're replying to this month.

Q PC cooling woes...

Hello Sir! I am Jaspreet. I am a great fan of your magazine. I am having the Dell 545S Slim tower CPU and its specifications are as follows:

- Intel Pentium Dual Core 2.7GHz
- 2GB RAM
- NVIDIA GeForce 210
- Windows 7 operating system

It was running alright before I bought my graphics card. As it is a slim cabinet its SMPS fan faces towards the inside, due to which my CPU gets more heated. As I play games like GTA 4, COD Black Ops etc., my CPU heats up extremely so much so that I have to remove my cabinet cover. Please suggest any PCI cooler for a slim tower or any other cooling device.

Jaspreet Singh



A low profile cooler for thin cabinets

A Hey Jaspreet,
Before you go about buying a new cooler, we'd suggest removing the existing fan and replacing the thermal paste and see what difference that brings to the internal temperatures. If that doesn't work then we'll move on to getting a better fan. We don't have the internal dimensions of the Dell 545S, so all we had to work with is the width of the cabinet that comes down to 4.2-inches. Let's subtract an inch for spacing between the cabinet and the internal components on both sides. This leaves us 3.2-inches to work with. There are quite a few coolers that are within these dimensions but very few of them are available in India. And those that are, aren't economical. But since you haven't mentioned a budget we'll list them out anyway along with the height of each cooler.

- Gamer Storm Gabriel 2.4-inch
- Scythe Big Shuriken 2 Rev. B 2.3-inch
- SilenX EFZ-100HA2 2.2-inch
- SilverStone Nitrogon NT06-Pro 3.2-inch
- Thermalright AXP-200R 2.8-inch
- Xigmatek Janus 2.5-inch
- Zalman CNPS8900 Quiet 2.4-inch
- Noctua NH-L9i 1.5-inch

Also, the side panel of the Dell 545S has a few slits which coincides with the CPU cooler so a more economical solution would be to affix a fan onto this grille on the inside which pulls air into the cabinet. Do keep in mind that modifications will void your warranty.



TestDisk is a pretty versatile file recovery software

Q Woeful Linux installation

Dear Digit,
You people are awesome. I am not a subscriber but I buy your issue every month and I'm on my fourth issue(before that I used to get it in my school library and after school finished I needed to get my own source). Now to my problems and I would list it as following:

1. Ok this is my huge problem, I tried installing Ubuntu 14.04 after your October issue and I mistakingly formatted my whole hard disk. Now can you tell me if I can recover the formatted files (i.e. it's my sister's hard disk and her files are really important and if I don't get them she will hang me).
2. I have installed Ubuntu 14.04 and I don't know how to install the tar and .deb file from the August (recovery) and October DVD so can you tell and I don't have internet so please write how to install those files (from package manager and command line).
3. Now the last thing, can you write an article on how to setup an open source C++ and other programming language editor and compiler(i.e dev C++ etc).

Thanks beforehand and can you tell me if you provide subscription in Nepal (I live there) because it's really hard to find your magazine here. Love you all and your magazine. <3

Asbin Dahal

A Hey Asbin,
What you've done is something all of us have managed to do when we first started fiddling with Linux.

1. The first thing you need to know is that your file system has changed from NTFS to ext4. This reduces your chances of recovering files but there is still hope. First download TestDisk which can be obtained from http://dgit.in/Test_Disk. Then you need to watch a few tutorial videos on YouTube to



know how to use TestDisk to recover files. In certain scenarios TestDisk will require details like the number of cylinders, sector size etc. To obtain this, open a terminal(Ctrl+Alt+T) and then type in

```
sudo fdisk -l
```

This will list out all drives in your system which should seem like this - /dev/sda1

Once you know the drive name, simply type in the same command with the drive name included like so

```
sudo fdisk /dev/sda1 -l
```

This will list out all the details that is needed for the operation. Do remember that each extra software that you install will make it all the more difficult to recover files which used to occupy the same space.

2. TAR files are archived folder and they need to be extracted first. Use the appropriate one from the following commands to do so.

```
tar xzf file.tar.gz
tar xjf file.tar.bz2
tar xzvf file.tar.gz
```

For .deb files you can simply double-click them to have Ubuntu Software Centre do the job for you or if you want to use the terminal then type in

```
sudo dpkg -i name.deb
```

There might be the problem of missing dependencies in certain cases and you will get a warning message when this happens. Type the following command to install all of those once you have installed the particular .deb package using dpkg.

```
sudo apt-get -f install
```

This last step requires an Internet connection as it searches the Ubuntu repositories for those files.

3. I'll forward this suggestion to the concerned writer.

As for subscriptions, drop a mail to help@digit.in and the subscription desk will help you out.

Missing hard drive

Hey guys, whenever I connect my Seagate Expansion 1 TB, it simply doesn't show up in My Computer. But, I can see it in Device Manager as well as Disk Management. In Disk Management, it shows the error "You must Initialize a disk before Logical Disk Manager can access it". I have already tried connecting it to another computer, as well as changing the USB cable. I have about 600GB of data in it. Please help me to recover at least some of the data.

Aaryan Kapoor

Hey Aaryan,

If you have any Linux distro on your machine try mounting the drive in Linux to see if it is accessible. You can do this with a live boot USB as well. Most probably it will be. If at all it remains inaccessible then http://dgit.in/PartFnM should help you mount the drive as read only and allow you to copy all the data over. Do note that the free version has the data transfer speed limited so it's bound to take its own sweet time to copy all your data over. Once you have the entire backup on another drive then you may re-initialise the disk and see if you data still remains.

Unlocked smartphone

I wanted to know whether an Xperia Z3 bought in the US will work in India without any problem, without unlocking. Does the version in the US differ in specs from the one in India??? Please reply soon.
Thank you.

Pranav Kumar

Hey Pranav,

This depends on whether the device is bought on a contract from any service provider. In this case, it will most probably be locked to that particular provider and you'll require an unlock code which the service provider will give you for a fee. One thing you need to note is if the phone runs on the same baseband as most Indian service providers. Here's a list of all basebands that providers in India use http://dgit.in/UMTS_BB . If the phone you wish to purchase works on the same baseband then the only thing you need to worry about is if the phone has been



Ensure the white portion sticks out from other side before pressing the plunger

region locked. In this case, you'll need a SIM from that particular region and you'll have to make a call for five minutes after which the region lock is disabled. Or you can get in touch with the service centre and hope that they do it for you.





Watch with Movie Nights
Watching movies together based on your preferences can be tough and this app wants to make it easier **http://dgit.in/MovNights**



Warning on unplugging
Laplock notifies you with an alarm and notification on your app when someone unplugs your laptop power cord **http://dgit.in/Laplock**

Be the perfect Chrome double agent

A little Chrome feature in allows you to effectively use two accounts, each complete with its own set of extensions and customisations, on the same PC. And it's way better than simply going incognito.

Siddharth Parwatay
siddharth.parwatay@digit.in



The 'Create user' dialog box has a whole bunch of avatars to choose from

Think about this question for a moment: What's the first application you launch after your PC boots up? I'm willing to bet that after compulsively right-clicking refreshing your desktop a couple of times, most of you fire up a browser. And in all likelihood, this browser is none other than Google's very own Chrome.

As users, we've bought into Google's ecosystem quite a bit. Many of us not only have Gmail accounts, but even Google apps with business accounts that let you browse your office mail (@companyname.com) in Gmail's familiar conversation style interface. Even if that's not the case, I know so many working professionals – such as artists, freelancers, coders, etc. – who have two Gmail accounts. One for official work purposes and another for their regular mail and Google+ profile.

We often use these Gmail accounts to sign in to Chrome to personalise, sync and, in general, customise our browsing experience. After all, if a browser is the first thing you fire up and an application that's almost always running in the background (or in most cases, foreground too), it's more than just a browser. It's actually your window to computing and your interface to the internet. Let's customise this window with a number of different extensions – ranging from simple stuff such as a Facebook Photo Zoom add-on to complex things such as a password manager. You'll eventually find your own little version of Chrome so familiar that you'll wonder how you survived without these customisations.

So where does the trouble lie?

The idea behind signing in to Chrome was to have this customised experience wherever you go. But, leading this double life can be difficult, especially when you're trying to log in to two accounts. How? Say, I'm in the mood for some light reading. Usually, my home browser has, at least, three different tabs open which I want to read later. How do I sync them without disrupting the work account? Remember, we're talking about signing in to Chrome, not Gmail that conveniently gives you the 'Add Account' button.

Also, there are times when I want to quickly grab a hot deal on an e-commerce site while at work or pay for a humble bundle with Amazon Payments. Quite frankly, the password for my Myntra account is not on my top-of-mind-recall list. Sure, I could sign in to the web UI for LastPass and retrieve my password. But that's a workaround.

Why can't I have true access to my customised Chrome experience whenever I want? Why can't I have a set of extensions such as link shorteners, CMS identifiers, etc., associated with my "Work" Chrome and another set associated with my "Personal" Chrome and have both instances run simultaneously? Turns out, I can (and so can you).

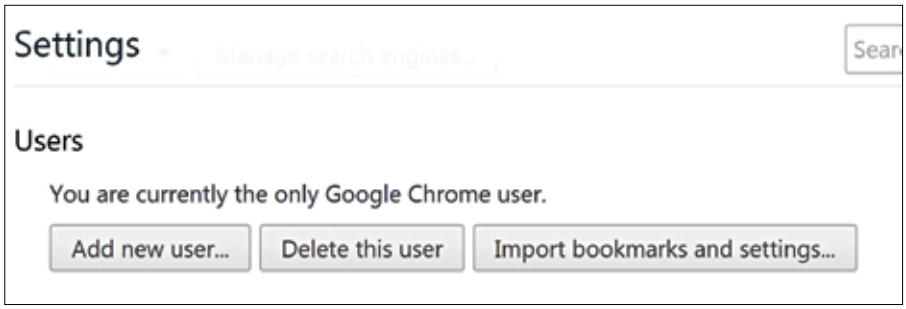
But what about security?

Precisely! Anyone who's ever signed in to Chrome knows that it's a persistent log in. Even after you close the browser, you're still signed in to Chrome and anyone who launches it will have direct access to your Gmail, Drive and Google's whole shebang.

So even if you can now have two separate instances of signed-in Chrome windows running alongside, how do you control access? Enter: Chrome's new profile management system that enables the profile lock feature and the new avatar menu UI.

All right I'm sold. How do I activate it?

It's quite simple really. First, go to the settings page by typing 'chrome://settings/' in the omnibox or go the clicky way from the top-right corner button. Assuming you're already signed in from one of your accounts, all you have to do is scroll down to the 'Users' section and click on the 'Add new user' button. This will open up the 'Create user' dialog box. Enter a name, say, "Work" or "Personal" and choose an avatar icon. Check the 'Create a desktop shortcut for this user' for now. You can always delete it later, if you don't want it. Once you click the 'Create' button, a new Chrome sign-in window will open. Log in with your credentials and you're done! If you've never before signed in to Chrome from a PC other than your primary PC, you may want to specify what you wish to sync. Check the little box next to 'Choose what to sync' at the bottom during login. From next time onwards, Chrome will remember your preference. You'll now notice that all your extensions, apps, bookmarks etc. will have synced and you'll have two separate instances of user accounts working simultaneously. How do you tell which is which? The little avatar that you chose now appears as a thumbnail overlaid in the Windows taskbar icon for Chrome. It also appears in the top-left corner of your Chrome window. Once signed in, you can go into the 'Settings' menu of the respective accounts and change the avatar thumbnail to your Gmail or Google+ profile picture too.



Add another user from the settings page



Enabling profile management from Chrome Flags

Enhancing your experience

For this to truly work, you need to have a security system. Go to the Flags page by typing '**chrome://flags**' in the omnibox. Hit [CTRL]+[F] and search for the word "Profile". (Alternatively, simply type 'chrome://flags/#enable-google-profile-info' in the omnibox.) Next, enable that particular setting. You'll need to restart Chrome for the changes to take effect. Once you fire up Chrome again, you'll notice a dropdown next to the close/minimise buttons in the top right. In this dropdown, you'll see a lock icon. Click it and voila! Chrome now has a login screen. Using those shortcuts you created earlier you can now access either of the accounts in separate windows. Remember to hit the lock icons in each of the respective windows whenever you're going AFK or shutting down the PC. Now if someone clicks the default Chrome shortcut either on the desktop or from the start menu, they'll be greeted with this login screen. So no password, no browsing? Not quite. They can still access Chrome as guests, but won't have access to your account.

Identifying which account's window you're in can be a little confusing at first. To ease your transition, try different themes for each account. That's about it. Time to Chrome like a boss!

Note: Please do not use this feature if you use the desktop plugin for hangouts. It has the bizzare ability to bypass the lock screen. Google if you're listening, big security flaw right here.





10Gbps broadband
South Korean ISP has announced its plan to roll out a 10Gbps broadband internet service soon **http://dgit.in/SK10Gbps**



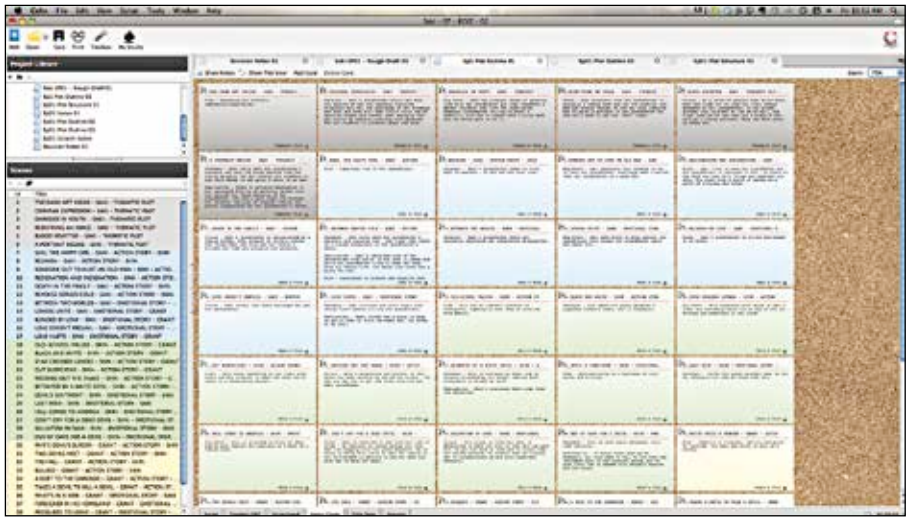
Steve Jobs biopic
Christian Bale has been signed to play Steve Jobs in a movie based on Walter Isaacson's biography

Digital Wordplay

Learn to harness technology to make writing easier. Like literally. Seriously!

Prakrit Dhondiyal
readersletters@digit.in

While writing on paper using a good, old-fashioned pen has its charm and usefulness, the writing services afforded by technology that help you write are just as effective. If not more, believe it or not. Technology can actually help you out here, let you write better, quicker and say vamoose to that pesky old writers' block, if at all it's been lurking around lately.



Celtx – Useful whether you want to write a short breakdown, script or storyboard

A fair warning before getting into the gritty details of these services though – don't rely on them for everything. It's very easy to use them as a crutch. That may cause your writing more harm than good. We're speaking from experience here. That being said, here are some interesting services than can help improve and perfect your writing skills.

Let's start with the basics: Blogging

Always a good place to kick off your writing aspirations is to start off a blog revolving around your passion/s – whether it's food, short fiction, travel or even just sharing your daily thoughts. It's a good platform for two things – to get writing and to learn the basics of website design aesthetics, firsthand. Blogs like Wordpress and Blogspot are a good place to start. No time to waste here, so better get cracking already, if you haven't.

The software paradigm

There are several software tools out there to help you organise your writing, once you know what you want to write about. Even basic writing software such as MS Word and Google Docs have come up with features in recent updates that are a boon to both editors and serious novelists. Even more so for writers who edit their own work. In addition to the old Spelling/Grammar Check, Dictionary/Thesaurus and Word Count features, Word has tools such as 'Translate', 'Track Changes' and 'Compare' to make writing a lot more convenient and analytical (even). If you need something more up to speed with the kind of writing you indulge in, there are many more options meant to suit your taste.

Scriptwriting

Celtx: Broadly hailed as the most lightweight scriptwriting tool available, Celtx (http://dgit.in/celtxsoft) has a certain beauty to its simplicity. But don't let the simple UI fool you. Its stock features are excellent and very efficient – whether you want to write a short breakdown, script, storyboard or even a camera layout for a shoot. It's also a great tool for aspiring novelists. This has to be your starting point if you're still not sure what tool to use.

Adobe Story: Part of Adobe's Creative Cloud Suite of app, Story is a professional scriptwriting app with brilliant add-ons accompanying the stock tools (http://dgit.in/adbstry). It colour-codes all your requirements and analyses the script accordingly. If the data is entered well, it can perform small tasks such as printing out a dialogue with one character's lines highlighted, putting together instructions for the production team with respect to lighting, props and schedules – basically performing the task of a virtual assistant director for a project. It also has a feature that's in Beta, which analyses your script to track its pacing and tells you when it's getting too slow. A useful feature to have, indeed, for so many good reasons.

Novel writing

Hemingway Editor: Ernest Hemingway sowed the seeds for the concept of the website (http://dgit.in/hmngedit), which proofs your writing using an algorithm inspired by Hemingway's style of writing. It helps you identify the tropes that could make your work easier to read and understand. It may not produce 100 percent accurate results, but it does its job as well as it can.

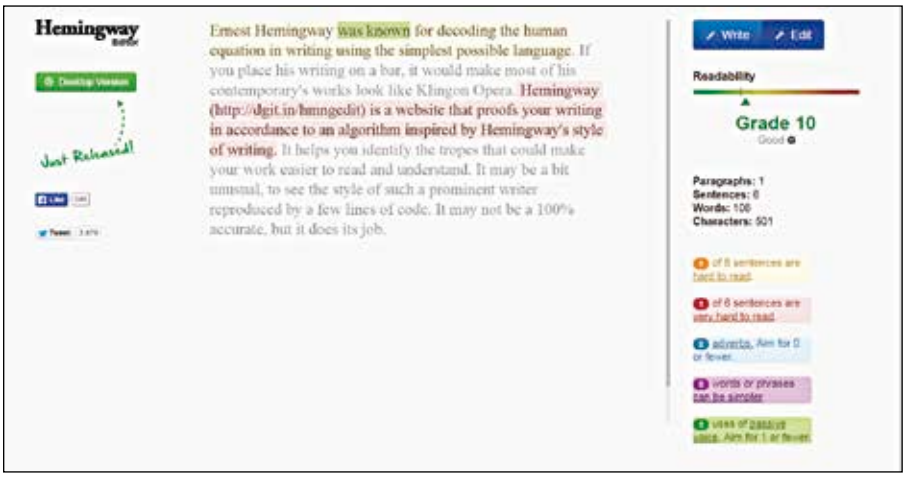
Write or Die: Well, not literally. Write or Die (http://dgit.in/wrordi2) is a website and



Wireless DSP Headphones

XTZ has launched what they claim to be the world's first wireless DSP headphones
http://dgit.in/DSPHeadph

DIY



The Hemingway Editor proofs your writing using an algorithm

paid app (₹1,223) for people who believe in brute force writing. You start by setting a time and word count, and are forced to keep writing until one of the two expires. It's a great way to push out words and some great ideas.

The Snowflake Method: Randy Ingermanson, an American fiction writer and self-proclaimed 'Mad Professor of Fiction Writing' likes using math and science to solve problems, including the common problem writers face – writing their own novel. Enter: The Snowflake Method. Ingermanson's little contribution to fiction novelists, the Snowflake is a methodical way to organise your thoughts and flesh out your story and its characters. The writing works on the fundamental construction of a snowflake. When you write, you start off from the chunk of the centre and add bits and pieces to get the whole picture. Simplifying the method further is a software called 'Snowflake Pro', which enables you to better organise your thoughts and ideas (http://dgit.in/snoflk).

Hiveword: Hiveword (http://dgit.in/hiveword) is a free online software and a more simplified version of Snowflake Pro. It combines the organisation abilities of Snowflake with the UI of Adobe Story. It's a good starting point for writers looking to experiment with software.

Wattpad: Wattpad is the go-to service once you've used the aforementioned software for writing. It's an online social writing community, where users with accounts can post their work online, open to the scrutiny of the other members of the community. When writing a novel, it's a good exercise to post your writing there one chapter at a time and read the feedback. Bouncing ideas is always good for a work in progress. Sometimes, it sparks a line of thought you hadn't considered.



Something like Lauren Beukes' 'Murder Wall'

Technology aside

Technology is great. But, sometimes, it helps to have a physical visual representation of your idea in front of you. Dedicate a small part of a wall to expunge and note down your thoughts. It's a great way to visualise and ideate. Happy writing!

iball
Your eyeball view.
Our technology new.

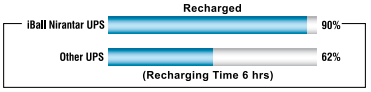
RICHARD MAY NOT BE READY BUT iBALL NIRANTAR UPS 33% FASTER RECHARGES THAN ANY STANDARD UPS

Richard! are you ready?

No...I need some more time...

Express Recharge.
High Performance.





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NO LOSS. BOSS!

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WINDOWS 10

Following the tradition Microsoft unveiled the next version of its Windows operating system. Called as "Windows 10", it's something Microsoft should have released two years back. The technical preview is already release and if you've had your hands on it here are some tips and tricks that you should definitely try.



Windows 10 tips 50
Secret Chrome browser tips 51

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

Resize Start menu

In Windows 10 Microsoft brought the very anticipated feature – the 'Start Menu' back. The new Start Menu has a revamped design with the touch of the Metro UI as well. One unique Start Menu feature that never existed in the previous versions was the ability to resize it.

In Windows 10 you can now resize the Start Menu by dragging the top edge upwards and downwards.

Change Start Menu colour

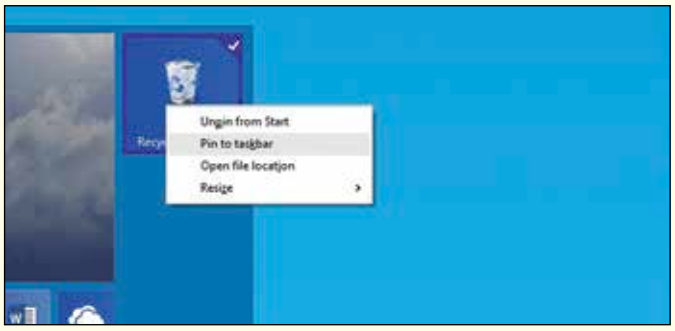
Start Menu that replaced the Start Screen can now be customized as well. You can change the default Start Menu colors to stylize your desktop.

To change the color open the Start Menu > Right-click on any empty space > Personalize > Choose your color.

Add recycle bin on the taskbar

Until today the Recycle Bin could never get its place on the Taskbar. However, with Windows 10 Microsoft has made it possible for you to add the Recycle Bin icon to it. This makes it easy to access it quickly.

To place the Recycle Bin on the Start Menu first you need to place it on the Start Screen (like you did it in Windows 8) > right-click on the icon > click on 'Pin to taskbar'.



Pin the Recycle bin from the Start Screen to add it to Taskbar.

Hotkeys in Command Prompt

The Command Prompt was always deprived of the keyboard shortcuts; the PowerShell within it hasn't had much love (by non-geeks) in the last several years because of it. Here are some of the best and very handy hotkeys you should know.

- To select text use: SHIFT + LEFT ARROW / RIGHT ARROW
- To select all: CTRL + A
- To copy: CTRL + C
- To paste: CTRL + V
- To enable Mark mode: CTRL + M (lets you use mouse for selection)
- To enable history navigation: CTRL + UP ARROW
- To find in console dialogue: CTRL + F
- To close command prompt: ALT + F4

Learn the new keyboard shortcuts

With glut of new features comes new shortcuts. The multiple desktops, task view and others can be accessed with a simple keyboard shortcut. Here are some of the important keyboard shortcuts for the keyboard junkies.

