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Publication

di9it

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Identity crises



Robert Sovereign-Smith, Editor

OSes cannot afford to “show-off” the way the gaming industry can

From the good old 386 days, to the multi-core monsters today, we’ve all watched excitedly as Moore’s law, or interpretations of it, held steadfastly and stubbornly true. It all got crazy about five years ago, when each time we upgraded our hardware, a few months later a friend or acquaintance would outdo us, and have a better rig. But that wasn’t the only irritating bit, what really got on our nerves was that said friend spent way less than us, for something way better. “Ahh, technology!” we’d say, nodding our heads in disappointment, and move on... slowly, thanks to our already outdated machines.

The one industry that is the epitome of this trend is gaming. That’s one area where hardware has been left far behind. As all those of you who have played games like Crysis will testify to, no matter how new your PC is, some games will just bring it to its knees. Some call it future-proofing the game engine, I just call it showing off.

The one vertical that shouldn’t follow that trend, however, is the operating system industry. It’s acceptable to us to have hardware that will not allow us to play the latest games. We’re even fine, for example, with running Adobe’s CS 1 suite instead of the latest CS4. However, it’s not acceptable for an OS to “require” a major hardware upgrade.

Windows 7 launched a little while ago, and of course I’ve been using the pre-release version on one of my non-critical computers for some time now. One stark difference between Vista and 7 that struck me was the performance. I’m not talking about benchmarks on super-high-end hardware that less than 1 per cent of the computing population can afford; I’m talking about the everyday, run-of-the-mill hardware that most of us own. On mid-range configurations, Windows 7 actually seems to do better than Vista. Sure you don’t get to use any of the eye-candy that those with gaming rigs can show off, but at least it works!

I remember people cribbing about the insane (at the time) requirements of XP, and sticking to Windows 98, just to be able to have a usable PC, instead of a good-looking UI that crawled through everyday tasks. It was no different for the switch from XP to Vista, with a lot of people turning their noses up at Vista – me included.

Some say Vista was ahead of its time, and I’m inclined to agree. However, the OS industry cannot afford to do that. OSes cannot afford to “show-off” the way the gaming industry can. I’m not talking just about Microsoft here, because those who use alternates have also


been cribbing about the same bloat. Mac users have complained about sluggish performance, especially irritating when it’s everyday tasks that you’re doing, like searching for files. Even Linus Torvalds himself has complained about bloat in the Linux kernel.

Thankfully, Windows 7 and Apple’s Snow Leopard, both, seem to be a step in the right direction, with reduced bloat, and better optimised code. This is exactly what we need from OSes – to stay light.

Considering that the future is obviously portable, OSes have no choice but to stay light. The lighter the better, in fact, considering that battery technology hasn’t really done anything to speak of in recent times. Portable hardware, in fact, has become more energy efficient to compensate for this, and as a result, slower than the average desktop.

Although we’re all wow-ed by the new looking OSes and all their eye-candy, we should be looking for usability, and functionality. Take for example the whole touch thing.

It’s rumoured that Windows 7 will cause a major shift in device design, with new touch-centric gadgets hogging the spotlight. We’ve heard about all these upcoming “multi-touch” devices, and yet none of them really seem to be exploiting the possibilities that exist. If you don’t believe me, watch Jeff Han’s multi-touch demonstration at TED (<http://tinyurl.com/45jz4a>). I know I’ve spoken of him before, but can you blame me for repeating it, when what we have today, over three and a half years after that demo, is still nowhere close?

I certainly hope OSes get out of the identity crises they’re in, and stick to improving functionality, only, leaving the eye-candy, and the attempt to be everything to everyone on the back-burner. Let the “Ultimate” versions of the OS come with all the bells and whistles, but let’s not stop focusing on the innovations and advances in usability. Enough with our eyes, it’s now time to start designing for the other senses, starting with our fingers. 


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Apple iPod Nano	ASUS EN GTX 260	XFX HD-477A-YD
Asus RT-N16	ASUS EN GTX 260 MATRIX	XFX HD-483X-YDFK
Circle Keyboard and Mouse	ASUS EN GTX 275	XFX HD-485X-YD HD
CoolerMaster ATCS840	ASUS EN GTX 285	XFX HD-487A-ZW
Cabinet	ASUS EN GTX 285 TOP	XFX HD-489A-ZDD7
Corsair H50 Water cooler	ASUS EN GTX 295	XFX PV-T98G-YN
Creative Inspire T6160	ATI Radeon HD 5770	ZOTAC GeForce 9800 GT
Gigabyte 700W PSU	ATI Radeon HD 5870	Synergy Edition
Nikon D3000	Galaxy GeForce GTS 250	ZOTAC GeForce GTS 250
Nokia E63	Galaxy GeForce GTS 250 1 GB	ZOTAC GeForce GTS 250 1 GB
Norton 2010 Internet Security	Galaxy GeForce GTX 275	ZOTAC GeForce GTS 250
NVIDIA 3D vision	896M D3	AMP! 1 GB
Philips GoGear Raga	MSI N9800GTX PLUS	ZOTAC GeForce GTX 260^2
Philips GoGear Vibe	-T2D512-OC	ZOTAC GeForce GTX 260^2
Samsung Omnia Pro B7320	MSI N9800GTX-T2D512	AMP!
WD Mini TV	MSI R4850-T2D512	ZOTAC GeForce GTX 275
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ASUS EAH 4870 MATRIX	Sapphire Radeon HD 5870
ASUS EAH 4870 TOP	Sapphire Radeon HD 4770
ASUS EAH 4890	Sapphire Radeon HD 4850
ASUS EAH 5870	Sapphire Radeon HD 4850
ASUS EAH HD 4870 x2	1 GB
ASUS EAH HD 4870 x2 TOP	XFx GS-250X-YD GS

Intel P55 Motherboard

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MSI P55-GD65
Gigabyte GA-P55-UD3R
Gigabyte GA-P55-UD6
MSI P55-CD53
Intel DP55KG
Biostar Tpower I55



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Each month, *Digit* walks through the technology maze to bring you the most relevant, and the most researched stories. If you have an opinion about anything published in *Digit*, or about technology in general, please write to editor@thinkdigit.com



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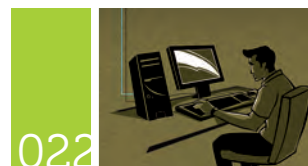
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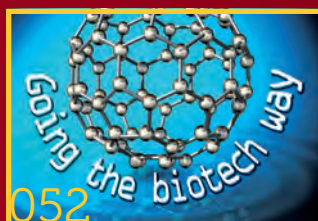
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Nikon's latest entry-level DSLR, the D3000 reviewed



070 NOKIA E63

Almost identical to the E71, but more affordable. Read to find out more



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Tools Multimedia Fresh View 7.80



Organise and view multimedia files (images, audio, and video). Fresh View lets you watch movies, listen to music, and view graphics in a slide show.

- SView5 1.48
- Photo Pos Pro 1.74
- Track 'n share your GPS adventures 3.0
- TwistedBrush Open Studio 16.07
- MIT 1.3
- Pos Free Photo Editor 1.26
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- FastPictureViewer (32-Bit) 1.0.109
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- Mayachitra Imago 1.0.3.90909
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- Arclab Thumb Studio 2.1
- My Photo Index 1.23.3361
- Fly Free Photo Editing & Viewer 2.18
- Jet Screenshot 2.1
- SmoothDraw 3.2.1
- ArcSoft Print Creations 3.0
- Hornil StylePix 1.0.0.912
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- PicoLy WebImage Lite 1.2.
- Picture Frame Wizard 1.0 build 20
- PhotoScape 3.4
- TMPGEnc Instant Show Presenter 1.1.3.72
- UltraSlideshow Flash Creator 1.21
- Photo Collage Maker 2.27
- Photo Enhancer 1.51
- Focus Photoeditor 6.0.11

Internet GigaTribe



GigaTribe allows you develop and manage your own file-sharing (P2P) network. Use it so you can exchange large files with your friends. This software is ideal for those wish to share their information and files privately. Only the users you have invited will see the files (and folders) you share.

- Free YouTube Download 2.3.1.63
- Home Ftp Server 1.10.0.135
- TomTom Home 2.7.2.1825
- Boost Machine 1.5.7
- BitDrom 1.1
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- ShareDix 1.1.0
- WireStack 1.1.0
- MobileWitch YouTube Downloader 1.1
- Video Download Toolbar 1.5
- GetGo Download Manager 4.3.0.382
- 900 Plr Articles with Resell Rights Free 1.0
- ZoomFoot Send Photo 1.0.25
- KooLoader 1.4
- Download Accelerator Plus 9.3.0.4
- Twihirl 0.9.4
- Gladinet Cloud Desktop Starter Edition (32-bit) 1.2.190
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- FrostWire 4.18.3
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System

CrystalDiskInfo 3.0.2

CrystalDiskInfo is a HDD health monitoring utility. It displays basic HDD information, monitors S.M.A.R.T. values and disk temperature

- 3DP Chip 9.07
- Allway Sync 9.2.21
- Baku 4.1.3500
- BatteryCare 0.9.6.3
- CZ Print Job Report 2.0
- Defraggler 1.12.152
- DriverMax 5.1
- Duplicate Cleaner 1.3.2
- Fast Clean 1.0
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- Fresh Diagnose 8.14
- Fresh UI 8.37
- InSight Desktop Search 2.0
- MyDefrag 4.1.2
- PC Wizard 2009 1.88
- PeaZip Portable 2.6.3
- PureRa 1.4
- Seeker 3.10.0.1
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- Easy Tweak 1.7.3
- EnhanceMyVista Pro 2.6
- Magellan Explorer 3.33

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- Second Copy 7.1.0.36
- UltimateZip 5.0

Entertainment Music

- Dj Tibo - Mister Dee'Jay
- jazzcomputer.org - Elsewhere
- Killing Jazz - Killing Jazz
- Promising crew - Mix Dubplates
- SEBRIDER - Heaven and Sea
- Sydney Poma - Compositions
- Audiovisu'Elle

HD Trailers

- Black Dynamite
- Disney's A Christmas Carol
- Fantastic Mr. Fox
- Saw VI
- The Crazies
- The Vampire's Assistant
- Visual Acoustics
- Zombieland

Videos

- Airheads
- Apoptosis
- Blip
- Egg
- Enemy at the gates composing
- Evolved Virtual Creatures
- Introducing the DSLR Gunstock Shooters
- Pipe Dream
- Sorry I'm Late
- Talin
- The Way of the Mantis
- Toybox

Gaming Games

World of Zoo - Animal Creator



World of Zoo takes players beyond the fences and into their own zoo, using hands on interactive gameplay.

- Pro Evolution Soccer 2010
- Machinarium Demo
- Supreme Ruler 2020

Trailers

- Guns of Icarus
- Interstellar Marines
- Obscure: The Aftermath PSP
- Operation Flashpoint: DR
- Modern Warfare 2

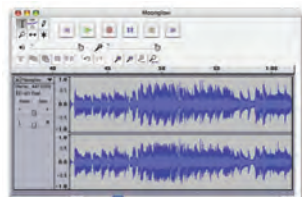
Tools Featured k7 Antivirus



K7 TotalSecurity 9.8 is the fastest way to make sure that your PC is completely protected from virus threats, spyware and hackers.

- Norton Internet Security 2010
- Bolidesoft All My Movies
- Infordesk All Business Documents
- Infordesk ParmisPDF

Mac Audacity 1.3.9



Audacity is a free audio editor. You can record sounds, play sounds, import and export WAV, AIFF, and MP3 files, and more. Use it to edit your sounds using Cut, Copy and Paste (with unlimited Undo), mix tracks together, or apply effects to your recordings.

- Avidemux 2.4.4
- Camino 1.6.10
- Cyberduck 3.3b4
- Doom 3 1.3.1 Rev A
- Google Earth 5.1.3509.4636
- iPhoto 4.0.3
- JAlbum 8.5
- Jing 2.1
- Miro 2.5.2
- Mozilla Thunderbird 2.0.0.23
- MPlayer 2.0b8r5
- Opera 10.0
- Paintbrush 2.0.1
- Picasa 3.5.1.68
- Remobo 0.20.1
- Skype 2.8.0.722
- TextWrangler 3.0
- TinkerTool 3.96
- Transmission 1.75

Symbian

Bing Messenger 1.05

Your friends are an important part in your life and you would like to be connected anytime with all your friends from all over

the world. Bing aims at making mobile communication for a closed group of friends easier, more interactive and cheaper.

- Bluetooth File Transfer 1.2
- Easy Wi-Fi
- F-Secure Anti-Virus for S60 Third Edition 3
- Freesms 1.23
- Fring for Symbian 8 3.2
- iSkoot for Skype
- LCG Jukebox
- Mobile Messenger 0.9
- Mobile Radio 1.02.01
- Mundu Radio
- NetQin Anti-virus
- Nimbuzz for Windows Mobile
- Pocket PC 1.1
- PowerCall 1.50
- ScreenShareS60
- SMS Preview 1.12
- Ultra Mp3 1.52
- WeFi for Symbian 1.4
- WOWScreens 1.51

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- NVIDIA GeForce 32 Bit XP
- NVIDIA GeForce 64 Bit XP
- NVIDIA Geforce 32 Bit Vista Win 7
- NVIDIA Geforce 64 Bit Vista Win 7
- ATi Catalyst 32 Bit XP
- ATi Catalyst 64 Bit XP
- ATi Catalyst 32 Bit Vista Win 7
- ATi Catalyst 64 Bit Vista Win 7

OS Operating Systems Sabayon 5.0



Sabayon Linux is a live DVD designed to transform a computer into a powerful Gentoo Linux system in less than 5 minutes. Gentoo Linux is a Linux distribution powered by a software install manager engine called "Portage".

Videos

Digit TV

TED

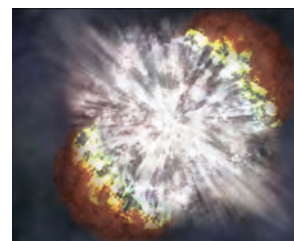
- Beau Lotto demonstrates how we see
- Carolyn Steel on how food



shapes our cities

- Evgeny Morozov speaks on the internet and dictatorships
- Frans Lanting's Lyrical nature photos
- Gordon Brown Wires a web for global good
- Parag Khanna maps the future of countries
- Stewart Brand with Squatter Cities
- Taryn Simon shares secret sites
- Tim Brown urges designers to think big
- Ueli Gegenschatz soars in a wingsuit
- Will Wright makes toys that make worlds

Astronomy 160 Lecture 22 - Supernovae



Professor Bailyn offers a review of what is known so far about the expansion of the universe from observing galaxies, supernovae, and other celestial phenomena. The rate of the expansion of the universe is discussed along with the Big Rip theory and the balance of dark energy and dark matter in the universe over time.

- Lecture 23 - Other Constraints: The Cosmic Microwave Background
- Lecture 24 - The Multiverse and Theories of Everything

Introduction to Computer Science

- Lecture 7 - Cryptography, Bugs, Integer Casting, and Functions
- Lecture 8 - Local and Global Variables, the Stack, Return Values, and Arrays
- Lecture 9 - Strings as Arrays, Command-Line Arguments, and more Cryptography

Game theory

Lecture 6 - Nash Equilibrium: Dating and Cournot

We apply the notion of Nash Equilibrium, first, to some more coordination games; in particular, the Battle of the Sexes. Then we analyze the classic Cournot model of imperfect competition between firms. We consider the difficulties in colluding in such settings.

- Lecture 4 - Best Responses in Soccer and Business
- Lecture 5 - Nash Equilibrium

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dvd@thinkdigit.com

Win... mo?

We spoke to Sumeet Gugnani,
Director of Communications
Business, Microsoft India

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The art of acrobatics

Ajay Pande, VP, Engineering,
Adobe India on design, India and
the future

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✉ I am an avid reader of your esteemed magazine. I have a suggestion for *Digit*. It would be a great idea if start conducting some sort of annual techfest; where upcoming talents can get a nice platform for launching their dreams. More than 50% of your readers are teenagers (my approximation) and many of them are doing something or the other for people around them in field of technology but many more of them aspire for some platform to perform where world can see them or hear them; there are existing platforms like Imagine Cup etc. but they are too high for them. Like many reality shows on TV which give chance to young singers or performers to showcase their talents, we in field of Computer Sciences should have some platform. I personally feel *Digit* has this capability (you are in habit of doing big things) to change lives of masses. I myself would love to participate in it.

Prateek Gupta

d That is a great idea Prateek. Rest assured that we are always exploring new ways to reach out to our readers, and interact with them.

Robert

✉ The september issue was great as always and I really enjoyed it. I have a very special thanks for your team. Thanks to you I am the champion of TCS IT WIZ Bhubaneswar edition for the 2nd consecutive year!

This time I got a Lenovo G230 along with a lot of other prizes. The laptop is OK - it only has a 12" screen. Now my old CRT looks bigger! Your efforts really help us students to learn about all the tech surrounding us. The Fast track on the history of computing really helped me. I have a suggestion to make: Why don't you release an External HDD annually, filled with all the important upgrades, software and the 12 issues in pdf (though at an extra price of course!)

It would be so helpful as I keep going mad at losing



the monthly DVDs which my friends borrow and then forget to return. It is also cumbersome to store all the DVDs and search for the particular issue when required. I know the *Digit* archive is helpful but it simply is a headache with all the DVDs and absence of some of them.

Moreover some of them even get damaged after a long time. Hence the Ext. HDD with an updating tool would be very helpful so that we can update the HDD monthly and store all the important updates in one place.

I am sure many readers will welcome this too.

Aurojyoti

d Congratulations on your win. If magazines ever start giving away external hard drives with their issues, we will be among the first to do so. Meanwhile, watch out for an archive of all previous *Digit* issues in the December DVD.

Robert

✉ I am one of the die hard reader of *Digit*. For last two years, I have not missed a single issue of *Digit*. Well, there are some questions in my mind which

1. Does installing two or more Operating Systems on a single system hamper its performance?

2. Keeping in mind GUI & multimedia with networking, which linux distro is the best out there? Please provide it, if you have not provided it yet.

Pratik

d When you install two or more Operating Systems, each Operating System will occupy a certain amount of space on your Hard Drive. The boot sequence will involve a step where you select the Operating System you wish to boot into. There is no real drop in performance in the system, unless you consider the amount of scratch disk space, or swap space used by some applications. You can however, cross-swap or allocate the partition of your other Operating System(s) as your scratch disk space. Linux is fundamentally made from a networking point of view, so almost any Linux distro is great with networking. The GUI for Linux is not a standard with every distro, and there are many GUIs available. KDE and GNOME are the most common. KDE has the most eye-candy. Linux Mint is a great distro that looks good, and plays most multimedia formats out of the box. However, Sabayon, which is in this month's DVD, also plays most formats out of the box too. It is a multimedia centric distro, so try it out and tell us what you think of it.

Aditya

✉ I'm a new fan of *Digit* magazine. A friend of mine recommended that I read this magazine. After reading it, I am also recommending this to my friends. One question that always strikes me is that computers only uses binary codes (1 or 2) to perform its work.

My question is that is it

possible to make a computer that uses digits, decimals or hexadecimals instead of binary? If yes than why they are not made earlier?

Sudhanshu Gupta

d Binary uses zeroes and ones, not ones and twos. This is because modern processors use a number of switches, and a zero or one stands for the on or off state of the switch. For more, have a look at the Computer Science lectures on our DVD. This has so far proved the simplest and most economical way to make computers. There are experiments where the light spectrum, electrons, and even bacteria are being used for computing, but these are still in the labs and a long way away from becoming mainstream, if they ever will.

Rossi

✉ Finally I recently jumped on the broadband bandwagon. Its been four years since I picked up the first magazine from a news-stand and since then I have not stopped reading your magazine. Each one of them have been outstanding. Yours is one of the best tech magazine publication. The videos provided by you, especially the TED videos are awesome. The Fast Track issues are simply great. It has become a great source of information. The October issue really rocked.

Well i have a few suggestions. Hope you will fix it in the future..

1. Please x 1000000000 times bring back the *Digit* Software Archive.

2. Its about time you guys changed the DVD interface. It is getting really boring :-(

3. Bring back the crossword.

That is all I am asking. Fulfill these wishes for me and I will be the happiest person on this planet.

Keep Rocking :-):-:-)

Maresh Bharadwaj

d Great to know that you got broadband. Visit us at www.thinkdigit.com, and you will find a lot of contests and giveaways. These are pretty regular, so sign up for our newsletter to stay

Buzz

Shop for international products the easy way. Check out how.

Where to write in

To reach the editor, mail editor@thinkdigit.com. For faulty DVDs, magazines etc, write in to help@thinkdigit.com. For anything related to the DVDs, DVDcontent@thinkdigit.com

updated. Join our forums to interact with other readers, and give us more detailed feedback. We are working on a new version of the Digit archive, and a better interface.

Aditya

✉ I am a subscriber of Digit now. I received my second subscription copy today with a disappointment of the PLAY disc missing.

I love Digit since I was in class 8th, that was the time when I didn't even know about computers and today I am a proud reader and a tech guru among my friends. This is something all the readers of Digit claim to be. It really proves it's "Your Technology Navigator" punchline.

With wifi connection I came to know that when one of our seniors uses his MacBook, all other laptops using net stop working. There are Linksys Wi-Fi 2.5 GHz routers on each of the three floors. His Mac pulls in all the three connections. Digit inspired me a lot about open source and I removed my Pirated Windows and Installed Ubuntu. I wanted to know is there a trick in Linux or Windows to do the same. Digit is really very addictive and the best. I've got my Economics Mid Term Exam tomorrow but am busy reading Digit.

Siddharth Jaiswal

❖ If you have a missing DVD, send in a mail to help@thinkdigit.com, your DVD will be sent over to you. We suggest that you talk to your network admin about the bandwidth leeching, instead of trying to imitate the person who is doing it.

Robert

✉ Hi, I am a reader of Digit for the last 5 years but writing in for the first time. I was buying Digit from a magazine stall all these years, because I used to think that I may not want to buy a particular issue. Days went by and it became increasingly difficult for me to miss even a single issue (I even asked one of my friends to buy and keep it for me one particular month when I was abroad), and finally

I realized that I cannot pretend anymore that I can miss an issue, and subscribed to it last month. Keep up the good work!

By the way I would like to buy the Samsung LN65B650 that you featured in this month Digit Drool maal section for Rs.29,300, can you please tell me where I can get it? :-D

Regards,

Kaustuv

❖ You got us there! We missed out on a zero.

Aditya

✉ Hi, First of all kudos for your Diwali special edition, there are indeed loads of contests for this month.

Now coming to my story, I've been reading your magazine since I was in 7th std. at that time jasubhai owned Chip as far as I remember and later it was stopped and Digit came into existence.

The sole reason at that time for buying your magazine was the bundled CD. As a Kid I was fond of the game demos which came on it. Now I'm 21 pursuing final year in Engineering. I'd been a loyal reader till an year ago. Yes, I stopped buying your magazine and I bought this issue viz. october after an interval of 11 months. Now the reasons why I stopped buying the mag.

I know this letter will never

LETTER OF THE MONTH

✉ I am an avid Digit reader like millions on this planet. I found technology my best friend and Digit is my day-to-day tech-helper. I got some Digit CDs back in 2004 when I was 10. I bought my PC and started exploring the virtual world. I started reading Digit from my library and found it interesting. Finally this August, I subscribed to Digit. Your every article is a perfect piece of writing and because of its versatile content and intellectual sections, Digit is my technology navigator. The QnA section helped me a lot in tackling day to day computer related problems and How Stuff Works is like a teacher to me. Diwali's Special Edition Digit was nothing less than a surprise to me which helped many of my

friends to find the gadget they were looking for. Now I am in 10th class and am planning for an IT career. I hope your magazine is going to help me to fulfill my dreams. I bought a Nokia N79 last year and Octobers Fast Track to Mobile Phones helped a lot in understanding my phone. I told many of my friends about Digit and now I feel that I am a proud member of the Digit family.

At last I thank all the Digit team for not only providing us top class content but the whole Tech-World in 160 pages. Digit is the best available source of tech-gyaan that a human can ever dream of.

Jaydeep Chakrabarty

be printed but, anyways...

1. The quality of paper started deteriorating from last 2 years. even after a price hike of 25Rs. I mean look at your competition, they are offering much better package at the same price.

2. Product reviews are outdated, the competition offers latest reviews. for instance take intel's core i5, there was no sign of it in your diwali issue, competition has a full fledged review on it with benchmark tests.

3. My favourite section in your magazine was Agent001. I loved the way he went to lamington road searching for hardware arguing with salesman, and finally getting the stuff. Now he sounds more like a reviewer telling the product name, specification and price.

4. Please improve the presentation of your magazine. Learn from international players.

Now one suggestion please give the reader an option of buying only the magazine (without dvd) at a cheaper rate. I've never run your dvd since past 2 years. I think readers like me will praise your move.

I have a soft corner for ur magazine because, all that I know is because of your magazine. Please take my letter not as a hate mail but as a letter from a loyal reader giving some advice

Priyank Shivhare

❖ We always appreciate those who write in to us with feedback. There was a problem with paper sourcing, which affected all of India. Generally, magazines with smaller print runs could afford to buy better paper at higher prices. We could not do this without increasing our price even further, and we always made sure that our quality of content was better than the quality of paper it was printed on. However, we have upped our paper quality recently, and it is now comparable to any magazine out there.

We did get the core i5 on the 20th of last month itself. What kind of content goes in the magazine is an editorial decision, and we cannot find space for all the products that we get. You will find a very detailed and in depth review of the core i5 on our website, www.thinkdigit.com.

I still love hanging out at Lamington road, but how the vendors behave there is different from how vendors behave in other parts of the country. Based on a lot of reader feedback, I decided to stick to giving you information that everyone in the country could use, and less on what was happening at a particular street I frequent. We did pilot a few news stand versions of the magazine, where only the magazine was sold. Reader's demand just the Fast Track, or just the DVDs. Our core product will always be the magazine, we will let you know if we come up with a subscription offer for just the magazine.

Agent 001



Did you know?

The Windows Mobile operating system is believed to be based on Windows CE, which was designed for simple computers and embedded systems

**6.5.1**

According to downloadsquad.com, Microsoft is already working on a update for Windows Mobile 6.5 with a rewritten, finger-friendly contact application

Win...Mo?

Sumeet Gugnani, Director, Communications Business, Microsoft on Windows Mobile 6.5

Siddharth Parwatay

siddharth.parwatay@thinkdigit.com

Tell us a little bit about Windows Mobile 6.5 and what separates it from the rest?

Windows Mobile 6.5 is an inflection point for Microsoft for very fundamental reasons. For long, this industry has been dominated by hardware. People used to buy phones for their specs, the megapixel count of the camera, etc. Over the last few years, it moved up to the next level, which is hardware plus software. The software experience started becoming more important. That's when we came into the picture, because Microsoft is of course fundamentally a software player. Therefore, all our versions - Windows Mobile 3, 5, 6, and 6.1, have been talking about software as the key differentiator.

What Windows Mobile 6.5 brings to the table is our claim to the services side. At this point we're announcing two new services after a fair share of consumer insight. The first service is the MyPhone service that will be available with 6.0 and above, but is being launched right now. The insight that helped develop MyPhone, was the fact that a lot of people literally trust their phone to do everything for them. Their whole digital life is contained in this phone. People don't even carry multiple devices these days. Therefore in a situation where this phone gets lost, stolen, damaged, or misplaced, you just don't lose a device or machine worth 10,000 rupees, you lose your whole set of memories. Photographs - pictures of birthdays, family, friends, contacts, music - all gone in a stroke. What MyPhone does, is give you 200 MB of free storage on the cloud so everything that you have on your phone gets synchronised. All you need is a Windows Live ID and it syncs everything and anything you choose right from messages to music, videos, contacts, calendars, docs, etc. The stuff is all compressed when stored online but you can view it via a browser. So if you lose your phone apart from the expense of buying a new one, you can come back to the MyPhone web site and you have everything right back in to your phone. The transmission takes place via GPRS, and syncs can be scheduled and chosen as per convenience.

What are the other services on the new version?

The second service is Marketplace. This is interesting because it is new and old at the same time. It is new in the sense that with 6.5, this is the first time we're offering an application store on the mobile. But it is kind of old to the extent that applications is what we do for a living. We've got more than 20,000 applications already there through our developer ecosystem. So there's really a whole universe of applications available. But our challenge was not to get an x number of application up there. Earlier, we used to make it available through third-party web sites. Our challenge was how to certify and make sure what we give is the best. So we set up filter criteria on applications. For example, the application cannot be more than 10 MB in size. Eventually, consumer experience is important. Especially, what they download over the air - if it is more, then the experience is not that great and you end up consuming more bandwidth. Secondly, it cannot have any objectionable content. What is good for the developers is that there is no new learning curve. The SDK is the same, the .NET framework is the same, Visual Studio is the same. All the developers have to do, is use those, submit the application and we



take over. The R&D team will go through the application and certify it. Only after certification will it get placed on Marketplace. Once it does go there, it's placed in a fairly user friendly manner. You have the 'most popular' and category wise kind of organisation and a user rating system.

So can you still get third-party applications?

Yes you can as before, from third-party web sites. A very small subset of that will be certified. The third vector of differentiation has more to do with the UI. We're talking about the ability to personalise the screen to whatever you want. You can do cool stuff like have widgets from Windows 7 installed on winmo 6.5. Alternately you can go to a skin generator site to make a theme.

Tell us about your plans for India?

We always go through our partner ecosystems. So we have 6 or 7 leading names of the phone industry associated with us. We have more than 25 models. Each of those models, gives you a different user experience. You have form factor variations like touchscreen with a qwerty, a touchscreen with a slider, a non touch with a qwerty, and so on. In this way we have best of the evolution of hardware to service. We're actually very delighted with the progress we've made in India over the last three years. Back then we used to sell about 25,000 phones a year. Today we're selling about 3,00,000 phones a year. We're the fastest growing platform here. We outsell every other major smart phone player, with the exception of Nokia which is more a universal end-to-end kind of player. So the consumer acceptance of the Windows brand is very high.

Market share trends abroad are completely the opposite for Windows Mobile.

We don't see this as a market share game at all. For a very simple reason - a smartphone is hardly four percent of the phone universe. So this is really about market expansion. Who grows faster in that market, are dynamics that can change. Someone comes up with a great new something so sales spike. Apple came up with a great UI back then and they did well. But the point is this is a long term race and there are a few players in for the long haul. We're in it for the long haul. We were the first to innovate in this platform. With version 3 we gave people the option of pull mail, with 5 we shared push mail, 6 we said take HTML email, with 6.1 threaded SMS, with this one we have services. So we're here, we're gonna keep investing in R&D and over the years the choice is going to be made by the consumers. 

Adobe patches

Adobe has fixed 29 vulnerabilities in Adobe Acrobat and Reader

Mobile Photoshop

You can now edit your photos effectively on your mobile handsets with Adobe's Photoshop.com Mobile for iPhone

The art of Acrobatics

Ajay Pande, VP Engineering, Adobe India on Adobe's Indian operations, engineering and design vision

Nash David

nash.david@thinkdigit.com

Tell us about the engineering and product design teams at Adobe India

Adobe India's engineering and product design teams are based out of two locations – Noida and Bangalore. We've been operating out of India and exclusively focussing on several products for the past 12 years. Our current engineering headcount for India is 1500.

What kind of talent do you look for while recruiting?

Sheer brightness and brilliance is something that excites us. For this, we go to the top institutes. For engineering and business talent, we look for people with passion and love for technology. The person should be willing to experiment and have the willingness to learn. We do not prefer people who keep switching between technologies or someone who is on the run. Adobe products are benchmarks – always the best. This translates even to our resources. We get the best whatever be the field. In addition, we have a strong rotation process, whereby engineers can move on to the product line of their choice depending on his/her interest.

Which is the most extensive market for Adobe? If US/Europe, is it still convenient to develop here and market it abroad?

When it comes to our products, approximately half of it is consumed in the Americas and the other half comes in Europe and Japan. We have managed to grow with corresponding growth in the respective industries. We are excited about this and expect to continue this trend in the years to come. Adobe Elements shipped to the world, was developed in India. Overall, Adobe is not geographic specific. If you compare Adobe with other software manufacturers, Adobe is clearly the leader. Our products are not localised to such an extent that their behaviour patterns change. In fact, whenever our client/customer industries have grown, Adobe's stable has grown. For example, in a country such as India, with the growth of the print industry, InDesign has seen rapid growth. Similarly with the future moving towards the cloud, Flash is witnessing growth.

What is significant about Elements?


Adobe Photoshop Elements and Adobe Premiere Elements were recently shipped globally. These product lines were developed entirely in India. Designers, especially for web and print platforms, extensively use Photoshop. Similarly, video editors use Adobe Premiere. Our latest addition, Adobe Elements, is targeted at hobbyists. Although not as critical as designers and editors, hobbyists do want their product to appear as professional as possible. This is where Elements steps in.

Does Adobe do all of its development work, or do you outsource? Tell us more about it from an Indian perspective. Also tell us what goes in the whole cycle.



Considering the criticality of our software applications, we consider this to be *our* business in all respects, and we carry all development work ourselves. Although we do have development partners, we do not outsource any of our development work. Basically, our product development cycle or product lifecycle begins with what is called a seed idea. A seed idea could come from anyone, be it an engineer or a manager or a director. When someone has an idea, they can communicate the idea by means of forums dedicated for this purpose. This is known as the incubation board. While the idea grows there, it is also reviewed. This whole process could take anywhere between 9 months to 18 months. The dedicated team then works on the idea as a start-up within Adobe. When results are visible, the senior management reviews the idea as a business plan. This review by the senior management is called the concept accept. The whole atmosphere is informal for the idea to evolve. However, once it takes the form of a business idea, it is strictly process driven and very formal in nature.

Can you tell our readers more about the Indian names we see during startup of Adobe products?

These names are mostly engineers and some managers. If you look at Acrobat, half of the names in the credit are Indians, not just by nationality, but based out of the India office. There are over a hundred Indian names. Even in Photoshop, you will find several Indian names. One such name is Seetharaman Narayanan, who is one of Adobe's early engineers based out of USA. 



It's official

Analytics platform agency ViziSense recently crowned Gmail as the numero uno email service, ending Yahoo! Mail's 10-year reign at the top



Blast the moon

NASA crashes rocket on the moon in search of water. Unfortunately the spectacle could not be captured on camera

What's the buzz in tech-land?

Update your digital quotient as we bring you the juiciest news from the cutting edge of technology

Nokia to sue Apple for patent infringement!

The 5800 XpressMusic failed to make a dent. The N97 has drawn yawns from most users, and laughs from iPhone owners. The upcoming N900 looks promising, but initial reviews have it pegged as nowhere near Apple's high-selling handset. So here's Nokia's latest attempt at an iPhone-killer: a court order!

The Finnish mobile phone giant seems to believe that when you can't beat 'em, the best option is to sue 'em. In a complaint filed at the Federal

to establish standards create intellectual property, which others then need to compensate for," said Ilkka Rahnasto, Vice President, Legal & Intellectual Property at Nokia. "Apple is also expected to follow this principle. By refusing to agree appropriate terms for Nokia's intellectual property, Apple is attempting to get a free ride on the back of Nokia's innovation."

Although the amount of money involved hasn't been disclosed, it is speculated that Nokia would be looking for a royalty payment close to 1-2 per cent (\$6-\$12) of every iPhone sold. With 34 million iPhones sold to date, that comes to about \$204-\$408 million in damages. Ouch!

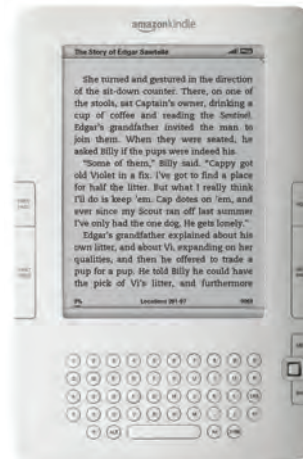
Most importantly, Apple seems to be on the back foot in this one since invalidating such a large number of patents is hard to do. Given Nokia's recent losses, they wouldn't

mind the extra cash, surely. How do you like them apples?

Kindle now in India

Since its launch, Amazon's Kindle has been somewhat of an object of desire. The idea of having access to thousands of books over the air, all in a sleek little gadget, is quite tantalising. Amazon recently announced that the Kindle would be available globally, and officially launched it in India at an event in Mumbai.

Kindle wirelessly downloads books, magazines, newspapers and personal documents to a crisp 6-inch electronic ink (e-ink) display that actually looks and reads like real paper.



Now you can hold ebooks in your hand

The screen has no backlight, so it doesn't give out the glare a normal screen would. The navigation is fairly simple and all the text content is custom formatted. So the Economist will not look exactly like the magazine, but more like any other novel. User customisation is also a great tool, allowing you to change margins, increase font size and even annotate sections with notes.

"Many readers have reported that they read faster now and read more. That's also because the Kindle is always with them" said Laura Porco (Director, Kindle Books).

So does that ring the death knell for actual books? Going by some of the astonishing numbers quoted by Laura, it may actually be so. "Currently, for every 100 physical books shipped, we have 48 on the Kindle," she said. Indian users can avail of a catalogue of 2,80,000 books, each downloaded in about a minute over 3G GSM or EDGE. There are no data charges for downloading a book, the service

for which is provided globally by AT&T and its international partners.

Windows 7 is out. And cheaper too!

On October 22, Microsoft launched its most highly-anticipated product, Windows 7, across the world. And for once, users in India have gotten a break.

According to Microsoft, the Windows 7 beta program had over eight million people signing up for it, making this the most widely-tested beta product in the company's history. The different versions of Windows 7 are available in India at the following prices. Home Basic - Rs. 5,899. Home Premium - Rs. 6,799. Professional - Rs. 11,199. Ultimate - Rs. 11,799

The prices are significantly lower than the product is retailing at in the US. So far, the cheapest way to get Windows 7 seems to be in Indonesia, where the Home Basic package costs Rp 9,00,000 (Rs. 4,400 approx).

There is more good news in store for those who bought Windows XP or Windows Vista after June 26, 2009. Microsoft India has a Windows 7 Upgrade Option Program for such consumers to avail of an upgrade to Windows 7 at no additional cost. The Windows Upgrade Option Program is available to Indian consumers and businesses with less than 25 PCs, through participating OEMs - Acer, Dell, HCL, HP,



Nokia's N97 is considered over-rated

District Court in Delaware, USA, the company is alleging that Apple's iPhone infringes 10 Nokia patents for GSM, UMTS and wireless LAN (WLAN) standards.

The patents comprise technologies that are "fundamental" to making phones, and have been infringed by Apple since it started making the iPhone in 2007, Nokia claims.

The world's largest handset manufacturer may be in the right, though. Nokia has already successfully entered into license agreements including these patents with approximately 40 companies, including virtually all the leading mobile device vendors.

"The basic principle in the mobile industry is that those companies who contribute in technology development



Read more on the features of the Kindle at <http://www.thinkdigit.com/d/kindle2/>



500 Million strong
At the current rate of growth, by either this December or January of next year, India will have its 500 millionth mobile subscriber



AVG 9 out
Developers of the world's most popular free anti-virus software, recently announced that its family of free and paid internet security products, AVG 9.0, is out

Lenovo, Sony, Toshiba and Wipro – as well as channel partners for assembled PCs. The upgrade to Windows 7 is globally available from June 26, 2009 through January 31, 2010.

Also, contrary to reports of the Windows 7 launch being delayed in India, Mr. G. Ramesh (Director Windows Client Business Group, Microsoft India) told ThinkDigit that all its OEMs have started shipping new machines on Windows 7.

Now realtime search

We all want information five seconds before it's even created, and today, Google and Bing have both accelerated towards that goal.

Both Microsoft and Google, announced within hours of each other (Microsoft going first), their plans to incorporate Twitter in their search results. Bing had earlier added limited support for searching Twitter updates by including tweets of famous celebrities in their results.

To many, who still take Twitter's "What are you doing?" rather too literally, it may seem like a waste of time, however what lies in its timeline is a history of events, changing thoughts, memes and moods: information some may find more relevant than the average search.

The real-time nature of Twitter and Facebook is of immense value, for anything between getting the latest updates during events, helpful messages during disasters, or just getting rescued from a drain. It is just one of those things we didn't know we needed, till we did, and now any search result is out of date if it doesn't take into account what people are discussing at the moment.

Google's suspiciously short announcement stating their intention to include Twitter data seems to be more of a reaction to Microsoft's announcement of the same, than a premeditated disclosure. This is what competition is all about, and it's good, the race between Google and Bing can only benefit us.

While Google plans to



To know about Google's foray into music:
<http://www.thinkdigit.com/d/gmusic/>

integrate this data into its search over the "coming months", Bing's Twitter search is available right now at <http://www.bing.com/twitter> but is apparently still too good for India. No worries, just change your location using the link next to "Preferences" in the top-right corner and select "United States - English" (this will take you back to normal Bing search, however your next visit to <http://www.bing.com/twitter> will allow you to start searching)

An Apple a day

Recently, as part of a major overhaul of its computer products line-up, Apple introduced the world's first touch-sensitive mouse, called the 'Magic Mouse'. Putting an end to the previous Mighty Mouse, the Magic Mouse is a wireless mouse with no mechanical buttons, no scroll wheels and no scroll balls: it works purely on multi-touch interaction. Users can scroll in any direction using multiple fingers, as well as use familiar finger-swipes.

Clicking the left and right buttons apparently offers physical feedback, depressing the entire white polycarbonate surface of the mouse. Those lucky few who got to experience the device say that the mouse moves a little when scrolling via touch.

We're sure glad that the mouse has the ever elusive 'right-click' that Mac were for

long averse to. Still, you need to "enable Secondary Click in System Preferences."

The Bluetooth mouse is powered by a set of AA batteries, which will last it for four months of battery life, according to Apple. The Magic Mouse will come packaged with the new



iMacs, or can be purchased independently for \$69 (Rs. 3,200 approx).

Apple also announced a new MacBook, two new iMacs and upgraded the current Mac Mini. The new MacBook is what interests us the most.

Apple renovated its lowest-end 'plastic' MacBook with a new unibody design that includes the new built-in battery offering up to seven hours of battery life – all for \$999 (Rs. 46,400 approx). Yes that's right they actually say seven hours!

The durable polycarbonate material uses the same techniques as the higher-end aluminium MacBook Pros. Along with a glass multi-touch trackpad, the device features a 13-inch LED-backlit display, 2.2GHz Intel Core2Duo processor, 2GB RAM, Nvidia GeForce 9400GM onboard graphics, 250GB hard drive and 8x SuperDrive.

**SUPER
SUBSCRIPTION
OFFER!**
GET (MORE)³
Turn to page 114



Gestures from From left to right: Single Click, Two button click, 360 scroll, zoom, two finger swipe.

International shopping made easy

Who doesn't love some good old retail therapy once in a while? But when it comes to online shopping, our choice is largely limited to stuff available within the geographical boundaries of the country. You will surely relate to the stressful times of trying to get your friends or relatives to carry stuff along for you. Although, one can order items from abroad, the process is very complicated and has still not reached the mainstream consumer. There's duties, foreign exchange, shipping and a whole lot of other things to figure out. Whatever happened to Globalisation and 'the world is flat', we wonder.

Well, it looks like eBay India is out to change things with the launch of its latest initiative - Global EasyBuy (ebay.in/geb). The promising venture might soon become the international online shopping destination for Indians, by offering shoppers convenient access to around 18 million international products. The products available are those that comply with the country's importing regulations and categories include luxury brands, electronics, books, hardware, musical instruments etc. Well international here is a misnomer. The website currently has products mostly from the US, but who's complaining. The way it works is that the consumer gets to pay a single amount (inclusive of product cost, shipping and any applicable duties) in rupees. In turn the original shipper from the US ships the product to a central hub in his country from then on eBay takes over to bring the item to your doorstep. The process takes place through eBay's secure payment gateway called PaisaPay. Head over to www.ebay.in/geb to experience it first hand and quench the shopaholic in you. The site looks fine, though be very careful with cached memory. At times with 'products last looked at' it may just take you to ebay.com which is not where you want to be. **d**

Mobile watch

Google's Android, not the iPhone OS is predicted to be one of the top contenders in the mobile OS war

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Web watch

With Google Wave invites being given away, is it really as useful as everyone wishes it to be?

26



What will Web 3.0 have in store for us? The most educated guesses will be short-sighted, but there are a few tantalizing hints from the bleeding edge of Web 2.0 development.

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Think of the web as an ecosystem, a constantly evolving, organic and volatile entity. Just as real world ecosystems have eras, the web too goes through phases. The first phase was the e-era or the dot com era. It became commercially viable to offer content and services online, and a big bunch of companies that were known primarily by their internet addresses came up. This stage of the web was also known as the “bubble”. Web 2.0, came into existence roughly in the second decade of the internet, and this was the “cloud” stage. User interaction, social networking, and user generated content are some of the hallmarks of Web 2.0. Right now, we are on the verge of another era, moving beyond what Web 2.0 has to offer. Tentatively called Web 3.0, exciting times lie ahead, where the web will get more firmly ingrained as a part of our lives. Most of the technology used in Web 2.0, the wikis, the widgets, and the APIs, were around on little used sites, and on design boards long before the onset of Web 2.0. In fact, some of these ideas were around since before the internet itself came into being, let alone the web. To get a clear idea of where the web is headed, it is necessary to have a deeper understanding of the technology that drives it. On the way to Web 3.0, users have conquered massive digital divides, survived a massive bubble burst, and even endured a full fledged war.

Laying the foundations

The web is made up of many layers of standards and protocols. Assume ten computers are connected to each other, and needed to communicate with each other. The simplest solution was in the wiring itself. Ask for something in a remote location, and you got it as if you were navigating to another location in your

own memory. If you have ten clusters of ten computers each, depending on the wires was not feasible. The answer to this was to make each computer a host, identify it with a number, and allow for navigation using these numbers. This was a protocol that laid the foundations to the internet, and was called TCP/IP. These protocols themselves have versions numbers, and currently version 4 is being used. The next generation will be version 6 that will allow for more computers to be interconnected. The number of digits available in the original standards have been exceeded by the growth of the internet. Now you have hundreds of computers, connected to each other, each with a uniquely identifiable number on the network. What then?

Each computer, or host, on the network, had something to offer, usually in the form of data. One solution was to give access to documents in whatever format they were created in. This would, however, cause a lot of problems. For one, not everyone could read all the formats of all the documents. This would mean that every user would have to install a large number of document readers, which was not practical at all. Moreover, this would heavily eat up the limited bandwidth available. The other solution was to represent all the data in a common and simple language, as close to plain text as possible, and have a client software interpret the data to display on screen. This was the approach taken for the web, the client software was a web browser, and the data was represented then in HTML. Hyper Text Markup Language was an innovative answer. Tags owe their existence to these early days of the web. Each line in a plain text document was tagged in a way that allowed a browser to interpret the tag, and display the text attached to it, on screen. This was a simple, and robust enough system. Anyone could set up a host, write in a few lines of code, and offer their content and information online for the world to see. There were however, a few challenges at this juncture of the internet.

**Bridging the great divide**

The first challenge was to get people online at all. The network of computers had to spread slowly from continent to continent and country to country. Phone lines were initially used for this, soon to be replaced by a massive grid of fibre-optic lines. The next challenge was to standardise the HTML language. This led to the browser wars, where Netscape, and IE would render the tags slightly differently, and sometimes support tags that other browsers did not. So if someone who created a web site wanted text to scroll across the screen in a marquee, one browser allowed users to view it as such, but the other did not. The browser wars have toned down a bit now, but are still an ongoing source of irritation for the users of the web. Another important breakthrough necessary was something to make sense of, and consolidate all the information on the web. Imagine going online, without Google, if you can. That is how the web was for quite some time. Without a search engine to direct you to the information that you wanted, the web was a meaningless heap of content that could not be navigated. The only way to get anywhere before search engines was through portals, that heavily selected the direction of your surfing. However, crawlers that jumped from blue lines to blue lines, and indexed all the information on the web came into being, allowing for a window into the wide and complex web.

The web back then was basically for information. You wanted to know about something, you went online, searched for it, browsed through it, and logged off. The users were spectators, without any real active participation. People who generated content did so on their own home pages. Email forwards had their day, one of the few ways that people could actually reach out to other people and say “hey! check this out! this is interesting”. We could have actually used 1GB mailboxes back then. Success stories such as Usenet and Napster were few and far between,

Mashups

Mashups are a combination of two or more web applications or APIs into a single web application. Head out to Webmashup.com for more

DBpedia

DBpedia is an effort to consolidate all the information on Wikipedia to be used as smart resources by Web 3.0 apps. Contribute at wiki.dbpedia.org

Feature

and soon died out for various reasons. To post images online, a few tech-savvy users relied on software that churned out HTML web galleries. A few services like Geocities and Angelfire allowed users to create and upload their own content, but this too required an understanding of HTML, and how hosts work. For a good ten years, this was the web, but dramatic changes were in the offing behind the scenes.

Ward Cunningham was working on a system that allowed users to edit databases, and quickly change and generate content. A Harvard kid with a laptop called Mark Zuckerberg was contemplating comparing his friends to farm animals, and have his buddies vote between the two. A company called Ludicorp was thinking of ways in which users could chat and pool photos at the same time, while playing their online multiplayer game. Pyra labs was working on a setup that allowed users to easily create and generate content in the form of online journals. These ideas were dormant for some time, and needed some kind of a catalyst. Something that fundamentally shifted the way the web was used. That came along, as a major reality check for the web in the form of the dot com bubble burst.

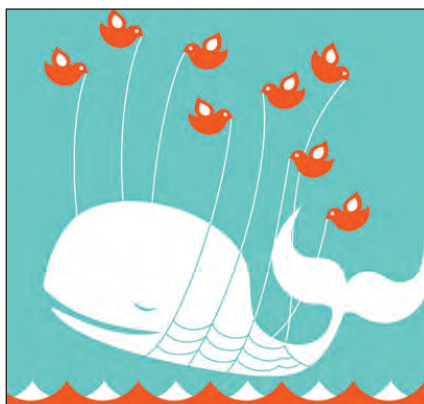


Handyman services

Web sites could no longer set up interesting portals, or put up content and expect to earn money. The focus shifted to getting users actively involved in the process of content generation. Wikis, so far used for side projects and coding communities, emerged as a massive political statement in the face of online reference web sites such as Encarta and gave them a run for their money. A simple method for editing, and creating content ballooned out of proportion, and became the *de facto* authority for gaining information online. Yahoo! bought off Flickr from Ludicorp, as a platform for sharing and pooling photos, and Google came up with its own Picasa Web as an image hosting solution. Stumble Upon and Digg, both small services, occupied the same space as the search giant Google for being windows to the web. Facebook spread from Ivy League collages in the US to the general population as a powerful platform for social interaction. Blogger was bought out by Google, and became a platform for everything from meaningless meandering to citizen journalism, an independent source of news and ideas that soon became mainstream. YouTube became the web's equivalent of television, offering almost any kind of video content on demand. Recently, Twitter emerged as another powerful platform that has managed to achieve so much by encouraging users to post so little.