- Snapping window: WIN + LEFT or RIGHT (can be used with UP or DOWN to get into quadrants)
- Task view: WIN + TAB – New Task view opens up and stays open.
- Create new virtual desktop: WIN + CTRL + D
- Close current virtual desktop: WIN + CTRL + F4
- Switch virtual desktop: WIN + CTRL + LEFT or RIGHT

Disable Start Menu and enable Start Screen

Seriously Microsoft? Do you really think anyone would like to go back to Start Screen when they have the "Start Menu"?

In case if you are an exception among the Windows users and want the Start Screen back, Microsoft lets you do it in a single click.

To do it, right-click on the Taskbar > Properties > Start Menu tab > Uncheck "Use the Start menu instead of the Start screen".

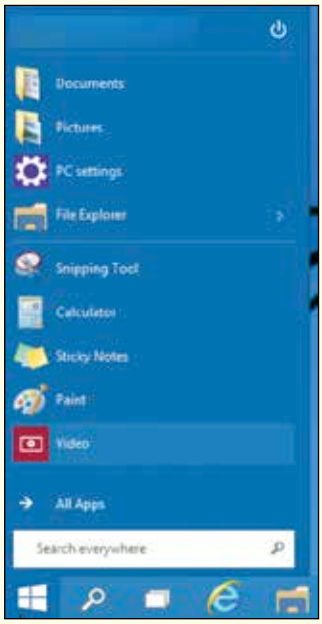


Check "Use the Start menu instead of the Start screen" to get back the Start menu.

Make Start menu look like Windows 7

Clubbing the features of the two major predecessors, Windows 10 brings live tiles into the Start Menu. However, if it's not your cup of tea you can stick to the old-fashioned Start menu as well.

To do it, firstly you'll need to unpin all the tiles from the Start menu, which will make it minimal. Secondly, pin the tiles that you want for quick access. Do it by switching to the"All apps" view > right click on the app > Pin to Start. Lastly, you can also change the color of the Start



Remove unwanted clutter to make the Start Menu look like Windows 7

menu to make it look like that from the Windows 7.

Add more virtual desktops as you need

Virtual desktops have been a part of Mac and Linux since long time. Windows finally gets this feature in its latest release. Called as "Task View" in Windows, it resides on the Taskbar.

To add a virtual desktop click on the "Task View" button located on the Taskbar, then click on "Add a desktop" and a virtual desktop will be added. You can similarly add array of desktops as you need. Going to the Task View will present thumbnails of all the desktops created.

Know the Windows 10 keylogger

Windows 10 differs from the other Windows operating systems in terms of privacy. In addition to how long it takes to open a file or details about your hardware, Microsoft is also collecting keystrokes and spoken text.

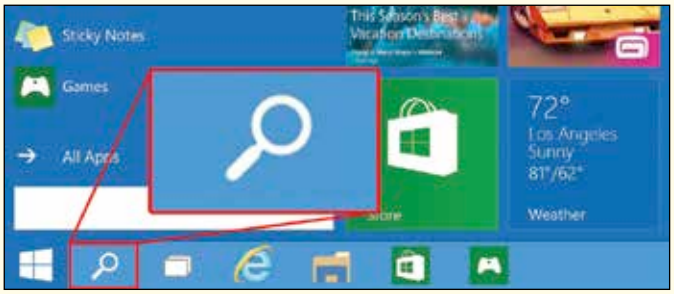
Microsoft claims that it's collecting users' voice information when they use speech-to-text to improve their speech processing. In addition to this, your entered text is also collected to improve the autocomplete and spell check features.

Microsoft is providing this to unspecified "partners" as well. So be careful while typing anything.

Make use of the Bing Search

Microsoft has integrated Bing search right into the Start menu. When you search in the Start menu you're offered with Bing web-search results along with the local Start menu results. In addition to this, a new Search app is also pinned right on the taskbar next to the Start button.

When you click it, you will be presented with Search Menu which displays 'Trending now' and your recent searches.



Use the "Search" button to quickly get access to the Bing Search.

ENHANCE BROWSING ON CHROME

Whenever the history of the Internet is discussed, the advancements made by web browser technology are often cited. A web browser is essentially a software application that makes browsing the Internet a more user-friendly experience. It allows users to search, view and present any form of information efficiently on the World Wide Web. Web browsers have undergone a massive shift from the pre-millennial days of Netscape Navigator and Internet Explorer to become powerful tools loaded with features to maximise the potential of the Internet. In this Tips and Tricks section, we'll share with you such nifty features of two popular browsers: Google Chrome and Mozilla Firefox. The tricks will help you uncover the hidden potential of these browsers, and enhance and simplify your browsing experience.

Google Chrome

Google Chrome, as the name suggests, is a freeware web browser developed by Google. Chrome is packed with Google's hallmark product standards – simplistic UI, uncluttered interface and theme, and the availability of vast resources from a single powerful web browser that has now become the most widely used web browser in the world, used by close to 45 percent of the Internet community. Listed here are a few useful tips that will help you better utilise Chrome's built-in features.

Import your browser settings to a different device

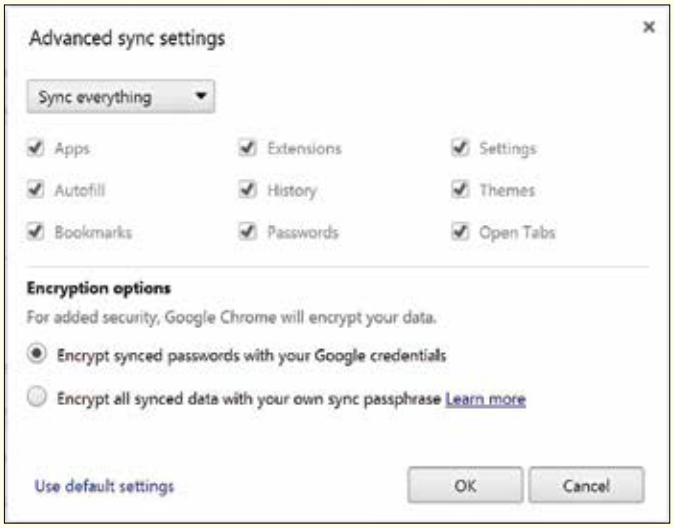
This is one of the more widely known features of Chrome but that doesn't make it any less useful. It's especially handy when you need to access your personal browser settings such as saved bookmarks and account passwords from another PC. To enable this feature, simply click on the wrench button (obsolete in most modern versions) or the Customise and Control button that appears on the top-right corner of the browser. Go to `Settings -> Advanced Sync Settings`. (If you'd rather type, go to 'chrome://settings/syncSetup' from the address bar (also called "the omnibox") and then 'Advanced Sync Settings'.) Choose 'sync everything' from the drop-down menu or select what you want to sync and click 'Ok'. The next time you sign into Chrome from any device, your personal browser settings will carry over. Neat, isn't it? However please note that this requires you to sign into the Chrome browser for it to work and that you've also signed into your other installations on other PCs.

Generate a password for different web service accounts

Chrome has a wonderful built-in feature that allows you to generate passwords while creating accounts for various web services. This feature needs you to be signed in to Chrome. To sync all the generated passwords across Chrome on all your devices, it might be a good idea to check the password box that appears in Chrome's Advanced Sync Settings.

To enable this feature, we'll use the very useful 'chrome://flags' page. (The page will be discussed in greater detail in a later tip.) Press [CTRL]+[F] to enable the find bar and type 'Enable Password Generation'. From the drop-down menu, choose 'Enabled' and restart Chrome when prompted.

The next time you're registering onto a web service and move the cursor to the Password field, a "key" will appear along with an additional window. The window prompts you to use the password generated by Chrome's built-in generator.



Sycning - one of Chrome's most loved features but yet not commonly known features

Search Google Drive files directly from Omnibox

Google Chrome's address bar, also called the Omnibox, enables you to add search engines from which to search. In this way, you could look for files in your Google Drive account directly from Omnibox. `Simply right-click within Omnibox -> Select 'Edit Search Engines' -> Scroll down to the 'Add New Search Engine' box.` Type 'Google Drive' followed by the desired keyword (E.g. 'gd'). Entries in the Omnibox preceded by this keyword will allow you to search directly on the particular search engine associated with it. In the URL box, enter the following URL: http://drive.google.com/?hl=en&tab=bo#search/%s and click 'Done'. Now you can directly search for files in your Drive account from your Omnibox by typing 'gd' followed by a space and your query.

Have an uncluttered browsing experience

When you're reading a long article or writing some script online, you may find the tabs, menus and toolbars of the browser to be a distraction. In such a case, it would be mighty beneficial to enable full screen view. To get this, simply press [F11] and your browser will go into a Full-Screen Mode.

Compose email from Omnibox

This is a really useful hack that allows you to compose and send an email directly from Omnibox without opening Gmail or any other email client. It takes a few minutes to set up and can be very handy when you need to send an urgent email. `Go to 'Settings' -> Search -> Manage Search Engines.` In the 'Add a new search engines' box, type 'Email Compose'. In the neighboring field, enter a desired keyword (say 'e') for this purpose and paste the following in the rightmost field: 'mailto:?subject=%s'. Click on 'Done'.

To use this hack after enabling it, simply type 'e' in the address bar followed by space. A tab with 'Search Email Compose' already typed out appears. Type the content of the mail and press [Enter]. A mail UI opens (provided you're already signed in) where you can type the recipient's address and send the mail. For this to work though, you'll have to set Gmail as your default mailto handler. To do this, `Select Settings -> Show advanced settings -> Privacy -> Content settings -> Handlers -> Enable.`

Set up keyboard shortcuts for extensions

For easy and quick access to extensions, Chrome allows you to tailor keyboard shortcuts for them. Type 'chrome://extensions' in the Omnibar and scroll to the bottom of the page where you'll find 'keyboard shortcuts'. You can add desired shortcuts for all your extensions.



The all-new and powerful Flags page from where you can unlock many hidden features

Use experimental features to optimise performance

Google Chrome ships with many experimental features that can optimise your browser's performance. To access these features, once again go to 'chrome://flags'. You'll be greeted with a warning in which Google does its needful of reminding us that the features on the page are experimental and may or may not enhance the working of Chrome. Their functionality is largely machine-dependent. Now that we've got that out of the way, let's move on. In this section, we'll discuss a few features that in all probability will boost Chrome's performance. We'll also talk about some of the tweaks that will, in general, help enhance your browsing experience on Chrome. All of the following features can be found on the chrome://flags page by invoking the find bar by pressing [CTRL]+[F] and typing the feature you're looking for.

Smooth scrolling

Enabling this feature will let you smoothly scrolling across and on web pages. While there's a chance that enabling this feature won't result in any noticeable change in scrolling smoothness, trying out can't hurt.

Activate auto-correct

Another simple tip: Chrome has the ability to auto-correct. While this can be a double-edged sword, the experience may vary from user to user.

Resume downloads

This feature allows you to resume downloads once Chrome is restarted after being

closed. It's an extremely handy feature in case you accidentally close your browser, lose internet connection or have packet loss issues. If this works, you should be able to see a new menu item called 'resume' on right-clicking on the file name in the Downloads folder.

Turn on Google Now

Turning on Google Now allows you to get notifications for mails and other apps on your Chrome browser. Reminder notifications also appear with a white bell in the system tray and it turns gray after all notifications are checked. Not for Linux, though.

Allow your browser to access the power of GPU processing

Enabling this feature is recommended as it allows all components on the web to benefit from the speed boost provided by your system's GPU, rather than just the CPU. Essentially, it brings into play the processing cores of your graphics card and enables it to participate in the processing related to browsing. Search for the keywords combo 'software rendering list' and set it to 'on'.

Use your machine hardware for optimal rendering

Chrome Flags has an option that allows you to turn on 'GPU composting'. This feature speeds up on systems with a dedicated graphics card and incrementally boosts speed across the board for modern Intel Core based machines as well. GPU composting enables the GPU on your system to participate in rendering the various layers of the webpage. Hardware composting of the above kind may result in the browser being able to deal with a higher workload with better efficiency in terms of speed and utilised power.

Utilise CPU potential

Enabling this feature allows your multi-core system to create an additional thread to take care of your webpage processes. Creation of a secondary thread gives you a relatively smooth browsing experience, even though your primary code is busy processing some other tasks in the background. To enable this feature, switch on the 'Thread composting' feature.

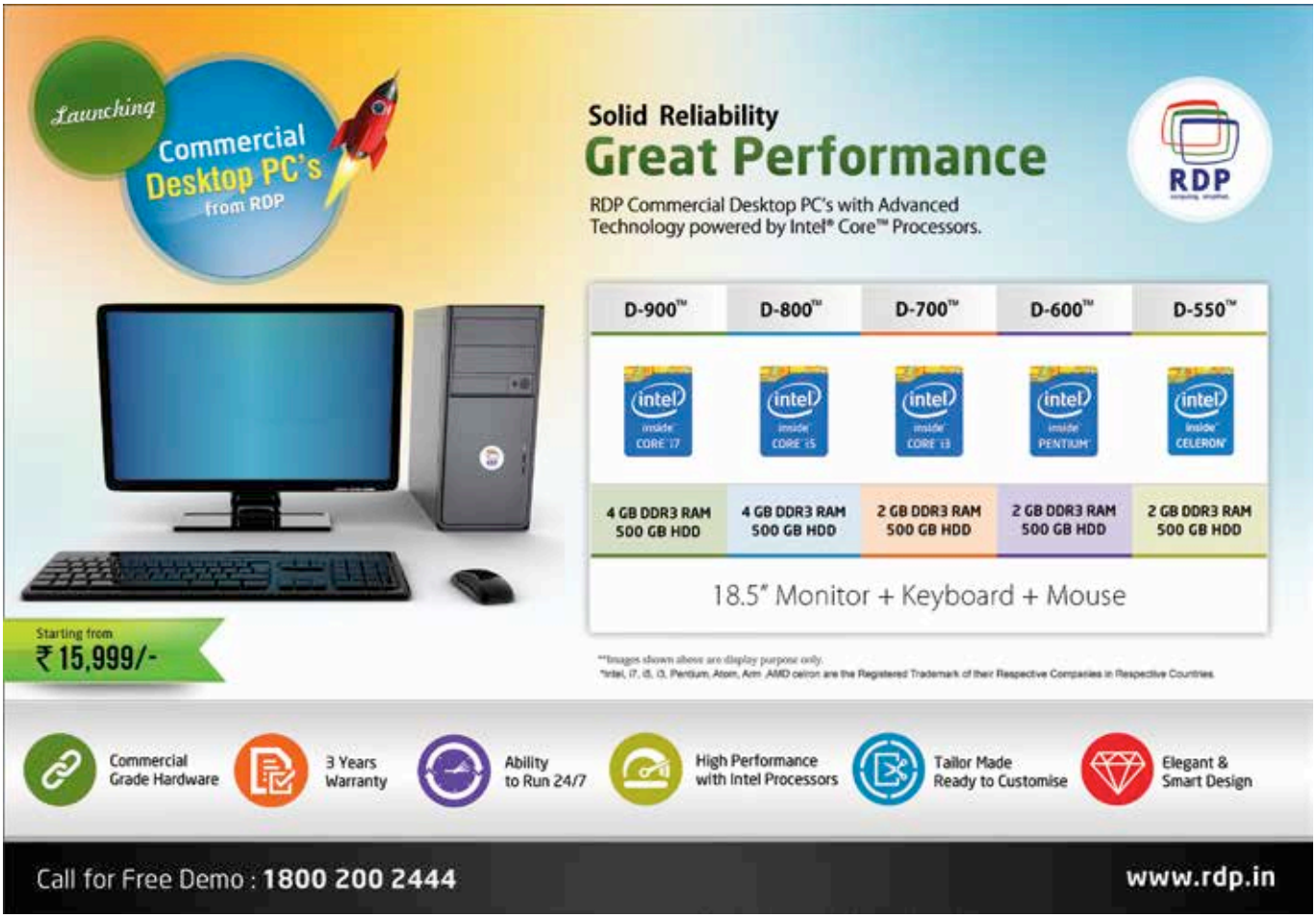
Enable GPU accelerated SVG for faster loading of graphics

This feature enables your GPU to accelerate the loading of Scalable Vector Graphics (SVG), which boosts loading speeds for graphic intensive web pages that have multiple visual effects.

Disable GPU Vsync for higher FPS

Disabling this option allows your browser to harness the power of the GPU to output frames at a rate greater than your monitor's refresh rate. 'Vsync' stands for 'Vertical Sync' and is frequently used in the adaptive sense for high definition graphics gaming.

A parting word for the above mentioned tweaks – these experimental features are highly dependent on your system's hardware and software configurations along with your browser version. However, it may be a good idea to implement these tweaks and Chrome experiments to see if they indeed induce a boost in your browser's performance.



80 **Bazaar**
The latest and greatest products reviewed to help you decide what you want to buy



Interstellar investigation
Christopher Nolan's Interstellar looks fantastic, but is its science accurately depicted? **http://dgit.in/InterInvest**

SOLID STATE DECISIONS!



With SSDs now being affordable, you no longer really have an excuse to not get one

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Affordability is what comes to mind when we think of SSDs. About a year and a half back when we tested SSDs, we saw that most of the SSDs were components that only enthusiasts would purchase. Now when we look at the prices of SSDs we can't help but wonder why on earth we aren't purchasing one for ourselves. A 120 GB SSD, which is more than enough for the average user, costs around ₹5,000 which easily fits into a mid-range configuration. Moreover, SSDs have topped the SATA III bandwidth long ago so picking an SSD came down to the controller's performance and the SSD's characteristics across different data sizes and queue depths.

With the Z97 and the X99 motherboards, the NGFF (Next-Generation Form Factor) or M.2 SSD form factor was introduced and this versatile standard is creating waves in the segment. There are plenty of SKUs available in the market but we don't see it being adopted that widely in the Indian market since the motherboards that support the M.2 ports do come at a slight price premium. Now, a few of you might want to stick the proverbial finger up our noses and 'educate' us that this isn't the case. Hold on to your horses, we aren't talking about M.2 ports that only support SATA drives, but the ones that support PCIe drives. This is where the real fun comes in. ASRock has even started fiddling around with the PCIe lanes that are linked to the M.2 port. On its ASRock Z97 Extreme6 motherboard, it has implemented what it calls the Ultra M.2 port. They've used PCIe lanes directly from the processor and these lanes are PCIe 3.0 rather than PCIe 2.0 which is found on motherboards. With a theoretical bandwidth of 3.2 GB/s this sure has a rather tall upper limit for bandwidth. If more manufacturers were to implement similar setups then we'd see a rapid shift towards SSDs with higher bandwidths.

Right now, getting high speeds would involve investing in PCIe SSDs which, in turn, eat up an entire PCIe slot that could otherwise be populated with a graphics card. So enthusiasts don't have much of an option other than to use SSDs in RAID.

SOMETHING ON THE HORIZON

The SandForce 3700 controller has been in the news for quite a while and we've even heard of a few SSD launches with that chipset. The SF3719, SF3729 and SF3739 are the ones that we are concerned with and they're geared towards the entry-level, mainstream and the enthusiast markets respectively. The entry-level SSDs use Phison controllers which aren't consistent across different conditions. Hopefully, that should change with the SF3719 which is not only power optimised and cheap but is also rumoured to be much better, given that the bare minimum performance

will be way greater than what cheap controllers of today are capable of.

A NEW ENTRANT

We were surprised to find that one of the entrants in the test is an upcoming brand in India. MaStar has already released USB flash drives and memory cards and this is the first time we tested any of their products. The GL01 series uses Phison's PS3109-S9, which is an entry level controller that has been used in Corsair's LS series and also in Kingmax's SSD lineup. There was some confusion since the product documentation mentions that it has Toshiba NAND but when we popped it open, all we could find was Micron NAND. There's nothing wrong with that but a goof up in a product's documentation is rare. Maybe the GT01 has them but we can't say anything for sure till we get one for benchmarking. The GL01 was the only one with a Phison controller in this benchmark, so it was natural that it's performance would be easily eclipsed. A comparison among other Phison enabled SSDs would be a better indicator of it's performance in the entry-segment. We don't have the retail price for these SSDs yet, so haven't considered these devices in the final scoring.

THE COMPETITORS

There weren't many new competitors this time around. Kingston's Fury is their budget offering targeted towards gamers and enthusiasts. Performance wise it's average, but it's way better when it comes to build quality amongst mid-range SSDs. It uses Kingston branded NAND chips though and Kingston has no NAND manufacturing facilities. Even the controller is a Kingston branded SF2281.

Transcend's SSD370 is part of their premium lineup but performance wise we'd place it more towards the upper ceiling of the entry-level segment. Also, we were pleasantly surprised to learn that Transcend makes PATA SSDs, yes! PATA!

Seagate's 600 series was also a part of this test and it was one of the top performers in the entire test. But an MRP of ₹17,500 it's quite an expensive unit. We did, however, spot units selling for around ₹12,000 on Amazon, which brings it into the same league as the other top performers.



SanDisk Extreme II

ADATA's SP610 turned out to be average, given the small sample size that we had to work with and it's cousin, the SP920 seemed to have lost out by a mere fraction in the performance test.

WINNERS:

Best Performer

SanDisk Extreme II 240GB

There are a lot of factors contributing towards SanDisk's performance in this test. Firstly, the NAND is made by them, given the Toshiba-SanDisk partnership. The Marvell 88SS9187 is one of the best controllers which gives a consistently high performance across varying data sizes and queue depths. We saw that the SanDisk Extreme II and the Plextor M6S shared pretty much the exact same configuration and scored quite similar in a few benchmarks but the SanDisk Extreme II was almost always ahead. This can be attributed to the fact that the Marvell 88SS9188 that the Plextor M6S uses is a slightly scaled down version of the 88SS9187. ADATA's SP920SS missed out by quite a margin from winning and this was mostly because of the weightages assigned to individual benchmark scores. Our weightages are scaled towards a more consistent performance and does not favour a drive that excels in just one or two aspects. Higher write speeds is what pushed the ADATA SP920 ahead in our score.

Aside from performance, even when we opened the two drives we noted that the SanDisk Extreme II had heat conducting pads between the controller/NAND chips and the metal body. The Plextor

HOW WE TESTED

Our performance tests involve the use of multiple benchmarks that test read and write performance using different data signatures to simulate different types of operations. Certain benchmarks look towards a pure read or write speed for sequential files. Then we have benchmarks that simulate a normal operating system's data transfer pattern. We also make use of our own sample files which involve compressible and incompressible data of varying sizes. Our assorted sample data consists of an insane amount of files which would be akin to huge game transfers. So we not only rely on synthetic benchmarks but also real world tests, which are a better indication of what an SSD would undergo once installed in a system. Needless to say, we weigh this test quite high in our performance benchmarks. The following are the synthetic benchmarks used. We don't believe in running too many synthetic benchmarks that produce the same results.

- **AS-SSD**

For transfer speeds and IOPS in 4KQD64 thread tests.

- **Crystal Disk Mark**

Another synthetic benchmark for sequential, 512K, 4K and 4KQD32 tests.

- **PCMark 8 Storage**

An industry standard benchmark that simulates data signatures for uses like playing games, running office productivity suites, multimedia editing software and also file transfer speeds.

We list out the various features that each drive comes with and we weigh the individual parameters to gain a feature score. The overall weightage given to the feature score is meagre since SSDs are all about performance and there aren't that many differentiating features anyway.

The last thing we do is check the SSDs for build quality. This involves opening the drives and checking how the PCB is mounted within the casing and also if the controller and the NAND chips are mounted with heatsinks or thermal pads. This too is given a meagre weightage compared to the performance score.