Can you spot something fundamentally

common to all these services? Not just the fact that all of these heavily depend on the users to create content - user generated material on Facebook, for example, can hardly be called content. These are not just web sites, these are platforms, and can be consumed in more ways than simply navigating to a particular URL. The key words here are tags, feeds, APIs, widgets. You can write applications that interface with the wealth of data in Facebook, Twitter or Flickr, you can navigate through the content on Stumble Upon and Blogger through a feed reader on your desktop, you can post videos from YouTube or songs from Grooveshark in your blog's sidebar by copying some lines of code. Many Twitter users have never seen the Fail Whale graphic of Twitter,



The Fail Whale is seen everytime Twitter goes down

and have never even gone to Twitter.com. To them, Twitter exists only on their mobile phones. The possibilities of how to use these platforms are not limited to what the creators of these web sites could think of. They are open to the world, to do what they want to do with them. The technology driving the web is no longer restricted to browsers, or even web pages. HTML already feels like stone age technology, because of how much the fabric of the web has evolved within two decades of the web's existence.

Rewiring the web



JavaScript, AJAX, LAMP, PHP, Flash, Silverlight and Air are the most common technologies used in Web 2.0. These are not merely improved ways of allowing web browsers to display more eye candy on screen, although this has definitely happened. Instead, they are ways and means by which users can interact with the web better. Most of these services form another sphere, a content rich network in its own right, another layer above the web itself. The Blogosphere, the network on Facebook, and the Tweetosphere are not named because

of some kind of fad or to better promote these services. These are real worlds, changing the social, political and economic landscapes. The web is no longer made up of static pages of information. Instead, the web is now made up of dynamic platforms and applications, which are two different things. There are many, invisible ways in which the web has changed. Creating, designing and maintaining web sites takes much more time, effort and money now, than it used to. The process has become much more complicated instead of simpler, and the end user is often oblivious of these shifts in the way sites and services on the web are conceived.

Think of an application that you run on your computer. Every time you click on something, the computer checks the memory for further instructions, and changes the screen according to your input. On the web, this was a different story. Your input data would be compressed, transferred to a server where it would be processed, and thrown back at you. Web 2.0 uses a bunch of technologies to reduce this difference between applications run on the desktop, and applications run through a browser. A portion of the processing is done on your machine, while another chunk is done at the server. However, users no longer have to wait while a set of instructions are sent to the server, and can continue to use the service. Instead of the entire page refreshing, portions of the same page change now, once a web site is loaded. Online image editing applications such as Pixlr, or services such as Google Maps are examples of this shift. You might have noticed how search suggestions on Google change in real time while you search. This was something undreamed of in the original implementation of the web. Web 2.0 is about *now* - what is trending right now on Twitter, what is happening right now in your friend circle on Facebook, what is the buzz in the blogosphere right now. Things have started "happening" online. Another major introduction is the use of third-party applications with a platform. It's fairly simple, for example to make a slideshow screensaver of all the images on Flickr with a particular tag, and scroll text of Twitter or Blogger entries of the same tag over these images. Open APIs are not only a way to encourage more users to get personal with the web service or application, they are a way to use the pool of content in new and interesting ways. Another shift is in how much Web 2.0 allows people to collaborate on projects. Web sites such as Jamendo, Sourceforge, OPsound and Vimeo allow users to create, share, distribute and remix music, videos and software. This is where the web stands right now, and this was the approach desktop



Read up on what businesses can do on Web 2.0 <http://www.thinkdigit.com/d/88212/>

Google Squared

Google's experiments with semantic search are at www.google.com/squared

AJAX

Read up on why the term was coined, and what it means at www.thinkdigit.com/d/29349/

software should have taken long ago. So, what's next?

The web has a few shortcomings, which will get amplified rapidly now. Searching for Web 2.0 sites is already a difficult thing. A search engine is made to crawl hyperlinked pages, and throw up the answer. Almost any Google search now gives you a Wikipedia page as the first or second link. Because of the way Web 2.0 has evolved, we are, or soon will be, back to where we started, in the pre-Google days, without some kind of a search engine to make sense of the web. Spiders are not designed to crawl content-rich sites, go to the deep back end of web-based applications, because the web is no longer made up of mere hyperlinks. Consolidating a database of web services is the next big challenge for search engines. There is only so far that the tags and metadata of today can take you. Internet search will have to undergo a radical change to keep pace with Web 2.0. In fact, what it means to search the web itself, might change radically.



Plans for the future

The next generation of social networking will probably use the current services as the back-end. The "front" will have to consolidate the web activities of users across a wide range of web services. Say a common service for updating your status on both

Twitter and Facebook is one of the most basic functionality to start off with, something that a service called Plurk already offers. The next step is auto-updating the status message based on the current activity of the user. To a limited extent, there are applications that say monitor your activity on Last.fm and re-submit the scrobbles as a status update on Twitter. A new generation of customisable middlemen, engines that let you take feeds, remix them, and feed them back to another service, or the same service are in the offing. Again, bots on Twitter do this to a limited extent. Swearbot, for example, monitors all instances of swearing on the Tweetosphere, and reprimands the swearer for using strong language. Flock is a web browser that lets you plug in to Orkut, Flickr, Facebook, YouTube, Twitter and other Web 2.0 services from one easy interface. Much more of that is headed your way. Theorists are talking about a "lifestream", a steady flow of data of what you are doing online, used by a multitude of services, for a multitude of applications, but the lifestream itself being invisible as a whole.

Another important line that will be breached is the difference between online and offline applications. Web 3.0 applications will fuse seamlessly with desktop applications in a manner that there is little

difference between the two. Your data will be accessible from any computer, and you can drag-drop content from the web to your system folders and items from your desktop to say, an attachment in your email. Google Wave, will offer some of these functions when it is released to the common public. Another important line that will get blurred, but over a period of time, is the difference between using your computer and your mobile phone. The interfaces are pretty low-key even on high end mobile phones with customised applications for Web 2.0 services, but these will get better. You can expect to be connected and online all the time, and use the Web 2.0 in a more personalised way. A large role will be played by the search engines of Web 3.0.

Search engines will have to become much more smarter, presenting portals based on the search term as their result, instead of a set of pages. For example, if you search for

the location using a pretty low-res mobile phone camera - without any appreciable load time at that. No search engine does all this yet. Wolfram-Alpha is a step in this direction. The functionality of the service is very limited, and falls drastically short of its claims, but that just goes to show the staggering task in designing the next generation of search engines. A single search engine for all these applications would be great, and no guesses for which one will try the hardest to get there, but smaller engines with highly specialised and robust application can get ahead. For example, both iTunes and TrackID on Sony Ericsson phones use Gracenote's database and search facility to identify songs. Gracenote is well ahead of Google when it comes to searching using snippets of songs, or their tags.

Web 3.0 will require some kind of system where all the applications can pool their resources. Some common language such

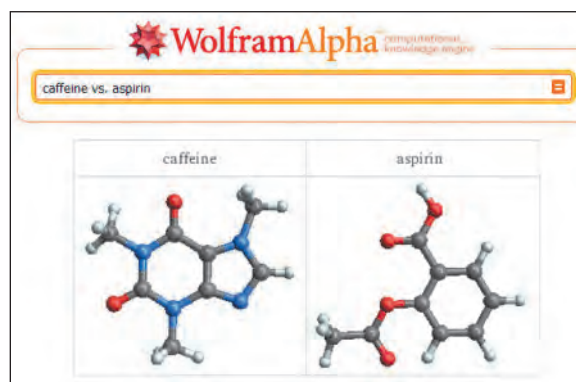
as XML, that will describe the content generated by the users, and their relation with each other. There are no standards as yet for this language, but when it comes, it will help the web understand us better.

There are two divergent paths that the web is taking. One approach is to consolidate everything in one central location, and the other is to distribute everything to the user. Google Docs, On Live and AMD's Fusion render cloud are examples where data is

centrally located, and worked on by remote applications. This includes applications where a game for any console can be played on any console. Another approach, drastically different, is Opera's Unite browser, and software such as Freenet. Both of these bring the power of web hosting to individual computers. Applications such as Seti@Home have long been using distributed computing for processing large amounts of data. Web 3.0 will incorporate both of these approaches, further blurring the lines between personal and public digital space.

There is a flip side to all of this as well. These trends are not exciting to everyone. There is a small minority of people who don't really approve of the direction in which the web is going at all. According to these people, blogging just introduced a whole bunch of clutter, Twitter is an irritating phenomenon, and all of these are passing fads. Privacy, and the use of personal data for advertising is another big concern, even if this is done by machines without human interaction. These concerns can not stop the web from going

where it will though, and for the digital community, the world continues to grow smaller by the second. **d**



Wolfram Alpha's search results are not always what most people expect

"India", the search engine should throw up a page which has snippets from wikis with a different focus (say travel, encyclopedic, and pop culture), feeds from recent blog entries, tweets and plurks, as well as photos from different pools. Possibly, airline tickets to popular airports, festivals in the country, and recent news from the location could also show up. The specifics of this would depend on user preference and history. Additionally, the content will have to change depending on whether the search is made from within India or outside. There are many more demands that users will have from search engines of Web 3.0. If you walk into a store, click a photograph of something on sale, and search using that photograph, the search engine should be able to throw up prices on nearby stores, and directions to the cheapest location of sale. The back end should be pretty robust, so as not to disappoint out of the way requests by users who really need it. Say, a person spots a great looking city while flying, and photographs it from the air, the search engine should be good enough to resolve and identify



Core 2 Cortex

ARM announces the Cortex-A5, the world's first multi-core processor for mobiles. We should see devices with these processors starting next year



Galaxy's younger cousin

The Samsung i5700 Spica is the company's second Android phone. It comes with the similar features as the i7500 Galaxy

Portability Mania

We're talking about the newest entrants in the portability space. Be it operating systems, applications, or devices themselves!

Attack of the droids

There are indicators that suggest a sea change is in the offing for the smartphone market. And this change is reportedly being spearheaded by none other than Google's Android mobile operating system. Rewinding to just a year back, we had only one Android phone in the market; the T-mobile G1. A year later, and there are now several phones available through multiple OEMs, and counting. Current research suggests that Android is going to be the mobile OS of choice in the near future and years to come. Currently, Android has a two per cent market share when it comes to smartphones. While Symbian is the consolidated leader in all phones, a Gartner report suggests that it will be Android that will challenge Symbian's position by 2012, and not iPhone. Why is this so? When you look at the current undisputed ruler of the smartphone market - the iPhone - you only have one form factor. Android phones on the other hand come in a variety of form factors. Whether it is hardware QWERTY, full touch, scroll wheel and other differences to fit preference.

Google's game plan

The mobile operating system is open source but developed by Google. Google has invested a lot in the platform with seemingly little apparent returns. It makes you wonder what Google's game plan is, since it is the biggest investor in Android. Well the answer

is simple. We're going to call it the Google integration scheme. The idea is to get Android to as many users as possible, thereby creating an ecosystem where many of the company's services, right from search to maps to mail will be seamlessly delivered to consumers. Remember, these



devices have tight integration with Google's services. From this point on the backbone and revenue generator of all Google's activities kicks in - advertising. A strong foothold in the mobile advertising market is what Google will obviously look for, since the industry is expected to be at \$10 billion by 2013, according to a study by Heavy Reading Research.

What are the challenges?

Form factors, which itself is an advantage for Android, in some ways could be it's biggest downfall. A similar problem is faced by Windows Mobile as well. The trouble is that since there are many variations in hardware, the software needs to be developed for the lowest hardware specification unlike Blackberry or iPhone whose software is built specifically for the phone. Then there is the issue of keeping

control over the developer community, and still making it worth their while. The developer community is quite averse to too much control so there needs to be a fine balance. Some reports suggest that the developer community is already irked with having to work with a

software that needs to support so many diverse hardware specs. Now that Windows Mobile 6.5 has its Marketplace software delivery mechanism, in the future we may see a system of certifying applications. So will Google succeed? Whichever way the cookie crumbles, this space is going to be interesting to keep an

eye on especially with players LG and Motorola coming out with their own Android phones soon. For a sneak preview of Android 2.0, check out our report on <http://www.thinkdigit.com/d/and/>

Full HTML glory on your small-screen phone!

Opera Mini has been a boon for all those people who want the full HTML browsing love of the iPhone, but are confined to a device that costs as much as one EMI of the iPhone itself. Here comes along another competitive app, named Bolt which boasts "lightning fast browsing" on

any phone that supports Java apps, that are supported by almost every phone with a colour screen today. Its latest version (1.5) was launched recently and is very similar to the Opera Mini in terms of functionality. Bolt claims that "many of the most significant upgrades occur 'under the hood', but you are sure to notice the results. Version 1.5 is the most reliable, fastest browser we have ever released - more than 15 per cent faster than Beta3." A complete web site can either be viewed in a split-screen mode, wherein a tiny thumbnail of the entire site covers the top end, and a magnified version is showcased at the bottom. One of the star features of Bolt include the ability to play back videos off any web site. How convenient watching videos on a slow EDGE connection is a matter of personal choice, but its a nice feature nonetheless. Although Flash Video (FLV) format is supported, the browser cannot handle Flash-based content on web sites. Also supported are subscriptions to RSS feeds, highlighting text for copy-paste and the regulars like favourites and history. It also has a built-in download manager and a pop-up blocker. For people keen to use secure web sites, the browser supports a 128-bit secure (SSL) connection; a standard mode of encryption used by such sites. We tried



BOLT



Storm: Take 2

Updates to the BlackBerry Storm 2 include improvements seen in its input mechanism; it also comes with BlackBerry OS 5.0 and Wi-Fi support



N900 Delay

The Nokia N900 launch gets delayed by a month; now to ship during November 2009, hopefully

the app out on a Windows Mobile phone and it handled full-fledged web sites quite well. Navigating through pages was an easy affair. We'd definitely give Bolt our thumbs-up!

Barnes & Noble plays nookie

Amazon believed that people were ready to jump from

readers of their own. Adding to this list is Barnes & Noble's 'nook'. Other than its striking resemblance to the Kindle 2, it has a few distinct evolutionary features to separate it from the crowd. For starters, it marks its place as the world's first ebook reader based on Google's Android operating system. Also, in place of

The colour touchscreen can be used for browsing content as well as typing using an on-screen QWERTY keyboard. For connectivity, it

is configured to be used with AT&T's 3G network in the US and also has Wi-Fi support. Two GB of internal storage is large enough to hold thousands of books.

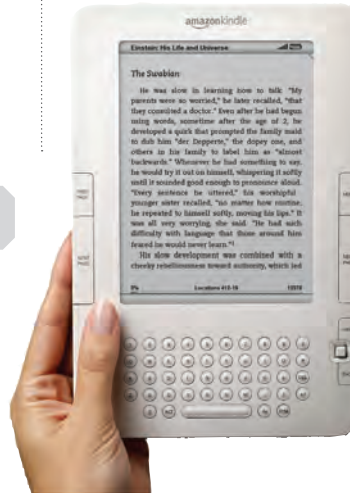
One of the great things about books was the ability to share it with your loved ones after you're done devouring them. Devices such as the Kindle 2 put brakes on this kind of convenience. The nook plans to bring it back by adding a 'lending' feature to share ebooks with other nook users. It is priced at approximately Rs. 12,480 (\$260) and will start selling in the US by the last week of November. We're unaware of when it will be launched in India and the response it will get. **d**



Check out what Amazon thinks of nook
<http://www.thinkdigit.com/d/nook/>

flipping pages to clicking buttons when they launched the Kindle, an ebook reader. A few other companies (like Sony) have followed the trend and come up with

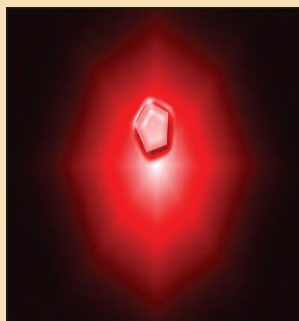
the Kindle 2's hardware keyboard, the nook will use a multi-touch colour screen positioned below a standard grey scale E Ink display – a first for ebook readers.



5 RIDICULOUS IPHONE APPS

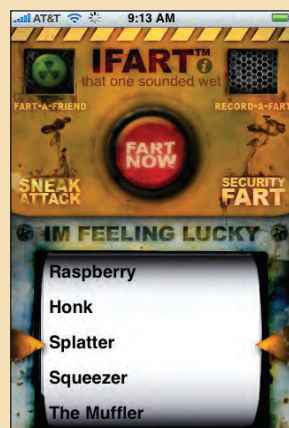
While we know that there are many cool, useful apps for the iPhone, there are also many that make you wonder if Apple has hired monkeys in their App Store monitoring department. Here's our list of some of the most ridiculous iPhone Apps that came to existence.

I Am Rich – This app created waves of controversy when it was being sold at the iTunes App Store for a ridiculous asking price of Rs. 46,500 (\$999). The poor, unsuspecting (yet stupid) users who actually went ahead with the purchase were shocked to see that when the app opened, the only thing they could see is a red gem with a motivational statement written below. We all know for sure who is a few thousand



dollars richer now, don't we Mr. App developer?

iFart – Possibly one of the dumbest apps in the store, this one-dollar software generates a fart sound at the touch of your finger. The only utility this app could possibly

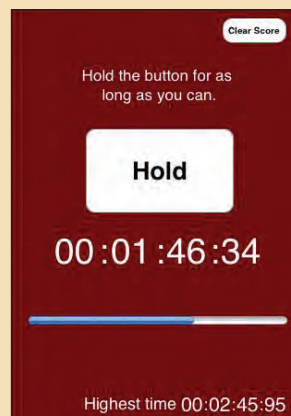


serve is a few giggles for the first few times you use it. But apparently, 13,000 people seem to have thought of other constructive ways to use it, thus actually putting it at the No. 1 position at the App Store at one point. Let it "R.I.P.", we say!

Enigma Clock – This app uses a unique algorithm to display



time as a mathematical riddle. When living in this fast-paced world is already too tiring for many, who in their right mind would want to use a considerable part of their brain just to tell time?



Hold On – This app presents you with a button. The task is to keep your finger on this button for as long as you can. After which it gives you detailed reports regarding your progress. No thanks, we'd rather waste our time by listening to Britney Spears' records all day long!

Alarm Free – Aimed as a self-defence application, it has a large button on the screen which when pressed, emits a faint beeping sound via the iPhone's speakers. Aside from the fact that nobody would actually actually hear your phone's cry for your rescue, why wouldn't the robber make away with your iPhone instead of your money?





Foto of the year

FotoFlock.com, the India-based portal dedicated to all things photography, announces the 'Photo of the Year' contest

Learn a new skill online

Check out howcast.com, a website that has great videos on how to pick up any skill; right from bathing your dog to washing your hair

Crawling, Digit style

This month, we take a keen look at what Google is up to and examine the continual question of whether to trust the cloud.



Surfs up! Will you ride the wave? Or will it be a mondo wipeout!

As with any so called revolutionary technology, initially, there is always a great divide between those who become early adopters/proponents and those that remain on the sidelines watching sceptically. Google Wave is currently in that position. Since the time Google sent out its first batch of invites, people have been trying to evaluate whether it's just a cool gimmick or does it have any value. For those who came in late, Google Wave is a real time collaborative tool that purges the line between instant messaging, email, collaborative tools, wikis and social media.

If you have the patience, you may want to watch Google's really long video (1 hr 20 min) on the official site. In a nutshell, Wave is a power-packed set of tools for creation. It allows you to create dynamic 'waves' (wiki-like documents) in which you can invite people to have conversations and collaboratively create, brainstorm, share pictures videos, while even taking polls on topics of debate, among other things. It allows for rich text and the best feature is the ability to annotate any part of the wave with comments.

People on the wave can reply to the comments and participants can view what is being typed 'in real time' - as it's being written. If you were invited to the wave at a

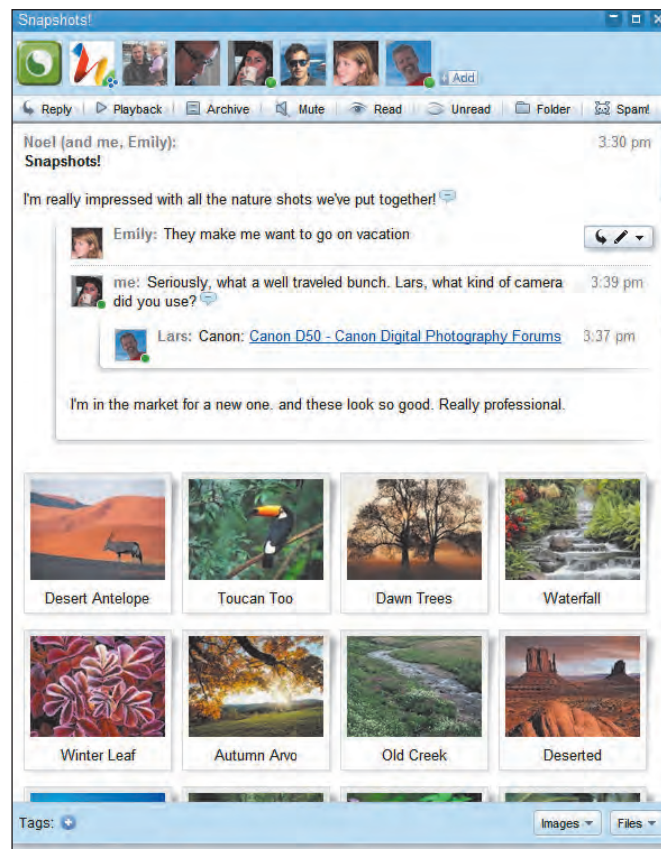
later stage of development, you can even rewind and play back the events. So in a way, wave creates feature-rich conversations that can be searched, revised, discussed and finally the end result after refinement can be used. All this is just the tip of the iceberg. Wave is essentially a platform on which developers can create

Apparently none, apart from a few bugs. It's just that people are having a hard time evaluating whether it's only 'fun' or it can be used for enterprise level work. And what is this 'work' it can be put to. There is also speculation of whether this will be just another communication tool that needs your constant

who reply independently.

Even with how well Gmail conversations are organised, you will find mails overlapping and then finally one person in the work group will be assigned the task of extracting the relevant points from all the mails and put them in a document. Google Wave makes all this redundant as whatever common objective you're discussing or ideating over, gets commented upon and refined then and there.

Some early users are finding the learning curve a bit problematic. Here again, the perception has more to do with the generation divide. Most users who have grown using social media tools as their primary means of communication will find the interface intuitive. While the old timers who can't get around the fact that "this doesn't look like Outlook", will definitely have a tough time. The bottom line is that once the platform is made public (even in Google's forever-beta style), people will find ways to make it work for them. We're eagerly waiting for our invite and Google has assured to include us in the next round of invites.



Collaborative features of Google Wave in use

either robots or extensions to perform certain tasks, taking Wave's functionality to a new level. For instance, there is a robot called Rosy that translates text in real time and there's a gadget that can create real time polls that can be embedded into a wave. All of this sounds really exciting, so what's the catch?

attention while operating in the already cluttered space of blogs, email, IMs, social networks and Twitter. Will Wave do away with all of those? In our opinion - not yet. But it will certainly reduce clutter. If you're used to working in teams, you'll relate to the confusion caused when one mail is marked to several people

Heads up in the cloud

A lot has been said over the past year about cloud computing. It's been mainly about moving this service or that application "into the cloud". We've always been pretty 'meh' about the whole affair, so let's look at what cloud computing really is. And what kind of things are being moved into the cloud?

If you're sitting in an airplane with your laptop, it certainly is not cloud computing. The definition of cloud computing is kind of nebulous (pun intended).



Right to have internet!

Finland is the first country in the world to make 1 Mbps broadband access a legal right to its 5.5 million citizens

How not to do stuff

Videojug.com, other than some seriously useful stuff, has some really funny videos in their humour section. Go check them out for a few laughs

The crux is that it allows you to perform certain tasks, much like your desktop applications but on a remote server, for instance Google Docs. In effect, you leverage the computing power and the software environment of the online or 'cloud' service. Data, software, computing power are all accessed from a cloud of online resources. Users can access these resources and their data from anywhere using just a browser. Therefore, it becomes a great tool to synchronise information, leaving you to not be restricted by the specific machine you normally use. You can start being productive from any PC with an internet connection. Your documents and other personalisations simply get loaded from the cloud. This kind of application support is known as SaaS (software as a service).

So what are the advantages? And where will cloud computing take us? The advantages are present - no version issues, and no upfront costs in software licensing, to name a few. Netbooks are only the first wave of devices that will eventually come out once cloud computing takes off in a big way. Devices will move towards being ultraportable, and highly stripped down near empty shells, with much of their computing taking place in the cloud. Many are looking at the cloud as a viable platform for an operating system

Cloud services aren't all about productivity either. The cloud can be about fun. Another service that is served up to you from the cloud is internet radio. With services such as last.fm or your music being streamed to your cell phone via cloud services such as Winamp remote, it is now becoming possible to leave the MP3 player at home and tune into the cloud. Cloud computing even allows hardware to be utilised remotely.

Amazon Elastic Compute Cloud, also known as "EC2", is a commercial web service that allows paying customers to rent computers on which to run their own computer



Illustration: Chaitanya Surpur

applications. Some people abroad have already begun downloading their torrents on these EC2 virtual comps and streaming them straight onto the screen. Sounds like a very nice picture right? Nope not quite. For people to start

fiasco have made it clear that it is not as reliable as we might think. The ubiquity of the internet is what has resulted in the feasibility of devices such as the SideKick, which store all user data on the cloud. Now, however, the illusion that



For more perils of cloud computing
www.thinkdigit.com/d/cloudy

depending on the cloud, certain infrastructure prerequisites need to catch up.

Connections have to become more stable, secure, and much faster. There is also the issue of server-side failure. That means answering the question of "what if the cloud disappears?". As the cloud becomes more lucrative as a destination for your data, instances such as the Twitter leak, the many Gmail outages, and now the T-Mobile

your data is safest in the cloud is lost. Last month T-Mobile SideKick customers had been facing a total outage, with no access to their data, with a lack of local storage this meant that a simple restart of the device would mean a total loss of all your private data.

Move over hard copies, Google Editions are here

Google has forever been trying

to get its finger in all pies. And last month's announcement that it will launch a new ebook store called Google Editions next year, only strengthens its position. The ebook market is currently dominated by Amazon and Barnes & Noble who sell ebooks that are tethered to devices such as Amazon's Kindle. Google Editions on the other hand will allow more number of soon-to-be-launched ebook readers to be compatible. In fact, any device with a browser can access these books. Initially, when Google rumours around this were circulating on the web, speculation was rampant that this will be a cloud based service. That means you don't own the book, but only the rights to it as long as you're able to access it. But fears were soon put to rest as Google recently clarified that users need only access a particular book once from their device of choice, and a copy is automatically cached for later use. This might spell huge trouble for Amazon and its Kindle.

Google Editions will be launched with a repertoire of about half a million titles sometime in the first half of 2010. Leveraging its superior search technology, Google will make the books fully indexed and searchable. So how would the endeavour work for Google? It will follow three modes of access. First, the books can be bought from Google directly in which case Google keeps 37 per cent of the amount, while the other 63 per cent goes to the publisher. The second route will allow customers to pick up the books from a partner retailer where the publisher gets to keep 45 per cent and the remaining 55 per cent is split between the online retailer and Google in some proportion. The third option is to purchase directly from the publisher's web site. No details are known yet about the last avenue.

All in all, there is going to be a lot of action in the ebooks segment in the coming months and we're quite keen to see which player emerges as the winner. Be it the multitude of device makers that are entering this sector or the content provider. **d**

explore design

Product design is all around us yet we're completely oblivious to the ways in which these products affect our lives and what goes into creating them

Siddharth Parwatay

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Product design is not just about seemingly trivial objects. Take the blood sugar monitoring gadgets used by diabetics to your all important personal computer; they're also results of product design. So, like all great endeavours begin with a simple question that has many complex answers, let's ask ourself – what is design? Apart from the test book definition of design, there are a lot of schools of thought about design and the profession of product design. In an interesting talk on **TED.com**, celebrated designer Tim Brown urges designers to think big and questions whether design is just about putting an “attractive shell on a piece of technology, or making things more



attractive, making things a bit easier to use". Some of today's product designers do indeed end up making designs that are only fit to be found in exhibitions and art galleries.

Product design could also be more about what Rodger Martin, a business school professor at the University of Toronto suggests – "integrative thinking". That's the ability to utilise opposing ideas and opposing constraints to create world-changing innovations. The stress is on world-changing, while the opposing ideas and constraints here are conditions that every product inherently should fulfil – desirability, technical feasibility and economic viability.

Paul Sandip's designs have garnered him substantial recognition abroad. He is a great exponent of contextual innovation and went on to explain what it means. "Emerging markets need new products and fresh designs that have not been force-fitted to the new environment. While designing for a new market segment, an in-depth study of its culture, lifestyle, and preferences becomes vital to be able to effectively determine the type of products, services, messages, or strategies that will fulfil the needs best. Contextual innovation is a consumer insight-driven design process that puts users at the very front of product development, creating an entirely new kind of usability-driven product platform," he said. He believes in redefining the mundane and ubiquitous to create something that is completely new. "When we re-define, as the word itself suggests, we work on the soul of the product, we question its very existence. Thus, giving the product a new mind and a fresh body," he adds.

A report by Boston University on product design and product personality says, "Design is not just a cultural phenomenon; it is also a key strategic variable that can assist companies in securing or defending a marketplace

advantage." Yet, design is now very much as part of pop culture with even a full featured reality show on BBC called Design For Life. The show is hosted by the famous recusant French designer Philippe Starck who is in search of the next rising star of product design from amongst 12 rather nice-to-look-at student finalists.

Eskild Hansen, the Head of the European Design Center at Cisco had a slightly different view of design and one that the new breed of goatee-sporting-designer-glares-toting bohemian designers of today will not like. He says "Design is an integrated and strategic part of building big businesses. Integrated means if you have a strategy in a business group it's important for designers to support that strategy. The design should be integrated into different business groups like technology, engineering, the market, customers and finally design. If all these are aligned towards the same thing you get good design."

Incidentally, design is theoretically defined as "the idea generation, concept development, testing and manufacturing or implementation of a physical object or service." and that "Product Designers conceptualise and evaluate ideas, making them tangible through products in a more systematic approach." Hence, there are certain elements of design remain constant irrespective of the school of thought from which product design is looked at.

Elements of design: Why do certain products look good and function well while some don't? **Aesthetics**

In product design, this branch of study relates to our sensory responses to an object. If an object is aesthetically appealing, it is pleasurable to look at, to touch and feel. Sandip says "Looking good is subjective. However there are

certain ways to achieve universally appealing aesthetics." According to him, the first principle is – Body attracts. A well resolved form factor always helps.

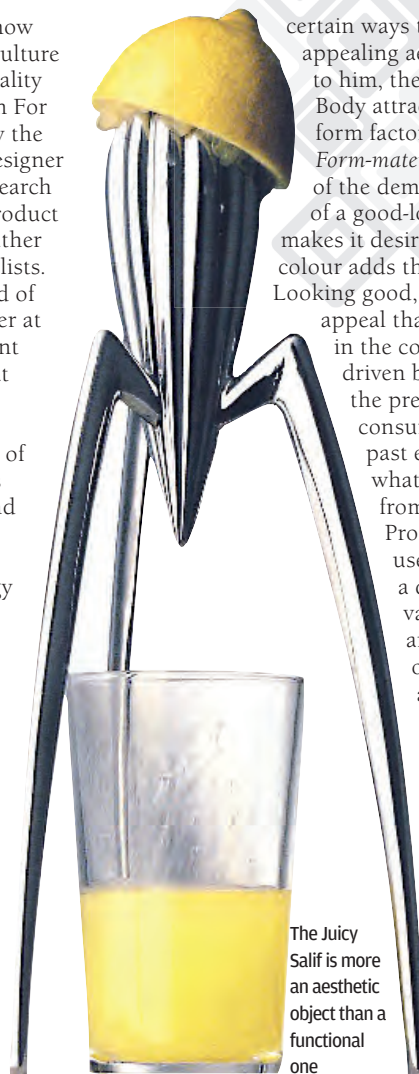
Form-material relation is one of the demanding parameters of a good-looking product. It makes it desirable. And finally, colour adds the oomph factor! Looking good, or more so the appeal that a product induces in the consumer is mainly driven by understanding the preferences of the consumer based on their past experiences, and what would they desire from the product. Products that a person uses are in one way a depiction of one's values, personality and the image that one wishes to portray as an individual, and hence the consumer should be able to relate to the product with the attributes that depict the same values, personality and image. When products look good to consumers, they meet these attributes, and when they don't, they are never

noticed after the first few months of release.

Aesthetics are therefore determined a great deal by emotion too. Take the case of a seemingly simple and ordinary object like a orange juicer that was designed Philippe Starck. The orange squeezer came to be known as the Juicy Salif and went on to become a cult product. These pieces became coveted objects and in turn all the more desirable. Hence, novelty, fashion, symbology also form a part of aesthetics.

Ergonomics and Interface design

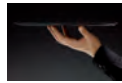
Ergonomics has a lot to do with the human interface that machines have to be built with. As a science, it tries to improve human interactions with products, equipment, environments and systems. It takes into account human biology, stress analysis and material engineering to make products that can be more easily used and will cause less stress to the human body.



The Juicy Salif is more an aesthetic object than a functional one



The crew of the reality TV show – Design for life



Sleek book reader

Plastic Logic has a nice looking prototype of its soon to be released Que ebook reader with a capacitive screen

Thus simply designing with the end user in mind. Ergonomics must also closely follow aesthetics. For instance you can't make a digital camera that looks fantastic but is just too difficult to hold. However depending on function, following aesthetics, ergonomics is the first one to take a back seat in certain cases. Cars designed to achieve high speeds may not be very ergonomic i.e. comfortable to use, but they serve their purpose.

Much of the products of today are electronics. Although interface design does not strictly come under the purview of ergonomics it goes a long way into the usability of a product. Interface design has to work in tandem with the limitations or capability of the underlying hardware. "With the advancements in



One of the early prototypes of a typewriter

computing, processing is moving towards multi-core and multi-chip configurations. We constantly work with hardware manufacturers and do customise our software depending on factors such as the instruction set of the processor. But overall, we work towards the best for our user", said Ajay Pande, VP Engineering, Adobe India.

Prototyping and testing

In Donald Norman's legendary book titled "The Design of everyday things" the author quotes an interesting story about the evolution of the modern-day typewriter. The inventors conceptualised, designed and redesigned their creation till about thirty experimental devices or *prototypes* were made. Each one was slightly different and potentially incrementally better than the other. These products were then sent to stenographers and people from other walks of life. A particular one amongst these, a Mr. James O. Clephane, drove the instruments so hard that he ended up breaking them faster than the creator was able to supply them with more pieces (to wreck). Yet with the help of these prototypes, the



The device helps position a knife properly in front of the rocker knife as well as a tool to help hold food

creators were able to spot functional defects and the end result was a fool-proof machine.

Why is design important in today's world?

From a manufacturer's point of view "Design is the only differentiator when companies reach a common technological platform. It is that aspect of a product which first attracts a customer towards

DO THIS

Have you always been scribbling and sketching designs of seemingly weird concept designs in a little notebook all your life? Chances are that you're a product designer at heart. Read our career story on product design and in the meantime, here's something you can do. If you decide that you have an eye to go beyond just seeing and actually looking at design, go ahead put your pencil to the drawing board. Once you've created something that's unique there is a very popular website called coroflot.com, where you can actually showcase your designs to the world. It's an easy way to get your creative projects online and in front of the right people. The website also has an extensive job support system. It's a great place to just browse through innovative products and learn.

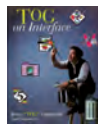
itself," says Sandip. It helps the end user as he gets access to a much better product. Himanshu Mishra, a Product Designer from CPDM, IISc, Bangalore who is currently associated with Innovation Labs - Tata Elxsi, echoes this sentiment. "Being faced with enormous choices for each of the commodities in today's world, one key differentiator that has evolved is

design, which causes the consumer's decision to tip in its favour. But more importantly, design is crucial not merely as an act of making commodities more appealing, but also to cater more as a problem solving approach to the issues that our society faces in this century. Thus, design becomes an all pervasive act required to strategically create or "design" products, services, systems, tools or any other manifestation that solve the omnipresent problems and addresses to needs and aspirations of the individuals, businesses, the society and the ecology," he says.

So as we've come to realise design can be put to use for the greater good of society too. "I think that in today's world consumers need something to excite them. but good design is life changing," said Hayley S. Rosen, Industrial Design student at Philadelphia University. "During my third year, we did a project with a group of occupational therapists and got an opportunity to work with clients that have various medical needs and couldn't do certain things. My partner Dan and I had three clients with three different needs. We were able to make prototypes and test them so we could make a final product. For example, we had a client that couldn't use a knife properly due to the lack of muscular development in his hands. We ended up taking an already existing product and adding a piece on to it so he could position a fork properly so he could cut his food. The real prize was when he used the device and was able to cut his food better than he could. It was very rewarding to see that his confidence level went through the roof because he could now do such a seemingly simple task without any problems".

So what are the challenges designers face?

The natural process of evolution of products is a slow and time consuming one. In the market conditions that designers operate in, there is rarely that liberty. The pressures include demands of time, forced innovation to come up with a new release of the product every year. Plus designers have to conform to the design philosophies of their organisation while retaining their individual mark. In the cutting edge world of technology designers also have to put more juice into a gadget while working within the pressures of technical limitations. Design being an activity which has a myriad range of stakeholders from people who manufacture it, market it, buy it, take care of after sales service to people who recycle



Tog on Interface

A fun and highly entertaining book by Bruce Tognazzini on interface design if you want to know the basics of the subject and don't want to get bored by a text book

Hotel with a view for all

Designer Richard Hywel Evans has designed a three storey building, 61 meters in diameter that is placed on a very slow moving continuous turntable rotating 1.3 times per day

it, it imposes a huge set of demands which the product should adhere to during all the stages of its existence. With many of these demands being contradictory, it becomes a trade off by favouring some the product's attributes over the lesser ones. "For example putting in extra components and tightly packaging the product to miniaturize it might make it difficult to service it, or replace parts later, and even create problems in recycling the components," says Himanshu.

Besides, designers in different countries face different challenges. "In India, design awareness is still at a nascent stage. However, a designer having a tiff with engineers from R&D on grounds of techno-aesthetic feasibility is quite normal, regular and universal. Designers

moving, says in a video on videojug.com "The number one is communication. I think most product designers really outsource their marketing, copy, branding and packaging. They design a product and then they shot gun it out to thirty people and you have just too many voices which creates noise and clutter. What the product designer really needs to do is not only be a product designer, but also be able to communicate what his product does for the consumer. And being a product designer in the green space, you know what I've learned is that communicating green is you have to be very specific about your impact. Generalities do not work for the green people. A perfect example, is when we started renting boxes, we had customers



Eskild Hansen, Head of the European Design Center at Cisco

"Designers have moved up from concept design and aesthetics to something much more strategic such as innovation and understanding users in a new way"

always work with non-standards and create new procedures and processes which at times become difficult to reason out to people with rational thinking," says Sandip.

Economic viability is a very pertinent concern for designers. "One of the major challenges faced by designers is keeping a product under budget given the technology and manufacturing constraints while trying to match the vision that marketing has for the product. For instance, a designer might propose that glass is a suitable material as against acrylic for a particular use. But it may happen that the manufacturing process incorporating glass might slowdown production speeds or increase expenditure. So a designer has to constantly evaluate his design based on the budget so that he delivers the best given the money", says Nithin David, an independent industrial design professional.

For an independent designer communicating your message correctly is as important as the product itself. This is true especially for designers working in the green space. As Spencer Brown, founder and inventor, earth friendly

that would say "What's your carbon offset? What's your carbon footprint? How much energy is used to produce this box"? You'd better have those answers. If you design a product and you're going to design a green product, you're also going to need to be open and transparent in your work. If you're not transparent and if you're not going to share the impact in specifics, you're going to get crucified. Don't show up."

Where are we now and where is design headed in the future?

Design has evolved quite a bit over the years. First the focus was on automation, then it moved on to speed and finally design. Now we see a whole new direction from intuitive designs to products becoming green. Let's look at what experts have to say on some of these trends.

Going green

The design life of a component or product is defined as the period of time during which the item is expected by its designers to work within its specified parameters; in other words, the life

IDEO

one of the world's leading design firms, predicted these design trends for the future

- Ever-increasing simplicity
- Diagnostic everything
- Mobile and wireless everything
- Virtual prototyping interactions and living
- Context awareness
- Sensors everywhere
- Your identity everywhere
- Smart surfaces
- Data visualisation
- Deliberate hackability and open-source-ness
- Peer-to-Peer
- Mashups
- Co-created everything
- Body hacking
- Radical transparency
- Collaborative innovation
- Techno collective action

expectancy of the product. "Designers can be seen as creating for the next landfill meaning that products become obsolete very quickly. Originally, products were designed to be kept for a long period of time and now a days, things are discarded in months," says Hayley. Hence designers have a choice about whether to design for longevity or design to make way for the "new and improved" version of the same product. Here many corporate considerations also come into play. "Design is also about the experience the product gives. This includes packaging, so in our little way, we do our bit by say instead of having a book inside can we print as much of the information on the box itself, thereby saving paper. Being in the field of technology, things change fast. If you look at your cell phone from three years ago, it's no longer relevant. Still, what we strive to do gives higher quality products, so even though people would keep our products for a longer time, we have a better position in the market," said Eskild from Cisco.

Some designers like Nithin David believe going green is "only a 'story' that can be used to sell design, while being responsible for the environment." He says "In the future, I expect material usage, etc to be regulated by governments trying to reduce the impact of industry on the ecosystem. Sustainable products are important and that is the way forward for any product manufacturer in the future."

Micro vs. Macro trends

Research

Forms a significant part of the product design process. This includes comparative product research and user research, to determine the ways in which products are used

Process of product design

It's not all about creativity when it comes to product design. A lot of analytical processes take place involving research and engineering. Then comes sketching, modeling, and CAD design

Micro trends can be defined as some of changes we've seen in very well established sectors, like white goods/ consumer durables being available in all colours and designs as opposed to their earlier standard visual appeal.

"A macro trend, and this is what we're more interested in, is coming into focus because of globalisation. This puts even smaller companies on a level playing field to be able to compete with the big guys. As a result of this, designers have moved

Himanshu Mishra, Product Designer,
CPDM, IISc, Bangalore



"Crucial ingredients that go into the design might get affected when an enthusiast executes a design as opposed to a designer"

up from concept design and aesthetics to something much more strategic such as innovation and understanding users in a new way." is Eskild's opinion. Defining it further Himanshu says "Specialisation, and *scope for exploration* for the user, are other trends that are emerging especially when it comes to personal devices as they allow the consumers to challenge their limits and explore beyond the established norms of usage of a device, for example multi-level connectivity on a communication device like a cell phone through social networks and network services, or features that allow enhanced quality of experience by being more capable in hardware. As far as the embodiment is concerned, there is a trend for more usable designs which are more

liked not only from a distance but during the usage, like in handling, carrying, operation and storage, to mention a few. For example, computing devices that fit snugly into pockets or are extremely light weight and small yet powerful are common."

Collaborative Innovation

"Everyone has good ideas but what was lacking in the last century was a way for companies to harness these ideas and work collaboratively to generate solutions for tricky problems. **Innocentive.com** is a good example of providing a platform for everyone to collaborate and work on thorny issues," says Paritosh Desai – Design Planner and Strategist, alumnus of IIT Institute of Design (Illinois Institute of Technology, Chicago).

Innocentive.com is the first global web community for open innovation, enabling scientists, engineers, professionals and entrepreneurs to collaborate to deliver breakthrough solutions for innovative R&D-driven organisations.

"I personally believe that participatory design is the way of the future. There are users in every context (whether it be in the development of jets or web sites) and their input has tremendous value in helping not only create a successful product but also inherently create strong brand loyalty. Similarly, this power could be leveraged by corporations as a means to get their consumers involved in setting direction, modifying products and in creating a strong brand loyalty." Paritosh adds.

Crowdsourcing

In our open source special (August issue) we went in depth into crowdsourcing which is being used to develop several categories of products including green cars. But as we found, it's mostly at the concept level. "Primarily, the kind of design that is getting crowd sourced is the type in which the tools required to design are easily available, and easy




Designers at work at Cisco's design studio

to learn apart from the creativity of an individual. Hence, I believe it has affected the print and graphic design industry in a bigger way, but when it comes to cross disciplinary design like product development, I think it still has a long way to go," says Himanshu.

Being a democratic process, crowdsourcing has its pros and cons. The pros being that everyone contributes with their own ideas to a common platform, giving all those with a creative bent of mind to give the design exercise a shot. Also, the goal gets a pool of fresh ideas unaffected by the way the designers think.

"On the flip side, the major con being that there are certain peculiarities of every design exercise, however simple it may seem to an outsider, and hence the sensitivity to those crucial ingredients that go into the design might get affected when an enthusiast executes a design as opposed to a designer," says Himanshu.

To conclude, we leave you with what Paritosh told us about the imminent future. Definitely something to mull over. "In the future, the role of the designer will change. The designer's role will be to facilitate conversations, decipher insights and create seeds for products that the average user can then morph to their own needs and tastes. The designer will be a researcher, facilitator and the gardener of people's gardens of ideas." 

"I personally believe participatory design is the way of the future"

Paritosh Desai, Design Planner and Strategist,
alumnus of IIT Institute of Design (Illinois)



Illustration: Shrikishna Patkar



Chic and vogue are not exclusive to Europe anymore. We spoke to Indian designers and corporate trendsetters on what they had to say on the changing times in India

Nash David

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India has grown significantly over the years. In this modern era, there is no third world. Not long ago, there were reports of attacks on Indian students in Aussie land. Several questions were asked. Some were disturbing. It went on from Indians smelling of curry (tinyurl.com/indianarticle), to our sanitation habits, thereby questioning the world's view of Indians.

A young India foresaw the need for design, and passed the Industrial Policy Resolution in 1953. This gave birth to the National Institute of Design in 1961 that cemented the road for Indian design. The world has grown and with time, products have evolved. While product automation

and efficiency significantly increased, product design by itself has bifurcated and become an industry by itself.

The globe recognises India

The average Indian's preference for washing to wiping is not a well guarded secret. NID alumni Paul Sandip saw the need for 'contextual innovation' to the Indian *lota* rather than loathing about Indian ways. It all started when Sandip, as a student, used to travel long distances by train from Kolkata and used to find it an ordeal to get a reserved train ticket on the world's largest rail network. Sanitation, in such situations is prime concern in India. Every citizen has a right to basic sanitation. One glance at the lavatory and you'll find a basin on one corner with a mirror too. Although, toilets are provided in trains, it is rendered useless without a tap (useless without a mug or

container, or even a bottle of water!).

Sandip adds, "I actually wanted to tell the world the Indian way is not something to look down upon. The self destructing mug ensures there is no waste lying around. It is cheap, efficient and



Paul Sandip's Disposable mug won him accolades at home and abroad

GOVERNMENT POLICY

The National Design policy recently approved by the Union cabinet envisages the following:

- Preparation of a platform for creative design development, design promotion and partnerships across many sectors, states, and regions for integrating design with traditional and technological resources.
- Presentation of Indian designs and innovations on the international arena through strategic integration and cooperation with international design organisations.
- Global positioning and branding of

Indian designs and making "Designed in India" a by-word for quality and utility in conjunction with 'Made in India' and 'Served from India'.

- Promotion of Indian design through a well defined and managed regulatory, promotional and institutional framework.
- Raising Indian design education to global standards of excellence.
- Creation of original Indian designs in products and services drawing upon India's rich craft traditions and cultural heritage.
- Making India a major hub for exports and outsourcing of designs and creative process for achieving a design-enabled

innovation economy.

- Enhancing the overall tangible and intangible quality parameters of products and services through design.
- Creation of awareness among manufacturers and service providers, particularly SMEs and cottage industries, about the competitive advantage of original designs.
- Attracting investments, including foreign direct investments, in design services and design related R&D.
- Involving industry and professional designers in the collaborative development of the design profession.

Red dot design awards

You can track all the latest design marvels on red-dot.de

FICCI Design Conclave

Design Conclave is a FICCI forum on Business of Design, Innovation and Technology

Feature

eco friendly.” Sandip’s award winning design is a disposable mug made of biodegradable paper and bound together by organic glue. It is capable of holding 1.2 litres of water and disintegrates within 20 minutes. This design was a finalist at INDEX this year, the biggest design award in the world that carries a sum of €5,00,000. In addition, Sandip’s mug has also been recognised with the Best Indian concept at the Business World Design Excellence Awards 2004. The Central Railway had invited him to deliver his product on a pilot project on the Kolkata sector. Five years later, Sandip is still hunting for investors to realise this idea. India is not short of ideas or creative ideas at that. The major hurdle is arranging manufacturers and financing to present your idea in the market. We hope Sandip doesn’t have to hunt for too long, as this holds promise for the millions in India who don’t have an easy access to sanitation.

Another creation by Sandip, the ATE Pencil eater was awarded the Red Dot Design award in 2007. Basically a sharpener, Sandip named it ATE because of its resemblance to the numeral 8. Jindal Steel has recognised his design with the Jindal Stainless Innovation Award 2007.

A significant share of Adobe’s development work is carried out of India. Yet, when the products are shipped abroad, it is the final product that is identified. What stands out is the usability and functionality of the product. The fact that a team of Indians did it, doesn’t stand out. According to Ajay Pande, VP Engineering, Adobe India, it is a global market with the user being global. Earlier, and even today with other vendors, products are significantly localised geographically. This limits the usability, something Adobe has identified. Pande adds, “Our products cater to users irrespective of their geographical location.”

Design is holistic

Design does need a holistic approach and so individual factors such as geographies alone cannot result in the ideal design. What was earlier the Indian choice, no longer holds true. Even Indian consumers are now becoming global consumers and their preferences are becoming global. According to Anil Sethi, President, Sony Ericsson India, “The basic premise behind launching the R&D facility in the country was indeed to improve cost efficiencies by designing global products locally. However, as an emerging trend it can be observed that the needs and behaviour of the Indian consumer are becoming tantamount to their global counterparts. Hence, we would like to leverage our local resources to create cutting-edge products for the global market.”



The ATE Pencil eater (left) by Paul Sandip, and Sandip receiving the Red Dot Design award in 2007 (right)




“Our designers are actively involved in the product development process and help us in deliberating on various design aspects to optimise the product cost”

Anil Sethi, President, Sony Ericsson India

According to Sethi, “At Sony Ericsson, product design is not deciphered as a function of good looks, but is well integrated in to each step of product

development – intelligent features, user-friendly applications, innovative materials, and of course, attractive visual appearance. Design is not an isolated process at Sony Ericsson. At the heart of our design strategy lies ‘User Experience’ (UX) and how best can we energise this experience in the hands of the consumer.”