Brand	Kingston	ADATA	ADATA	Seagate	Corsair	Transcend	MaStar
Model Name	HyperX Fury	SP610	SP920	600	Neutron GTX	SSD 370	GL01
Capacity	240	256	256	240	120	128	60
Price (₹)	11,000	11,500	14,300	17,500	8,875	5,999	NA
Cost per GB	45.83	44.92	55.86	72.92	73.96	46.87	NA
Performance	64.23	80.87	89.76	86.63	82.22	70.20	46.76
Features							
SSD Controller	SandForce SF2281	Silicon Motion SM2246EM	Marvell 88SS9189	Link Media LM8780	Link Media LM8780	Silicon Motion SM2246EN	Phison PS3109-S9
NAND Memory	Kingston	Micron	Micron	Toshiba	Toshiba	Micron	Micron
TRIM Support	Y	Y	Y	Y	Y	Y	Y
NAND Process (nm)	25	20	20	19	19	20	19
Interface	SATA III	SATA III	SATA III	SATA III	SATA III	SATA III	SATA III
SSD Tray (Y/N)	N	N	Y	N	Y	Y	N
Height (5mm/7mm/9mm)	7	7	7	7	7	7	7
Synchronous (Y/N)	Y	Y	Y	Y	Y	Y	NA
SLC or MLC or TLC	MLC	MLC	MLC	MLC	MLC	MLC	MLC
Toggle Mode (Y/N)	Y	Y	Y	Y	Y	Y	Y
No. of NAND chips	8	8	16	8	16	16	4
Warranty (Years)	3	3	3	3	5	3	3
Performance							
Crystal Disk Mark 3.0.1 (5 Test runs of 1000MB) (Random)							
Read							
Sequential	500.5	551.9	526.5	535.1	531.6	550.8	416.7
512K	427.6	398.3	490.2	390.4	388.6	385.8	295.7
4K	19.72	33.83	35.11	33.02	32.83	33.87	28.2
4K QD32	101.2	314.4	398.1	379.5	380.1	281.4	112.6
Write							
Sequential	228.1	289.3	360.1	472.1	315.2	154	109.4
512K	224.4	294.3	360.1	471.2	317.8	158.1	83.07
4K	145.4	157.1	173.9	140.9	140.5	146.5	75.58
4K QD32	197.9	292.2	332.2	350.8	317.5	154.8	79.2
AS-SSD (IOPS)							
Read							
16 MB	31.43	32.93	32.97	32.3	32.16	32.83	25.41
4K	5296	8048	8351	7852	7819	8002	8800
4K-64 Thread	24426	75397	94676	90750	90978	69510	29409
512B	11228	34540	34081	27551	27705	33021	5604
Write							
16 MB	13.59	17.33	21.37	27.52	18.8	9.25	4.6
4K	33840	34085	37892	30288	31081	31145	18537
4K-64 Thread	50408	61278	73968	78748	68593	33722	11346
512B	4662	28424	25504	20890	21477	20069	7084
Real world tests							
8 GB Sequential File Write	30	28	22.5	18.5	26.5	51	114
8 GB Assorted File Write	45	44	41.5	35.5	42.5	64.5	122
8 GB Sequential File Read	24.5	23.5	24	23.5	24.5	25	25.5
8 GB Assorted File Read	49	47	47.5	50	51.5	46.5	55
Sequential Transfer speed	297.10	314.40	348.21	385.52	317.49	213.05	116.07
Assorted Transfer speed	172.25	177.93	181.93	189.38	172.25	145.87	91.48
PCMark8 Secondary storage Score							
Storage Score	4639	4954	4956	4959	4940	4915	4567
WoW	58.4	58.3	58.8	58.4	58.5	58.3	60.4
BF3	135	133.4	133.6	133.7	133.7	133.6	136.4
Photoshop Light	118.4	114.3	114.7	114	115.1	116.3	145.4
Photoshop Heavy	371.4	364	362.1	359.9	364.2	372.3	437.2
InDesign	59.1	58	57.9	57.6	58.2	59.4	67.3
After Effects	71.3	70.8	70.5	70.8	70.9	70.7	71.7
Illustrator	72.7	72	72.3	72	72.1	72.2	74.4
Word	48.5	28.4	28.2	28.3	28.4	28.5	29.9
Excel	9.3	9.2	9.2	9.3	9.3	9.3	9.6

	MaStar	SanDisk	Plextor	ADATA
	GL01	Extreme II	M6S	SX1000L
	120	240	128	100
	NA	14,000	5,499	15,000
	NA	58.33	42.96	150.00
	47.52	90.00	82.57	63.17
	Phison PS3109-S9	Marvell 88SS9187	Marvell 88SS9188	SandForce SF2281
	Micron	SanDisk	Toshiba	Intel
	Y	Y	Y	Y
	19	19	19	25
	SATA III	SATA III	SATA III	SATA III
	N	N	Y	Y
	7	7	7	7
	NA	Y	Y	Y
	MLC	MLC	MLC	MLC
	Y	Y	Y	Y
	8	8	8	16
	3	5	3	5
	442.8	550.6	521.8	468.9
	272.9	333.6	410.4	418
	26.99	40.65	39.62	28.65
	112.5	385.4	393.4	112
	109.8	511.4	338.3	172.5
	67.96	463.1	337.1	171.7
	76.25	159.5	119.2	141.4
	81.6	313.1	319.8	168.4
	25.81	32.69	31.22	28.94
	8818	9165	9355	6223
	30184	88805	94298	30500
	4751	29065	31657	10919
	4.48	30.49	20.42	10.3
	18915	34815	26550	33329
	16264	71507	71984	40456
	8460	34750	29229	4913
	108	17	24.5	37.5
	118	30.5	40.5	57.5
	27.5	24	24	24.5
	55	45	48	49
	119.49	394.92	333.85	261.16
	93.59	214.46	182.96	152.03
	4621	4977	4965	4861
	60.4	58.2	57.9	58.3
	136.4	133.2	133.4	134.8
	137.4	114	114.7	121.1
	417.6	359.8	364.6	380
	66.4	57.5	57.8	59.8
	71.6	70.6	70.7	71.4
	74.5	71.8	71.9	72.6
	29.8	28.2	28.3	28.8
	9.6	9.2	9.2	9.3

M6S just had a thermal pad between the controller and the body. Lastly, the Extreme II has a 5 years warranty while the M6S comes with a 3 year warranty. The build quality and extra warranty did not contribute towards it winning the **Best Performer** award, which it earned purely because of its performance advantage over the competition. We're really eager to compare this with the Samsung 850 Pro but we didn't get that unit in time for the test. Hopefully, we'll get it in time for the Zero1 awards in December.

Best Buy

Plextor M6S

If you've read the above paragraph, then you know you're getting a good deal with the Plextor M6S. It's configuration is near about the same as the best performer in this comparison test. The controller lacks a little bit of potential but that isn't a substantial loss in performance by any means. It costs ₹5,499 for the 128 GB SKU and we do believe that the 256 GB SKU might perform ever so slightly better than the 128 GB SKU owing to more parallel I/O lines between the controller and the NAND chips. However, the exact implementation and performance can only be judged once we get our hands on one to test.

Even if the 256 GB SKU were to perform at the exact same potential as this drive, if not better, then for a price of ₹11,950, it would still offer a better value for your investment. You get top-notch performance and that too at an affordable price, which is why the Plextor M6S wins the **Best Buy** award in this comparison test.



Plextor M6s

Editor's Pick

ADATA SP610 256GB

The Editor's Pick was a particularly hard award to give. The Plextor M6S offered superb performance at a very reasonable price, but ultimately, we felt that 128GB would be a little limiting for an enthusiast. At the same time, spending ridiculous amounts of money for something like a Sandisk Extreme II also seemed like a waste, since even an enthusiast wouldn't really need that much performance.

In the end, we settled on the ADATA SP610, which offers comparable performance to the Plextor M6S at a low cost per GB, making it a very good deal in our opinion. Therefore, after some deliberation, we're quite pleased to offer it the **Editor's pick** award.



ADATA SP610

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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ZOTAC GTX 980 AMP! Extreme

There are a lot more AMP!(s) now than usual



ZOTAC generally had just the one AMP! branded card which was basically a factory overclocked variant with a better cooler with certain PCBs having modifications in order to handle the increased power load. This time around the ZOTAC GTX 980s come in a lot more variants with three SKUs under the AMP! brand. So now they have the plain old AMP!, an AMP! Omega with a moderate overclock and lastly the AMP! Extreme which has a significant overclock. Maxwell scales quite well which is why manufacturers are able to bifurcate the high-end segment even further than before based purely on clock speed. We can expect much more variants once you start factoring in everything else that can be customised.

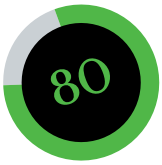
Coming to the ZOTAC GTX 980 AMP! Extreme, we get to see a factory overclock of 165MHz since the stock GTX 980 is clocked at 1126MHz. Such overclocks aren't alien, even with the GTX 780 Ti we'd seen similar increments with certain cards having approximately 170MHz over the stock GPU. Moreover, if you look at the boost clock then the increment ends up being 102MHz over the normal clock speed whereas the top custom GTX 780 Ti would only have a increment of 60-70MHz. This indicates that Maxwell cards can handle load spikes much better than Kepler cards.

The front of the card protrudes significantly so while the metal bracket occupies two expansion slots, the body will take up another and this will make it difficult for linking two cards in SLI if the slots are side by side. Thankfully, most motherboards which support a dual SLI/Crossfire have the two x16 PCIe slots spaced far apart for such cards. The real problem will arise when one tries 3-way or 4-way SLI. 4-way seems impossible without fitting a custom cooling solution while 3-way might be possible with very few motherboards. A new feature that we saw was Light Id, which is a bunch of LEDs on the card that change colour based on the load that the card is handling at that moment. The card switches between green and red which is a little lacklustre when compared to other manufacturers that use RGB LEDs to include a bigger spectrum. On the rear we see a new additions which is labelled as OC+. This feature requires that you connect a microUSB cable(provided with the card) to the internal USB header to allow you to monitor a lot more parameters that what is normally allowed to on most GPU software. These parameters include voltage levels from the external 8-pin power connectors as well as from the PCIe slot, GPU current draw, memory current draw. It even allows for manipulation of some of these parameters.

If you haven't fiddled around with a lot of graphics cards then this might all seem a bit unsettling, and to make matters worse there isn't much documentation to go by when it comes to all this. Exploring the software that comes with the card will help allay some of your concerns. Just don't click on apply if you aren't sure about what you're doing. Since the software connects to a USB port it is likely that the monitoring and manipulative abilities would be locked to that particular interface. So using any other software will only grant to access to features that are made available by NVIDIA's API. Everything else will require the FireStorm utility.

Performance wise the card does a lot better than everybody else. 3DMark Firestrike score for the ZOTAC GTX 980 AMP! Extreme exceeded that of the stock card by over a thousand points. The FPS count in Bioshock Infinite was a good 7 frames/minute greater that a stock GTX 980. And this difference was maintained in all other gaming benchmarks by a margin of 4-9 FPS. The same goes for OpenCL compute scores which were a good 300 points ahead of stock. So across the board, this card does way better than every card that we have tested so far which is why it gets the Best Performer award in the graphics cards category.

Mithun Mohandas



Performance..... 90
Value 75
Build 76

Specifications

Chipset: GM204; **Base clock:** 1291MHz; **Memory clock:** 1800MHz; **CUDA cores:** 2048; **Texture Units:** 128; **ROPs:** 64; **Manufacturing process:** 28nm, PCIe 3.0,4096 x 2160 digital resolution support, 4 GB Memory; **DirectX support:** 12; **OpenGL support:** 4.4; **Power Connectors:** 8Pin + 8Pin; **TDP:** 165+W; **Dimensions (LxWxD):** xxxxxxx mm. **Warranty** - 5 years extended warranty

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Control multiple displays
MIT researchers have built a software with which multiple displays can be used as a single giant display **http://dgit.in/HuddleLamp**



Honda Sensing soon
A driver assistive system named Honda Sensing would be launched in Japan on the Honda Legend **http://dgit.in/HondaSensing**

Micromax Nitro

Micromax pushes the Nitrous button

From a cursory glance the Micromax Canvas Nitro with its plastic body and a 5 inch HD screen is like any other phone you get in the market at this price range. There's nothing remarkably different here. Having said that, things start to change after that initial quick assessment. And they change for the better, as far as the phone's concerned.



Price ₹12,990

Micromax has skipped the quad-core or the hexa-core which is an understood norm in this price category and gone straight for an octa-core processor from MediaTek with 2 gigs of RAM. Even though everything seems to fly on the device, heating issue still persists with MediaTek SoCs which in turn affects the performance of the device.

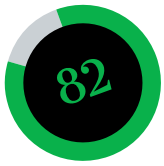
Micromax has kept the UI pretty basic and the phone runs on Android 4.4.2 KitKat.

The Micromax Canvas Nitro offers a 13MP primary camera, which is marginally better than the ZTE V5. The front camera is a 5MP BSI fixed focus camera with a wide angle lens and quite acceptable for taking selfies and videos.

Battery is the playing field which Micromax Canvas Nitro has mastered. Even when I played Asphalt 8 Airborne for more than two hours, I recorded a mild drop in battery. It took me almost 14 hours to drain its battery under heavy usage.

So, if you want to buy a mid-range phone with outstanding specs, understated design and value for money and don't want to buy the Motorola Moto G (2nd gen) buy the Micromax Canvas Nitro.

Hardik Singh



Feature 85
Performance 96
Value 92
Design 66

Specifications

Display: 5 inch IPS display with 1280x720 resolution (294ppi); **Battery:** 2500mAh; **Storage:** 8GB, expandable via microSD card; **Camera:** 13MP rear with LED flash, 5MP front; **SoC:** Mediatek MT6592; **CPU:** 1.7GHz quad-core; **RAM:** 2GB; **Operating system:** Android 4.4.2; **Connectivity:** 3G, W-Fi, Bluetooth, Dual-SIM

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ASUS Strix GeForce GTX 970

Flagship-like performance on a budget



Price ₹26,700 (+Tax)

ASUS's Strix GeForce 970 looks pretty good, it has dual 90mm fans which are activated when temperatures creep up into the mid-60s. They're calling it 0 dBi technology and the card is pretty silent. Even with FurMark putting the squeeze on the card, the noise level was very low. The peak temperature we noticed was 69 degrees and the average temperature remains higher than other cards but as long as it stays within the thermal threshold you're good.

The base clock of 1114 MHz is 64 MHz higher than stock. And the boost clock is at 1253 MHz which again is greater than the boost clock on stock cards by 75 MHz. While running our benchmarks on this card we noticed that the ASUS Strix GeForce GTX 970 performs as good as two GTX 760s in SLI which is saying a lot about the card. And it does all of this while drawing power from a single 8-pin power connector while the 760s use 4x 6-pin connectors. So when you compare it to a GTX 980, the latter is obviously going to be ahead and the difference is 10-20 FPS with certain games getting another extra 10 FPS.

At the end of the day, the GTX 970 costs 60 per-cent of what a GTX 980 comes for but performs at about 90 per-cent of the GTX 980. You can see how this plays out when it comes to getting your money's worth. And the ASUS Strix GeForce GTX 970 which comes with a factory overclock is all the more better compared to a stock card.

Mithun Mohandas



Performance 77
Value 75
Build 60

Specifications

Chipset: GM204; **Base clock:** 1114MHz; **Memory clock:** 1753MHz; **CUDA cores:** 1664; **Texture Units:** 104; **ROPs:** 64; **Manufacturing process:** 28nm, PCIe 3.0, 4096 x 2160 digital resolution support, 4 GB Memory; **DirectX support:** 12; **OpenGL support:** 4.5; **Power Connectors:** 8Pin; **TDP:** 145+W; **Dimensions (LxWxD):** 140 x 280 x 40 mm. **Warranty** - 3 years warranty

Contact

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Pocket Drone
A tiny hexcopter drone from Cyphy can fly up to two hours, tethered to a long invisible wire **http://dgit.in/CyphyDrone**



Neuron activity
This is how electrical impulses flowing along through the neurons of the brain look like **http://dgit.in/NeuronConn**

Sony Xperia Z3

Third time lucky

Six months ago Sony announced its flagship smartphone, the Xperia Z2 and bang on time we have the Xperia Z3. With such a small time gap, Sony has proved that it can indeed provide a flagship device every six months. The Z2 was somewhat disappointing for Sony since it didn't achieve great sales. With the Z3, Sony hasn't improved a lot, rather it maintains its sleek design with minor changes here and there. You still get the front and back glass panels with a metal frame in between.



The front has the same 5.2-inch full HD display but this time Sony has improved on the panel and brings in a brand new display that offers 600-nits brightness, which Sony claims is the brightest display on any smartphone. Well, we agree. The display is actually quite bright and colours pop out almost like on an AMOLED panel. There are new set of dual stereo speakers and a brand new round LED notification light on the top left. The edges of the metal frame are now more curved and subtle Even the flaps that cover the ports and slots blend in well with the rest of the body. At the back we have the same 20.7MP camera with an LED flash.

For the ones hoping for a design facelift, you might not be happy as the Z3 is entirely not that different from its predecessor. Sony has carefully updated the small issues faced on its previous-gen flagships and is very smartly improving on them. The glass in the front and back is not entirely scratch proof, but Sony claims that it is definitely shatterproof. It does feel quite large in the hand although the bezels are not that wide. Of course you get waterproof and dust proof IP68 rating, which allows you to submerge the handset in 1.5m of water for up to 30 minutes.

Running on Android 4.4.4 KitKat, we noticed a refreshed UI from Sony. The updated UI is definitely smoother and much more stable than on older Xperia devices running on an older build. The Z3 comes loaded with the expected Sony apps including Album, Movies, Walkman, Backup and Restore, Lifelog, Sony Select, Socialife, TrackID and, of course, the PlayStation app. This app lets you log into the PlayStation Network, keep a tab on your profile and lets you connect and play PlayStation 4 games on the smartphone.

In the performance department, we have a Snapdragon 801 SoC clocked 2.5Ghz along with 3GB of RAM and an Adreno 330 GPU. With such high end hardware chances of apps crashing is almost nil. HD content looks brilliant and sharp and even high end games are a piece of cake for the Z3. Benchmark scores showed that the Z3 is not a game changer, but it does manage to score at par with all the latest flagship smartphones in the market.

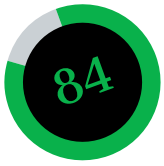
The battery is now rated at 3100mAH which is a bit lower than on the Z2. So, does it hamper the battery life? Well, you would be surprised that it has actually increased and we got one and half day of backup on normal day to day usage. Sony however claims that you can get a backup of 2 full days. We also played a full HD video on full brightness for one hour and saw a drop of 15%.

The Xperia Z3 yet again comes with a 20.7MP sensor along with G-lens, which was first seen on the Z1. There aren't any huge improvements in the camera department however Sony claims that it has improved on the ISO levels with a maximum boost of 12800. The camera app has improved and feels faster and more responsive. Pictures produced are really good and have accurate colours. In daylight, pictures are sharp and have a decent amount of depth.The autofocus and shutter speeds are fast and the auto-white balance is pretty accurate.

Video recording is great especially 4K which produces some really crisp looking videos. Of course these videos take up a lot of space and making long videos could be an issue as the smartphone starts heating up.

Bottom line, the Sony Xperia Z3 is not a huge update when compared to the Xperia Z2, but it is certainly one of the best flagship smartphones. A sleek design, an excellent camera, and a great battery life really makes the Z3 worth the price.

Kunal Khullar



Features 90
Performance 75
Value 85
Design 85

Specifications

Display: 5.2-inch, 1920x1080 resolution Triluminos display with X-Reality (424ppi); **Battery:** 3100mAh; **Storage:** 16/32GB, expandable upto 128GB via microSD; **Camera:** 20.7MP rear with LED flash, front 2.2MP; **SoC:** Qualcomm Snapdragon 801 MSM8974AC; **CPU:** 2.5GHz quad-core; **GPU:** Adreno 330; **RAM:** 3GB; **Operating system:** Android 4.4.4; **Connectivity:** 3G, Wi-Fi, Bluetooth, NFC

Contact

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Anti-WiFi zone
A woman in the United Kingdom has painted her house with special paint to turn it into a no WiFi zone **http://dgit.in/NoWiFiPaint**



Real life Transformer
Some hobbyists in Japan have made a transformer that can walk and also drive after transforming into a car **http://dgit.in/JapTrans**

MSI GE60 2PE

A benchmark for all future laptops



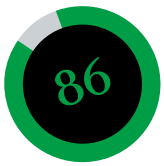
Despite its unimaginative name, the MSI GE60 2PE stands apart as among the very best laptops that we've ever had the pleasure of testing. For a laptop to be good, there are a few things that it needs for sure, starting with the screen, and to that end, MSI has done itself proud. The screen is gorgeous. The contrast ratio is very good and while we will admit that the screen is a bit too dark, the display's colour rendition is phenomenal and at par with the best display we've seen. It's also bright at 300 cd/m2.

Completing that display is an excellent keyboard that, just short of a mechanical keyboard, is amazing to type or game on. It's designed and built by SteelSeries, which is probably why it's so good and as a bonus, you get fully customizable RGB backlighting! Speakers are again exceptional (built by DynAudio) and provide loud and clear feedback that put just about every laptop speaker to shame.

In terms of hardware and performance, the Core i7-NVIDIA 860M combo is quite capable and most games managed to pump out 60fps at medium-high settings, which is very good. The laptop did tend to heat up, as expected, but the "CoolerBoost" cooling system managed to keep temperatures in the 85°C range at full load. The only thing it lacks is an SSD. It's a glaring omission in an otherwise fantastic product.

Despite being fantastic, one cannot ignore the steep price, but we're also hard-pressed to think of capable alternatives.

Anirudh Regidi



Performance.....85
Features.....87
Design and Build.....83
Value for Money.....85

Specifications

CPU: Intel i7 4710HQ; **RAM:** 8GB; **GPU:** Nvidia 860M; **Display:** 15.6" @ 1080p; **Misc.:** 1TB HDD, Blu-Ray drive, SteelSeries keyboard, DynAudio speakers

Contact

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Airtel 3G Wi-Fi Dongle

Performance and reliability comes at a price



The dongle has a standard design which is the size of a pen drive with two LED indicators, one for power and the other to indicate 2G and 3G connectivity. The back of the dongle can be removed to accommodate a regular SIM card and a microSD card. Apart from plugging the dongle into a desktop/laptop, it can also be plugged into a charger with a USB port or even a portable charger.

Tests showed that the speeds varied from 0.8Mbps to 3.9Mbps on download and 1mbps to 2Mbps on uploads. Connectivity isn't an issue, given Airtel's footprint. If you are looking for a reliable and portable 3G dongle with Wi-Fi, this dongle is a good option to consider.



Feature.....75
Performance.....85
Value.....65
Design.....70

Specifications

SMS Support; **Wi-Fi:** IEEE 802.11b/g/n; Wi-Fi hotspot up to 5 Devices; Work with Power Mains; HSPA+21.6Mbps D/L and HSUPA 5.76Mbps; Mobile Wi-Fi App

Contact

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Binatone 3G Wi-Fi Dongle

Offers decent connectivity



The design of this dongle is pretty standard with a glossy finish and a USB 2.0 interface. The back panel comes off to reveal a SIM card and also a microSD card slot.

It can be used in both 3G and Wi-Fi mode which supports up to five devices. Like any other dongle, you can connect it to a computer or even a power adapter with a USB port. The performance of the dongle was pretty good as we didn't notice any network issues and we managed to get constant 3G speeds on different networks. While this is a good product, however there are much reliable products available in the market, so definitely purchase wisely.