While the keypads in the Gulf would have Arabic keys; those in Russia, Russian, consumer preferences especially when it comes to product behaviour is now averaging and becoming ‘global’. Effectively, the mobile phone will behave exactly the same way to each key pressed. Sethi adds, “Our Sony Ericsson Creative Design Centre has an extensive studio base spread across Sweden, London, the USA, Asia and Japan where industrial designers work alongside human interface designers, colour and material designers and graphic designers. Industrial designers develop the underlying shape of the product, while human interface designers choose graphical themes, icons and wallpaper for the screens. Colour and material designers work with the texture, materials and colours, and packaging and graphical material is created by graphic designers. The number of designers working on each project varies, but they are all part of a team that collaborates to break new ground in design. We at Sony Ericsson believe in making technology more human,

hence the focus on ease-of-use and one touch access user interfaces.” 



Give us your feedback at <http://www.thinkdigit.com/d/nov09>

YOUR DESIGN ON CHILDREN’S DAY

On Children’s Day this year, yes November 14th, the Doodle on Google’s homepage will be the creation of an Indian school student. This is part of a joint effort by Google and the National Institute of Design, Ahmedabad. Google India has reached out to around 10,000 schools across India and has publicised this exciting event. In fact, Dennis Hwang, Chief Google Doodler (what a cool job!) has given tips on how to go about Doodling your very own Google Doogole. You can watch this video at <http://www.youtube.com/watch?v=TOOY0xuQ3TU>. While this year’s submission deadlines have passed by, keep tab on www.google.com/doodle4google for new entry dates.





Design Flops

Ludicrous compulsions force companies typically renowned for their design sensibilities to end up creating massive blunders. Let us delve into what happens when design goes bad.

Siddharth Parwatay

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Albert Einstein once said “The intuitive mind is a sacred gift and the rational mind is a faithful servant. We have created a society that honours the servant and has forgotten the gift.” However, this maxim does not hold true when it comes to product designers who have to stretch the boundaries of creativity to come up with products that aspire to become the next big thing. Often in this process designers lose sight of things that are important such as rationality and common sense. We, the aesthetically challenged lot, get a glimpse of this in the movie *Elizabethtown* – a humorous take on a product designer who falls from grace when he ends up making a shoe that goes on to become not just a failure, but a fiasco of mythic proportions. Like the case of products in real life we don't know exactly what went wrong with the shoe except for the fact that it was inspired by a stingray and ended up looking really stupid when worn. Not many people would want a fish on their feet right?

There can be several things that go into making a bad design. Aesthetics – as in the case of the above narrative, is just one example. We tend to overlook these fauxpas and focus on the products that are design successes. The fact remains that good design is difficult to come by. The bulk of the products – especially in the consumer goods segment – are badly designed. They are inefficient, cumbersome, difficult to use, and will not have any of the elements that we've come to expect out of good design. Products by and large are wasteful, and worst of all, not nice to look at or touch.

So why exactly do product designs fail? It can't be that designers set out to make crappy designs. Somewhere along the way the goal probably gets obscured by mitigating factors and the end result is a sub-optimal product. The standard set of reasons like budgetary constraints,

time crunch and lack of talent can't be helped. There are however some ludicrous compulsions due to which companies known for their good design sensibilities end up creating blunders of epic proportions. Flops can happen to anyone. Flops can happen in any category of products. Heck, flops can happen to an entire category of products. Buckminster Fuller, the famous architect and futurist put it quite succinctly when he said “When I am working on a problem I never think about beauty. I only think about how to solve the problem. But when I have finished, if the solution is not beautiful, I know it is wrong.”

Too ahead of its time

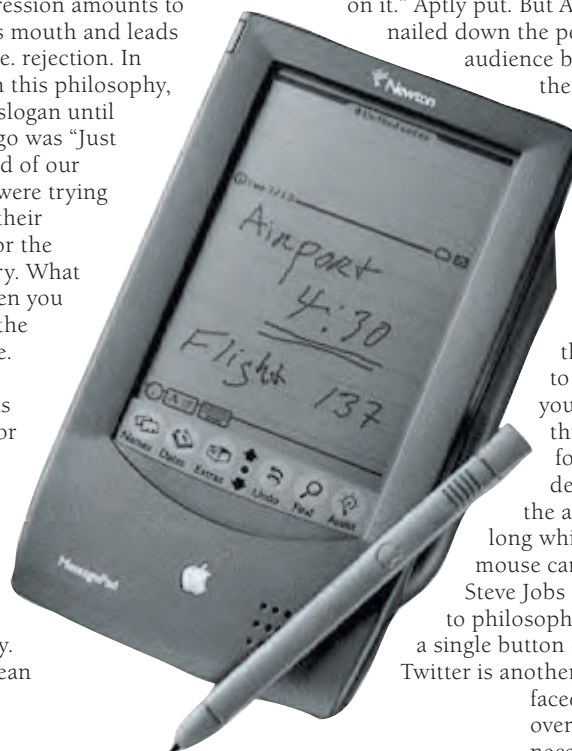
Designs and products that go beyond the norms of what is acceptable for that point in time usually don't work. Consumers want to be fed changes one mouthful at a time. Progression amounts to stuffing ones mouth and leads to choking i.e. rejection. In keeping with this philosophy, Panasonic's slogan until some time ago was “Just slightly ahead of our time”. They were trying to proclaim their semblance for the contemporary. What happens when you don't? Take the case of Apple. Some of the best products recognised for their design have come from the gloriously creative drawing boards of this company. Does that mean

the giant is immune to design failures? Certainly not. In 1993 Apple launched a product that would go on to become the precursor to an entire category of products (PDAs or Palm Pilots as they're wrongly known) – the Apple Newton MessagePad. The device however was criticised for being too bulky and the handwriting recognition software on it too buggy. Perhaps they were hasty with incorporating handwriting recognition when underlying technological infrastructure was not quite in place. A blogger on networkworld.com said, “What these reviews don't tell you is that Apple did get the handwriting recognition down soon after its initial release, to the point where the handwriting recognition worked as fast a typing, at least for me. But since most Americans can't write, the Newton is an easy target for using ‘selective memory’ in the media blurbs on it.” Aptly put. But Apple should have nailed down the peculiarities of its audience before the releasing the product.

Too simple?

Forgive us, but Apple comes into the picture again. Case in point; Mac and its single click mouse. Agreed that things need to be simple, but do you need to dumb things down so much for the common denominator of the audience? For a long while up until the mouse came into being, Steve Jobs stubbornly stuck to philosophy of having a single button on a mouse.

Twitter is another product that faced the problem of over-simplicity that necessitated a whole



The Apple Newton MessagePad was criticised for faulty handwriting recognition



Touchy Touchy

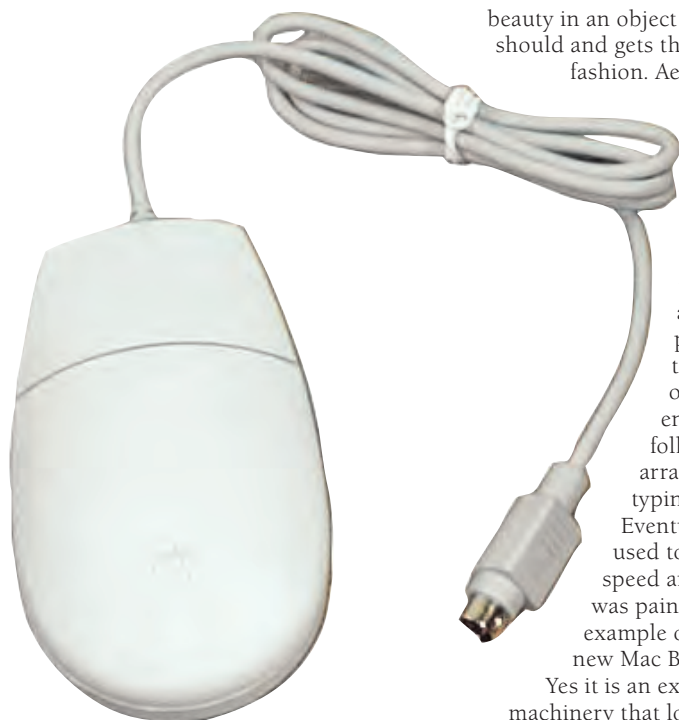
The Razr 2 from Motorola featured an exterior touch screen that launched stuff while sitting in a user's pocket. Highly undesirable.



Slippery controllers

The Wii is surely a revolution, but the glossy controller is famous for slipping out of your hands and heading straight for the screen. Nintendo had to issue latex grips as a quick fix.

Feature



The Mac mouse with its single click button

legion of third party apps that run on top of it or use the API. In fact, they recently had to beef up the level of complexity of their home page. The inference we can make here is that a reasonable amount of complexity might add to the feature set of a product or device, while definitely making it more suitable for so called 'power users' – people that thrive on complexity. Whichever way you look at it, we feel the choice of the level of complexity should be left to the user, much like video games have varying levels of difficulty.

Design before usability

Some designers fall into the trap of making products that pick design aesthetics over usability, comfort and ergonomics. This leads to some serious consequences. We asked Hayley S. Rosen, Industrial Design student at Philadelphia University what she thought. "This is the age-old question of form vs. function", she said. "I feel that the beauty in products is if the form dictates the function. The

beauty in an object is if it works the way it should and gets the job done in a proper fashion. Aesthetics can sometimes be a shell for a great idea." Back in the day Nokia came up with a phone called the Nokia 7600. Sure, the design was unlike anything ordinarily witnessed, but what about usability? The phone had a screen in the centre and two lines of buttons at either end. Because it didn't follow the conventional arrangement of keys, typing became a pain. Eventually users did get used to it but at the cost of speed and the learning curve was painfully steep. Another example of this would be the new Mac Book Pro. Surprised?

Yes it is an excellent piece of machinery that looks great, is fast and very powerful. But the notebook actually hurts like hell when you use it for a while! The edge of the palm rest gouges into your wrist with every passing hour, till ultimately you're left with large suicide-attempt like welts on your wrists.

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This flop on an otherwise great product probably happened because Apples new design ethos of sharp edges is a little to err sharp for comfort.

Ignoring consumer categories

Very often designers are guilty of designing for those that are aesthetically enlightened i.e. connoisseurs with an eye for design. These designs will surely work in concept awards, but will they work on-road? The choice of words here refers obviously to cars, since they're the most likely to fall prey to this oversight. Traditionally cars have had some of the most beautiful and atrocious designs that have seen the light of day. Cars also ignored for a long while an entire segment of consumers – women. Many women would find that great looking cars were not ergonomic to use. They faced simple issues like chipping fingernails in badly designed door handles to grave ones like fatigue with bulky vehicles. An exception to this norm was the 1990 Mazda Miata –



The MacBook Pro literally has *cutting edge* technology

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Novelty not good design

Take this mirror chair designed by Kai Linke makes you wonder how people are supposed to use it. Unless of course the designer had some very ahem intimate use for it.

a sports car loved by the female populace. We wonder why some men prefer not to be seen in one of these nimble machines.

Product differentiation

Form factor is very important when it comes to product differentiation. Companies that have a handful of products need to follow a strict differentiation policy in terms of form factors. Cowon for instance has a few PMPs in its portfolio. Each one is unique in form and design. When this is not followed it can lead to confusion in the consumers mind. One product might end up cannibalising the other or eating into each other's market segment or share. The Windows Mobile platform may not be something to write home about. But as Mr. Sumeet Gugrani, Director – Mobile Communications Business, at Microsoft put it "Windows Mobile 6.5 comes in the widest range of form factors through our partnership with a number of OEMs. You have everything from candy bar to sliders to QWERTY to full touch. All options are available." It can have disastrous consequences when differentiation is not followed in the public utilities domain. Take the freshly minted batch of coins from the Indian treasury. The rupees one and two denomination coins do follow certain design norms like keeping in mind the illiterate sections of society by clearly displaying value using symbology depicting hands holding up the appropriate number of fingers. Yet the coins are so similar in size and shape that we can't

differentiate them quickly. The older generation of coins were so different that you could tell them apart just by feel and touch.

Uninvited Innovation

Sometimes mundane objects can go through a revamp with the thought of bettering them. The adage 'old is gold' holds true and some tried and tested things should be left alone. Questioning tradition for being irrelevant is fine but respecting it for its longevity of existence is also a virtue. The perfect example of something that doesn't need reinventing, apart from the wheel, is perhaps the chair. We've been sitting on these things for ages now and there's not much room for something radical to be done there as the human form hasn't changed much over the past 2,000 years or so. A while ago, we came across a design called Stenstool



Sega Saturn didn't find too many game developers

Chair by Jimmy Kessler. It's basically a stool that's a rock supported by four spindly legs. Why would you want to sit on a rock? After all, it was these that prompted our ancestors to invent chairs in the first place! Another example is the Sidewaysbike by inventor Michael Killian. You sit in the centre but face and pedal sideways! Wonder how that would work. Check out sidewaysbike.com for pictures and videos of this weird contraption.

Ignoring scalability

When you build something, it should form a platform on which further improvement can take place. Take the case of pagers. "Pagers lasted for sometime but never reached the potential they were touted to reach they were not the easiest to use and not very intuitive. They were banking on text for communication thereby limiting the usage amongst literate population. With the advent of mobile telephony they

Feature Creep

A designing pet peeve in which products are packed to the brim with features. The more things you ask a device to do, the harder it becomes for you to make it perform its core function.

just disappeared", says Anirudh Maitra of Pictualize Edutech, a start-up engaged in designing educational and learning enhancement products. Another one would be the 1995 offering, Sega Saturn. It's often criticised as one of the worst gaming consoles in history. It was built on the cutting edge of technology yet something went wrong. The complexity of its dual Hitachi CPUs caused problems in game development. Soon game designers started moving towards the easier and cheaper PlayStation platform. The problem was no scalability thus sealing Saturn's downfall.

The me too effect

Have you noticed that most MP3 players coming to the market lately look conspicuously like iPods. The same round dial, similar screen size and all other attributes, only they look like country cousins of the original. 'If it worked for them why can't it work for us?' – is perhaps the thought design houses are struggling with. Since the CoverFlow format of displaying elements became popular, you find it in every other place from TV programming to websites to even print. Websites today follow the tried and tested web 2.0 sensibilities and end up looking like they came out of the same mould. If it works, it works but here is the caveat - at some point people are bound to get up and say – hey this is getting boring now. What then? **d**



Whatever happened to comfort?



One of the many iPod look alikes

Keep them maximised

If you find yourself closing applications often, keep them maximised – when you throw your mouse cursor to the top-right, you'll always reach the close button

3D isn't useless

The new 3D desktops are heavily steeped in direct manipulation, so they're more enjoyable

Look. Feel.

What magic are user interfaces are made of?

Nimish Chandiramani

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It all started back in November 2006, when we were coming up with new ideas for the interface for Digit DVD (which, you might remember, made its debut in December 2006). In our (shameless) imitation of the Vista desktop, several questions popped up: why is the Start button on the bottom-left? Who decides where the close button goes, and why must we use these little boxes called “windows”, when we maximise them to fit our desktops anyway? But it was 4 am; we were sleep-deprived, and had deadlines.

But the questions still remain. How do interfaces work for us, and why in heaven's name do we actually enjoy some of them?

Let's start with some background...

The Science

Yes, there's actual science at work here, and it dictates both the way user interfaces (UIs) are laid out, and how they become enjoyable.

The Law

All interfaces – more specifically, the ones that require pointing – start with a mathematical model called Fitts's Law (some people will tell you it's Fitt's law, or Fitts' law). They are wrong. The law

describes the time to acquire a target (that is, be able to click on a button, hyperlink, or menu item) as a function of the distance to it, and the size of the target. You can test this right now: if your mouse cursor is in the middle of your screen, it'll take you less time to reach an icon that's closer – obviously. If you turn on Large Desktop Icons, you'll be able to hit those icons faster – by milliseconds, of course, but those add up.

There are important conclusions to be drawn here. Firstly, big targets are good. Secondly, targets should be as close to the mouse pointer as possible. The most important conclusion, however, is this: the edges and corners of the screen are infinitely huge.

Think of it this way: no matter how much you move the mouse, the cursor will never go beyond the edge. So unlike a target that's placed in the center of the screen, you'll never overshoot a target that's placed at its edge.

What does all this mean? Ah, but we must keep you on the edge of your seat for a bit longer. There's another aspect to UIs, and it comes from the science of happiness.

The Flow

Since the 80s, Apple has been throwing its weight behind an interface style called Direct Manipulation (DM). With the ability to point and click at objects on screen comes the desire to control them – to move

and rotate and push and pull and drag and drop (aha!) – and DM interfaces must fulfil those desires. Interfaces should feel like ‘driving a car’.

But why driving?

In 1990, Mihaly Csikszentmihalyi, a Hungarian professor studying happiness, described the concept of flow – a state of mind where you feel immersed, involved, and in control. And one very important source of flow is...yes, driving.

And so, DM interfaces must give you a sense of flow. Games do this all the time – the best games, as you have no doubt experienced, match themselves perfectly to your skills. They never feel so hard that you want to give up, but never so easy that you feel bored. Like driving.

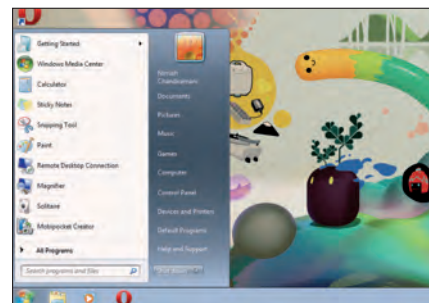
And so, armed with these two pieces of knowledge, we can explain the mysteries of the universe! At least, those that pertain to interfaces.

The Answers

And now, we come back to some of our original mysteries, and some new ones.

The case of the Windows Start button

Now that we know the implications of Fitts's law, this one isn't hard to crack:



Even though it's a big glowing round button, the Windows 7 Start button still respects the corner

corners are good, so if you've got something important you want users to access – say, a single button that gives users access to every function on their computer – you stick it in a corner of the screen. You'll notice that even though the big, round start buttons in Windows Vista and 7 don't touch the corner, you can still activate them by just throwing your mouse cursor to the bottom-left and clicking.

The case of the Mac menu bar

This one is a common irritant for Windows users who are used to menu bars being inside their programs – on the Mac, the menu bar is always on the top of the screen. Despite the culture shock, this is a good thing, according to Fitts's law. The top edge of the screen is infinitely high, so no matter how far up you move the mouse cursor, you'll always be able to use the menu bar.



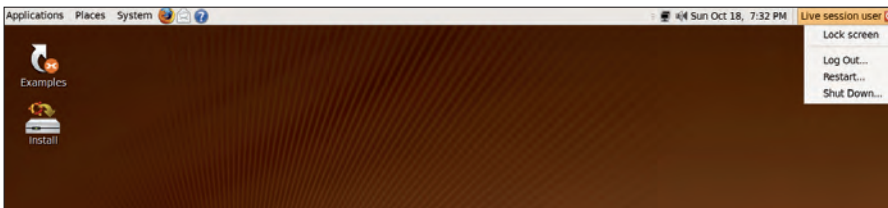
A Mac desktop, with icons optimised for maximum hit-ability

Forget the Dock

If you're a Mac user, or a Windows user who loves fancy docks, stop it. They're more pretty than useful. On Macs, get your hands on DragThing; on Windows, use Windows

Touch too

Yes, the science of user interfaces applies to touch UIs as well. Some concessions can be made because the finger is easier to move than a mouse, but Fitts's law still keeps things sane

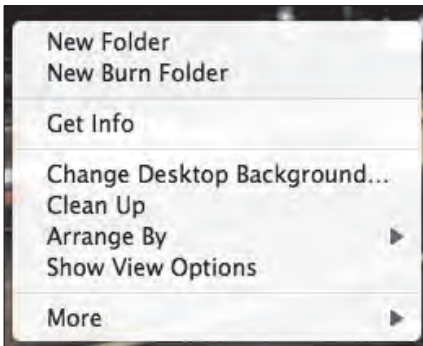


Ubuntu tries to do the top bar thing like the Mac, but putting the "log off" button in such an important position is just silly

The case of the contextual menu

You can't really appreciate the importance of a right-click (contextual) menu until you've used a one-button Mac mouse. Not that Macs don't have the contextual menus – the pre-Mighty mice just don't have a right mouse button. But that's not the issue here.

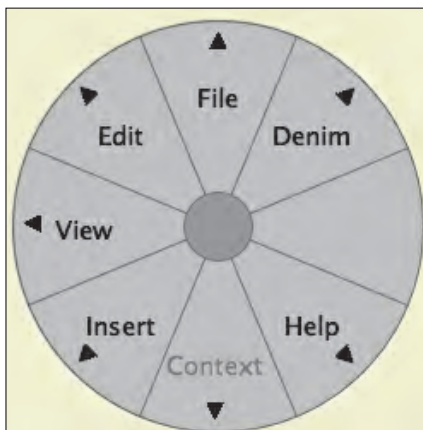
We have contextual menus because of the 'keep the targets close to the cursor' bit of Fitts's Law – the menu appears wherever you right-click, and the menu item you want is a short distance away. The contextual



Apple tries to keep the length of its context menus in check. Sometimes, they're even successful

menus we have today aren't the best solutions, though: they're vertical, so if the item you want is at the bottom, you have to move the cursor a longer distance than if it were at the top.

The best way to create contextual menus that embody all that Fitts would approve of is the pie menu – all the menu items arranged in a circle—though very few programs use one. There are two good



Pie menus are fine for a few menu items, but they can get messy for bigger menus



You can save screen space by making the dock small, but then you have these big icons jumping up at you

things about pie-shaped menus: first, all the menu items are the same distance from your cursor, and second, you don't need to remember the names of the items – eventually, you'll be able to access them just through motor memory.

The case of the Mac Dock

We seem to be a bit fixated on the Mac, don't we? The Dock is one of the 'likeable' things that Steve Jobs goes on about, and makes for some really nice-looking promotional material. But is it Fitts-y good? Let's look at what we have, here: it's on the bottom edge, so that's nice. It's got big, shiny targets; that's nice too. What isn't nice, though, is that those big targets take up a lot of vertical space – on wide

screens, which don't give us much vertical space anyway. You can work around this by making the dock really tiny, but turning on magnification so the icons get bigger when you approach them.

To add to the annoyances of the dock, it gives you moving targets. As you open more programs, the dock resizes itself, taking the Trash icon with it. So if, at any point, you thought you'd commit the Trash's location to your motor memory, tough luck.

And yet, this happened:

The case of the Windows 7 taskbar

As Microsoft's answer to the Dock, the Windows 7 taskbar inherits much of its silliness – the unnecessary height (there really wasn't much wrong with the original short-but-wide taskbar, really) and the confusion between open applications and regular old shortcuts, to name a couple. On the other hand, it does bring some useful targets closer to the mouse cursor by way of jump lists – you can access recent folders, web pages, and so on just by right-clicking on the program's icon. UI design-wise, then, there's nothing to jump about, but there's nothing overly awful here, either.

Moving on, then.

The case of the 3D desktops

This is another thing we must blame Mac OS X for. Features like Exposé brought to us the idea that windows don't need to be drawings on a screen – they can be real objects that can be tossed around a

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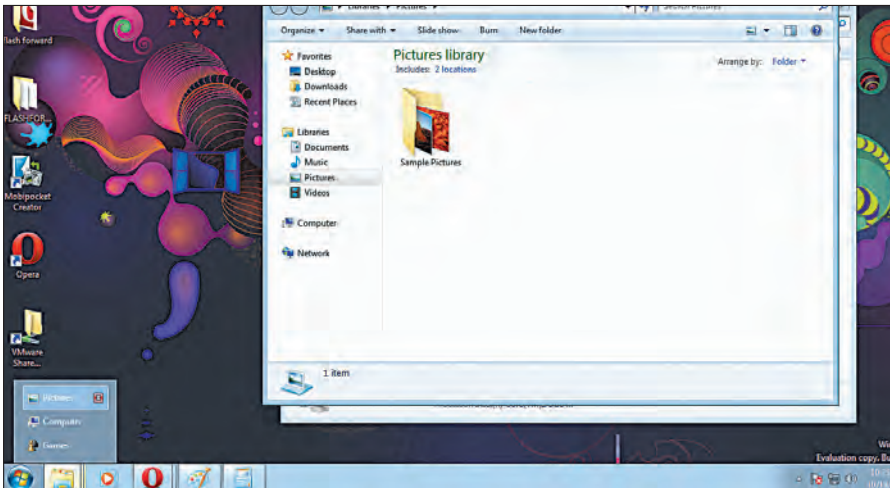
Sorry, Keyboard Warrior

UI design is dedicated exclusively for use with the mouse, though Windows does a respectable job of keeping the keyboarders happy

Less is More

Another UI “Law” is Hick’s law, which essentially says “more buttons means more time to choose one”. It’s the reason iTunes doesn’t have a Stop button

Feature



There’s some good and bad here, but nothing that warrants the words “love” or “hate”

screen, spread out like a pile of papers, and brought back together. Then came Microsoft’s Aero in Vista, and the Compiz/XGL/Beryl/whatever in Linux systems. Working with windows became so much more satisfying — grabbing your Linux desktop and rotating it like a cube, watching windows scroll like a pack of cards — it all became so much more real. A little more like driving a car.

Yes, its Direct Manipulation at work here, for a change. Now that even the most basic graphics card can handle the load of windows that are rendered as 3D objects, we can look forward to even more DM-oriented interfaces. BumpTop, for example, tries to bring the direct manipulation joy that you get out of your physical desk to your virtual desktop (it’s even got pie menus, incidentally). It lets you grab files and toss them around, resize their icons, and all sorts of things that you can do with real physical files.

And while we’re on the subject of DM, we can use it to explain one thing that’s baffled us for ages.

The case of the Enter that renames

If you’re using the keyboard to navigate the Finder on the Mac, you’re in for a nasty surprise if you try to open a file or folder by hitting the [Enter] key; for the Mac interprets hitting [Enter] as your desire to rename the

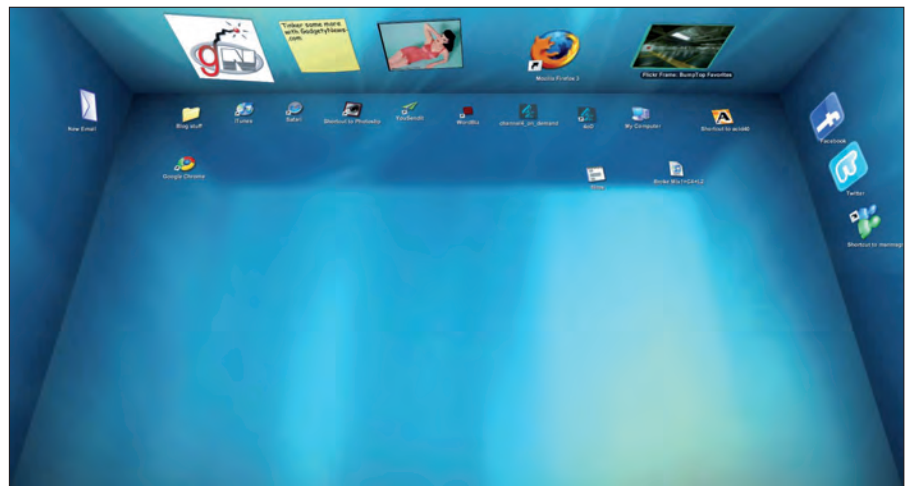
file, rather than open it. After spending days reading about the science of UI design, we were able to explain nearly everything we saw and interacted with, except for this one silly, silly thing. And so, we turned to Bruce Tognazzini, who founded the Apple Human Interface Group. As you read, remember that DM is a mouse-centric philosophy: “Apple wants to facilitate direct manipulation, and that means that you can change the names of things without having to go somewhere else, like a properties window, to do so. There is no need or reason for someone to click on a document with the mouse, then move to the keyboard to press the Return key to open it when double-clicking will do.”

It’s a fair argument, but it confirms another thing that’s annoyed us about Mac OS X: Apple doesn’t expect you be using the keyboard that much; tough luck, keyboard warriors.

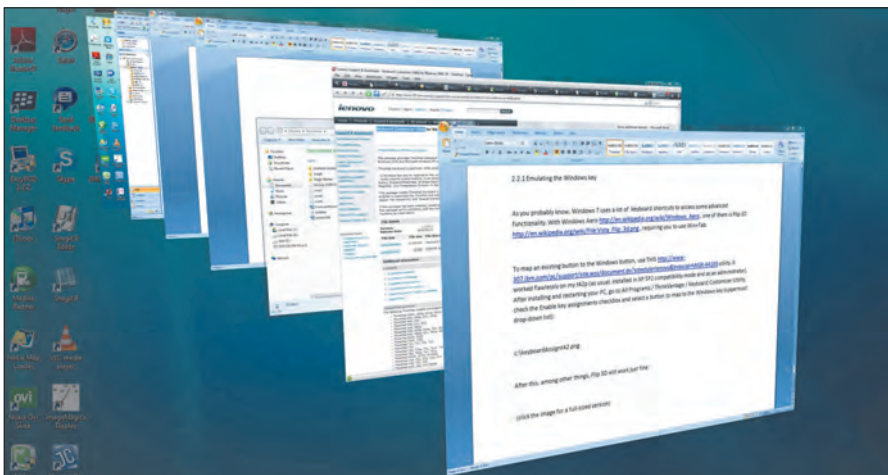
There. Now we can get some sleep.

Endnote

If, by any chance, none of these mysteries have ever bothered you, you might want to




It may not be the most productive of interfaces, but BumpTop’s full of DM fun



Many may hate it, but Aero did make Windows a lot more fun

re-think what you’re doing with your life. Too many TV rays mush-ifying your brain, perhaps?

Without knowing what makes for an optimal experience, you can’t begin to customise your OS to work better for you. For example, Ubuntu users: get rid of that silly top panel and reclaim the top-right corner for something better — like closing maximised windows. And don’t think you’re being a ‘power-user’ by using small icons in toolbars — you’re actually slowing yourself down.

If, armed with this new knowledge, you’re able to solve your own unique UI mystery, share it with people. If you manage to customise a program in a way that makes the UI better, share that too. You could all be part of Digt’s Famous Five Hundred (UI Chapter). 



The Modscene

H4xx0rs are not the only 1337 kids that dig into the source code, pull stuff apart, and put them back together in a better way...

Aditya Madanapalle

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Cog in the machine

Game modification is the creation of new gameplay environments or scenarios using a released game as the base. The Modscene came about as a result of a convergence of two trends of technology usage. Firstly, in a world where products were rolled out of an automated production line, users had a need to distinguish their own products from the rest. This involved either changing the surface of the product, say in painting a car in a particular way or adding vinyls. There were those who however, changed the inner workings, tuning the mechanics of a car for a particular purpose, and were interesting in making changes that were not just cosmetic. Washing machines, toasters, computer hardware, and software were all taken apart and put together better suited for a particular purpose. This trend is what is referred to as the "hacker ethic", finding out how something works by pulling it apart, and making it work better. This is analogous to putting a cog in the machine that makes it work better rather than

disturbing the way it functions. Secondly, the internet has helped considerably change the way in which media is produced and consumed. Technology has grown to a point where enthusiasts and amateurs can create and publish content on the lines of studio-backed media. This can range from fan flicks on the lines of big budget movies, to fan fiction using the same universe as popular books. Computer games were a very fertile ground for these two trends to come together. Not only could you get into computer games and change the way they work, but you could also put together modifications and share the content you created with other people.

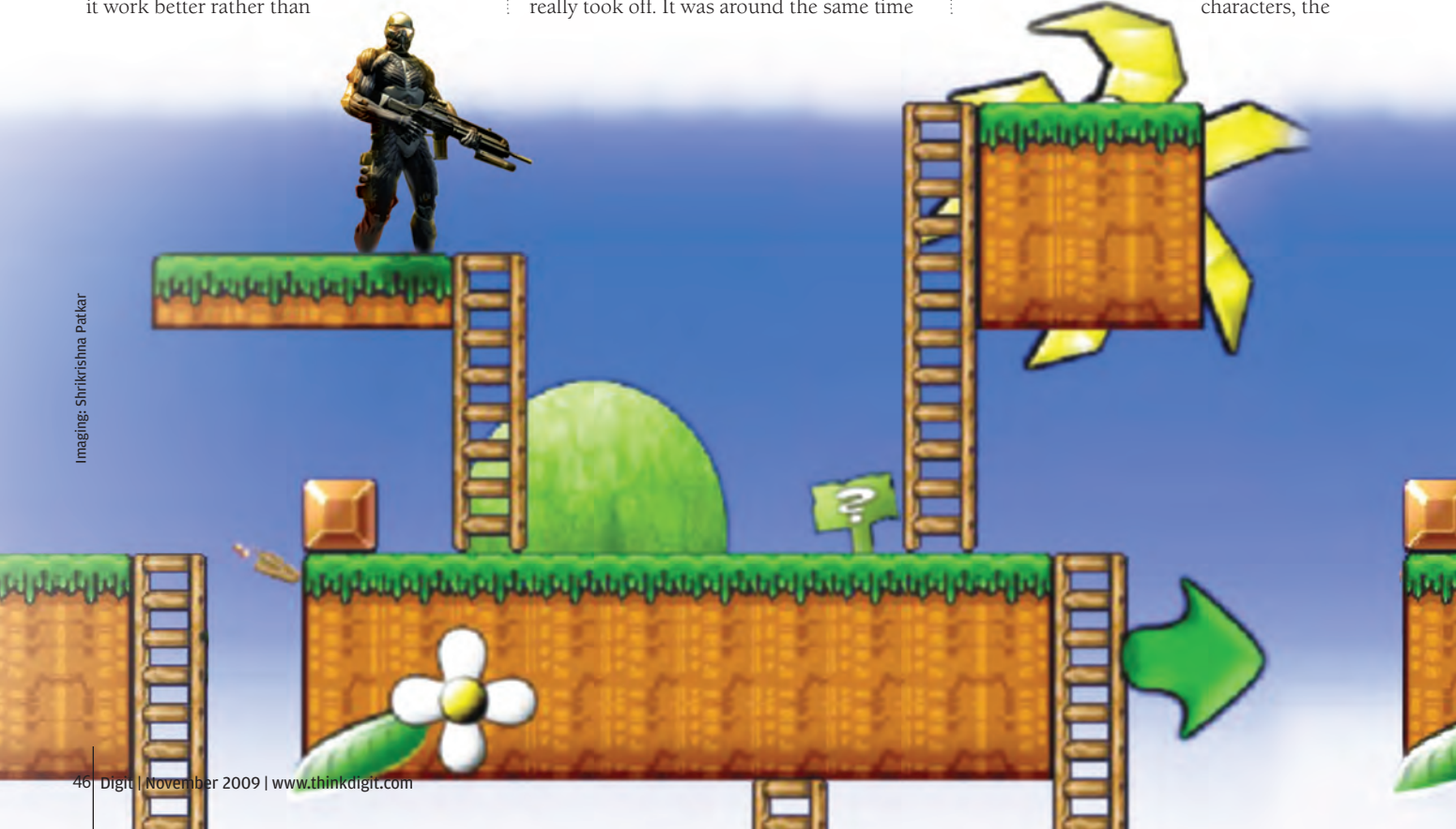
Some of the really early games to encourage participation from the consumer in terms of creating the gameplay environment were games released with map editors. These were fairly simple editors, which simply involved a space where users could paint on objects, and save their creation as maps. These maps could be loaded, and the game could be played in the custom environment. It was in the early 90s, with games such as *Wolfenstein 3D*, *Doom* and *Quake* that the Modscene really took off. It was around the same time

that the internet also started spreading its tendrils across the planet, so communities could grow around the activity of modifying games. Game modification now is a much more complicated affair than simply editing maps or changing the way a particular game looks. Some of the people from the Modscene have been hired by the official developers of the game, for later iterations of the product, or for developing new games because of their experience in certain areas.

A typical modern computer game is broadly made up of two basic parts; the game engine and the libraries. The game engine consists of a set of rules, that govern how 3D objects are drawn, how they are painted, how characters within the game move, and a system for managing the physics of the game. Often, there are many game sub-engines, say a separate engine for managing the physics of projectiles like rockets and bullets, and an engine for managing the particles, as in smoke, fog, water and sparks. The library is a set of files that contains all the game information. This includes the maps, the models of the characters, the textures used to paint the surfaces, the weapons, the storyline etc.

The Doom days

Doom, when it was first released, the libraries of the game were saved in what are known as .WAD files. WAD is an acronym for "Where's all the Data?", and packaged the sprites, sounds and levels or maps together. 'Sprites' are animated or static pictures of all the elements in the game, including the characters, the





enemies, the weapons, the ammunition and the explosions. These .WAD files were easy to modify, create and distribute over the Internet. The Modscene started with this game, and within a span of two years thousands of .WAD files were created and distributed over the Internet. More than one thousand five hundred of these .WAD files were distributed during later versions of the Doom game, and the game enjoyed a market life-time of more than five years because the modifications required the original game to be installed on the system. Another important feature about the modification community around Doom was that the developers released tools specifically meant for modding. Id Software encouraged the modification community to the extent, that they even released the source code of the tools used to create the game. A number of map editing utilities by third party developers also came out. Another important aspect established by *Doom* was that the copyright of the game was limited to the library, but the game engine was released with a more modification friendly license. In 1997, the source code of the game was released with a GNU licence, paving the way for gamers to have more control over their modifications. The producers of games realised at this time that allowing the gaming community to modify their games boosted their sales. Valve and Id Software in particular are known to encourage the

Modscene actively, to the extent of hiring the biggest contributors to the modscene. A number of people who made .WAD files played an active role in developing *Quake*, *Unreal Tournament* and *Half Life*. All these games are known to have active modding communities. A few of these mods are actually played more than the original games.

Rocket science

One of the reasons for the popularity of *Doom* was the multiplayer aspect of the game, and the deathmatch mode, which allowed players to battle it out against each other in a gameplay environment.

The *Quake* series amped up the multiplayer aspect, so much so that *Quake 3* was released with a very rudimentary single player campaign with heavy focus on multiplayer gameplay. The *Quake 3* engine had a very modular approach, and is one of the most versatile and beautiful game engines around. Modders could change individual characters, or avatars, and change the way they look while playing a match. Modders could change the maps, or create new ones, as an arena in which a deathmatch or capture the flag game is conducted. Modders could also change the underlying physics of the game, the damage of the weapons, the timing of item

spawning, the spawn points themselves, as well as add in entirely new weapons and items to the existing mix. While the modification of *Doom* was restricted to making the game look different, as in say *Doom* with characters from the Batman universe, or from the Alien series of films. *Quake* took the concept of modding way beyond such cosmetic changes, bringing to light a number of nuances of multiplayer gameplay as fundamental considerations during the design of any such game (see box).

OSP (Orange Smoothie Productions) and CPMA (Challenge ProMode Arena)



Follow Digit's Urban Terror community on <http://www.thinkdigit.com/d/69793/>

are two popular *Quake 3* mods that were played more often than *Quake 3* itself, referred to as *Vanilla Quake*, as the original, unmodded version. These were changes in the physics of the game, in the weapons balance (see box) and a set of map packs which were changed for better gameplay. A typical online *Quake 3* game consisted of custom avatars being played on a custom map using modded physics, all of which were compatible with each other. Sometimes, mods were made to specifically go against the tide of many of the design considerations of other mods. While most *Quake 3* mods focused on easier to navigate

MODIFICATION PRINCIPLES

Spawn Points – Spawn Points in a multiplayer environment are almost of paramount importance. Spawn points are locations on a map, where the player, items or weapons 'appear' at frequent intervals during gameplay. The positioning of the spawn points are important for balanced gameplay.

Weapons Balance – There are a number of weapons in any multi-player game. While designing these weapons, an important consideration should be that any player with a particular weapon does not have an outrageous advantage over another player with a different weapon. The firing time between two consecutive shots, the range the weapon, the availability of ammunition, and the splash damage caused by the weapon are all used to even out the odds of two players using different weapons. Some weapons are known to be tremendously powerful (eg. the BFG and variants) but these are balanced out when amateurish use is as likely to kill the player who is using the weapon as the player who is getting fired at. Additionally, the spawn points of the weapons and ammunition in any single map, are positioned in such a way that the players have a more or less even chance of getting hold of any weapon. The time taken for

ammunition or weapons to re-spawn are also carefully timed after a lot of test gameplay and thought. Weapons Balance also has to be co-ordinated with the Items Balance to equalize the overall gameplay for all the players involved.

Items Balance – Items in the game are things that players can pick up while playing a game. These include the medkits, the armour, power-ups, weapons and ammunition. The spawn points of these items, their positions relative to the spawn points of players and the re-spawn timings of these items have to be carefully planned so that no single player has an inherent advantage while playing a game. Consider a simplistic scenario involving just two players in a deathmatch with two power-ups and no other items except the weapons that they spawn with. One power-up gives a player full armour, and the other power up gives a player full health. Now, the map and the spawn points should be designed in such a way, that no player should have access to both power-ups. Logically, each player should get one of the two power-ups before they continue trying to dismember the other. The same applies for other kinds of games as well, for example the locations of items and creeps in an RTS game.

Technology Tree Balance – In RPG and RTS games, which involves controlling a large number of units which evolve over the gametime, growing in terms of the in-game technology of the races being played, the races often have a unique growth path. Important landmarks in the growth of a race is called a level, and two races at the same level should be evenly matched in a hypothetical perfect game. No race should have an overpowering and obvious advantage over any other race. For RTS games, finding this balance is a very difficult and long process. The amount of damage that a particular unit can do to another unit or building, and the amount of damage that a particular unit can take under attack can be tweaked very slightly, but drastically change the over-all balance of the game. For this reason, most RTS games frequently release patches to continuously even out the balance of the technology growth, so that amongst equally competent players, the races that are used are equally matched.

AI – Sometimes a game can be improved vastly by just tweaking the artificial intelligence of the in-game characters or bots. Many mods for popular games focus on just creating a better AI, and nothing else.



Going retro

Publishers can revive old titles by upgrading the graphics themselves. Dark Athena is a recent example



Level editing

Game modification can be as simple as editing levels of your favorite games. Try creating levels for Pingus or Moto X.

maps, better spawn locations and better weapons balance. Due to this, players that knew the maps, knew the spawn points, and the timings at which any item spawned, could navigate to these items better than those that were new to the map. This practice is known as 'resource hoarding', where getting an item gives the particular person an advantage. *Rocket Arena* was one modification that threw all these design considerations in the bin. Players started with a lot of ammo, all the weapons, the armour and health maxed out. There were no items in the maps at all, and the players just had to battle it out with what they had. The modifications could be so versatile, that there were a few racing games made using the *Quake 3* engine. Since the source code of the engine was released, there have been many successful total conversions of the game. These are not just mods that can be played by loading the mod using the original game, but stand-alone, re-distributable games that are totally independent of *Quake 3*. *Urban Terror*, *Alien Arena*, *Open Arena*, *Warsow* and *Tremulous* are just some



Warsow, an artistic modification of *Quake 3 Arena*

of the free, stand-alone multiplayer games based on the *Quake 3* engine. You could play Pro Mode on a third party map using custom avatars. The versatility of the *Quake 3* engine also allowed modders to create maps specifically for the skill of the users in using weapons for movement, called 'trickjumping'. *DeFrag* was one of these mods, where the aim of the game was creating speedruns on *DeFrag* maps, and showing off trick jumping techniques. The *Quake* engine has also been heavily used by the Machinima community, and in fact, gave birth to that technique of animation.

Boom! headshot

Another game that was heavily modded was Valve's *Half Life*. A number of modders who had worked on .WAD files in the *Doom* days were part of the development team of *Half Life*, so the game was purposely made to be modder-friendly. The game itself came with a bunch of toolkits to help modders, including the *Hammer Toolkit* which was meant for editing maps. There were two kinds of mods that originated from *Half Life*. Single

player mods had a storyline or scenarios for a player to cross. *Wanted!* is one of the most famous of these, which had a wild west themed storyline. The game was later on bundled with a commercial release of *Counter Strike*, a multi-player *Half Life* mod, based on *Half Life*'s 'Goldsrc' engine.

Counter Strike started as a mod of *Half Life*, but grew on to become a stand alone game. *Counter Strike* is one of the biggest success stories of the modscene. *Counter Strike* remains till date the most played game online, in LAN parties, and at gaming tournaments. There were other *Half Life* multi-player mods too, like *Day of Defeat* and *Firearms*, but these were not embraced as wholeheartedly by gamers. *Counter Strike* had many iterations, including *Counter Strike: Condition Zero*, and *Counter Strike: Source*, the latter was based on the Source engine used in *Half Life 2*. *Counter Strike* has also been ported to the Xbox console.

The easy access to the code of the game allowed *Quake 3* and *Counter Strike* modders to create scripts and aimbots that put other players in a gameplay environment at a



A *Counter Strike H4X* that let's players see through walls

heavy disadvantage. These ranged from guns that automatically targetted players, allowing users to see through walls, or cones in front of other players that showed where they were looking.

This heavily changed the kill to death ratio of the gamers using these fixes, called H4X. Servers would use cheat detection scripts to deter these, Punkbuster in *Quake* and the VAC for the official *Counter Strike* Servers. Although these were very effective, really crafty users could and can still get around these prevention mechanisms. The server operators usually ban players with disproportionate kill ratios.

Modding today

Neverwinter Nights was one of the first MMORPGs that allowed for the creation and sharing of a lot of user made content. The game shipped with the *Aurora toolset* that allowed users to edit the different aspects of the game in a stand-alone editor, save their creations as 'modules' and then play them or distribute them. The tool set could change or resize objects, add textures

to them, change the locations of in-game cameras, change the behaviour of units, and skin the GUI of the game. *Neverwinter Nights* is remembered as one of the few MMORPG games that encouraged user-made content. The changes were largely superficial, with a few power tools for modifying beneath the surface. However, the source code was not released with any license that allowed the users to create stand-alone games.

RTS games such as *Battlefield 1942*, *Age of Empires*, *Command and Conquer*, *Rise of Nations* and the *Warcraft* series have all been modded to various degrees. The approach is to create an RTS games for a particular universe, such as the *Lord Of The Rings* legendarium or the *Star Wars* continuum. Units, scenarios, maps and campaigns are made for these universes and distributed over the internet. *Civilisation IV* is a very modder-friendly RTS games, which allows users to change any aspect of the game using python scripts. *GTA Vice City* is another popular game for modding. Modders for these games focus on realism, adding objects, or adding storylines to the



Crysis Sandbox, a level editor for *Crysis*

game, instead of total conversions. Total conversions have been made, but many of these require a licenced version of the original game, so have not spread as much as *Quake* or *Half Life* based stand alone total conversions.

Crysis is one of the most technologically advanced games to be released in recent times. Its engine, *CryEngine2*, is cutting edge. Despite this, even before the game itself was released, the engine and toolsets to create mods were released to select modding clans for the creation of mods based on the engine. The web site www.crymod.com is an official portal for *Crysis* based mods. The sandbox toolkit that ships with the game can be used to create, edit and share maps with other players. This is another example of publishers supporting the development community.

How friendly a new game is to modding has now become an important consideration for video game publishers. The ability to allow users to easily create and share user made content has become an important factor in the gameplay experience. **d**



eBook craze

Barnes and Noble have their answer to Amazon's kindle. It's called the Nook, comes with a touch screen display and thousands of free books



More Megapixels!

16.1 MP images, 1080p video recording, and \$5000, the EOS 1D Mark IV is Canon's answer to the Nikon D3s

Sanyo Xacti **CG11**

These simple to use camcorders from Sanyo come in a range of eye-catching colours, and can shoot 720p resolution HD videos. The best little feature is the ability to directly upload videos on YouTube as long as there is a Wi-Fi connectivity around. The default storage is a little disappointing though, you will have only 40MB to play around with. You can pick one up for Rs. 14,660 (\$318).



Flip Mino **HD**

At first look, the Mino HD looks like a very old fashioned PMP. You will need to stare at the massive lens at the back of the device for the fact that the Mino is an HD camcorder to set in. Everyone loves big chunky red buttons, and the Mino has one for recording at 720p resolution. There are no wires involved as you "flip" out the USB to transfer video to your computer. The website (www.theflip.com) let's you add on any custom designs you might have. Definately a steal at Rs. 10,604 (\$230).

Duncan Wilson **Otto**

No, these are not your regular run of the mill speakers. In fact, these are not any kind of gadget that you have ever heard of. The world around you is full of very slight, almost imperceptible sounds. Your desk, your glass of water, even your walls, all produce very slight vibrations, that you could not hear - till now. The Otto can attach itself to almost any surface using a combination of magnets and vacuum pads, and amplify the slightest sounds emanating from that source. Thinking of getting one? Dream on, these are made but not on the markets.





Slim Speakers

JVC's ultra thin home theatre system with SP-FT speakers and a AX-FT amp is just 31 mm thick



Retro gaming

You don't need to throw away those NES cartridges just yet, just plug in the Sega2USB on your mobo, and revisit those retro games

Drool maal



Onkyo P3

Atom processors on Ion platforms make for too tiny to believe computers. This new breed of computers are a strange hybrid between netbooks and desktops, called nettops. The specs are a modest 160 GB hard drive, 2 GB RAM and a CPU that runs at 1.6GHz. The Onkyo P3 can get even smaller if you just slide out the DVD-ROM. We were unsure if anyone would actually pick one of these up, till we read a thread on our forums asking for a small, portable desktop. Well, here is your answer, but you will have to shell out Rs. 35,500 (\$770) for it.

Eye-Fi

The Eye-Fi card is innovative use of technology that has slipped Wi-Fi capabilities in what looks and functions as a standard SD card. The card interfaces with popular Web services with open APIs such as Flickr and Facebook, and let's you upload photos from your phone or camera. It is basically an easy way to bring the internet to your device, if it does not have in-built Wi-Fi support. There are a range of cards for specific purposes, starting from Rs. 2,300.



MiShare

Trust the Chinese to come up with something like this. The miShare is a simple device that transfers data between two iPods. Pretty useful for those situations where you want to swap songs without having to use a computer as an intermediary... which you cannot (officially) do anyway when it comes to iPods. The device sells for a measly Rs. 4,610 (\$100), but we wish the Chinese would come up with something like this for our portable hard disks.



Logitech G110

Gaming keyboards from Logitech are always at the forefront when it comes to keeping the needs of gamers in mind. The G110 is actually much more sober than it's predecessors, and chucks out some of the unnecessary features such as the LCD display. However, it retains the style factor with customizable backlights for the keys. There are a total of 36 pre-programmed key combinations which the gamer can save, as well as game recognition which creates keyboard profiles for each game. Yours for Rs. 3,687 (\$80).

Gotta go the biotech way

Srikanth R

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“Biotech” (BT) conjures an image of cutting edge research undertaken in sterile high tech labs, the products of which rarely concern the common man. But, contrarily, BT has been in the public consciousness for many reasons and also since antiquity – that belies its cutting edge image. For example, the common process of converting milk to curd is BT, or the process of making *dosa* batter sour.

In general, “technology” refers to the application of science. In the same vein, Biotech or Biotechnology is “any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use” – as defined by the UN. The “biotech” in the conversion of milk to curd involves the use of bacteria to break down milk protein into lactic acid.

What is BT?