Feature.....65
Performance.....70
Value.....80
Design.....60

Specifications

WLAN: IEEE standard 802.11b/g/n; Micro SD card memory up to 32 GB Support; WPA-PSK, WPA2-PSK; 3G Network (WCDMA (HSDPA/HSUPA); Supports 3G Frequency Range (WCDMA 2100MHZ (850/ 1900MHZ); Wi-Fi hotspot up to 5 Devices; **Warranty :** 1 year

Contact

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Routers going wrong
Check out this video to find out what happens when your router goes wrong and you lose the internet **http://dgit.in/RoutersVid**



LG's own processor
LG will be manufacturing its own processor now with the next smartphone packing one **http://dgit.in/LGProc**

Ricoh SP111

Unjammable? We put that claim to the test

66

Cost of Ownership 75
Performance..... 67
Features 45
Value for money..... 75

Specifications

Resolution: 1200x600dp; **Interface:** USB 2.0; **RAM:** 16MB; **Input capacity:** 50 sheets; **Weight:** 6.7kg; **Duty cycle:** 10000 pages

Contact

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Website: ricoh.co.in

Laser printers are a very mundane category to test and the winners usually boil down to a trade-off between price and features. The SP111 however, seemed to offer something special. Ricoh claims the printer can't jam and with a claim like that, you can be sure we did our best to put it to the test.



Price ₹6,990

The printer did prove itself to be quite difficult to jam (but we did get it to jam multiple times), but when we compared the "unjammable" nature of this printer with another laser printer from a different company, that laser printer stood up to our tests just as ably, which was very much in-line with our expectations, considering that laser printers handle paper quite well.

So, jam-ability aside, how did this printer fare? To be honest, the printer only managed passable scores in our tests, with print quality that's sufficient for text heavy documents, if you're not too picky about the quality. Another issue was the design of the device itself; while it is compact when not printing, the fully deployed state of the printer occupies a considerable amount of space, given that the output tray opens up almost to the length of an A4 size sheet. The printer is also a little slow to wake from sleep and takes about 20-30% longer to print documents than its competition.

Of course, the printer is quite cheap, especially with the official toner refills, which is a big point in its favour and given the design of the device, it's obviously meant for SOHO use where print volume isn't a priority. A good value product for sure.

Anirudh Regidi

ASUS Rampage V Extreme

This one has yet to take the black

82

Features 84
Build 80

Specifications

Chipset: Intel X99; **Memory support:** DDR4 8x3300(OC) MHz upto 64GB; **LAN:** Intel I218V Gigabit Ethernet; **Audio:** ROG SupremeFX 7.1; **SATA:** 12x SATA III; **Expansion:** 4 PCIe x16 (x16+x8+x8+x8); **Dimensions (LxWxD):** 305 mm x 272 mm; **Warranty:** 3 years

Contact

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We saw ASUS's new OC socket on the X99 Deluxe and the Rampage V Extreme features the same technology. Compared to the Rampage IV Extreme this one has support for higher memory speeds which tops out at 3300MHz and was expected since DDR4 offers better performance natively. A notable addition is that of a 1300 Mbps 3T3R 802.11ac Wi-Fi module which is an improvement over what was seen earlier. The X79 Rampage IV Black Edition came with a wireless module and it was only natural to see it included on their next flagship enthusiast board.



Price ₹37,100 (+Tax)

When it comes to storage you have a lot more SATA III ports, some of which are part of SATA Express interfaces. There is also an m-keyed M.2 port that is compatible with modules that are up to 110 mm long. It does, however, not have a mounting hole for 4.2 cm long modules and that shouldn't matter since those modules are designed for smaller form factors and we have no dearth of space on an ATX board. Both PCIe and SATA M. 2 drives are supported which is a rarity since most boards only support M. 2 SATA.

Aside from all this the board does come with the usual set of features like Keybot, MemOK, slow mode etc. There is an on-board button for switching between audio profiles which should have come with a header to extend the button. Lastly, ASUS has included the OC panel, (a pretty handy device for overclockers) with this X99 motherboard.

Mithun Mohandas



Gun fire notification
Yardarm will be able to tell police dispatchers whenever an officer draws out and fires their weapon **http://dgit.in/Yardarm**

3D map of universe
Researchers from Max Planck Institute and US Berkeley Lab have created a 3D map of the universe which is 11 Billion years old **http://dgit.in/3DUniverse**

Motorola Moto X

Motorola finally has a true flagship

The only thing not likeable about the Moto X (2nd Gen) is its camera. Everything else about this smartphone screams true flagship. The device has the Snapdragon 801 SoC along with Motorola's Mobile Computing System. This gives the device amazing performance, at par with any flagship smartphone today.



Price ₹31,999

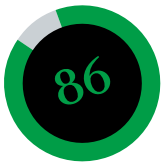
In addition, the 1080p AMOLED display is bright and has very good sunlight visibility. The feel is further enhanced by the Corning Gorilla Glass 3 protection, which improves the touch sensitivity. The overall look of the smartphone is also quite good. The new Moto X is a bigger version of the older model and is not as compact or light. The device still feels quite compact compared to other devices with the same screen size.

The premium feel is further enhanced by the addition of the metal rim. Motorola's engineering allows the rim to also act as an antenna, while avoiding the 'death grip' issue that Apple had on the iPhone 4S. The device automatically boosts the signal to areas of the antenna that are not covered by your hand.

The only issue with the Moto X in its camera, which though improved to 13 MP, which disappoints in low light and isn't the best in normal outdoor conditions either. Also, while the pricing is still inexpensive compared to its main competitors (Samsung Galaxy Alpha and Xperia Z3 Compact), the device should've been even cheaper, ideally.

None of this though hurts the Moto X as much as the 16 GB storage without micro-SD support. Easily one of the best smartphones in the market, but its camera performance and storage space can be a downer.

Prasid Banerjee



Design 88
Features 80
Performance 85
Value 90

Specifications

1080p 5.2 inch display; 2.5 GHz Qualcomm; Snapdragon 801 SoC; 2 GB RAM; 13 MP rear camera, 2 MP front camera; 16GB internal storage; 2,300 mAh battery; Android 4.4.4 KitKat upgradeable to Android 5.0 Lollipop

Contact

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Huawei Honor 6

Medal of Honor

The Honor 6 is the latest offering from the Chinese manufacturer Huawei. To be honest, the phone shows a lot of promise with its beautiful design, 3GB of RAM and an octa-core processor running the show. And it does so with great aplomb, much to our surprise, considering its 20k price tag. The phone is as good in real life as it looks on paper.



Price ₹19,999

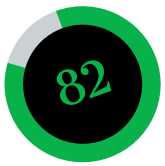
The phone offers a 5-inch 1080p display complemented on either side by thin bezels, making the screen seem quite large at first. The screen offers good viewing angles and good legibility. Text on the display looks crisp and is easily readable indoors as well as outdoors. As far as the design goes, Huawei seems to have taken aesthetic cues from Apple's iPhone 4S which gives the phone a premier look and feel, which is nice at the price.

On the inside the phone is rocking a 1.7GHz Kirin 920 octa-core processor which handled everything we threw at it with ease. Multitasking on the phone with the 3GB dual-channel RAM was a breeze and even with moderate to heavy usage the phone was able to last for almost a day and half which is quite commendable for an octa-core phone – not something you see in phones, day in day out.

The 13MP rear camera on the Huawei Honor 6 takes decent pictures but not as good as other competing phones donning a 13MP camera sensor. But that's about the only minor disappointment on this phone. Its 5MP front facing camera is good enough for taking selfies in ample light and for video calls.

All in all the Huawei Honor 6 is a recommendable phone at its 20k price point.

Hardik Singh



Feature 85
Performance 90
Value 75
Design 79

Specifications

Display: 5 inch IPS display with 1920x1080 resolution (441ppi); **Battery:** 3100mAh; **Storage:** 16GB, expandable via microSD card; **Camera:** 13MP rear with LED flash, 5MP front; **SoC:** Kirin 920; **CPU:** 1.7GHz octa-core; **RAM:** 3GB; **Operating system:** Android 4.4.2; **Connectivity:** 3G, W-Fi, Bluetooth

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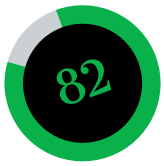
360Fly Action Camera
With the 360fly action camera you can record in full 360 view using a wide view angle
http://digit.in/360Fly



Google with Oxford
Google will be working with Oxford University to further its research in artificial intelligence
http://digit.in/GoogleOx

Samsung Galaxy Alpha

Finally a 'premium' smartphone from Samsung



Features 80
Design 80
Performance 84
Value 85

Specifications

4.7 inch 720p display; 12 MP rear camera, 2.1 MP front camera; Exynos 5 octa-core SoC (1.8 GHz + 1.3 GHz); 1860 mAh battery; 32 GB internal storage; 2 GB RAM

Contact

Samsung India
Phone: 1800-3000-8282
Website: samsung.com/in

The Galaxy Alpha is what the Samsung Galaxy S5 should have been. The company has finally added some metal on its device and it could easily be the best looking of all Samsung smartphones right now.

The device has a 4.7 inch display, which makes it compact and the overall feel is very iPhone-like. Nevertheless, the Alpha has its own personality and looks and feels very good, even with the same faux-leather back as the Galaxy S5. It is also incredibly light and slim, weighing only 115 grams – 3 grams more than the iPhone 5S.



The device though takes a hit in two departments, the first being performance and the second the display. While the 720p display is bright and really good to use, the 40k price tag begs for a 1080p display, especially because the much lower priced Moto X has it. The Super AMOLED display also tends to oversaturate colours quite a bit, although it's largely a personal preference.

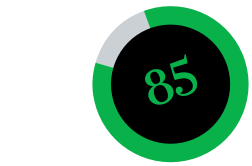
The bigger problem in the Alpha is the heating. The slim form factor coupled with an octa-core SoC results in easy heating. This results in thermal throttling of the processor and hence a drop in performance. During extended gaming, you would have to let the device cool down often.

The Galaxy Alpha though has a respectable 12 MP camera. Even though the megapixel count might seem low, the camera actually takes very good pictures in normal lighting conditions. The camera does stutter a little bit under tubelights and low light, but it is still better than many others in the market.

Prasid Banerjee

Noctua NH-D15

The best CPU air cooler we've ever tested. Period.



Features 85
Build Quality 90
Performance 90
Value for money 75

Specifications

CPU Support: Intel Socket LGA 2011 / 1366 / 1156 / 1155 / 1150 / 775, AMD Socket FM1 / AM3+ / AM3 / AM2+ / AM2; **Dimensions:** 160(H) x 135(D) x 165(W) mm; **Weight:** 1320 grams (with fans); **Base:** Copper; **Fan Speed:** 300 (PWM) ± 20% - 1500 RPM (PWM) ± 10%; **Power Consumption:** 1.56 Watts;

Contact

Prime ABGB
Phone: +91-22-6740 2006
Email: sales@primeabgb.com
Website: www.primeabgb.com

We've always been a fan of CPU air coolers that are low on noise even under taxing conditions and Noctua has kept our excitement alive in this regard with their impressive line-up of air coolers till date. Seeing how big the size of the older NH-D14 was, we weren't surprised to find the NH-D15 in the same vein albeit bigger. By principle, more the surface area, better the heat dissipation, so high end air coolers tend to be huge and bulky. The NH-D15 with its size tends to block out the first PCIe slot on certain motherboards but you can make sure of the clearance that it provides by referring to Noctua's website.

Noctua includes a wealth of useful accessories inside the box including two of their NF-A15 fans, two low noise adapters, a fan splitting Y-cable, a tube of Noctua's NT-H1 thermal paste, a screw driver, extra fan clamps and a case badge. At an ambient room temperature of 28°C, we saw an average idle temperature of 29°C while the load temperature never crossed 48°C.



And so, the NH-D15 wins our Best Performer award for air coolers for a performance that blew most air coolers out of the water. We also observed that the cooler is almost inaudible outside the case. Although expensive as per air cooler standards, with an excellent build quality and a performance that's as good as AIO liquid coolers, the Noctua NH-D15 is a recommended choice and justifies its price to a large extent.

Siddhant Sharma



Hybrid Play for kids
Kids can use playground toys as video game controllers with the Hybrid Play clip
http://dgit.in/HybridPlay



Ford anti-collision system
Others having included automatic anti-collision braking systems in their cars, Ford would be doing it soon **http://dgit.in/FordAntiColl**

Sony Xperia Z3 Compact

Small in size, big on performance

Sony is back with a brand new compact device and although it isn't a huge update, it is yet again the most desirable mini smartphone that one can get. With minor updates and similar design and form factor, the new Z3 Compact certainly looks like one of the best Android smartphones. Comparing to its predecessor, the Z1 Compact, we now have a larger 4.6-inch display which offer 600-nits of brightness, a Snapdragon 801 SoC with 2GB of RAM, a 2600mAh battery and the same 20.7MP camera



Price ₹44,990

which now supports 4K video recording. Other minor changes include the omission of the metal frame and some cosmetic changes to improve the ruggedness of the device.

You get Android 4.4.4 along with a refreshed UI which feels more fluid. The OS is stable and we didn't notice any issues with apps and high end games run smoothly. The handset also support a direct link to the PlayStation 4, where you can actually attach the handset to a controller and play games running from the console.

The camera app as it is more responsive and faster. The camera also has boosted ISO capability of up to 12800 which is the highest on a smartphone camera. Pictures come out great and offer natural colours rather than going for higher saturation. Even 4K videos are of great quality. A promising phone, overall.

Kunal Khullar

78

Features 87
Performance 75
Value 67
Design 83

Specifications

Display: 4.6-inch, 1280x720 resolution Triluminos display with X-Reality (319ppi); **Battery:** 2600mAh; **Storage:** 16GB, expandable upto 128GB via microSD; **Camera:** 20.7MP rear with LED flash, front 2.2MP; **SoC:** Qualcomm Snapdragon 801 MSM8974AC; **CPU:** 2.5GHz quad-core; **GPU:** Adreno 330; **RAM:** 2GB; **Operating system:** Android 4.4.4; **Connectivity:** 3G, Wi-Fi, Bluetooth; Waterproof and dust proof certification

Contact

Sony India
Phone: 1800 103 7799
Email: NA
Website: www.sony.co.in

Zebronics Bliss Portable Tower

Large speaker, little punch

The Bliss is a portable speaker from Zebronics that supports a whole host of input sources such as SD/MMC memory cards from which it can read MP3 or WMA files, FM radio and auxiliary line in. However, what it doesn't support is bluetooth; and a non-bluetooth portable speaker in today's day and age seems like an anachronism i.e. an object from a bygone era which doesn't fit into today's reality very well.



Price ₹1,549

The speaker unit is about the size of a shoebox, which is on the larger side. On the front you have two drivers that are quite large and in turn push up the expectation for how loud this speaker should be. Fire it up and you realise that while it's reasonably loud, it's not as loud as you'd expect a speaker of this size to be. The bass performance too is dismal. On the bright side though the FM source is more amplified than the Aux in and the FM reception above average thanks to a collapsible antenna built into the back of the speaker. As far as other features go you have a handle at the top for easy portability and a small LED screen on the front that shows source and FM frequency. The Bliss also comes with a basic remote as well, which is good.

Priced at ₹1,549 (with a one year warranty) might be an option for someone not looking for stellar performance and can accommodate it's bulk and heft. Remember to carry along a 3.5mm audio cable with you at all times, though.

Siddharth Parwatay

50

Build 50
Performance 45
Features 50
Value 55

Specifications

Model name: ZEB - PT100UCF; **Driver size:** 1 x 4-inch, 1 x 3-inch; **Output power:** 5W x 2; **Impedance:** 4 Ohm; **Frequency response:** 100Hz - 20KHz; **SNR:** >85dB; **Battery capacity:** 2000mAH

Contact

Top Notch Infotronix India
Tel: 044-40000007
Email: enquiry@zebronics.info
Website: www.zebronics.com

Pentax K-500

Almost hits the sweet spot



The key features of Pentax K-500 include an APS-C (23.7x15.7mm) 16MP CMOS sensor, an ISO range of 100-51200, a 6fps drive motor, 11-point AF system, full HD 1080p video recording at 30, 25 and 24fps, HDR mode and shutter speeds ranging from 30 seconds to 1/6000. The viewfinder offers almost 100% frame coverage and there is also a 3-inch LCD display at the back.

The K500 has a heavy build and weighs more than most of the entry level DSLRs in the market. The body feels really strong even with the plastic construction. Weighing in at 590gms, it is higher than the Nikon D3300 and even the Canon 1200D. The controls, dials and buttons are nicely placed and you don't feel completely lost if you are coming from any other DSLR brand, although it does take time to get used to the controls. It is said to be built on the same blueprint as the K50, but due to its entry level specs it has no weather sealing feature.

There are three dials, including one for changing modes, and the other two control your aperture and shutter speeds. Of course you can also use these dials to scroll through the menus.

The back has a bright 3-inch LCD and a four-way pad to control your settings along with some usual set of buttons. The viewfinder is comfortable thanks to the rubber eyecup. On the right there is the SD card slot underneath a plastic door which has rubber lining on the inside. There is also a slot for remote shutter release underneath the card slot which is protected by a rubber flap. The left side has PC/video connectivity port, a switch to change to manual, AF-S and AF-C focus modes, a RAW mode button and a flash release button. Like all DSLRs there is a hot-shoe port on the top and a pop-up flash unit. At the bottom there is the battery chamber which can take the standard supplied 1050mAH rechargeable lithium battery or 4-AA batteries which is quite a unique feature.

The performance level of the K500 is pretty good. Picture quality, RAW and JPEG, is impressive and there is also a very useful feature where the camera allows you to save a RAW file even if you haven't set the camera to save RAW format. The camera can pull out the RAW image from the buffer system.

You do get two command dials which is not usually seen on entry-level DSLRs. This makes it easier and quicker to change settings. The auto-focus is fast but quite noisy on the kit lenses. The in and out movement of the lens is quite whirry, which is really annoying if you are shooting candid shots. Other than the noise there is another major issue that stumped us. The camera doesn't offer the auto-focus points in the viewfinder. However you can shift between the AF points if you have not set the camera to AF-A or auto point selection through the live view.

You do get a number of presets, filters and colour modes in the camera which will definitely keep the amateur photographer entertained. The interface, however, feels very outdated and reminding us of an old point shoot camera. We really hoped for a better and a more modern looking interface.

The image noise control on the K500 is quite impressive as pictures taken at ISO 3200 didn't show any signs of noise. At about ISO 6400-12800 you start seeing noise rising up. The focusing is pretty good and accurate, if we keep the 'no AF points in the viewfinder' issue out of the picture. The image stabilization works well and we felt it to be better than the Nikon D3200 and the Canon 1200D. The auto white balance is reliable in almost all situations, and we noticed that it gives cool results on some occasions.

The K500 is an impressive entry-level DSLR, but in a world where Canons and Nikons and Sonys are taking over the photography world, Pentax has lost ground. However if you don't plan to extend your photography kit and want to use a DSLR as a hobby photographer, the K500 is not a shabby choice at all.

Kunal Khullar



Feature 75
Performance..... 80
Value 85
Design 70

Specifications

APS-C (23.7x15.7mm) 16MP CMOS sensor; ISO 100-51200; 30 seconds to 1/6000 shutter speed; 6 fps drive motor; 11-point AF system ; Full HD 1080p video recording at 30, 25 and 24fps; 3-inch LCD display

Contact

Ricoh India Ltd
Phone: 011-49103000
Email: ril.info@ricoh.co.in
Website: ricoh.co.in



Gaming briefcase
CyberPowerPC's Fang Battle Box is a mobile gaming rig that can contain your hardware too **http://dgit.in/CyberPowPC**



GTX 970 on Mini-ITX
Gigabyte downsized the Geforce GTX 970 to make a tiny Mini-ITX variant which would ship next month **http://dgit.in/MiniITX970**

Transcend StoreJet 35U3

The only thing it lacks is a bit of padding. That's about it, though.



With no difference in the design when compared to its predecessor, the StoreJet 35U3 now has support for USB 3.0, killing any need for the previous eSATA port. This is not because the eSATA port is slow but compared to USB 3.0 the bandwidth on both interfaces is nearly the same – so why not go in for the slightly more popular connectivity interface? Makes total sense. The external silver-coloured aluminium casing of the StoreJet has a stylish brushed finish and has an 80mm cooling fan. Just like the previous model this too makes use of the Type B USB connector which is sturdier than the Type A and the Type B micro connector. It supports GPT so maximum capacity won't be an issue for quite a while.

We measured the performance hit between connecting a hard drive directly on a SATA III port and through the Storejet 35U3. Synthetic tests didn't experience a considerable drop in performance but it fell by up to 45-50% in the real world tests which involve transferring sample files that involve a mix of incompressible and compressible data of varying queue depths.

There was a temperature difference of up to 18% while copying a large number of files. The case doesn't have any padding inside to protect the hard drive if you happen to drop it.

The StoreJet comes with Transcend Elite data management software and the EcoFanControl utility that lets you change preset profiles for your cooling fan. This particular model comes with a 3TB drive included which itself costs ₹6,700 so at a price of ₹8,999 for the whole package, it's a pretty good deal.

Abhijit Dey



Build Quality 67
Performance 77
Value 84

Specifications

Dimensions: 197.5x48x127.5mm; **Weight:** 340g (Without HDD); **Op. Voltage:** AC input:100V-240V | DC input: 12V/1.5A; **Storage Media:** 3.5 SATA HDD; **Connection Interface:** USB 3.0; **Warranty:** 2 years

Contact

Transcend Information Inc.
Phone: NA
Email: NA
Website: http://in.transcend-info.com/

HP EliteBook 1040 G1

A desirable, premium ultrabook

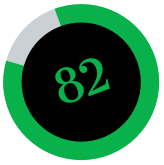


In the world of high-end ultrabooks, where money isn't a consideration, where you desire a thin and light laptop that should hold its own in a boardroom as well as an airport lounge, the EliteBook 1040 G1 is all that and more. Smartly designed, well constructed, with a premium look and feel, this slim business ultrabook ticks all the right boxes in terms of aesthetics and build. It not only has a spill-resistant keyboard, but the whole machine passes MIL-STD 810G testing for drop, functional shock, vibration, dust, humidity, altitude, high and low temperature, and temperature shock. A rare claim made by any laptop, let alone an ultrabook.

The Elitebook Folio 1040 G1 has two USB 3.0 ports and a DisplayPort connector onboard, while VGA and Ethernet connectivity is supported via an included connector. The ultrabook has a great keyboard, nice screen to work with but its touchpad takes getting used to.

The Elitebook 1040 G1 has fast internal hardware, with an SSD thrown into the mix no less, ensuring you don't feel the performance pinch using most business applications. And while we clocked 3 hours 17 minutes of battery in our benchmark tests, the EliteBook 1040 G1 is still not the fastest ultrabook we've tested this year. It's fast, faster than most laptops you'll encounter, but just not the fastest. Definitely worth considering, especially with its 3 year warranty (included in the price).

Jayesh Shinde



Feature 87
Performance 79
Value 76
Design 85

Specifications

Screen: 14-inch, LED-backlit, 1600x900; **CPU:** Intel Core i7-4600U Processor; **RAM:** 8GB; OS: Windows 8.1 Pro 64; **SSD:** 256GB; **GPU:** Intel HD Graphics 4400; **MicroSD:** Yes; **Wireless:** 802.11n + Bluetooth 4.0 **Fingerprint reader:** Yes; **Warranty:** 3 years; Metallic Gray / 14"

Contact

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Website: http://www8.hp.com/in

worldview

OUR PICK OF THE BEST TECH ARTICLES FROM AROUND THE GLOBE

(MUST READS)



SOYLENT 1.1 UPDATE?