BT is not a discrete field of study, rather a convenient association of different sciences with biology. This association is driven by the need to find greener alternatives to present processes. And it is evident that the thrust of BT has two directions: firstly to discover organisms that can do biologically what is presently being done chemically, and secondly to modify existing biological agents to improve their efficiency. While there are terms such as industrial BT, textile BT, medical BT, food BT, agricultural BT,

etc., to describe the various associations, a more meaningful division could be: red BT, denoting all BT activities that relate to medicine/healthcare; green BT, for all agriculture/food related BT activities; blue BT, includes all activities relating to aquatic applications of BT; and, white BT, referring to all activities relating to BT applications in various industries. We shall see how each of these BT subclasses has impacted us.

Applications White BT

The Industrial Revolution, while improving lives, has destroyed environments. Stringent environmental laws and greater awareness have meant that industries need to treat their wastes before disposal, a cost that effects their bottomlines. This has spurred the search for greener alternatives. This search has zeroed in on enzymes. Enzymes are chemicals that are naturally generated by living beings to break down food. Their action is similar to those of catalysts in normal chemical reactions; and being biodegradable they don't need further treatment before disposal. There are different types of enzymes, and they are classified based on their target molecule. For example lipases are enzymes that aid the breakdown of Lipids or oily substances, cellulases are enzymes that aid the breakdown of cellulose, etc. BT has exploited this natural ability in micro-organisms (MOs), and in many cases enhanced or modified this ability to serve mankind. Some places where BT is applied:

* Textile industry

Enzymes are increasingly being used in different processes instead of chemicals.

For example, hydrogen peroxide, which is used to bleach cotton, needs to be removed from the fabric before it can be dyed. There are peroxidase enzymes which can do the same job, saving a lot of water which would otherwise have to be used for rinsing. Enzymes also play a role in creating the “stone washed” look in jeans – this was originally created using pumice stones, but no longer. Cotton, being white, needs to be dyed to create textiles of any other colour, requiring a lot of chemical dyes. BT cottons that have been genetically modified to express colour makes the process of dyeing redundant.

- Textile cleaning industry
Stubborn stains can be broken down by specific enzymes; for example, stains left by oily substances can be broken down using lipases. Enzymes that work well at normal room temperatures obviate the need for high temperature and harsh chemicals for the job. In India, premium detergents like Ariel and Surf Excel include enzymes to tackle tough stains without damaging the cloth (or the environment).

- Paper industry
Converting wood to paper requires removing lignin from the wood. Fungi produce the laccase enzyme that can breakdown lignin, and is ideal for this job. Another case: in order to make used paper fit for reuse, it needs to be free from glues or other sticky materials. Esterase enzymes that attack the bonds that allow the sticky substance to cling to the pulp are used for the separation. Traditionally, both these steps require treating the pulp with chemicals at a high temperature. With enzymes, the process



Fuel on the go

NASA is looking into bionanotech that will convert plant and human waste into fuel for long distance space programmes.



And now, Biohackers

Renegade scientists are now manufacturing mutant bacteria strains in homebrew labs using videos on the internet. More at <http://snipurl.com/ql1xw>.

Feature

becomes significantly cleaner and cheaper. Bleaching the pulp to create white paper can be achieved with enzymes called xylanases, instead of the usual chlorine-containing chemicals, reducing the need to treat the waste water.

• Plastic industry

Plastics have revolutionised our lives, but their recalcitrance to degradation have made them ecologically unacceptable. Bioplastics offer the best of both worlds. These are different from normal plastics in two ways – the raw material and their molecular makeup. Normal plastics use petroleum as the main raw material, and their complex molecular structure makes them resistant to decomposition by micro organisms. Bioplastics, on the other hand, use starch as the raw material – starch is abundant in plants such as corn, potato, etc., which are renewable and easier to obtain. Also, their molecular structure is more simple making them more biodegradable. Just as with normal plastics, there are many types of bioplastics, all with different molecular structures. Polylactic acid (PLA) is a popular bioplastic material. This has its starting material lactic acid that is produced by the enzymatic breakdown of starch. Bioplastics can be moulded into different shapes and share the same utility possibilities as regular plastics.

• Bioremediation

This is the reclaiming of any area that has been polluted beyond human/animal inhabitability, using biological agents. Take the case of cleaning up oil spills. The BT answer to dealing with this challenge is to spray the slick with bacteria that prefer oily environments. These bacteria break up the oil and in the process release carbon dioxide and water, as part of their normal metabolism. The environmental impact of the cleaning up operation is almost nil (some chemicals need to be added to encourage the bacteria to speed up the process), since there are no by-products that are unsafe. Oil slicks are accidental in nature, but normal petroleum extraction and delivery activities

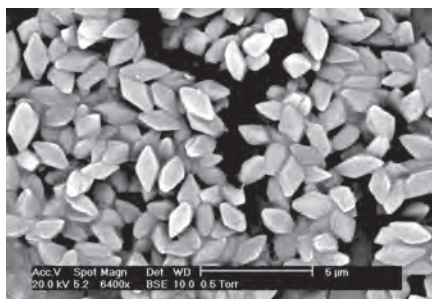
involve leakages and spills that taint the vicinity. MOs are also used in these areas to clean up the mess.

• Biofuels

These are the subject of a lot of public attention, especially after petroleum prices skyrocketed in the recent past, and also due to concern about global warming.

Ethanol can be used as an additive to normal petrol – a mixture of 85 per cent ethanol and 15 per cent petrol has been found usable with minimal engine modification

The Jatropha plant has been in the news for being a source of biodiesel – oil derived by crushing its seed is mixed with alcohol to make biodiesel – which is an ideal substitute to diesel. BT offers other avenues of creating substitute fuels such as ethanol (ethyl alcohol), which can also be used in modern vehicles that otherwise run on petrol. The core process involves using appropriate enzymes to break down plant matter to create the ethanol. The plant matter can be plant products such as corn, or sugarcane, or any plant waste product or even wood from trees – the enzyme needed to perform the break down changes with the source. Ethanol can be used as an additive to normal petrol – a mixture of 85 per cent ethanol and 15 per cent petrol has been found usable with minimal engine modification. Biogas/"gobar" gas plants are quite well known here in India, and BT plays a role in



BT: An enemy of an enemy

the process of using bacteria to break down dung/"gobar" into methane which can then be used as burning fuel.

• Biomining

MOs are used to aid the process of extracting metal from its ore, mostly sulphide ores. This process is used in the extraction of metals such as copper, nickel, gold, zinc, etc. At present, about 25 per cent of the total copper mined uses MOs to extract impurities from the ore before further processing. Gold miners also benefit from using MOs in the extraction process. Algae are used to improve the oil output from oil wells. Once injected into the oil well, algae, as a normal by-product of their metabolism, produce carbon dioxide gas which displaces the petroleum and facilitates recovery.



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Indian swine flu vaccine

The Department of Health Research is actively developing an indigenous swine flu vaccine

Bioplastic race

One of the major efforts by biotech firms around the world is to find a cheap, bio-degradable substitute for plastic

Green BT

The Green Revolution was powered by chemicals in the form of fertilizers and pesticides. The environmental cost of this reliance on chemicals is only now being appreciated.

- Biofertilizers

Rhizobium bacteria absorb atmospheric nitrogen and makes it available in a form that can be absorbed by plants. Nitrogen is an essential nutrient for plants, and a major component of commercial fertilizers.

Rhizobium naturally attaches itself to legumes by forming root nodules, but through BT it is possible to increase the number of such nodules, thus increasing the rate of nitrogen absorption. Similarly, non-leguminous plants are associated with Azetobacter bacteria for nitrogen absorption. All that is needed is for seeds to be coated with these bacteria prior to sowing.

- Biopesticides

Bacillus thuringiensis is a bacterium that is used as a natural pesticide because it infects many pests, and can be sprayed over crops instead of regular pesticides. Going a step further is Bollgard BT cotton. This is a product of Monsanto Company, and the first GM crop to be planted in India. The Bt in "Bt cotton" stands for Bacillus thuringiensis, which is the source of the gene inserted into the cotton DNA, that causes the production of a protein that is toxic to the pest American Bollworm that destroys cotton balls. This innate resistance reduces the need for pesticides.

- GM livestock

Besides plants and MOs, BT has also modified large animals, mainly farm animals such as cows, pigs, goats, etc. High yielding cattle are in demand for selective breeding among dairy farmers; this is an ancient practice which takes a long time to produce results. BT speeds things up by genetic manipulation. Besides improved milk production, the nature of the milk can also be modified.

Cows have been genetically modified to carry human genes responsible for the creation of lactoferrin – an iron carrying protein that is essential for infants. The milk produced by these cows is iron-rich in contrast to normal cow milk, making it ideal infant food (to substitute human milk).

Spider silk is acknowledged to be the strongest natural fibre, and this has many potential applications where a right mix of strength and weight is needed – bullet proof vests come to mind first. By genetically modifying goats with spider genes, spider silk is produced along with goat's milk in much larger quantities than can be produced by spiders. Needless to say, the issue of animal rights is a major stumbling block in this area.

Red BT

The decoding of the human genome has allowed scientists to identify the genetic basis of human susceptibility to many diseases, but the full benefits of these findings are still some time away. Even so, BT has already contributed to healthcare in many ways:

- Testing technologies

The traditional method of testing for disease involves taking a sample (blood, sputum, etc.) and culturing it over a period of time to allow microbial growth, and then identifying the organisms.

This delay has been dramatically reduced by using tests that directly check for unique patterns of proteins or DNA (much like anti-virus software flags suspicious programs). Monoclonal antibody testing is based on the principle of the unique antibody-antigen relation. Polymerase Chain Reaction (PCR) is another BT product that is used to rapidly make copies of genetic material

allowing even minute samples to be used for testing. It is the process behind such techniques

as DNA fingerprinting which can be used to uniquely identify any living organism.

PCR can also be used to test genetic material for identifying disease agents – the test to detect the Swine flu virus (H1N1) is based on PCR.

The use of animals as test subjects is controversial, and yet the only way to ensure a drug is fit for human trial. The search for a cancer treatment has benefited from a special type of mouse called Oncomouse or Harvard Mouse, which is a BT product. This GM mouse has a human gene (oncogene) that makes it susceptible to cancers, and hence is an ideal test subject for anti-cancer research.

- Medicines

BT has made it possible to generate medicines for human consumption by genetically modifying MOs, and insulin generating MOs have already been mentioned. Other medicines that are BT products include recombinant EPO (Erythropoietin) a protein that is responsible for red blood cell generation. EPO is created on a large scale by inserting the human gene responsible for EPO production to Chinese hamster ovary cells which are then cultured. EPO is the most widely sold BT medicine, and is needed for anaemic patients – such as those suffering from kidney failure. We have mentioned the potential uses of bioplastics. In the medical arena, bioplastic surgical thread is used for stitching up surgical wounds. It gradually self dissolves, saving the patient another hospital visit.

Blue BT

Marine organisms have been a source of food and medicines since ancient times. Different forms of algae serve as protein rich food, a source of gelling agents used as additive in ice creams, as lubricants, etc. The wonder properties of Spirulina

were the topic of much discussion in the recent past. "The most powerful food in the world." Spirulina is an algae that is rich in many essential nutrients, proteins, vitamins, iron, etc. Medicines from marine life include a painkiller that is actually a neurotoxin and part of the defence mechanism of cone snails.

Algae are being seen as an important source of biofuels, especially since algae seem to thrive on waste water – irrespective of the source: either from factories, mines or residential complexes.

The Future

The future will see greener alternatives replace most, if not all, environmentally unfriendly chemicals and fuels, thanks to BT. Butanol, which is seen as a replacement for petrol, and ethanol are expected to be produced in larger quantities using GM bacteria.

It needs to be noted that unlike most other new products, BT products have a very long gestation period from lab to market, and even then public opinion can drown down scientific reasoning – particularly where food is concerned. So while many interesting concepts are discovered, applied, tried and tested in the lab, they need not survive the trip to the market shelf. Some BT food products in the pipeline: nutrition enhanced food: potatoes containing vaccines against hepatitis virus, rice fortified with vitamins, iron and omega3 fatty acids, etc., drought resistant GM corn – a result of inserting a bacterial gene that imparts resistance to the organism from adverse environments into the corn DNA.

And some wishful thinking doesn't seem too far-fetched. So far, human genes have been transferred to MOs to enable them to produce human products. In the future, one can expect the reverse – genes coding for the best features of plants and animals transferred into the human, creating a man that can run as fast as a cheetah and fly as well as a bird. **d**

Enzymes create the "stone washed" look in jeans, originally done by pumice stones

The test to detect the Swine flu virus (H1N1) is based on PCR

VMware goes mobile

VMware Inc., the leader in desktop virtualisation, recently announced its Mobile Virtualisation Platform (MVP) for mobile phones

Growth ahead

A recent Gartner report predicts that by 2012, 50 per cent of new smartphones will use mobile virtualisation

How stuff works

Shr Krishna Patkar



Virtualisation Goes Mobile

We take a look at mobile virtualisation and what it means for the smartphone market

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Have you ever downloaded an application to your smartphone, only to find that it is not compatible with the operating system installed on your phone? Have you ever bought a new cell phone, only to realise that all your carefully backed up applications are incompatible with your new phone? The latest smartphones come installed with a variety of operating systems, all of them incompatible with each other. To top it off, none of these operating systems has a clear advantage. This confusion forces you to make trade-offs, trying to pick one operating system over the others. Your decision will usually depend on the application ecosystem, and its overlap with your requirements. As a result, no such decision will be perfect, because sooner or later you will run across an application which you want but cannot have. Mobile virtualisation is a potential solution to such issues. In fact, enterprise research firm Gartner has predicted that by the year 2012, more than 50 per cent of all new smart phones will contain some kind of virtualisation technology built into the handset by the manufacturer.

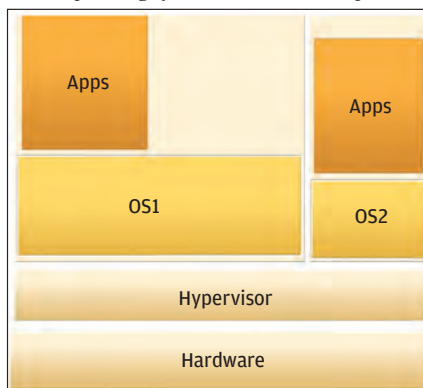
Over the last few years, virtualisation has developed from a niche technology to one that is being increasingly used to run servers and data centres more efficiently than ever before. Most servers used for different applications usually run at 20 to 40 per cent of their maximum capacity. This is required since we need to provide a buffer for short periods

when there may be extremely high load on the server. The rest of the time, the server stays idle with low utilisation. With multiple servers installed in a data centre, you can see that the average utilisation will be low while the power consumption and cooling expenses will be much higher. Though virtualisation was initially implemented by IBM for increasing the utilisation of its mainframe systems, it was only recently that people started using it on normal servers as well. So how exactly does virtualisation help? Here's how...

The core of virtualisation technology is a piece of software called a 'hypervisor'. This hypervisor runs on top of the system hardware in the form of a thin layer or interface between the hardware and the operating system. The advantage of the hypervisor is its ability to support multiple operating systems running in parallel on top of the hypervisor. Each operating system behaves as a separate

machine, and has access to the hardware of the base machine through the hypervisor software. Each operating system is known as a virtual machine. Clearly, the advantage of this approach is that multiple virtual machines can be running at the same time on a single piece of hardware. The resources of the base machine are shared among the virtual machines by the hypervisor. The resource allocation can be changed dynamically according to demand to give more resources to virtual machines that are under a higher load. Virtual machines can even be moved from high utilisation machines to those with lower utilisation without having to shutdown the machine. Virtualisation also simplifies backup and disaster recovery processes since the virtual machine can be copied to a backup location and recovered in the same way from the backup. As a result of implementing virtualisation, the average utilisation of the base server hardware is much higher. This in turn results in cost savings in terms of hardware, power and cooling expenses. Virtualisation has been used for testing multiple operating systems as well as running web servers which have low average utilisation among other uses. Mobile virtualisation is the latest form of virtualisation to emerge in the IT industry.

Mobile virtualisation is similar to server virtualisation, except that here we are running multiple mobile operating systems on top of a small software hypervisor. Due to the limitations of these mobile platforms, available memory is much lesser, requiring slim hypervisors which will not use large amounts of memory. The basic concept remains the same with some slight changes. For example,



Two operating systems running side by side on a single server

Evoke QA4

Motorola's new messaging phone, the Evoke QA4, is the latest high profile handset to incorporate OKLabs virtualisation technology

Xen

The open source virtualisation project, has incorporated support for ARM mobile processors

the virtual machine may be a smartphone operating system for complex tasks and applications running in parallel with a real-time operating system (RTOS) which takes care of the regular phone functions. There are different types of virtualisation being implemented and tested by different vendors.

The most basic form of virtualisation is actually application virtualisation which is almost the same concept as the Java runtime environment. Here, the hypervisor software runs on top of a normal operating system and supports different applications running on top of the hypervisor. The advantage of this approach is that the developer does not need to develop separate applications for each platform or operating system since the hypervisor takes care of all interactions with the base operating system and hardware. Another advantage is that this can run on basic feature phones and provide advanced applications to users which are normally provided by smartphones.

Cloud-based virtualisation is also gaining ground these days. With the advent of cloud computing and more and more enterprises moving data and applications to the cloud, mobile virtualisation can also take advantage of this technology. Cloud-based virtualisation involves a virtual client interface running on the mobile phone where all inputs are given while all the actual processing and storage actually occurs in the cloud. Cloud computing minimises the need for powerful mobile processors since only display capability is required and also reduces power consumption. A major advantage of cloud computing is data security since the actual application and all the data resides on the cloud which can be secured in a much better manner than cell phones storing the same data. However, cloud based virtualisation requires a constant online connection which may not be possible at all places.

Virtualisation is also used for gaining remote access to machines running other operating systems such as Windows. This may be considered an extension of the cloud based virtualisation model since we use the application to display data and information being processed at some other place.

The most useful kind of virtualisation is the one most commonly used in servers around the world. Multi-OS virtualisation is used to execute multiple operating systems on a hypervisor running on a common piece of hardware. The operating systems can either be running side by side or the machine may need a reboot to switch between the two operating systems depending on the implementation. In the rest of the article, we are going to look in more detail at multi-OS virtualisation in mobile environments.

Mobile virtualisation is useful for everyone, starting from handset manufacturers to application developers and end users.

A major application of virtualisation is in terms of security. Users can have one secure virtual machine for business applications and a second one for personal use with ringtones, song, games etc. The advantage of this setup is that the secure virtual machine is protected from any issues occurring due to the personal virtual machine. Any malware or crash will only affect the personal virtual machine leaving the secure one intact.

With the help of mobile virtualisation, users can also have multiple profiles on their phones, one for business use and one for personal use. This is particularly helpful for users who usually carry multiple phones with them to office etc. Depending on the particular implementation, the user may be able to use



"Your phone is becoming a combination of your PC and wallet all rolled into one. This could become the most important device a consumer can own."

Srinivas Krishnamurti
Director of Product Management and
Market Development, VMware Inc

both profiles together or login into one profile at a time. This will also allow the user to bring a device of his choice to work since he can then use a secure corporate connection for business related activities.

This will also be helpful to corporate IT departments in their standardisation processes since they can load the same secure operating system image on all phones without any hardware differences. Also, in case of any issues with the virtual machine, IT can simply wipe the secure virtual machine and copy a new one in its place without affecting any personal data stored on the device in other virtual machines.

Since its now possible to do more and more activities using smartphones, an increasing number of people are keeping their personal

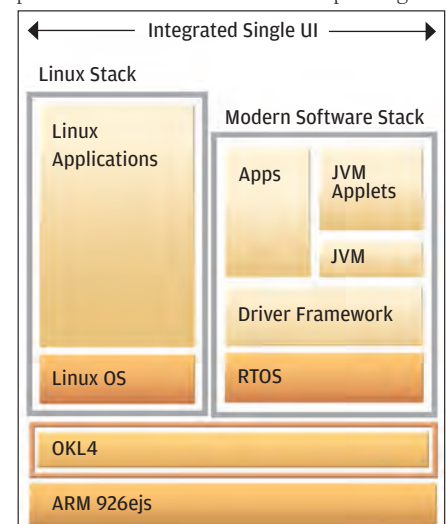
data on their phones. In case of mobile virtualisation, all personal data is present in the virtual machine. So, any user upgrading to a new smartphone can simply copy his virtual machine to the new device, thus avoiding any issues with regards to applications or data.

The manufacturer can offer phones with a choice of operating systems since the operating system is just a virtual machine which can be installed at the point of sale. This increased choice to the user may indirectly increase competition between operating systems while giving more options to the user.

Mobile virtualisation also results in cost savings for manufacturers in terms of the hardware used in the device. Instead of separate microprocessor chips for each function, virtualisation and the software hypervisor enable a single core chip to perform all the different functions which are split into separate virtual machines.

Mobile virtualisation also translates into a shorter time to market for operating system developers. This is because for traditional smartphones, every new phone has a different chipset and so the operating system for each new model must be tweaked for the specific hardware in the device. With mobile virtualisation, the same operating system can be used on multiple devices since the hypervisor takes care of any differences in the hardware for each new model.

Application development becomes a much simpler process for developers in case mobile virtualisation is being used. This is because they will only need to develop their application for one platform. Using mobile virtualisation, the application can automatically be used on other smartphone platforms as well. e.g. an application written for the Android operating system can be run on a Windows Mobile smartphone using mobile virtualisation which will run the Android operating system in parallel with the windows mobile operating



Mobile Virtualisation: Motorola Evoke Hardware Structure

Windows 7

Windows 7, the successor to Windows Vista, will incorporate virtualisation technology called XP mode for compatibility with older programs

Vendors bet big

Mobile Virtualisation firm VirtualLogix is funded by Cisco, Intel Capital, Motorola and Texas Instruments, all big names in the technology business

How stuff works

system. The same argument holds true for users as well since they can use an application developed for a different platform on their smartphones using mobile virtualisation and a corresponding virtual machine.

While we have just seen many advantages of mobile virtualisation above, some challenges lie ahead for this technology as well.

Under mobile virtualisation, each virtual machine has its own scheduling processes and tasks running in the background. Unlike a single operating system, multiple virtual machines will not share data regarding scheduling requirements for different tasks and processes, etc. This can result in degradation of performance across all virtual machines running on that device.

Mobile virtualisation suffers from some performance and battery life issues. There is a performance penalty since all commands to the mobile hardware must pass through the hypervisor which adds an extra layer of waiting time since multiple virtual machines are attempting to use common hardware. So the designers have to ensure that performance does not drop noticeably when multiple virtual machines are started on the phone hardware. Most smartphones are tweaked for battery life as part of a process that involves significant interaction between the operating system, device drivers and running applications. However, since each virtual machine functions in its own silo, none of them may be able to make decisions regarding energy management.

While time to market for the manufacturer decreases since they do not need to tweak the operating system each time, the hypervisor needs to be able to support the many different hardware combinations which may be used in the smartphone market. Companies like ARM license their chip designs to mobile companies who may make their own design modifications to the processors. In order to support that particular hardware, the chip design and modifications must all be verified

by the company supporting the virtualisation hypervisor.

The mobile virtualisation hypervisor must be provided by the handset manufacturer as a built in feature when shipping the product. As a result, it becomes critical for the virtualisation companies to partner with handset manufacturers and ensure that enough partners are on board to support and use their technology.

Now that we understand the technology, we can take a look at the major companies which are working on mobile virtualisation.

The largest firm in this group is VMware Inc., owned by storage major EMC. VMware was one of the early pioneers in virtualisation and is a global leader in the virtualisation space. Though it is not available to manufacturers yet, VMware entered the mobile virtualisation market with the VMware Mobile Virtualisation Platform (MVP) which they acquired from Trango Virtual Processors in November 2008. The MVP software contains a hypervisor and supports mobile virtualisation on ARM processors and multiple smartphone operating systems. VMware demoed a Nokia N800 running Android along with Windows CE at VMworld Europe in February 2009.

Open Kernel Labs is an existing provider of mobile virtualisation solutions for multiple smartphone operating systems. It has partnered with heavyweights like Motorola, Citrix, ARM and a number of handset manufacturers for incorporating mobile virtualisation into their products. It has already launched a phone based on mobile virtualisation called the 'Motorola Evoke QA4'.

VirtualLogix is another company in the mobile virtualisation field. Cisco, Intel, Motorola and Texas Instruments (TI) hold a stake in this company for development of products based on mobile virtualisation.

Xen is an open source project in the virtualisation field which has also released support for mobile virtualisation using

ARM's ARM 9 processor family. Samsung is developing cell phones based on mobile virtualisation and the Xen project.

Research In Motion (RIM), the maker of the popular Blackberry software, have also announced that they will release a version of their blackberry operating system which will run on Windows Mobile phones. This is also based on Multi-OS mobile virtualisation.

While VMware is a major player in the virtualisation space, it does not have a smartphone based on the Mobile Virtualisation Platform in the market yet. Both of its major competitors, Open Kernel Labs and VirtualLogix have already released products for mobile virtualisation and are backed by large hardware companies who will benefit when mobile virtualisation takes off. So these two firms may be targets for an acquisition once the mobile virtualisation market develops further. The Xen open source project also has substantial technical expertise behind it. It was responsible for the drop in prices of server hypervisor software since open source software is free of cost. Hence, it too cannot be underestimated.