Soylent - the controversial food 'replacement' that aims to provide optimal nourishment while eliminating the hassles of preparing and cooking food, just released a version 1.1 'update'. See what that entails:
http://dgit.in/wvSoylent11

IM-ING SANS INTERNET

During the recent protests in Hong Kong, the authorities cut off access to all communication channels they could think of - including mobile networks and Wi-Fi. However, protesters still managed to communicate just fine. How? FireChat!
http://dgit.in/wvFireChat

PAMPERED AT 20,000 FEET

Flying is usually a forgettable experience at best, but airlines are going all out to provide outlandish comfort to its wealthy passengers. An example is Singapore Airlines' Suite Class. Read on to know more:
http://dgit.in/wvLuxAir

MICHELIN VERSUS YELP!

Rating and reviewing restaurants is a profession in itself – Michelin's forte. But what do you do when the internet is flooded with user-generated reviews from a decidedly unsophisticated upstart - Yelp?
http://dgit.in/wvYelpMichelin

[Lifehacker Corner]

THE ABSOLUTE BEGINNER'S GUIDE TO ANDROID APPS



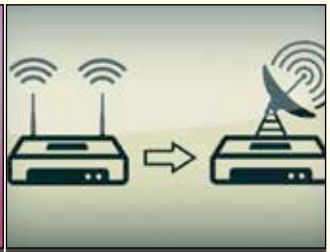
Getting started writing Android apps can be daunting – there's the programming language (Java), the Android APIs, the design guidelines and the process of publishing your app to the Play Store. It doesn't have to be so complicated though. To make your life a lot easier, Lifehacker has collected all the resources you need – including documentation, API references, tutorials and courseware – into one handy article. If you're just looking to test the waters, you should start right here. **http://dgit.in/wvAndroidApps**



Enable 2-Step Authentication – now!
We've lost track of the number of times hackers have breached passwords on major sites. It's high time you took an extra step to protect yourself. This page gives you an exhaustive list of all the sites you can enable 2-Step verification on.
http://dgit.in/wv2Step



ReBuild Adobe's Creative Cloud – free
Adobe is the leader in design, graphics and video editing software, but obtaining a legal copy of this can prove to be quite expensive. Lifehacker has put together a free suite of applications aimed at replacing Adobe's Creative Suite
http://dgit.in/wvAdobeAlternative



Supercharge your router
Wireless routers have become ubiquitous in homes, but they come with their own set of annoyances. Luckily, simply installing a different firmware on your router can fix some of them, while also giving you a tonne of additional configuration options.
http://dgit.in/wvWirelessRouter

SHORTS

ONE FOLLICLE AT A TIME

Baldness is either perceived as a sign of age or wisdom. But it's almost universally despised, and transplants often leave behind unpleasant scars. However, inspired by a Subway ad,Dr Carlos Wesley has invented a device that can replace your hair without any of the usual downsides.
http://dgit.in/wvHairTransplant

GIFS GET A LOT BETTER

imgur

Love them or despise them, animated GIFs on the internet are here to stay. Recognizing them as an integral part of Internet parlance, Imgur has decided to give them an upgrade. All GIFs hosted on Imgur will now be automatically converted to MP4 videos. Read more about it:
http://dgit.in/wvImgur

SECURITY PRINCESS



Considering what they do, it is no surprise that Google employs people tasked with breaking Google's services, to better guard themselves. At the helm of these efforts, is Parisa Tabrizi, an exemplary engineer whose official title at Google is 'Security Princess'!
http://dgit.in/wvSecurityPrincess

MUSIC DISAPPEARING!



A lot of music from the 1920s and 1930s, far before the age of MP3s, is in danger of being lost permanently. Music archivists are working hard to rescue records from being permanently damaged - but they're fighting an uphill battle.
http://dgit.in/wvVinyl

The 9 new facets of Android L

Get a taste of Google's new Lollipop

– By Team Digit



Material Design

We'll start with something that has been widely publicised. Google is going with what it calls Material Design for Android L. This will feature a flatter look, with more Google Now-like cards for notifications.

Lock Screen

The lock screen gets a major revamp, with card notifications popping up for texts, missed calls etc. There are small lock, dialer and camera icons at the bottom of the screen, doing their respective tasks.



Heads Up!

Imagine you're writing a mail to someone and you get a call. With Android L, you won't be interrupted. Rather, you will get a heads up notification showing the caller details along with the Answer and Decline buttons. This is a feature that you can find in Xiaomi's MiUI as well and Cyanogen Mod found it just before Google announced it for Android L.



Notification Bar

Speaking of notifications, the notification bar itself is going through a major revamp. The drop-down menu for notifications will feature Google Now-like cards and won't cover your entire screen. The quick settings keys can be accessed by a second swipe after pulling the tray down.

3D Multitasking

If you use Google Chrome on your phone, then this one won't be very new for you. Chrome uses a 3D one on top of the other look for tabs that you open. You can close or switch tabs from this screen. The same is being used for your apps on the multitasking screen.

ART and 64-bit Support

The ART runtime is present on KitKat as well, but it is not the default runtime. In Android L it won't be a choice anymore. ART processes code 'ahead-of-time' and provides support for 64-bit systems.

Battery Saver

The battery saver mode is an addition to stock Android that most users will welcome with open arms. In Lollypop, Google's mobile OS will have its own battery saver mode so you don't have to download a sperate third party app for it.

USB Audio

Android L has also decide to introduce USB Audio. You may see USB headsets becoming more popular soon, once phones adapt to being able to play music directly through the USB port.

Bluetooth 4.1

When it comes to data transfer, it can't ever be fast enough. Bluetooth 4.1 is faster than the current Bluetooth 4.0 that you find in flagship devices. In addition, 4.1 also doesn't interfere with 4G bands like its predecessor. Yes, Android L will support it.

SEND MONEY VIA TWITTER

BPCE, a French bank, allows its customers to link their bank accounts to their Twitter profiles. All one needs to do to transfer funds is to send out a tweet mentioning the bank, the handle of the recipient, the amount to be transferred and the hashtag #envoyer.Sending money could not have been easier.
http://dgit.in/wvSMoney

GOOGLE = LAZY PEOPLE?



Most queries these days are simple questions or lookup of facts – and Google in particular excels at this type of query. However, Google's head of search, Amit Singhal, claims that this is making users more lazy with their searches. How? Find out:
http://dgit.in/wvGoogle

HOW CHIPS WORK



At their core, CPUs and memory chips are made up of billions of microscopic transistors, arranged into circuits called logic gates. Gizmodo gives you a dummy's guide to just how these transistors and other parts come together in a system.
http://dgit.in/wvChips

MORE THAN MEETS THE EYE



Have you ever wondered if everyone else sees the world the same way as you do? Well, in the case of impressionist painter Concetta Antico, we know for a fact that she doesn't. Due to a rare genetic mutation, she can see nearly 100 million colours in the world that normal people can't.
http://dgit.in/wcTetraChromat

6 things you need to know about the Nexus 6

The new device brings a lot of firsts to the Nexus lineup and including some very important changes

– By Team Digit

2k Display

The new Nexus has a 2K display, which promises top-of-the-line screen performance. We wonder how taxing it will be on the SoC and battery though.

Size matters

The new giant Moto X – whoops – Nexus 6, is humongous. It sports a 5.9-inch display and is the first phablet in the Nexus series. One should note that the device's overall size is the same as the 5.5-inch iPhone 6 Plus.

Fast Charging

This is another new feature in the Nexus 6. The Motorola Turbo Charger allows you to give the battery 6 hours of charge in 15 minutes. We hope the phone can actually live up to these claims.







Pricing

A hugely disappointing aspect of the new phone is that the price isn't subsidised by Google anymore. The device costs at par with the iPhone 6, which is something you don't expect from a Nexus device.

Water resistant

The previous Nexus devices were sturdy, well-built and good looking, but never water resistant. The Nexus 6 is, making it the first. Motorola's nano-coating (the same as on the Moto X and Moto G) is probably the reason for this feature.



Optical Image Stabilisation

Google talked about improvements to Android camera at the I/O conference. This is perhaps why the Nexus 6 is the first Nexus phone with OIS to ensure camera quality.

India Launch

There's still some time before the India pricing is actually announced, but Motorola issued a press release today announcing that the device would be coming to 28 countries (including India) soon. The device should be priced between ₹40,000 and ₹45,000, which would still make it cost-effective compared to the chief competitors – Galaxy Note 4 and iPhone 6 Plus.

IT'S SUPER EFFECTIVE

A treasure trove of content for comic book nerds, 'It's Super Effective' is a YouTube channel that focuses solely on the histories,



storylines and interactions of superheroes in the two competing universes of Marvel and DC. If you're just starting out in the comic book world, it can be a great resource to keep yourself abreast of the history of your favourite characters.
http://dgit.in/wvSuperEffective

(QR Code)

For a list of all the links from this section, head over to dgit.in/wvnov2014
Or point your phone to the QR code above

(PRODUCT LAUNCHES)

XPERIA Z3 COMPACT



The newest flagship in Sony's repertoire, the Sony Xperia Z3 Compact is a relatively small device - feature a 720p 4.6" display. The phone is waterproof, comes with a handy tap-to-wake feature and can be paired with a PlayStation controller.
Price - ₹43,000

LENOVO YOGA 3 PRO



The Yoga 2 Pro's successor, the Yoga 3 Pro improves on this formula by packing a QHD+ display with a resolution of 3200x1800, a lighter chassis and better battery life, thanks to Intel's newest generation of Broadwell chips.
Price - ₹1,15,000 (approx)

HP 7 VOICE TAB



HP's foray into the budget tablet market was made earlier this month, with this 7 inch tablet, dubbed the HP 7 Voice Tab. As the name suggests, the tablet supprts voice calling via a single Micro SIM, and sports a ton of great hardware.
Price - ₹10,990

WORDJUMBLE

ABSOLUTE TIMEPASS

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

There are 15 spying terms hidden in the grid alongside. Find them all.

Top 3 YouTube Picks

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



The Group Hopper
In its latest SNL Digital Short, actors Pete Davidson and Bill Hader play out a parody of the Hunger Games and The Maze Runner
http://dgit.in/wvghopp



A Ride in a Tesla Supercar
Check out what it's like to be in the driver's seat in a video made by the Verge inside a Tesla P85D Model S in autopilot mode.
http://dgit.in/wvTesla



The World's Greatest Video Game Collection
This video game collector is auctioning his set on eBay, so if you have close to a million dollars lying around...
http://dgit.in/wvGames



We take a look at various methods for the implementation of 2D physics in browsers with the help of Box2dWeb on pg. 96

Will it be completely universal with Windows 10?

>>Microsoft remains tight-lipped about what's new for developers on Windows 10>

Let's just say that Metro is long dead. Just the name, ever since the threat of a lawsuit from a German firm of the same name, "Metro" apps have since been rechristened as Windows Store Apps. However, after a similarly short amount of deliberation they've now come up with the term Universal Apps. It seems Universal Studios wasn't that uptight to follow up with a lawsuit. Anyway, we know very little of what Microsoft has in store for developers with the new operating system. At the recent Windows 10 presentation, Microsoft ensured that APIs which are at the heart of Windows OS on small form factors, could easily be run in the native desktop environment. Hopefully, by the time you read this, the Connect() developer conference should already be underway and more light will have been shed on the developmental aspects of Windows 10.

Universal apps mean that code written for Windows 8.1 can easily be shared with Windows Phone 8.1. Microsoft has been working on ensuring that the core files of each operating system on different platforms are easily compatible. We knew of this first when the .NET framework called Portable Class Library was unveiled. However, the library was mostly used for writing code for the phone and tablet form factors. Windows 10 is going to change that but you'll still have to do some work on each platform individually, this has more to do with the user interface rather than the core files. So you'll be programming with dual inputs in mind all the time, keeping in mind different input modes. More of this will be explained at the Connect() conference as mentioned earlier.

There are a few Universal apps already on the Windows app store. Tweetium and Paddock are two such programs which run on the desktop environment as well as on the Windows Phone environment. So programmers coding for the mobile platforms have to keep in mind the very limited amount of memory available on these devices. The luxury of more than 4GB of RAM (going upto a ridiculous 128TB) which is available on desktops, can no longer be taken for granted. As a result of this, it's very likely that Desktop apps will also become more efficient, which is a win-win situation all around.



The plan for Universal Apps

What if one doesn't code for all environments? Well, your app will continue to run in a windowed mode and if you're on a mobile platform, then there is always the Azure platform which can run those apps on a virtual machine and give you remote access. The Connect() conference is going to showcase only a little of what will be covered in greater detail at the Microsoft Build Developer Conference in April-May. >

*side panel



*InMobi Hack Day 2014

This year's winning entry at the InMobi Hack Day was a multilingual chatting program. The runner-up creations included a wearable based monitoring app and a lipstick emulator.

http://dgit.in/InMobi2014

*Broadband study

Finally, a full fledged study was done to figure out the relation between broadband performance, pricing and demand across the developed as well as the developing nations. Read a report here.

http://dgit.in/SSInternet



*Dynamic Encryption for phones

Multi-layered AES encryption could soon bring dynamic encryption to telephonic conversations. Read it all here.

http://dgit.in/DynaTelEnc



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Implementing 2-dimensional physics for browser based games using Box2dWeb

>>Here's how you go about building the next Angry Birds>

Introduction

We've all had that phase where we've spent countless hours playing browser-based games. Back in the day it was mostly recreations of classics like Hangman and Tetris from the bygone era of MS-DOS. The evolution of games soon brought into existence much improved graphical fidelity but realism, in terms of physics was just being conceived. We moved away from all of that till Social Networking websites dragged us right back into browser-based gaming. In the beginning it was all just Flash with ActionScript but with improved HTML standards, we started seeing JavaScript physics libraries becoming more and more prominent and Flash being put on the backburner.

Soon enough we had games like Crazy Taxi, Angry Birds and the whole lot coming into existence. Some of these seemed to have a dash of physics simulation added while some games' entire USP relied simply on physics. We're of course talking about Angry Birds. It has spawned thousands of clones and we slowly started seeing more physics-based games breaking the surface. Now that HTML5 has shown a marked improvement, with more features being made native, the memory overhead and complexity of coding for the web came down. We even have intermediate programming languages like asm.js which happens to be a subset of JavaScript, hence, it runs on all browsers natively. Games that were written for C/C++, Lua, Qt, etc. can all be ported into asm.js using a source-to-source compiler. This can be played on any platform that exists now and all you need is an internet connection.

What makes games feel real is the physics in it. Angry Birds wouldn't feel as good, and definitely wouldn't have achieved the level of popularity that it has, if there had been no physics in the game. The piggies rolling over, bumping into structures and bringing down entire wooden buildings feel so natural. This is made possible thanks to a Physics engine. Mainstream games use much advanced APIs like PhysX and Havok. Browser based games use JavaScript libraries like box2dweb, Ammo.js, Cannon.js, JigLibJSetc. Box2D is an open source 2D physics engine that has been used for implementing 2D game physics across a great many platforms. Some of the games built using this engine are Angry Birds, Happy Wheels, Tiny Wings, Crayon Physics Deluxe, Limbo etc. Box2D has been used on Nintendo DS, Wii, mobile OSes like Android, BB10 and iOS. It has also been ported to many languages and we're going to looking at one such port – Box2dWeb, a JavaScript port of Box2D.

Why Box2dWeb?

Firstly, we're only working with 2-dimensional physics and



Using Box2DWeb can be just as easy as this

Box2dWeb is only programmed to simulate physics in a 2-dimensional world. Its constraint system is called joints and its quite easy to setup and use. Even setting up collision detection is relatively simple since you just have to add a listener to that particular object. It is quite fast to execute and as with any programming language, only poor coding can mess that up. The API is very simple, you can always refer the original C/C++ manual or the manual for the Flash port if you find the JavaScript manual lacking. Overall, it's a feature rich 2-dimensional physics engine that is supported on all major browsers.

Setting up a simple scene

We'll get the body tag out of the way first. It's just the canvas within which the demo takes place.

```
<body onload="init();">
    <canvas id="canvas" width="600" height="400"></canvas>
</body>
```

Now, the very first thing that needs to be done is to set up a world in which all of the actions are to take place. To do this we need to create an instance of b2World which in turn requires you to declare a vector along which the force of gravity will act upon all objects (both free-falling and pivoted) within the canvas. Vectors are defined using the b2Vec2 function, which is a 2D column vector with two elements.

```
var world = new b2World(
        new b2Vec2(0, 10)    //gravity
      , true
    );
```

Once this is done, we'll add a ground surface. We create objects and define their state using b2BodyDef and then create fixtures using b2Fixture and define their physical properties like density, friction, restitution etc. using b2FixtureDef. An entire list of all parameters that can be used if available in the documentation.

```
var fixDef = new b2FixtureDef;
    fixDef.density = 1.0;
    fixDef.friction = 0.5;
    fixDef.restitution = 0.2;

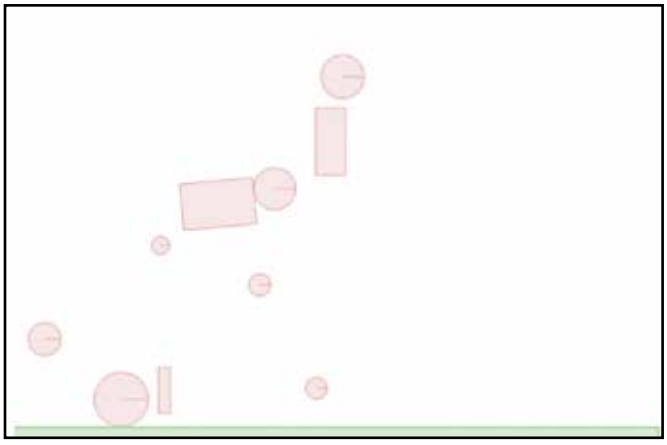
var bodyDef = new b2BodyDef;

    //create ground
    bodyDef.type = b2Body.b2_staticBody;
    bodyDef.position.x = 9;
    bodyDef.position.y = 13;
    fixDef.shape = new b2PolygonShape;
    fixDef.shape.SetAsBox(10, 0.5);
    world.CreateBody(bodyDef).CreateFixture(fixDef);
```

You can use the same definition to create walls and enclosures. Now we'll add some objects that have random characteristics. We're going to be adding ten objects and we'll be randomising their shape (quadrilaterals or circles). Further on, even the length/width/radius will be randomised along with the co-ordinates where they are to be initialised.

```
bodyDef.type = b2Body.b2_dynamicBody;
    for(var i = 0; i < 10; ++i) { //creating 10 objects
      if(Math.random() > 0.5) { //ran-
domising shape using a condition
        fixDef.shape = new b2PolygonShape;
        fixDef.shape.SetAsBox(
            Math.random() + 0.1 //set width of box
          , Math.random() + 0.1 //set height of box
        );
      } else {
        fixDef.shape = new b2CircleShape(
          Math.random() + 0.1 //set radius of circle
        );
      }
      bodyDef.position.x = Math.random()
* 10; //initial position x-co-ordinate
      bodyDef.position.y = Math.random()
* 10; //initial position y-co-ordinate
      world.CreateBody(bodyDef).CreateFixture(fixDef);
    }
```

An optional step is to setup debugdraw, which paints all the objects so you can observe interactions and subsequently debug. You can also mark out object that are active and non-active using different colours.



Our randomly generated canvas

```
var debugDraw = new b2DebugDraw();
                debugDraw.SetSprite(document.
getElementById("canvas").getContext("2d"));
                debugDraw.SetDrawScale(30.0);
                debugDraw.SetFillAlpha(0.3);
                debugDraw.SetLineThickness(1.0);
                debugDraw.
SetFlags(b2DebugDraw.e_shapeBit | b2DebugDraw.e_jointBit);
                world.SetDebugDraw(debugDraw);

    window.setInterval(update, 1000 / 60);
```

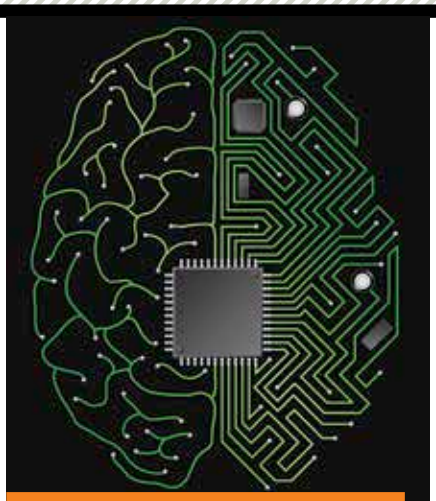
The last thing that needs to be done is to update the world whenever actions are performed. These can be user generated actions or actions resulting from incidental collisions of objects in the game world.

```
function update() {
    world.Step(
        1 / 60   //frame-rate
      , 10       //velocity iterations
      , 10       //position iterations
    );
    world.DrawDebugData();
    world.ClearForces();
  };
```

To summarise, we've created a world, implemented gravity along a vector. A ground surface was added as a rigid body and then ten random objects were generated that would drop down and collide with the ground. This is the simplest implementation of the JavaScript library and we'd love to see any works that you've created using the same library. >

Resources:

Project Home
https://code.google.com/p/box2dweb/
Box2D API Documentation
http://www.learn-cocos2d.com/api-ref/1.0/Box2D/html/index.html
Example featured in the article
http://pastebin.com/0a94fJRW



>>How biocomputing aims to expand its applications>>

>>A team at ETH Zurich have developed precise and programmable biological components to build better functioning biocomputers >

The development of biocomputers has been a hot topic for a while. Bioengineers have spent decades developing different components and modules (made of biological material) that can be successfully embedded into living cells, controlling their functions. Imagine taking control of cancerous cells and reprogramming them to deny further duplication, saving the life of the host. Injecting neurons with small circuits made from biological material can be used to treat the many neurological disorders and more.

The possibilities with bio-computers are endless and most of them point to an impressive future of the capabilities of the human body. Bioengineers have been developing individual components and prototypes of biological computers for the last 20 years, but there are still a great many obstacles to overcome. The way biological circuits work are very different from their silicon brethren. Biological signals can be in more than two states. This is good, because the data complexity rises, but it's also bad because it's actually quite hard to read and analyze that date, expecially when scaled up.

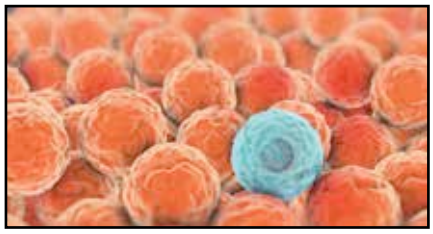
At ETH Zurich, an international university for the study technology and natural sciences, a team has managed to develop several components that aims to become building blocks for precise biological computers. We look into a couple of those components developed at ETH.

Control over individual sensors

Nicolas Lapique, an ETH doctoral candidate under Yaakov Benenson, Professor of Synthetic Biology in the Department of Biosystems Science and Engineering at ETH, has developed a circuit that makes it possible to control every individual sensor, preventing the sensor from staying permanently active. It could be activated when desired using a control signal. This circuit has been tested on human kidneys and cancer cells. Further development of the circuit would make it possible to detect harmful cancer cells. If the detector comes across any such cells then the circuit would trigger and destroy those very cells. The healthy cells would of course be safe, in particular because they can also be tagged with a "safe" marker.

Precise biological converter

Laura Prochazka, another doctoral candidate under Benenson, has developed a precise and versatile biological signal converter. In electronic circuits, there is either current flowing or not flowing and the signals are always the same. This isn't the case with biological circuits where the signals are different (different proteins



or microRNA molecules). Hence, signal converters become essential between biological components. The developed signal converter also converts multiple input signals into multiple output signals.

The future of biocomputing can have modular biological components combined and changed at will, just like any plug-and-play device. Current bioengineers will also be able to program circuits like regular software programming at a later stage. The applications of biocomputers are vast and it's easy to let one's imagination run wild with the possibilities that this technology has to offer. >

*the source code



*Apple's TestFlight Beta

>>Apple's testing service, TestFlight, has been released for iOS developers, allowing them to get their apps tested by upto a 1000 beta testers

http://dgit.in/TestFlightBeta



*More bounty to bugs

>>Since finding bugs is a really time consuming job, Google has increased the top bug bounty to $15,000 for security researchers disclosing bugs.

http://dgit.in/MoreBounty



*64-Bit app testing

>>For app developers, Google has released a tool that allows developers to test their 64-bit apps on the upcoming Android L OS. You can download it at the link below

http://dgit.in/64bitAndTool

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Buying a gaming laptop

On the quest for higher frame rates without compromising portability

Agent 001
agent001@digit.in



The theme of the past month, in terms of reader letters reaching my inbox, has largely been something like this. There's a heightened interest in people wanting to buy a gaming laptop, and everyone wants me to make a recommendation that lets readers choose a gaming laptop at different budgets. So for the benefit of everyone grappling with this inner turmoil, I decided to write this ready reckoner.

A gaming laptop – a really good one – is a complicated mixture of engineering and industrial design to pull off successfully. That's why the really good ones are always so expensive – Dell's Alienware, MSI Ghost, ASUS ROG, etc. But they still struggle to match up to a desktop gaming PC's performance, at a similar price. So my first advice to anyone who wants to entertain even the thought of purchasing a gaming laptop: don't get carried away with emotions and thrill, and coldly assess the pros and cons of what you're about to do. If you want a gaming laptop, the only thing that should drive that decision is the requirement of portability – because a gaming laptop can be taken to LAN parties, from your couch to your bed, and so on. If portability isn't the single biggest criteria of your buying decision around gaming laptops, you've lost the plot on priorities completely, and doing a great disservice to yourself and your gaming experience, where a gaming PC can serve you MUCH better. Hands down.

Now that we've gotten that out of the way, the assumption here is that everyone who's reading at this point desperately wants a gaming laptop. There are two things that matter, something that you should look at far more attentively than anything else. A gaming laptop's GPU and its VRAM. The CPU and RAM are important, too, but whether or not the gaming cookie does crumble squarely depends on the GPU and its VRAM. I've taken a long look at the offerings and AMD's Radeon GPU-based laptop offerings are few and far in between, while the market is flooded with NVIDIA GeForce graphics equipped gaming notebooks. You should look at buying laptops with NVIDIA GeForce "GTX" 700M or 800M GPUs, and not just settle for the "GT" ones, if you can. The VRAM of choice should be GDDR5 over GDDR3, and the higher its capacity is obviously better – since it will hold a greater number of textures and other graphics-related data to generate the required frame rate. A minimum of 2GB of VRAM is the most basic qualification of a worthwhile GPU to drive most recent games, while 4GB of the same gives you enough headroom to pump out frames at higher settings.

Having a 1080p screen is an absolute must for any serious gamer worth their salt, but for lower-configuration GPUs, driving a game at 1366x768 pixel resolution can be managed pretty well. Another thing not to be overlooked while buying a gaming laptop is the notebook's keyboard layout. Any self-respecting gaming laptop has to have a full keyboard with dedicated number pad, and I strongly urge you to try your hand at them before purchase. Also, definitely think of investing in a laptop cooling pad, because these machines will generate quite a bit of heat. All the good ones I've encountered are from Cooler Master – check out their Notepal series.

As to which gaming laptops to buy, we've compiled a list of Top 10 Gaming Laptops on our website at: http://dgit.in/Top10Gaming. We've got machines for every budget. Keep fragging!



Neutron mini-PC
Neutron is a mini-PC packed with Haswell and is the size of the palm of your hand
http://dgit.in/NeutronPC

Agent 001

Q Can I run that game?

Dear Agent 001, I love to play games on my PC. I play games like DMC Devil May Cry, Resident Evil 6, Sleeping Dogs 3, Dead Island, Call of Duty Modern Warfare 3.

My PC configuration is as follows:

- Intel Core i3 3220 3.30GHz processor
- 4GB RAM
- Intel B75 motherboard
- Windows 7 Ultimate 64 bit OS

With this in mind, I want to play games like Assassin's Creed 3 or 4, Prototype 2, GTA V, Max Payne 3, Deadpool, Hitman Absolution. Will I able to play these games on my PC with this configuration or will I be needing a graphics card? If yes which NVIDIA graphics card will be the best fit for my budget which is between 4k to 6k?

– Abhinav Pal

A One of the quickest way to know if any of your wishlist games can be supported on your gaming rig is to check out a tool like http://www.systemrequirementslab.com/cyri. It truly is a nifty little tool that lets you easily lookup a particular game that you want to play, see its system requirements, or alternatively launch a JAVA browser plugin to inspect your own PC configuration and tell very succinctly whether the said game can run on your machine or not. Alternative, you can also install a desktop application to run the tool offline anytime you so desire. As far as suggesting you a GPU between 4-to-6k, take a look at the GeForce GT 640 from NVIDIA – it should let you play most of these games between medium to high settings, most of the times.

Q Best phone of them all!

Hello! I'm Prateek from Maharashtra. I'm willing to buy a mobile that is priced up to ₹15k. After a lot of surfing the web and e-research, I have zeroed in on these three mobile phones - Moto G (2nd Gen), Micromax Canvas Nitro, and ASUS Zenfone 5. Please help me decide on any one of these phones as early as possible.

P.S. I want a phone which has the best performance and also should have good battery life.

– Prateek

A All the three phones you've mentioned are value for money, so I'll break it down for you. If you want the out and out best performer, then the Canvas Nitro is the best choice. You will get the best performance out of it for playing games etc. But Nitro would mean a lack of regular updates and maybe even support issues. In the (decreasing) order of performance, it would be Canvas Nitro, Zenfone 5 and then Moto G, although all are good performers overall.

If you want good build quality and battery life, then the Moto G (2nd Gen) is the best. Also, it would mean timely updates. ASUS Zenfone 5 should give you updates, but Motorola will definitely be faster because of stock Android on the Moto G. The battery life is very close on all three, but the Nitro is better than the others, going by pure benchmarks and our real-world usage of the device.

DSK INTERNATIONAL CAMPUS
animation | video game | industrial design

DSKIC STUDENTS BAG BAFTA NOMINATION!

Sagittarius is an on-rails FPS shooter made for the Oculus Rift. In the game, you embody a spy that infiltrates an enemy base and is caught while stealing battle plans. Your character is equipped with a crossbow which is aimed using the Oculus Rift. The objective of the game is to survive the onslaught of enemies as your chariot races through enemy lines towards the safety of your base.

This is a game developed by a team of students (called Too Mainstream) from DSK International Campus, Pune, for Dare to be Digital, an international video games development competition. Once a year, teams of five students, usually a mix of artists, programmers and audio, assemble at Abertay University, Dundee, Scotland, for 9 weeks during June to August to develop a prototype video game, receiving mentoring from industry.

CHASING THE IMPOSSIBLE DREAM

The journey for Dare To Be Digital started last year. We came up with a concept, made a video pitch and applied for the competition. Luckily, we got selected and moved on to the next stage of the selection process. We had to give a presentation to a panel of judges to convince them that we had a good concept and that we were a formidable team. We succeeded at that, too! We were invited to Dundee to compete in the competition, and from then on there was no looking back. We were the only team to be selected from India along with 14 other teams from all over the world.



Team Too Mainstream getting selected for BAFTA Award

Overall, it's been a tremendous experience for us. Interacting with other teams around the world, and making contacts with them as well as the mentors. At the end of the competition we showcased our game to the audience at Dare Protoplay. A lot of people played this game during the protoplay event, which took place in the Caird Hall, Dundee over 3 days. We were overwhelmed with the audience responses to our game.

The results were announced the last day of the protoplay. We were in the Top 3 and we have therefore been nominated for BAFTA - Ones to watch award. We are now developing the game further at DSK International Campus for the upcoming BAFTA event which will take place in London in March 2015. Wish us luck!

-- Ashik Sharief, Too Mainstream, DSKIC

Advertorial



Zeiss VR One cheaper
Zeiss VR One is a $99 mobile VR goggle that will support smartphones between the sizes 4.7 to 5.2 inches **http://dgit.in/ZeissVROne**



Cancer cured?
Scientists from Harvard Medical School have engineered cancer-killing stem cells in a lab **http://dgit.in/1tnLPpr**

SPEND SMART

All the awesome gadgets that you could possibly want are listed here for your perusal. Keep browsing and keep shopping!



POINT AND SHOOT CAMERAS

Brand	Model	Resolution (in MP)	Sensor Type	Optical Zoom	Max ISO	Battery Life (Shots)	Price (in ₹)
Canon	Powershot SX50 HS	12.1	CMOS	50x	6400	315	25,150
Canon	PowerShot SX400 IS	16	CCD	30x	1600	200	10,135
Canon	PowerShot SX170 IS	16	CCD	16x	1600	300	9,695
Canon	IXUS 155	20	CCD	10x	1600	230	5,999
Fujifilm	X-F1	12	EXR CMOS	4x	12800	300	13,999
Nikon	Coolpix L330	20.2	CCD	26x	1600	370	10,217
Nikon	Coolpix L830	16	BSI CMOS	34x	3200	390	14,290
Nikon	Coolpix S3600	20.1	CCD	8x	3200	220	5,838
Olympus	Stylus VH-520	14	CMOS	10x	3200	320	8,988
Panasonic	Lumix DMC-TZ25	12.1	MOS	16x	6400	260	10,480
Panasonic	Lumix DMC-LZ30	16.1	CCD	35x	6400	380	11,499
Sony	Cyber-shot DSC-H300	20.1	Super HAD CCD	35x	3200	350	13,990
Sony	DSC-HX20V	18.2	EXR CMOS	20x	12800	320	19,500
Sony	Cyber-shot DSC-W830	20.1	CCD	8x	3200	210	7,500



DSLRS

Brand	Model	Resolution (in MP)	Sensor Type	Microphone	MMC Slots	Approximate Battery Life (in Shots)	Price (in ₹)
Canon	EOS 1200D Kit	18	CMOS	Mono	1	500	26,500
Canon	EOS 5D Mark III Kit	22.3	CMOS	Mono	1	950	2,49,500
Canon	EOS 7D	18	CMOS	Stereo	1	800	1,28,900
Canon	EOS 700D	18	CMOS	Stereo	1	500	42,495
Nikon	D5200	24.1	CMOS	Stereo	1	600	35,200
Nikon	D5100	16.2	CMOS	NA	1	510	26,308
Nikon	D4	16.2	CMOS	Mono	1	2600	3,70,000
Nikon	D800	36.3	CMOS	Mono	1	900	1,74,551
Nikon	D3100	14.2	CMOS	NA	1	550	22,999
Sony	Alpha SLT-A99V	24.3	Exmor CMOS	NA	1	500	1,39,990
Sony	ILCE-3000K	20.1	BSI CMOS	Stereo	1	500	25,300
Sony	Alpha SLT-A58M	20.1	HD CMOS	Stereo	1	690	44,990
Sony	SLT-A58K	20.1	HD CMOS	Stereo	1	690	32,990



Why key logging?
Read on to find out why Microsoft is logging your keystrokes in the Windows 10 technical preview **http://dgit.in/Win10KeyLog**



Samsung supercharges WiFi
Samsung is working on faster standards of WiFi technology that will increase the speeds by a factor of five **http://dgit.in/WiFiSuper**



LED TVS BELOW ₹30,000

Brand	Model	Type	Screen Size (in inches)	Display Resolution	HDMI Port	USB Port	Price (in ₹)
AOC	LE40A6340/61	LED	40 inches	1920 x 1080	Yes (2)	Yes (2)	24,990
Haier	LE40B7500	LED	40 inches	1920 x 1080	Yes (2)	Yes (1)	27,190
LG	32LB5610	LED	32 inches	1920 x 1080	Yes (2)	Yes (1)	29,490
LG	32LB5610	LED	32 inches	1920 x 1080	Yes (2)	Yes (1)	29,191
Lloyd	L40N	LED	40 inches	1920 x 1080	Yes (2)	Yes (1)	29,725
Micromax	40T2820FHD	LED	40 inches	1920 x 1080	Yes (2)	Yes (1)	22,990
Onida	LEO39FD	LED	39 inches	1920 x 1080	Yes (2)	Yes (2)	25,547
Onida	LEO40FS	LED	40 inches	1920 x 1080	Yes (2)	Yes (2)	29,637
Philips	32PFL5578	LED	32 inches	1920 x 1080	Yes (2)	Yes (1)	27,990
Philips	39PFL3559/V7	LED	39 inches	1920 x 1080	Yes (1)	Yes (1)	29,991
Philips	32PFL5578	LED	32 inches	1920 x 1080	Yes (1)	Yes (1)	26,768
Samsung	32H5100	LED	32 inches	1920 x 1080	Yes (2)	Yes (2)	29,990
Sansui	SJV24FH-2F	LED	24 inches	1920 x 1080	Yes (1)	Yes (1)	12,285
Sony	BRAVIA KLV-22P402B	LED	22 inches	1920 x 1080	Yes (1)	Yes (1)	13,490
Videocon	VKC40FH	LED	40 inches	1920 x 1080	Yes (2)	Yes (1)	29,490
Videocon	VKC22FH-ZM	LED	22 inches	1920 x 1080	Yes (2)	Yes (1)	12,626
VU	40K16	LED	40 inches	1920 x 1080	Yes (3)	Yes (2)	25,990



WEARABLE SMART DEVICES

Brand	Model	Date Display (Y/N)	Dial Shape	Strap Material	Display Size	Screen Resolution	Fitness Sensors (Y/N)	NFC (Y/N)	Weight (in grams)	Dimensions (in mm)	Warranty (in months)	Price (in ₹)
Burg 13	Sao Paulo 1312 (Call function)	Yes	Square	Rubber	NA	NA	No	No	69	45 x 44 x 15	12 months	21,900
GOQii	Life (With 12 months plan)	Yes	Rectangle	Silicone	NA	NA	Yes	NA	NA	NA	12 months	13,482
LG	G Watch	Yes	Square	Silicone	1.65 inch	320x320	No	No	63	37.9 x 46.5 x 9.95	12 months	8,900
Migo	Smartwatch ZH0000120	Yes	Square	Rubber	1.54 inch	240X240	No	No	80	280 x 45 x 13	NA	7,399
Mota	Smartwatch MT-SW1B	Yes	Rectangle (Curved)	Metal	NA	NA	No	No	36	79 x 64 x 25	NA	5,152
Motorola	Moto 360	Yes	Round	Leather	1.56 inch	320x290	Yes	Yes	49	46 x 11	12 months	17,999
Pebble	Steel	Yes	Square	Stainless Steel (Leather optional)	1.26 inch	144x168	Yes	NA	56	46 x 34 x 10.5	12 months	18,990
Samsung	Galaxy Gear	Yes	Square	Silicone	1.63 inch	320x320	Yes	No	73.8	57 x 37 x 11	12 months	16,090
Samsung	Gear Live	Yes	Square	Silicone	1.63 inch	320x320	Yes	No	59	37.9 x 56.4 x 8.9	12 months	15,900
Samsung	Galaxy Gear Fit	Yes	Rectangle (Curved)	Silicone	1.84 inch	128x432	Yes	No	NA	24 x 57.4 x 12	12 months	9,195
Sony	Smartwatch SW2	Yes	Square	Silicone	1.6 inch	220x176	NA	Yes	122.5	42 x 9 x 41	6 months	14,200
Spice	Smart Pulse M-9010 (Dual SIM)	Yes	Square	Silicone	1.57 inch	320x240	No	No	NA	54 x 42 x 14	12 months	3,999

digit RECOMMENDED BUYS

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



TOP 3 BEST SMARTPHONES

Brand	Model	Price (in ₹)
LG	G3 (32GB)	38,999
Sony	Xperia Z3	49,990
HTC	One M8	40,850



TOP 3 GAMING LAPTOPS

Brand	Model	Price (in ₹)
Dell	Alienware 17	1,83,720
ASUS	ROG G750JX	1,49,999
MSI	GE60 2PE	1,39,400



TOP 3 PREMIUM POINT AND SHOOT CAMERAS

Brand	Model	Price (in ₹)
Fujifilm	X100s	68,000
Sony	DSC-RX100 II	35,890
Fujifilm	X20	28,000



TOP 3 ULTRABOOKS

Brand	Model	Price (in ₹)
Sony	Vaio Pro 13	1,06,140
Lenovo	Thinkpad X1 Carbon	1,26,400
Apple	Macbook Air 13	59,959



TOP 3 BUDGET GRAPHICS CARDS

Brand	Model	Price (in ₹)
ZOTAC	GTX 660 192-bit 2GB	12,999
ZOTAC	GTX 750TI 2 GB	10,900
Sapphire	Radeon R7 260 X 2GB	9,250



TOP 3 BEST GRAPHICS CARDS

Brand	Model	Price (in ₹)
Sapphire	Radeon R9 295X2	1,26,450
ZOTAC	GTX 980 AMP! Extreme Edition	50,999
ASUS	GTX TITAN Z	2,51,500



TOP 3 BUDGET TABLETS

Brand	Model	Price (in ₹)
ASUS (Google)	Nexus 7 2013 (32GB + WiFi)	17,999
Samsung	Galaxy Tab 3 T211	14,299
ASUS	Fonepad 7 Dual SIM	11,499



TOP 3 BEST TABLETS

Brand	Model	Price (in ₹)
Apple	iPad Air (16GB + WiFi)	34,500
Samsung	Galaxy Note 10.1 (2014 Edition)	44,640
HTC (Google)	Nexus 9 (32GB + LTE)	44,900



TOP 3 BUDGET TO MID RANGE IEMS

Brand	Model	Price (in ₹)
SoundMAGIC	E10M	4,247
Cowon	EM1	1,199
Creative	HITZ MA350	1,349



TOP 3 GAMING HEADPHONES

Brand	Model	Price (in ₹)
Kingston	Hyper X Cloud	6,500
SteelSeries	Siberia V2	6,499
Sennheiser	G4ME Zero	19,992

digit KILLER RIGS

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

Basic rig = ₹24,770 | HTPC = ₹29,076 | Entry-level gaming = ₹47,208 | Mid-range gaming = ₹63,909 | Ultra high-end = ₹2,76,953 | Digit Test Rig= ₹2,78,354

BASIC RIG

Processor	Intel Pentium G3220	3,600
Motherboard	Gigabyte GA-H81M-S1	3,300
RAM	Kingston ValueRAM 2 GB 1333MHz	1,500
HDD	Toshiba 500GB	3,000
Monitor	Dell IN1930 18.5 inch	5,850
Graphics Card	None	0
Cabinet	NZXT Gamma	2,490
PSU	Corsair VS450	2,200
Speakers (2.1)	Creative SBS A120	1,300
Optical Drive	Samsung SH-224DB/IDDS	1,000
Mouse	Amkette Ash Black (Bundle)	530
Keyboard	Amkette Ash Black (Bundle)	0
Sound Card	None	0
Total		**₹24,770**

HTPC

Processor	AMD A8-5600K	6,999
Motherboard	MSI FM2-A75MA-P33	4,750
RAM	G.Skill RipjawsX DDR3 2 GB (2 x 2 GB) PC RAM (F3-12800CL9S-2GBXL)	4,200
HDD	Western Digital WD20EZRX 2TB	5,500
Monitor	None (your TV)	0
Graphics Card	None (HD7560D onboard)	0
Cabinet	Cooler Master Elite 120 Advanced	2,977
PSU	Cooler Master Thunder 450W	2,560
Speakers	None	0
Optical Drive	Samsung SH-224DB/IDDS	1,000
Mouse	Microsoft Desktop 2000 wireless combo	1,850
Keyboard	Bundled	0
Sound Card	None	0
Total		**₹29,076**

ENTRY-LEVEL GAMING

Processor	AMD FX6300	6,999
Motherboard	Gigabyte GA-970A-DS3P	6,054
RAM	G.Skill NS DDR3 4 GB (2 x 2 GB) PC RAM (F3-10600CL9S-2GBNS)	3,500
HDD	Seagate Barracuda 1TB	3,685
Monitor	Dell S2240L	8,540
Graphics Card	Sapphire Radeon R7 260X 2 GB	9,250
Cabinet	NZXT Gamma	2,490
PSU	Cooler Master Thunder 450W	2,560
Speakers	F&D F680	3,000
Optical Drive	Samsung SH-224DB/IDDS	1,000
Mouse	Amkette Ash Black (Bundle)	530
Keyboard	Amkette Ash Black (Bundle)	0
Sound Card	None	0
Total		**₹47,208**

MID-RANGE GAMING

Processor	Intel Core i5-4440	11,500
Motherboard	Asus B85M-G	5,580
RAM	Gskill RipjawsX F3-12800CL9D-8GBXL	6,000
HDD	Toshiba 1TB DT01ACA100	3,880
Monitor	Dell S2240L	8,540
Graphics Card	ZOTAC GTX 660 192-bit 2 GB	12,999
Cabinet	Thermaltake Versa H21	2,980
PSU	Seasonic S12II 620 Watts	5,630
Speakers	F&D F680	3,000
Optical Drive	Samsung SH-224DB/IDDS	1,000
Mouse	CM Storm Devastator (Bundle)	2,800
Keyboard	CM Storm Devastator (Bundle)	0
Sound Card	None	0
Total		**₹63,909**

ULTRA HIGH-END GAMING

Processor	Intel Core i7-4790K	24,500
Motherboard	ASRock Z97 Extreme6	15,750
RAM	ADATA XPG 2 x 4GB (2 Kits)	11,000
HDD	WD WD30EZRX 3TB + Samsung 850 Pro 256GB SSD	20,459
Monitor	BenQ BL3200	73,899
Graphics Card	ZOTAC GTX 980 ZT-90201-10P Standard	44,999
Cabinet	NZXT Phantom 820	16,836
PSU	Cooler Master V1000	15,200
Speakers	Logitech Z906 5.1	23,750
Optical Drive	LG Blu-ray WH16NS40 RW	5,800
Mouse	Roccat Kone XTD	5,800
Keyboard	Corsair Vengeance K70	8,460
Sound Card	ASUS Xonar Phoebus	10,500
Total		**₹2,76,953**

PRIMARY DIGIT TEST RIG

Processor	Intel Core i7 - 4960X (Extreme Edition)	74,500
Motherboard	ASRock X79 Extreme 9	28,499
RAM	Corsair Dominator 32GB - 2133MHz (8GB x 4)	37,999
HDD	Toshiba DT01ABA100V	3,879
SSD	SanDisk Extreme II 240GB (x2 for HDD testing)	26,598
Graphics Card	GTX 980 AMP! Extreme Edition	50,999
Cabinet+ Cooler	Cabinet (NA) + Intel RTS2011LC - Stock AIO	NA
PSU	Corsair HX1050	16,291
Monitor	BenQ GL2460HM	11,600
Optical Drive	NA	NA
Mouse	Razer Ouroboros Elite	11,490
Keyboard	Roccat Isku FX	7,500
Sound Card	ASUS Essence STX	8,999
Total		**₹2,78,354**

110 **Tomorrow's tech**
Seven technologies that will change transform the future of the human race.



UFO Soap Pump
Duncan Shotton Studio has designed a soap dispenser that looks like a UFO abducting beings with a tractor beam **http://dgit.in/UFOPump**



MOM!

You're Out of This World!

India made history with its Mars Orbiter Mission this year. We explore the innovation, technology and significance of this great accomplishment.

Samir Alam
readersletters@digit.in

Zero hour, four seventeen a.m. 24 September 2014. It had been 298 days since the launch of India's Mars Orbiter Mission or Mangalyaan, marking the first time India would venture beyond the Moon into the orbit of another celestial body. Scientists, engineers and researchers at the ISRO's Missions Operations Complex (MOX) in Bangalore were gathered together awaiting the big news. Joined by their colleagues across the world in support stations at Lucknow, Mauritius, Indonesia and Norway they knew the moment of truth was at hand. Will the indigenously designed Liquid Apogee Motor engines on the PSLV rocket awaken after nearly 10 months in dormancy? Would this moment lead India into the record books? Or will the failure be just another another footnote in history?

Seconds later as the confirmation of the engines activating reached the MOX, the burst of applause and cheering was deafening. History had been made. India became the first nation to reach Mars orbit on its first attempt and the first Asian nation to reach interplanetary space, beating out China and Japan. In addition to this the Indian Space Research Organisation or ISRO joined the world leaderboards as the fourth space agency, after NASA, the Soviet space program and the European Space Agency, to reach Mars orbit. This great accomplishment came at the end of many years of hard struggle and innovation for everyone involved, and perhaps the first step in to a new era of Indian space flight.

A Journey of 414 Million Miles Begins

The roots of India's relationship with space exploration hasn't only been one of pure discovery, but also of survival. Before we could think to go to the Moon, much less Mars, it was more important to feed the hundreds of millions in the country. In the post-Independence phase of Indian growth, the need to leverage every technological and scientific means to attain self-sustenance was critical. The 1980 launch of the Rohini satellite on the Satellite Launch Vehicle 3 (SLV-3) was a momentous occasion since India had successfully created its own launch vehicle within 11 years of the creation of the Indian Space Research Organisation. What had begun in 1969 with the help of the Soviets, evolved to become an indigenous aerospace industry catering to the needs of the world.

Just over thirty years ago, in April 1984, India made its first historic foray into space travel. With the help of the Soviet Intercosmos Program, Squadron Leader Rakesh Sharma flew aboard the Soyuz T-11 rocket to the Soviet Salyut 7 Orbital Station. Gaining instant national recognition, Rakesh Sharma became the first Indian cosmonaut in space. Finally, an Indian could see the world as it really was and report it first hand. So when the Prime Minister at the time, Indira Gandhi asked him how India looked from space, he fittingly replied - "Sare jahan se achha...".

There are many such stories that demonstrate the indomitable spirit of Indian innovation. But very few face such a long journey to fruition. Beyond parochial definitions of patriotism and nationalist spirit, India has always been about scientific discovery. The curiosity that led Aryabhata to discover natural cosmic phenomena and Satyendra Nath Bose make discoveries in experimental quantum mechanics was the same curiosity that led India to take on the seemingly impossible challenge of reaching



MOM's proud parents

Mars. The purpose of the Mars Orbiter Mission, although stated to be a "technology demonstration", was, more meaningfully, about the scientific resilience that Indian scientists and researchers demonstrate, given their limited resources.

Powering MOM with Jugaad

The ISRO was only allocated ₹4,000 crore for its annual budget in 2013. Just to put that in context - the first successful American mission to Mars orbit cost ₹3,812 crore (adjusted for inflation). Indians scientists on the other hand had to use the whole ₹4,000 crore for dozens of projects across the board, not just one epic mission like the



MOM's solar panels

Americans. So how did they do it? Well, jugaad seems to be the opeartive word. In many a context, the word "jugaad" can appear to be a pejorative, but its also the cornerstone of innovation.

The idea for pursuing a mission to Mars came in the wake of the launch of the Chandrayaan-1 in 2008. The mission concept and proposal was completed in 2010 with a thorough feasibility study conducted at a cost of ₹125 crore to the ISRO. The government approved the project in August 2012 as a worthy pursuit, intending to demonstrate India's advanced space-faring capabilities. The satellite design itself was calculated to be over ₹150 crore and it finally cost us ₹153 crore. Most of the other costs went into setting up ground-based tracking stations and support systems which would continue to have value for future mission as well.

An Adventure of Many Quests

From the moment of government approval the clock had started for ISRO and the launch window of 28 October 2013 was decided upon. Since all spacefaring missions have to be conducted during certain "launch windows" when the rotation of the Earth around the Sun and the Earth's axis rotation make for an optimum trajectory. For Mars, this window occurs once every 780 days, a window where the least amount of energy is required to make the journey. A setback occured almost immediately; adverse weather conditions affecting the ability to establish sea-based monitoring stations in the Pacific Ocean. A new launch date was then set - 5 November 2013 - less than 15 months from the date of the proposal being confirmed.

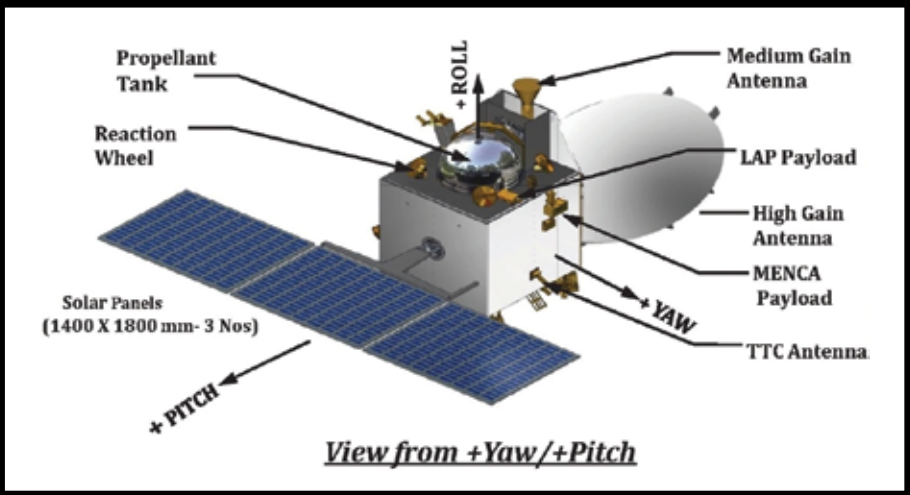
The mission was a technology demonstration but it needed to go above and beyond just the ability to reach Mars orbit. The spacecraft itself was designed to carry an instrumentations suite with which to conduct scientific readings of the planet. This payload would perform critical scientific functions once the launch vehicle had successfully attained a stable orbit around the planet. The instrumentation was integrated with the spacecraft in April 2013 and testing was scheduled to begin in August of the same year leaving very little margin for error due to the fast approaching launch window.

The initial plan called for the use of ISRO's geosynchronous Satellite Launch Vehicle (GSLV) but due to glitches in the cryogenic engines, there would be a three year delay in the launch. Not willing to wait ISRO decides that instead of devoting massive resources - of both time and money - to a completely brand new launch system, it would be best to base the MOM spacecraft on the Chandrayaan-1 Moon Orbiter which was a Polar Satellite Launch Vehicle (PSLV). However this presented it's own set of problems, the largest of which being the lower power of the PSLV compared to the GSLV. This is where one of the many *jugaad* decisions was taken. ISRO choose to forfeit a direct-to-Mars trajectory in favour of an iterative orbit, acceleration trajectory. A riskier venture but one that ISRO were confident in.

Ready Your Engines

With the same core spacecraft design and system structures from Chandrayaan-1 the scientists were certain that the mission objectives would be met. The power configuration of the spacecraft would effectively facilitate all the instruments mounted on the inner panels of the spacecraft. The cuboidal Mangalyaan craft, like its predecessor, used a composite and metallic honeycomb panel sandwich design for maximum flexural rigidity, allowing for lower weight constructions. This choice limited the launch mass to a svelte 1,337 (no, we're not joking) kilograms - with the craft weighing in at 475 kilograms, inclusive of payload, and 862 kilograms of fuel. These savings were a crucial part of the cost saving for the Mars Orbiter Mission.

The major source of power for launch was the bi-propellant Main Propulsion System and an Attitude Control System. The propulsion system consisted of two spherical tanks, each containing 390 liters



The indigenously designed system allows for a more compact configuration



Bluesmart luggage
New smart luggage with proximity trackers alert you if you walk away from it
http://dgit.in/BluesmartBag



Cardboard desk
Refold is building a standing desk on Kickstarter that is made of cardboard and is pretty strong **http://dgit.in/RefoldDesk**

of propellent. The tank's pressurisation was achieved using high-pressure Helium allowing Mixed Oxides of Nitrogen to act as oxidizers for the Unsymmetrical Dimethyl Hydrazine fuel. This combination of fuels, with the indigenous design, allowed for long burn times and high integrity of the engines. The spacecraft also had a unified, deployable solar array to generate power for the various systems, payload instruments and energy storage for emergency needs. The solar array was designed in three parts, each of which measured 1.4 meters by 1.8 meters and provided 840 Watts of electrical power while at the distance of Mars from the Sun.

The key to the whole launch system was the system of motors used in the propulsion system. For the Mars mission, ISRO once again didn't see the need to design something from scratch when they already had a trusted model ready. Using the Liquid



The Chandrayaan design was refit for the purposes of Mangalyaan to save on costs.

Apogee Motor (LAM), which had powered Indian geostationary satellites in the past, as well as Chandrayaan-1. The task at hand was to adapt and prepare the LAM on the Main Propulsion System to spark out of dormancy once the 298 days journey to Mars, from Earth orbit, would end. The Attitude Control System was a simpler matter - consisting of eight 22 Newton thrusters using the same fuel to adjust the roll, pitch and yaw as needed.

The propulsive Attitude Control System was accompanied by four reaction wheels for navigational assistance. The system consisted of two star trackers, gyros and a nine headed approximate Sun sensor. The attitude data was also gathered by an Inertial Reference Unit and Accelerometer



Earth's own gravitational energy was used to launch MOM into it's designated trajectory

Package, all of which was centered around a MAR31750 computer processor that managed the command, processing and execution of onboard commands.

The communications on board the spacecraft were managed by two 230 Watt Travelling Wave Tubes (TWTA) which operate in the microwave signal range. The spacecraft also had a 2.2 meters parabolic X-Band reflector High Gain Antenna used for data downlinks and command uplink communications. In addition, the craft also includes a medium gain and low gain antenna system. Telemetry and science data was recorded on two 16 Gb Solid State Recorders. This whole package came in at an easy ₹153 crores, far below international standards of expense for missions of this nature.

Achieving Escape Velocity

Since the Mangalyaan was powered by the significantly less powerful PSLV, there was no way to chart a direct trajectory to Mars - there just wasn't enough thrust. The power would need to come from elsewhere and what better way than using the Earth's own gravity? Using the Oberth effect in its plans, the ISRO decided that Mangalyaan would first ascend to Earth orbit and slowly accelerate its interplanetary trajectory with carefully and precisely timed perigee adjustments to achieve escape velocity. This would launch Mangalyaan into a Trans-Martian Trajectory and see it safely between the planets with minimal fuel.

The plans called for carefully timed boosts in Earth orbit known as orbit raising maneuvers. With five such planned stages, each subsequent rise in orbiting altitude would accelerate the spacecraft until it reached escape velocity. The thrusters on board would make further corrections to ensure that the craft stayed precisely on its intended trajectory. The first three maneuvers were conducted between 5 to 7 November and proved to be successful, while the fourth one on 10 November missed its intended trajectory. To compensate, a supplementary orbit raising manoeuvre was implemented, which restored the spacecraft to its original path.

Another burn of the thrusters proved necessary to propel the craft to its escape velocity. The seventh and final burn took place on 15 November, it was followed 15 days later by a 23 minute firing of the LAM engines. This move thrusted Mangalyaan away from the clutches of Earth's gravity at the escape velocity of over 11 kilometers per second and sent it on its way into a heliocentric orbit towards Mars. Mangalyaan would continue this journey for the next 780 million miles in the cold dead of space until it reached Mars.

Only after 298 days did the LAM engines start up again with a 3 second test fire 41 hours before orbit insertion was planned. At 4:17 A.M. Indian Standard Time ISRO was dispatched a signal via the medium gain antenna that the LAM engines were active and 3 hours and 21 minutes after that, a message was received stating that Mangalyaan was in orbit around Mars. The experiment had proved successful!

"Hypothesis: Innovation and perspiration can displace monetary advantages in the pursuit of science. Experiment: Mars Orbiter Mission. Result: Success. Hypothesis confirmed. QED."

And the Science Gets Done

The primary objective of the Mars Orbiter Mission had been accomplished. India had successfully placed a spacecraft in Mars orbit on its maiden voyage. The satellite even began a neighbourly twitter-chat with NASA's Curiosity Rover on Mars saying "Howdy @MarsCuriostiy? Keep in touch. I'll be around." But there was still more work left to do. The payload being carried by MOM consisted of five scientific instruments which would now take over and carry forward the secondary mission.

As MOM continues to make the steep elliptical orbit around Mars, with a period of almost 73 hours, it has begun to perform a range of duties. The orbit will bring the craft as low as (periapsis) nearly 422 kilometers and as far out as (apoapsis) nearly 77,000 kilometers from the surface of Mars. The five instruments loaded on board weigh in at a modest 15 kilograms but the data they would generate would be worth its weight in gold (or maybe more).

The instruments on board consist of a variety of tools for different tasks. The Lyman-Alpha Photometer on board is being used to measure the quantities of deuterium and hydrogen in the upper atmosphere of Mars for example. The data is intended to help scientists estimate the amount of water that is lost to outer space from Mars' surface. The specially designed Methane Sensor for Mars is intended to locate, map and measure any potential methane sources on the planet's surface while the Mars Exospheric Neutral Composition Analyser or MENCA is a complex bit of instrumentation used for mass spectrometry. It's a type of a quadrupole mass analyser that filters ions from the environment based on their mass/charge ratio, which gives the neutral composition of particles in the Mars exosphere. The next bit of gadgetry onboard is the Thermal Infrared Imaging Spectrometer which takes detailed readings and measurements of the temperature and heat emissions from the Martian surface. These data sets are used to map the topographic composition of the planet as well as gather data on the mineralogy of the planet. The final but perhaps the most exciting instrument onboard Mangalyaan is the Mars Colour Camera which will take photographs of its environment and transmit them back to ISRO.

The Mars Orbiter Mission reached Mars with twice as much fuel as was expected. This could conceivably extend the lifespan of the craft to about a year orbiting and studying Mars. With its basic instrumentation, Mangalyaan will conduct atmospheric studies, environmental studies and extensive surface imaging of Mars. And with images already being received by ISRO we know that MOM has already gone above and beyond the call of duty and expectation. The only question that remains is, "What next?"

To Infinity and Beyond!

As we sit here and bask in the reflected glory of ISRO's MOM scientists, researchers and engineers who made this great achievement possible, it's heartening to know that their work has been rewarded. While ISRO has been justly rewarded with a 50 percent rise in its annual budget (to ₹6,000 crore) for 2014-15 we are assured that new and more ambitious missions to Mars are being prepped for 2018. We can only imagine what they'll come up with but until then, we may have bigger questions to ponder ourselves.

So we can either slap each other in the back with congratulations and praises, take pride for sharing the same general geographic identity as those who actually accomplished this feat, or we can reflect. We have invested in ISRO but what about the investments we need to make for 50 years in the future? Yes, India may generate the largest number of engineers but what about the scientists? The pure researchers? The Aryabhata and the Bose? Our investment in the pure sciences doesn't even come close to the ISRO budget. That perhaps is the next worthy endeavor.



MOM takes some great pics! A snapshot of a duststorm on Mars

Great accomplishments are not the product of luck or genius. They are a cumulative commitment made by society to its own future. These commitments come in many forms, the most significant of which is the investment we make in our educational future.

How we educate the next generation will decide if we are prepared to take the lead in international, and even interplanetary affairs. We have just stepped out into our backyard but will we be ready to trek across the stars? Are we only going to invest in a future, content with manufacturing professionals eager to move abroad? Or are we ready to start fostering the growth of discoverers motivated to take India forward? The future of our nation could depend on this decision. Until then, we can take solace in knowing that Mars doesn't demand a H1-B visa for Indians.



@MarsOrbiter has a quirky sense of humour on Twitter.



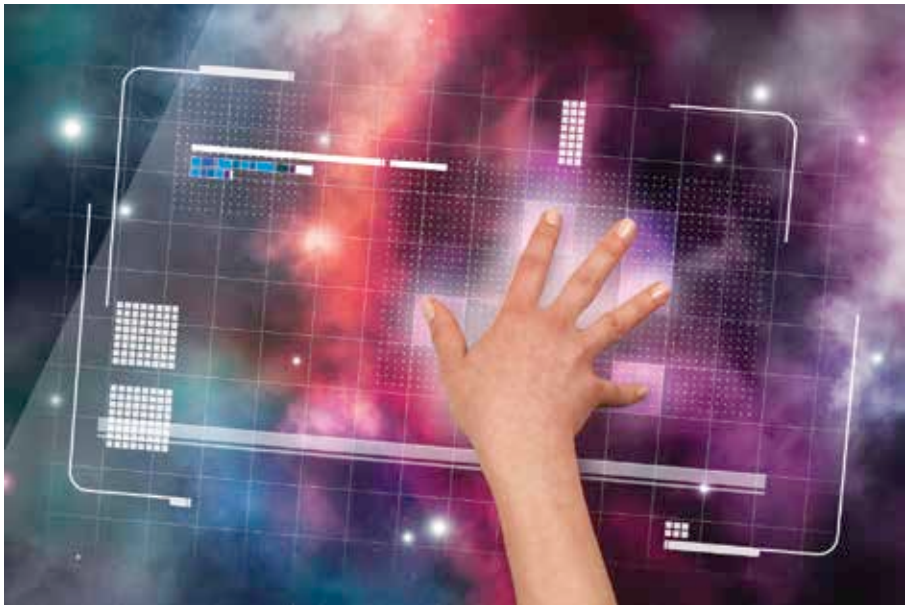
Middle-earth airlines
Check out this epic air safety video by Air New Zealand that includes the cast of Lord of the Rings **http://dgit.in/HobbitAirNZ**



Lighted up highways
Tron fans rejoice! Your dream of lighted up roads is now a reality in Netherlands. **http://dgit.in/TronHighway**

7 Discoveries of 2014

That Will Change the Future



Science is discovering and inventing new things everyday. We highlight the seven most amazing discoveries that are sure to change the future.

Samir Alam
readersletters@digit.in

History has a strange relationship with science. Take the instance of electricity for example - humans knew of lightning and static shocks for thousands of years. But it wasn't until the year 1600 that English scientist William Gilbert actually christened the phenomenon as *electricus* meaning "of amber" - due to the observed static electrical attraction when amber was rubbed. Even then the phenomenon remained at best a novelty. Something to be studied but of no practical importance to society - after all, they had whale oil and coal and with the discovery of the good old steam engine in 1606, they had all the power they could need. What good was electricity?

History does have a strange relationship with science and curiosities can evolve to become the very foundation of the way we live (take the case of electricity for instance).

With this awareness - the knowledge of the past and the imagination towards the future, we can contextualise the discoveries of today. Keeping that in mind, we're going to highlight the most recent discoveriers that we believe, will revolutionise the future.

Electro-telepathic Communication

The word telepathy is predominantly used in science fiction. As a concept, it's simple - the ability to transmit one's thoughts into another person's mind and vice versa. But this fantastical ability is no longer confined to the pages of a comic book or mutant movie.

Thanks to the efforts of an international consortium of neuroscientists, roboticists, engineers and researchers, brain-to-brain communication between humans has become possible. The two groups responsible are Starlab in Barcelona, Spain and Axium Robotics in Strasbourg, France.

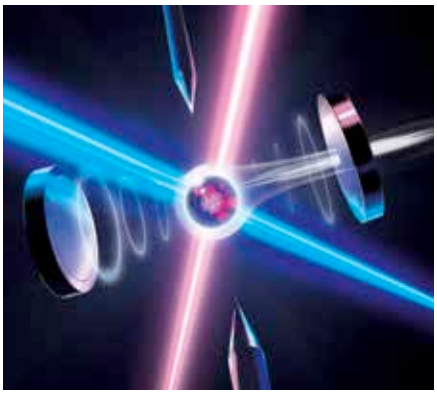
The project is of course in its early stages but participants located nearly 8,000 kilometers away from each other were successfully able to communicate simple greetings between their minds via the Internet. The direct brain-to-brain interface was created as a series of electrodes attached to the transmitters on a person's scalp to record specific patterns of brain activity.

They began with a simple greeting such as "ciao" and "hola". These readings were translated into binary code and then sent across via the Internet from their base in India to a laboratory in France where the binary was decoded back to brain patterns. The participants in France received the patterns as a sequence of light flashes in their peripheral vision. This allowed their brain to successful decode the signal to the original message. This proof-of-principle experiment poses many exciting possibilities for the future of how this technology can be used - from

helping impaired people communicate to the ability to reach out to soldiers in war scenarios - the choice is ours.

Unhackable Quantum Internet

With the interconnectedness of the Internet and the sensitivity of personal data online researchers have been working away at using quantum technology to secure the Internet. The technology in question is known as quantum key distribution or QKD.



Photons can hold any one of four positions which can be sequenced for a key

The method of using quantum keys to encrypt messages is being experimented across the world in places such as China and Switzerland. Using this technique, Internet networks transmit photons in specific quantum states to create a cryptographic key. Using quantum key distribution, data can be encrypted over ordinary, non-quantum networks due to its higher degree of mathematical complexity.

This means that in order to decrypt the message a very powerful computer is necessary. But the beauty of the QKD protocol is that if anyone was to attempt to intercept a quantum key, it would alter the quantum states of the photons and alert users that the key is under attack.

With successful small scale networks in the United States, China and Switzerland proving unbeatable efforts are being made at securing any loopholes such as hardware hacks and social hacks to further reinforce the system. At the present moment, the network range is restricted due to the issues of quantum stability over long distances, but that problem is being addressed with the development of quantum repeaters that would use quantum entanglement to create a globally secure network. The research is underway and we can expect it to be the next iteration of the Internet of today.

Cheap Nanotube Hydrogen Fuel

The world is in an energy crunch. With fluctuating fuel prices, diminishing supplies of fossil fuels, nascent sources of renewable energy and the impact of climate change making the global situation dire. To make matters worse, the need to feed, house and support the seven billion and rising population of the planet makes the discovery of a viable energy alternative a must.

Under these circumstances the invention of the technology that allows the cheap manufacturing of clean burning hydrogen fuel is momentus. Researchers at Rutgers University, New Jersey, have developed a method of using carbon nanotubes to manufacture commercially useful hydrogen fuel from water. The usual method of converting water to hydrogen fuel is extremely expensive as it uses platinum for its electrolysis reactions.

But with the development of the new sustainable chemical catalyst in the form of "noble metal-free nitrogen rich carbon nanotubes". The bottom line being that with the use of these new carbon nanotube catalysts in electrolysis reactions researchers can set up water to hydrogen fuel conversion systems in a variety of conditions. By simply splitting the water molecules to create clean, commercially viable hydrogen fuels, the system can be adapted to a number of settings and environments, as well as be coupled with existing energy producing systems like solar, hydro, wind and nuclear energy.

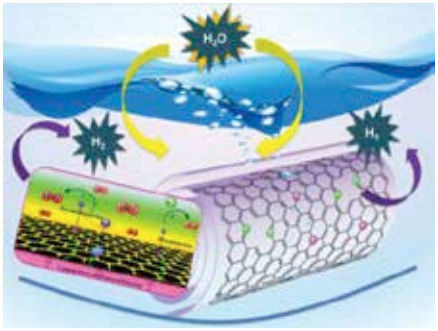
This discovery directs the use of nanomaterials towards one of the most important problems of our generations and has the potential to change the way the world fuels itself in the future.

Liquid Data Storage Devices

We are surrounded by data and most of it's smashable. It can be anything from a cell phone to a cloud server - in the end all the data of the digital world exists in some solid form ready for smashing. But with the recent developments in nanoparticle studies at the University of Michigan and New York University, we may soon find data dripping from every surface. Researchers at these universities have designed a method for storing digital data in liquid form and that too at immensely high densities.

A normal one terabyte hard-disk would come in at the size of a small cell phone (47.5 milliliters of volume from Western Digital) while a one terabyte liquid storage would fit in a tablespoon (which is about 15 milliliters of volume). The usage of "wet" or "soft" storage mediums as been an ongoing research objective for data storage and researchers have finally found a working system. By using suspended clusters of nanoparticles in a liquid they have discovered that they can store more data than the typical binary systems computer.

Since these nanoparticles are in the form of one central sphere attached to up to 12 particles in different configurations, the capacity of data storage increases by



The carbon nanotubes act as a catalyst for the electrolysis reaction separating water molecules.

an exponential factor. A cluster consisting of 12 particles attached to a single sphere can create nearly 8 million unique configurations as compared to the binary format of 1 and 0. This equals 2.86 bytes of data storage per cluster. To put that in context - the tablespoon of storage we mentioned earlier only uses a three percent concentration of these 12 particles in the liquid to attain a terabyte of storage.

Scientist are now working on inventing a fast and reliable method of reading



Ghost town for sale!
An entire village in Connecticut is on sale. Yours for $800,000 if you want it.
http://dgit.in/ZQ67uJ

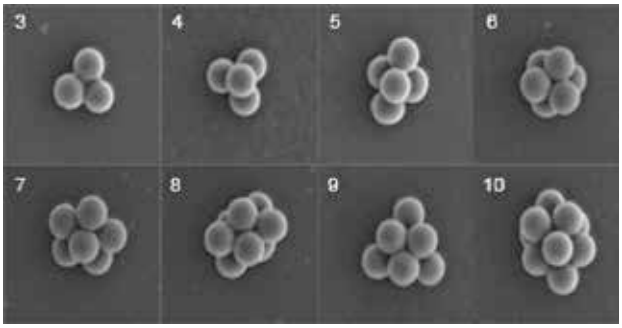


Here is today
Here's something to put your life into perspective. Just click through and find out: **http://hereistoday.com**

the stored data, which would allow for the successful commercialisation of the technology. It's not unlikely that in the future all your data would travel along with you in a vial in your pocket or even in your blood. Just don't sneeze your data on everyone, OK? Manners.

Artificial Blood Supplies

Blood is the life force that keeps the human body going. As the delivery mechanism for oxygen to different organs, it's also a critical component in a host of other tasks such as immunisation and temperature regulation.



10 of the millions of possible configs. for storage of data

When there is a medical emergency, blood donations become a critical necessity. And given the different blood types and their respective rarities in different parts of the world, we have witnessed the death of untold millions due to lack of blood donations at the right time. Thankfully that will all change given the invention of artificially generated red and white blood cells thanks to stem cell research at the University of Edinburgh and the Scottish National Blood Transfusion Service.

They have successfully used stem cells to create Type O negative blood cells and since it's a universal donor that blood type can be used by anyone. These types of blood cells are present in only seven percent of the world's population and are very rarely found in donation camps. The blood is manufactured by de-differentiating fibroblasts from adult donors and reprogramming them to create induced pluripotent stem cells (iPSCs).

The iPSCs are then cultured in a bone-marrow like environment (where blood is created in the human body) for a month. The final stage of extraction then yields human ready blood cells. As of now, a careful clinical testing procedure will be implemented in 2016 where three patients suffering from low hemoglobin levels will be tested to see the reliability and safety of the blood substitute.

The idea is to scale up this manufacturing process to industrial levels in the near future when rare blood types and timely donations won't be an impediment to saving lives thereby securing the health of the whole human race.

Shape Shifting Robots

We're pretty used to the ideas of robots thanks to science fiction. The idea of human automaton is being advanced with every passing year, but all of them are restrained by one key factor - rigidity. Robots are made of metals and other hard materials that, although they imitate the skeletal structure of humans, remain woefully stiff and inflexible.

However, this might change very soon since researchers at MIT, Max Planck Institute for Dynamics and Self-Organization and Stony Brook University in the United States have developed a material that will allow robots to be "soft". Using a 3D printed phase changing material composed of polyurethane foam and wax researchers can use heat variances to manipulate the softness and hardness of the structure. Taking inspiration from the organic world where skeletal organisms have the benefit of nerves and tendons to operate their hard bones, the new material is being used to create more flexible robotic components.

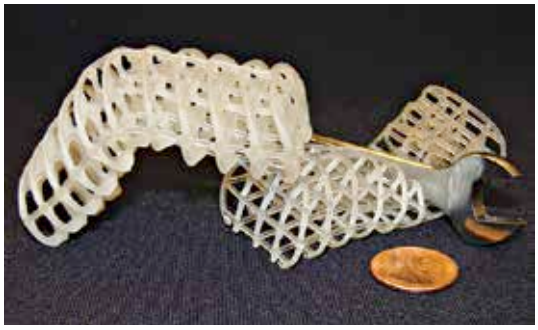
The prototype model was a snake robot, which is one the most flexible vertebrate creatures, capable of intricate movements and flexibility. Their goal was to allow it to pass through a one centimeter opening and reach the other side, capable of functions. In comparison to any other attempts in soft robotics, this method of using foam and wax makes the whole process very affordable and easy to use. Other applications of the same technology would even allow robots to self-heal, but that research is still in its infancy. Although this new technology doesn't exactly harken to the liquid chrome elegance of the T-1000 from Terminator 2, it will get the job done. Anyway, those T-1000s were scary, so we're better off, right?

Cancer Controlling Gene

Cancer kills more than AIDS, TB and malaria combined and with over 22 million expected victims annually by 2030, it's one of the biggest health perils facing the human race. The most virulent of all the different cancer varieties is lung cancer, that claims 19 percent of all deaths every year.

The most dangerous attribute of lung cancer is its ability to metastasize and spread to other parts of the body, which gives it the terminal advantage in killing people. Hopefully, this trend may now be prevented since scientists at the Salk Institute have discovered the DIXDC1 gene that can stop the movement of cancer from the lungs to the other parts of the body.

By blocking the DIXDC1 gene, cancer cells can no longer anchor other cells together and create metastatic off-shoots to the rest of the body. Scientist are working at understanding more about this unexpected discovery and are looking to adapt it to existing therapies being used to treat cancer patients. This gives us reason to feel hopeful that with more intent research into gene manipulation, the future of humanity will be cancer free in all respects and not just limited to the inhibition of lung cancer metastasis.


Rigidity that's dependant on temperature



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Club members need to submit at least one article a month to keep their membership alive. You even get to choose your own topic– the only constraint is it should be technology related (obviously!).

Interested? Visit digit.in/writers_club to register

Evergreen pop culture geeks

Geekism isn't always in the blood. Sometimes, culture has to give us that little extra push to get there. And it does so by giving us role models to look up to. Here are some of the geeks in pop culture that subliminally pushed you towards becoming the techno geek you are today!



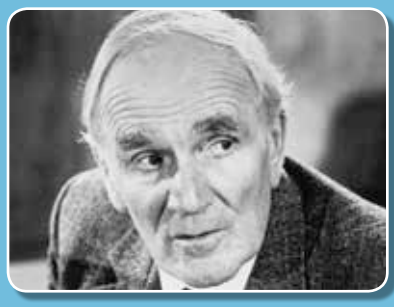
Spock

Spock was (arguably) the first pop-culture geek. The emotionless, logic-driven Vulcan was the perfect merger of geek and nerd. If there's anyone who should be blamed for blurring the line between the two, he's your public alien #1. He did, however, set the standard for an entire generation and inspired forth-coming geeks to live long and prosper.

Flynn

Attention all programs! The geek is on the grid! He's the first character in geekdom to survive a physical com-puter virus. Flynn's legend brought out the badass in geeks everywhere. From being introverts who spend their time in front of a screen, our image took a more athletic turn. Thus introducing the new-age geek who has brains *and* brawn.





Q

No, not the one from the Continuum. But a great tech geek, nonetheless. He was one of the few techno geeks in pop culture history who doesn't need to be young to be geeky. His gadgets added the extra punch to Bond's crazy antics. And everyone would kill to get him to take a peek under the hood of their Aston Martin.

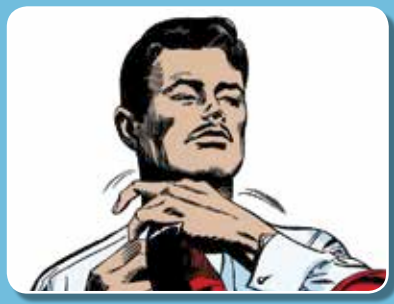


Doc Brown

Great Scott! How can we forget the guy who invented garbage-powered flying DeLoreans and introduced the world to the 'Flux Capacitor'? Emmett Brown was, at one time (pun intended), an epitome of geekiness. Imaginative, brilliant and invariably all-out insane, eccentric ol' Doc Brown just has to make this list!

Tony Stark

Even before Robert Downey, Jr. took up the mantle of Stark, Tony was a techno geek who had the resources every geek dreams of. Keeping aside the fact that it's family money, the guy has the brains and just the right amount of spunk to be among our top six. The billionaire, playboy, genius, philanthropist Tony Stark gets all the women.





Jessie Bannon

Whether it's hacking into NORAD, deci-phering an ancient alien language or simply pulling apart QuestWorld, Jessie Bannon was the cute and ass-kicking geek you'd want by your side. Maybe it was the red hair, maybe it was the brains, maybe it was both. But she was (with acceptable exception) the preteen crush of geeky kids everywhere.



Biometric MasterCard

MasterCard will be launching a credit card along with Zwipe that will have an embedded fingerprint scanner
http://dgit.in/MasterCardTouch



Will.i.am's smartwatch

Black Eyed Peas' Will.i.am launched his smartwatch, Puls, which is more of a fashion wear than a watch
http://dgit.in/WillIAmWatch

How we unwind



F! Press F!

Borderlands was the flavour of the the month. Our fearless leader took it upon himself to finish *Borderlands: The Pre-Sequel* with almost record-breaking insanity. With a few hilarious in-game mishaps. The experience can be read about in this month's SKOAR!

More coffee?

The new coffee machine is the centre of everyone's attention lately. Staying true to his alter ego, the Monkey has been fiddling around with it to see if he can tweak it to give more than just coffee and tea. We wait to hear of the progress – or the ominous sound of an explosion followed by the smell of vaporised milk.





Video mania

The month started with the inauguration of Studio Digit – the Mumbai Chapter. Okay, it doesn't look as good as the picture, but it's getting there! Pony was overjoyed. So much that he and the Monkey took it upon themselves to do justice to our videos. The results are posted at **http://www.youtube.com/digit**

digit DIARY

And another month passes. Incidentally, the pretender who held the quill of our Digit Diary for the past two months was overthrown in a brilliantly organised coup d'etat and reassigned to more sober conquests. Now, with the mantle on the right shoulders, our epic episodes this month began as most months do – with the release of more games that we can possibly play in the time span we have to exist in this materialistic world. It's been especially rough on Sid, who refused to eat or sleep until he finished *Borderlands: The Pre-Sequel*. After over a dozen hours of eye-watering gaming, the poor guy can't hear the word 'Elpis' without clicking a non-existent mouse screaming "Die, motherfudgers, die!" at the top of his voice.

The Ant (who came back for a visit this month, to our joy and his despair) decided to take it upon himself to challenge our lone Vault Hunter, claiming to be the better gamer. After several failed attempts at trying to take on the RK5, he slunk away to his corner to sulk, muttering about 'bad game design', while a smug Sid looked on. With the overdose of gaming this month, we decided to bring SKOAR! back into play (which you already know, considering you're reading this). Hopefully, it's here to stay, but on the record, our reply is "no comment".

The Pony also had a gruelling month. If balancing his dream project outside Digit along with hacking and slashing orcs wasn't enough, he had to deal with being our only at-hand video editor on call. Leaving him jumpy (Ah, well. Occupational hazard). He had help with our videos, though. Mithun really took a liking to our spanking new video production studio (yes, we're all pro filmographers now), and may decide to shift his bed into the office to have enough time to try out the new (top secret) equipment we've put together (whilst taking frequent trips to our new coffee machine, giving the Energizer bunny a run for his money). He was also great at the manual labour (shifting glass slabs, soundproofing, jhaadoo-ponchha...) – a herculean task. He had enough time to help out with the studio work, though, since he returned his copy of Borderlands to Amazon on account of them delivering it a day late. Say what you want about Mithun, he's a monkey with principles. Irrational, yes. But principled.

With the videos on in full swing this month, Big Daddy's picked up the 'Actor of the Month' award by a landslide vote, especially because of his brilliant outtakes. Little Sister's swelling with pride. Sid came in a close second, for his memorable role as 'The Midget on the Bbike'. The contested videos can be seen at **http://dgit.in/Act1014comp**

All-in-all, an eventful October. Another one bites the dust.

The Digit SKOARboard

Difficulty Level:	7/10
Processing Power:	25 DigitFlops
Song of the Month:	Misty Mountains – Ron Howard
Butt of the month:	The Ant
Time for gaming:	127 hrs 32 min
Time fiddling with the coffee machine:	10 hrs
Attempts by the Ant to kill RK5:	23
Firecrackers set off:	0 (Because we love the environment)
Quote of the Month:	"Please for the love of God, rid the diary of its hyperbolic glory. 23 attempts, seriously? WTF?" ~Ant the Verbose



App to solve equations
PhotoMath is an app which uses the phone's camera to solve equations. Currently for iOS and Windows **http://dgit.in/AppPhotoMath**



Hybrid brain sensors
DARPA and the University of Wisconsin have built hybird brain sensors to map neural activity **http://dgit.in/BrainSensor**

Digit 101 – Monitor interfaces

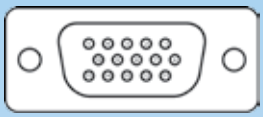
We demystify everything that a display needs as far as input/output is concerned. Let's look at all the different interface options available under the sun

Siddhant Sharma
readersletters@digit.in

Ever wondered why there are so many different types of analog and digital connectivity options on a display? What do they look like and how do you differentiate between them on the basis of bandwidth? Or what's the maximum resolution a certain signal standard is capable of? Worry not, we're here to guide you through each of the popular signal standards and their respective connectors and also speak about what's in store for them in the future.

VGA

Designed in 1987, Video Graphics Array (VGA) is a signal standard whose connector is also christened with the same name. It has become the universal analog display interface. What makes VGA different from DVI and now slightly outdated is that it carries an analog signal. Although it supports a resolution of 2048 x 1536, when was the last time you saw a VGA monitor running at that res? The all-too-familiar blue VGA connector is dubbed DE-15 because it has 15 pins. Don't take our word for it, go on and count 'em.

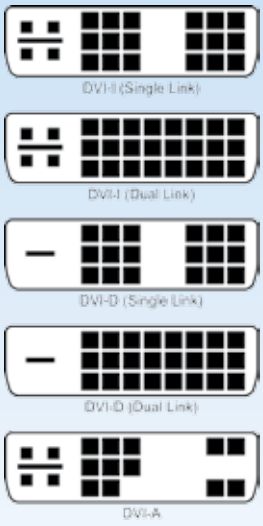


The DE-15 socket pin out

As it's been almost three decades since VGA came into being, industry top guns such as Intel, AMD, Dell, Lenovo, Samsung and LG have already signed on to phase out this de facto display interface in order to let HDMI and DisplayPort flourish (Read more about it at dgit.in/VGA_Death).

DVI

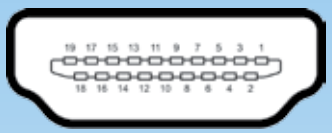
After VGA, DVI was the answer to improving display interface technology in general, since it was not only digital, but analog as well – which meant that it featured support for analog connections and hence compatible with the older VGA interface. Being the best of both worlds combined in a decent 29-pin package, DVI is capable of carrying RGB data, clock and display data channels together at an amazing bitrate of 3.96 Gb/s in single-link mode. Now, what the heck is 'single link'? Well, DVI primally supports multiple modes such as Digital only, Analog only and even Digital plus Analog, hence we have the DVI-D, DVI-A and DVI-I connector options, respectively. The digital only DVI-D, for instance, features single-link and dual-link varieties. The single link employs a lone 165Hz transmitter that supports a resolution of up to 1920 x 1080 @ 60 Hz, but the dual-link mode makes use of a second transmitter with six additional pins and bumps up the resolution to 2560 x 1600 @ 60Hz. A resolution of 3840 x 2400 @ 33Hz is also supported. These six pins at the centre of a dual-link DVI-I or DVI-D connector are absent in a single-link connector and DVI-A skimps on 12 pins at the centre in total and that's how you can identify a particular one.



Different DVI connector types

HDMI

In a collective bid to throw analog out of the window, companies such as Hitachi, Panasonic, Philips, Sony, Toshiba and others came together to create HDMI or High-Definition Multimedia Interface that revolutionised the display industry. It provided a compact, yet extremely functional interface for transferring uncompressed digital video data and compressed or uncompressed digital audio data between a HDMI-compliant display controller and display device such as computer monitors and TVs. The key difference between HDMI, DVI and VGA is that HDMI completely lacks VGA compatibility as it doesn't have any analog contacts. Inspite of this and many other differences, in order to provide backward compatibility between DVI-D and HDMI, most HDMI devices support DVI-D signalling too.

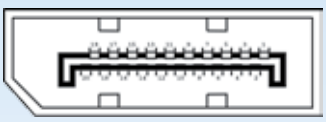


19-pin HDMI pin out in its full glory

Various versions of HDMI have been deployed till date. Most current devices use versions 1.2, 1.3(a) or 1.4, while HDMI 2.0 is the latest version. HDMI 1.4, with its 19-pin connector, is capable of carrying a maximum resolution of 4096 x 2160 @ 30Hz. Pixel clock increments in different HDMI versions have allowed to tap into HDMI's potential, thus allowing for transmission of 3D 4K content at high frame rates through the new HDMI version 2.0.

DisplayPort

The ultimate digital video transmission interface, DisplayPort, is basically the first ever interface to depend on packetised data transmission like the one used by Ethernet. What this means is that it can allow for transmission of extremely high quality uncompressed content through fewer pins (20) as compared to other interfaces. DisplayPort version 1.3 now enables transmission at a whopping bandwidth of up to 32.4 Gb/s, thus making it possible to run multiple displays off a single DisplayPort connector. Although 4K has just started getting mainstream, this crazy amount of bandwidth provided by DisplayPort 1.3 allows for transmission of 4K 3D, 5K and even 8K (7680 x 4320) content. If the price of 4K displays hasn't put a dampener on your hopes of owning one, this surely will. After all, a beefy flagship today is the runt of the family tomorrow in the tech world.



A typical DisplayPort connector

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digit SQUAD

Every month we highlight some aspiring tech writers and their spirited attempt to get published in the magazine. Let's have more!

Top 10 Upcoming VR Games



Tarun Dham

Virtual Reality (VR) seems to be the in thing these days. Each brand is making its own version of VR headsets, be it Google who showcased its Google Cardboard not too long ago or Samsung who also came up with its own VR headset that's turning heads (quite literally). For us geeks, nothing beats gaming on these cool looking immersive 3D headsets. Here are the top upcoming Virtual Reality games that you'd love to play on your Oculus Rift:



Doom 4

This game needs no introduction, does it? With the next iteration of Doom coming to your consoles and PCs, you can now enjoy one of the best FPS games around. Time to hunt for some adult diapers!
Release Date: TBA
Link: http://dgit.in/CNVRG1



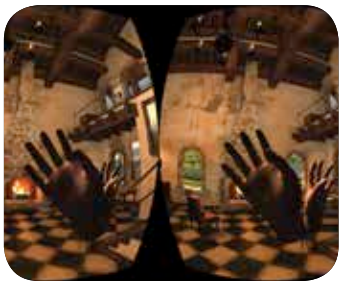
Miner Wars 2081

An action survival space shooter set in the year 2081 - ten years after every planet in our solar system has gone KABOOM. You operate a mining ship in an open world, that's entirely destructible. Online or off.
Release Date: October 2014
Link: http://dgit.in/CNVRG4



Dream

The player is a graduate who has no direction in life and is obsessed with his dreams. As the player, we're challenged with solving puzzles and secrets to give the person a new lease on life
Release Date: TBA
Link: http://dgit.in/CNVRG2



Tuscany Razer Hydra

A tech demo for the Razer Hydra and Oculus Rift, this demo showcases the true potential of VR and the future that all gamers can expect. It's an exellent example of VR in action. Do check it out.
Release Date: October 2014
Link: http://dgit.in/CNVRG5



Eve: Valkerie

Ever wondered how Luke Skywalker and Han Solo must have felt while battling Sith? Well, you can replicate that level of adrenaline while battling in this game. The game has 360-degree action fights, and is multiplayer ready!
Release Date: Late 2014
Link: http://dgit.in/CNVRG3



Xing: The land beyond

This is an atmospheric first person puzzle and adventure game. The game's mission is to search for answers as to why the person (player) is here. This you'll do through exploration and puzzle solving, all in VR.
Release Date: TBA
Link: http://dgit.in/CNVRG6



VR Test Drive

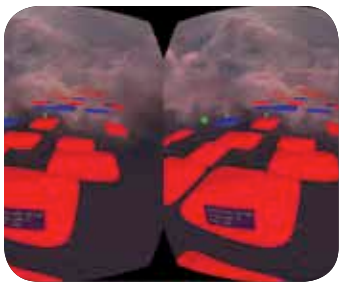
With the Oculus Rift DK2 headset, you can test drive the Lexus RC F 2015 Sports Coupe
http://dgit.in/LexusRift



Detachable displays

Google is building displays that could be joined together to create bigger displays, just like Legos.

Digit Squad



Rift Rush

This is a platformer game, the main objective of which is to jump from one place to another, and as you progress through the levels the pace gets more challenging. Platoformming in VR? It can really be so much fun.

Release Date: December 2014
Link: http://dgit.in/CNVRG7



Strike Suit Zero

This game takes place in the year 2299, and your mission is to save Planet Earth. To do this, you need to take control of a spacecraft called 'Strike Suit', which has the capability to transform into a suit of armour.

Release Date: October 2014
Link: http://dgit.in/CNVRG9



Zed: Absolution

Zed, the main character of the game, is banished from his home realm. To avenge his murdered family, he must fight other realms which are both challenging and terrifying. It's an arcade shooter however, so come prepared.

Release Date: October 2014
Link: http://dgit.in/CNVRG8



The Gallery: Six Elements

In this game, you become an explorer, when you accidently fall into a sewer and find a secret that was lost in time. The game lets you travel to other worlds and reminds you of Myst in a certain fashion.

Release Date: TBA
Link: http://dgit.in/CNVRG10

DRINKIFY

The most interesting creators from our community are showcased here



Drinkified?

The Creators of Drinkify

When they aren't fiddling around with code and contributing to the open-source world, these three IITians; Rishi Dua, TV Ashok and Ashwin Kachhara don't sit around idle. Their cumulative interests span across a multitude of topics that include Big Data, Machine Learning, Social Media research, rollerblading, karaoke and tinkering with tech. Rishi's responsible for the Machine learning algorithm and Ashok maintains the code base while Ashwin is the brains behind the user interface.



The creation: Drinkify

While we don't condone consumption of Alcoholic drinks, here's an interesting concept. A dilemma over which drink to consume led to the inception of the app which gives recommendations and also points you in the direction of the nearest watering hole. Drinkify finds drinks similar to the one entered by the user from a database that covers almost all the brands available in India. It uses machine learning algorithms, leveraging parameters like taste, price, smell, alcohol content etc. to rank drinks by similarity. http://dgit.in/1wuulWa

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