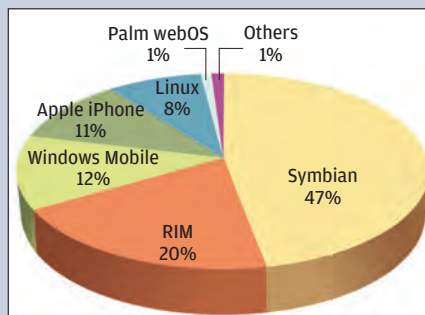
According to Gartner research, the mobile virtualisation segment is expected to grow at a fast pace by the year 2012. However, the current market is growing quite slowly. While some of this can be attributed to the effects of the worldwide economic recession and reduced spending on IT, the fact remains that server virtualisation also took some time to become prevalent in datacenters. The positive sign is the entry of established virtualisation companies like VMware into this field because this shows that they are also expecting this market to grow in the future. Considering these facts, mobile virtualisation companies have sufficient time to work on its negatives. On the other hand, looking at the benefits that users get from mobile virtualisation, we can safely say that mobile virtualisation is going to be mainstream one day. **d**

SMART OS

There are seven smartphone operating systems that are widely used in the market today:

- **Symbian OS:** Symbian, owned by Nokia, has the largest share in the worldwide smartphone market although its market share is very small in North America. Although Symbian is used by other handset manufacturers as well, each of them uses its own implementation of Symbian due to which all applications are incompatible across the different versions.
- **RIM BlackBerry:** Research In Motion's Blackberry is a well-known business phone known for its strong email and productivity applications. RIM is soon going to release a version of Blackberry that will run on Windows Mobile as a virtual machine.

- **Windows Mobile:** Windows Mobile is Microsoft's smartphone operating system, currently at version 6.5. Substantial improvements and better touch screen



The pie chart shows sales of smartphones as of Q4 2008. Source: Gartner Research

support are expected in the upcoming Version 7.

- **iPhone OS:** This is a lighter version of Apple's Mac OS X. The latest version is 3.0.
- **Linux:** Linux is an open source operating system. Many companies, including Motorola, use it in their smartphones after changing the source code as per their requirements. Linux is available free of cost.
- **Palm webOS:** Palm has been losing market share over the last few years. The new Palm device, the Palm Pre has gotten good reviews as an iPhone challenger.
- **Android:** As of Q2 2009, Google's Android had a 2.2% share of the worldwide smartphone market (Source: Gartner). It is based on Linux and is an open source operating system.

In this fourth installment of Digit's 'Icons of Trust' survey, we've listened to some of the lakhs of Digit readers out there, heard their opinions, tabulated everything, and come to conclusions. The results are out, and it's time to hear what India's largest and most influential technology community has to say to all the brands out there

THE T FACTOR

Team Digit

editor@thinkdigit.com

The Icons of Trust survey we do is much more than a simple study of market perceptions. Whether it's a large screen TV for the family, or a business phone for your boss, you – the average Digit reader – are generally well informed, and take the trouble to know about brands, products and technology in general. With the recent shift of Digit readers from consumers to prosumers, your impact on the Indian technology market is a given, which is what makes your opinions more important than anything else.

This survey is of equal interest to readers and brands alike, because as readers, this is a sort of validation or reference to what your peers think and feel, and more importantly, have experienced when buying technology. This is what will help you buy smarter and ensure that money you (or your family and friends) spend, is spent well. For brands, the results have obvious implications – listen to your customers, give them what they need and in return, sell more as a result. It's all about making sure your voice reaches the ears of those who are making products to sell to you, and we're just playing catalyst here.

This year we covered the hottest selling categories in technology: cellphones, laptops, HDTVs, PMPs, desktop PCs, digital cameras, PC monitors, external storage and MFDs/printers. The difference from last year's survey is that we combined MFDs and Printers into a single category, and more importantly, included HDTVs.

HOW WE TRUSTED

How is trust calculated?

All respondents are asked to complete a rather long and comprehensive questionnaire, which aims at arriving at scores for five parameters: Awareness, Satisfaction, Cost of Ownership, Credibility and Loyalty. These five factors are what determine how much the respondents "trust" a brand.

Awareness: We're not likely to buy or recommend something we've never heard of before. To get figures for awareness, we asked the respondents some questions to see how many knew of the brands in this segment. This is again sub-divided into first, unaided recall, such as, "Which is the first brand that comes to mind"; later, we provided people with a list of the brands, and asked them which they were aware of to measure aided recall.

Credibility: Questions were asked to gauge what respondents felt about the quality, durability, technological advancement, design, innovativeness, etc., of each brand.

Satisfaction: As owners of a brand's products, how satisfied you are with their products is one of the key factors that influence how much you trust the brand. In this regard, we questioned the respondents as to how satisfied they were after purchasing a product, how easily available was it, how hard was it to find

information about it, how well-informed were the sales people about the product, how easy was it to get after-sales support... you get the idea.

Loyalty: A lot goes into making people stay loyal to a brand. Although our interactions with fanboys online is not always a good experience, you have to give credit to brands for being able to incite passion in their buyers. To ascertain the loyalty that respondents held for brands, we asked them a series of questions such as "Would you buy another cell phone of the same brand again", and whether, based on their experiences, they would buy a product in a different category from the same brand. We also gauged how eager the respondents were to recommend products from this brand to friends and relatives, and whether the respondent generally spoke positively or negatively about the brand.

Total cost of ownership: Not all products can be bought once, used forever. There's expenditure even after the purchase for servicing and repair, which may or may not fall under the warranty period, thus affecting your total cost of ownership. To ascertain this, we asked the respondents a series of questions to determine how much they had spent on a brand after purchase. This factors in the warranty, repair costs, upgradation (if any), etc. We also sought the respondents' opinions about which brands they felt were cheaper to own...



Core i5 motherboards

The best of the Core i5 motherboards tested – there's something for everyone

Cellphones

In awareness, advertising seems to have helped Nokia, SE and LG, but not Samsung and Motorola

Cellphones

When asked, people wanted to buy other products mostly from Samsung; but other mobiles mostly from Nokia and SE

Icons of Trust**Cellphones / PDA Phones****Same old song and dance**

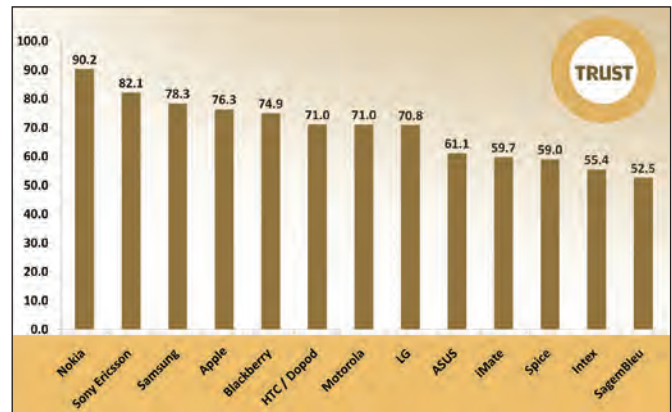
Obviously, being one of the most bought technology items, the mobile phone category is also one of the most hotly contested, with brands fighting tooth and nail for every decimal of a percentage of the market share.

Nokia did it again. All said and done, here's one brand that remains unchallenged in the mobile segment. Although Sony Ericsson comes in second, it would be a lie to say it was a close second. In all five of our parameters – awareness, credibility, loyalty, satisfaction and TCO (total cost of ownership) – Nokia stood alone at the top.

Sony Ericsson came in second in most parameters, and was no lower than third in any of the five. What this means is that for once, we have a clearer runner-up, which is not something the Nokia guys will ignore, no matter how far ahead they

are. The only times SE was displaced from its runner up slot were in the credibility and TCO parameters. It's very interesting to note that Apple seems to have more credibility than SE amongst our respondents – quite a feat considering Apple has basically just one phone model to its name! As for TCO, Samsung edged out SE by a smidge, giving us the impression that Samsung owners just spend less on repair and maintenance after purchase.

Samsung rose two ranks this year to come in third, just edging out Apple, who is our biggest climber – leap-frogging 3 ranks up from last year. BlackBerry fell two spots, and Motorola and LG have both slipped a notch from last year – thanks mainly to Apple's rise. We also saw two new entrants, Intex and HTC/Dopod. The latter shot straight into sixth place, which is commendable



I was looking for innovative applications and Apple does that really well. Also, I love the web browser on the iPhone.

Samrat Mazumdar, Bhubaneswar

In my house we have four handsets and they are all Nokia. We're all very used to Nokia. Also, once we bought a Motorola and it gave us a lot of trouble. If we dropped it, it had problems. With Nokia, you can drop it 3 or 4 times also and it will work fine.

Parimal Patel, Vadodara

for a brand that not many could identify with in last year's survey. Also, we have to mention ASUS, who climbed an impressive two spots this year, validating their increased efforts in this category.

A resounding victory for Nokia in the end, but we can't wait for next year, and hope that one of the others can give them a run for their money – stiff competition between brands is what brings joy to the consumer, after all.

Desktop PCs**Score one for branded**

What's big here is that Dell has rallied from third place last year to take the crown away from HP/Compaq. It's a close fought battle, but Dell won four of the five battles in the race to be the *Icon of Trust*.

It's a two horse race when it comes to awareness, with unaided recall revealing that if you ask the average person to name PC brands, Dell and HP are pretty much the only answers you will get – again, advertising bucks well spent.

Credibility sees Apple jump from nowhere into third behind the big two. Apple is the third most trusted in terms of build quality, and comes in second for innovativeness. Dell and Apple (in that order) also rule the roost when it comes to what the respondents thought was a stylish brand.

For satisfaction, most people stuck to Dell and HP/Compaq as their top two. Interestingly, Apple, again, got very high scores for quality of their products – coming in second behind Dell. As expected, when it came to how easily available products were across geographies, HP/Compaq obliterated its opponents, with only Assembled PCs being able to tussle for top spot.

When it comes to loyalty, it's more of the same. The only interesting change here are that when asked whether the respondents were confident buying another product from the same brand, in a different product category, Sony got a big thumbs up, coming in second.

TCO questions led us to believe that the assembler market is still the cheapest way to get service and repairs. HCL jumped into the fray here, coming in at



Dell machines are priced just right. They have excellent after-sales service.

Amit Ranjan, Guwahati

I've been using Lenovo and I've had no problems. My friends own Compaq and HP and always complain about the DVD drive.

Ratul Nandi, Gurgaon

third for TCO. Dell fell to fourth place in this parameter.

In the overall trust index, it was Dell all the way, with HP/Compaq a close second. The major improvement here is by

Lenovo and Apple, climbing three and two places since last year. On the flip side, Acer fell a massive three spots, which is sad for one of the world's largest PC manufacturers.

Desktop PCs

Lenovo is considered to listen and respond to customer feedback more intently than the rest

Digital Cameras

Sony tops the list in terms of aided recall, knowledge of sales people and quality of after sales service

Digital Cameras

Pointers for the shooters

For those of you who remember, last year, we were unable to separate Canon and Sony, with both brands winning our trust award. This year, Canon edges ahead of Sony by a whisker, to claim Digit's 2009 *Icon of Trust* Award, for digital cameras.

Samsung seems to have the biggest loss, falling four places to seventh spot. Olympus, surprisingly jumps three spots ahead to end up at fourth. Nikon continues its steady climb by going from fourth last year to third this time. But that's just the numbers, what does this all mean to us?

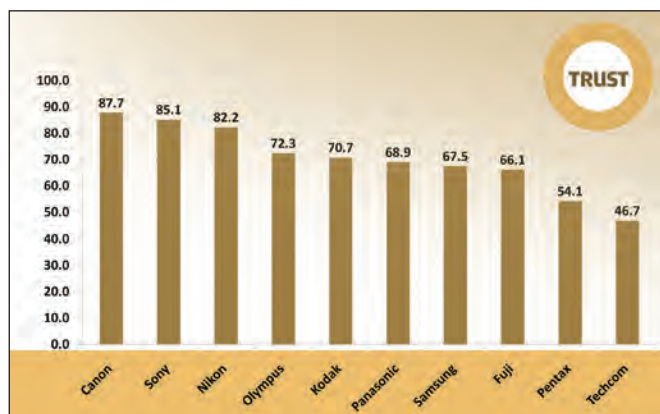
When it comes to top of mind, unaided recall, Canon was far ahead of the competition. Sony and Nikon were second and third, with almost equal top of mind recall amongst the respondents.

Overall, in terms of awareness, Canon was the ultimate winner here, with

excellent top of mind recall. Sony and Nikon are not far behind, but the rest of the pack is sorely lagging – looks like it's time to up those ad-expenditures.

Credibility was a much closer contest, again between Canon, Sony and Nikon. In every aspect of our questioning, it was really hard to tell these brands apart, with almost an equal number of respondents vouching for each of these three brands throughout. For innovativeness, however, Sony ruled, with more people feeling Sony trumped Canon. When it came to ease of use, also, Sony and Canon (in that order) were quite a bit ahead of the rest.

When it came to satisfaction, Sony edged out Canon by a fraction, with Nikon coming in third. Availability seems to be key here, with most people feeling that Sony cameras were more available in stores. The respondents felt that



I love my Canon because I can use pen torch cells and it has a great optical zoom. These are the two main reasons I bought this camera.

Govardhana Rao, Bengaluru

Canon was better than Sony at resolving queries, and faster at fixing problems – a nice area to win.

As for brand loyalty, digital camera owners who had bought a Canon seemed quite loyal to the brand, with more people vowing to buy Canon again. Even when it came to recommendations, most people said they would recommend either of the top three – Canon, Nikon or Sony.

When it comes to cost of ownership, Canon and Sony were the top two, indicating that they are sturdy, and people don't spend too much on them after purchase. However, Kodak jumped up to secure third place ahead of Nikon.

In terms of overall trust, the big three in the camera markets seem to be duelling it out, and leaving the rest far behind.

Monitors

The reign continues

Last year's survey revealed that Samsung and Dell were the top two monitor choices, and this year that remains unchanged. However, last year's third placed HP has slipped a massive three places to sixth this year. AOC is a new entrant, and debuts straight into fifth place – ahead of HP – impressive. The biggest fall was Lenovo, who fell 4 spots to a disappointing ninth. This is a closely fought category, with four brands battling for AOC's fifth place.

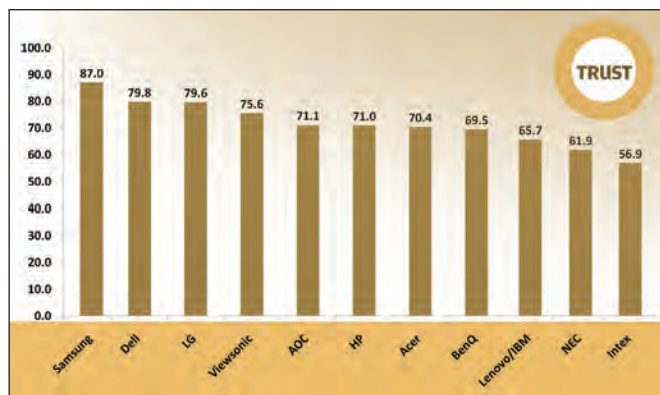
Samsung was miles ahead of all competition in the awareness field, and actually stood first in all five categories.

Consider this: half of all the respondents polled said "Samsung" when asked which monitor manufacturer first came to mind.

In terms of credibility, Samsung was just ahead of

Dell on almost every question – people did feel that Dell was just a tad more technologically advanced and had more innovative features. However, when it comes to quality, sturdiness, improvements, responsiveness to consumer needs, and style, Samsung won on all those counts.

When it came to satisfaction, LG displaced Dell in second place, indicating that lot of people were buying LG as well, and were quite satisfied with what they had. It's not surprising because both Samsung and LG scored much higher than Dell in terms of availability in stores. People also felt that Samsung, LG and Viewsonic were the brands that made information about their products available most easily, and educated their sales people the best. According to the respondents, the same three, in the same order, were the



The product quality of Dell is quite good. I have three monitors in total and the picture quality from the Dell is definitely the best.

Aditya Poddar, Pune

best at making desired models available for purchase across India.

Samsung and Dell users are also very loyal, and a vast majority of respondents wanted to recommend them in that order to their friends. The same held true when answering the question, "Would you buy this brand's monitors again?", as well as "Would you buy other products from this brand?". Apart from the big two, a lot of

the respondents were loyal to LG, Viewsonic, HP and AOC as well.

When it came to ownership costs (TCO), however, there was a deviation of perceptions. Although Samsung stood like a rock in first place, Dell fell behind LG, Viewsonic and BenQ, to fifth. This implies that people feel that Dell is a little more expensive to own and maintain than it should be.

External Storage

Although behind Transcend overall, people believe that Kingston has better after-sales support than the former

HDTVs

Top-of-mind recall: 50% Sony, 33% Samsung and 17% LG. Not one person named another brand as the first they think of

Icons of Trust

External Storage

A volatile market

Storage, whether hard drive- or flash-based, is notorious for being a volatile market. The only other segment that's considered more volatile is the memory market, as most of us going out to buy any of these products can testify. There never seems to be a right time to buy here, with prices changing often.

This year, the term external storage seemed to have more people thinking hard drives, rather than flash drives – a stark contrast from last year, when flash ruled. As a result, we have some ridiculous comebacks, such as Western Digital's 11 rank upheaval to second – up from last place just a year ago. Seagate took top spot this year, a rise of eight placing over last year's placement of ninth. All this climbing had to be done by standing on someone's shoulders, and the unfortunate ones were Apacer (fell eight spots), Hitachi and Samsung (both fell 5 spots).

It's categories like this that tell us a lot about the markets and buying trends, and these results are all the more important to

brands who want to stay ahead in such volatile circumstances. We had three new entrants to this category: HP in at eighth, OCZ in at twelfth and Freecom in at fifteenth.

When it came to awareness, Seagate, Transcend and Western Digital (WD) led the pack by a comfortable margin. Top of mind recall saw half of our respondents name Seagate as the brand that first came to mind. The other half either put in Transcend or Western Digital, with hardly anyone else naming the other brands in this survey. Aided recall helped that a lot, but Seagate, Transcend and Sandisk stayed the top three, respectively.

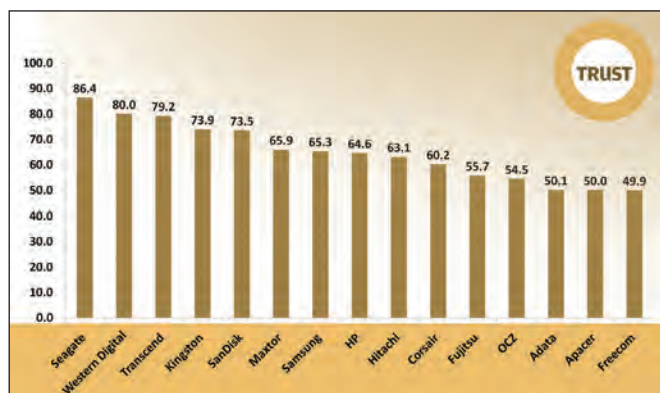
When it came to credibility,



Read the full story online at:
http://thinkdigit.com/d/IOT_2009

Seagate took top spot in all questions. Western Digital was second throughout as well, except that when asked about ease of use, Transcend scored more than WD. Kingston and Sandisk were pretty much left fighting for fourth place.

In terms of Satisfaction, almost



I am an engineer, so I understand the technical aspects of these drives. I've tried other brands and see that the performance is the best in WD, especially the response time.

Gaurav Salvi, Vasai

everywhere, Seagate ruled again. The only place it lost out on was availability in retail stores, where it lost to Transcend. WD and Transcend effectively fought for

differentiating with the time taken to resolve queries and problems with the products.

The top five also seem to have very loyal customers, and despite all our grilling and questioning, the margins for our loyalty test weren't very large. The same also held true for total cost of ownership. This category, although very volatile, seems to have thrown up very little variation in terms of the parameters that we calculate trust on.

Congratulations to the top five, but as we can have only one winner, Seagate takes the crown.

HDTVs

Fighting for every pixel

This is a new category this year, and is perhaps one of the most popular in middle- to upper-class houses. It's almost a status symbol these days, the way cars are, with success being measured by the size of HDTV you own. The results put Sony at the top, by a wafer thin margin, over Samsung, who in turn just edged LG out for second.

Based on the responses, the average Indian has only one of three answers if you ask them to name the brand that first springs to mind – Sony, Samsung or LG. Not a single person named any of the other brands as the first that comes to mind – the surest symbol of a stranglehold by the top three.

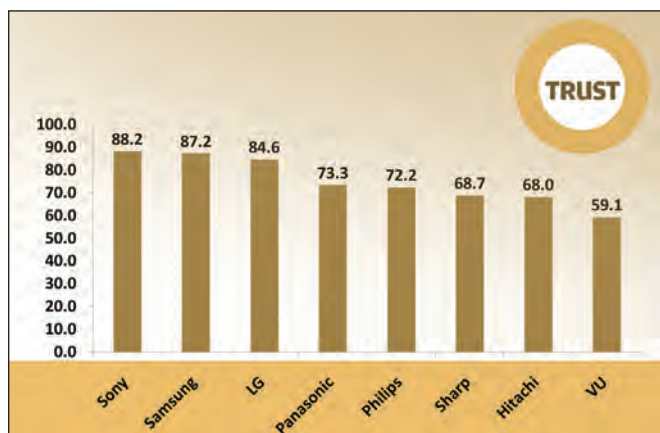
Philips and Panasonic were pretty up there with the big

three once respondents were helped out with a list.

In terms of credibility, the top three remained unchanged, again. Samsung edged out Sony in terms of style and design, but only just. LG led from the front in terms of ease of use, with more people believing that their products are easier to use than Sony or Samsung.

Those who purchase from these three brands also seem to be a satisfied lot. All three were said to be really easily available, gave out enough information, and had pretty well-educated sales people. Samsung was a teeny tiny bit ahead of Sony in terms of after sales service, and also for making all their models available at most retail stores.

It's in the total cost of ownership that everything is



I like LG because it provides options. It has excellent picture quality and I can use it with everything – DVD player and computer as well.

Sankar Baisnab, Kolkata

turned around. Sony, our leader in all the other parameters fell to sixth place. Samsung and LG stayed at the top, thus indicating that they have the right price points, and people generally find Sony to be expensive to buy and

maintain. Panasonic, Philips and Sharp were also considered to have a better TCO than Sony.

Overall, winning in four of the five parameters was enough to keep Sony at the top, but not by much, as you can see.

HDTVs

The difference between Sony and Samsung, based on responses for certain questions under credibility and satisfaction, was often less than 1%

Laptops/Netbooks

In terms of innovation, Sony edged out Apple in the results, and when it came to ease of use HP was the chosen one

Laptops and Netbooks

Everywhere you go

The results saw Dell emerge as the eventual winner ahead of HP and Sony. What's commendable is that Dell gained four ranks from last year to capture the top spot, while last year's winner Lenovo fell to fourth. Last year, HP and Sony were tied for second, and this year HP stays at second, inching ahead of Sony.

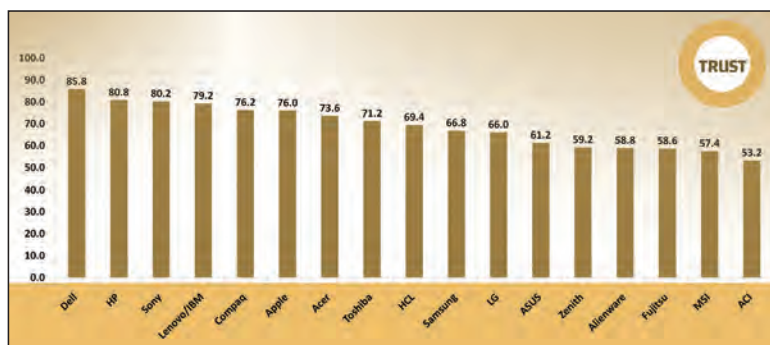
Last year we had a three-way tie for seventh between Fujitsu, Zenith and LG. This year, these three fell the most in the rankings – Fujitsu fell eight places, Zenith fell by six, and LG dropped four spots. We also had four new entrants this year – ASUS, Alienware, ACI and MSI. ASUS debuted straight into twelfth place, which is a big jump in such a crowded space of seventeen players.

When it comes to awareness, Dell and HP dominated in terms of top of mind, unaided recall. The other brands that people were able to recall easily, without help, were Lenovo and Sony. When it came to aided recall, everyone seemed to suddenly

remember that Compaq still makes laptops – jumping it to second spot in a tie with HP.

Apple jumped into the fray with a rather high credibility amongst the respondents, who felt that they could trust the quality of Apple's notebooks the most. Sony was second in that regard. The responses also indicated that Dell made the sturdiest products, while Dell and Lenovo, in that order, were listed as the brands that listened to consumer needs the best. People also felt that Apple's products were the most advanced, but just a tad more than Dell's. When it came to style, Apple won, with Sony close behind.

When we quizzed the respondents about satisfaction, Dell, HP and Sony emerged as the top three. HP was recognised as the brand most easily available all over India, and also had the most models available on demand. Respondents also felt that Dell



I've been using laptops for over five years and Apple is the best one I've used in my life.

Durgapur, Shyamson Goswami

I use Zenith and I like it very much. I would rate it higher than an HP or Sony of the same price.

Charu Peer, Mumbai

had the best after sales service, responded to queries better, and had the quickest turnaround when repairing faulty products.

When it came to loyalty, more people spoke positively about Sony to their friends, and more also said they would recommend Sony as a purchase to friends. Dell owners seem to be a satisfied bunch, and Dell was the answer when we asked people if they would continue to use the same brand.

For TCO, however, Sony, Apple and Alienware were

thought of as too expensive, and fell to the bottom of the ranking. Dell, Compaq and Acer were considered the cheapest in terms of purchase and maintenance. HP came fourth in that same list, and lost a lot of points in the overall running.

In the end, Dell dominated every aspect of our trust calculation. We do expect a major scrap in this segment, so we hope to see the top five chop and change ranks over the course of the year until our next survey.

PMPs

Rock the vote

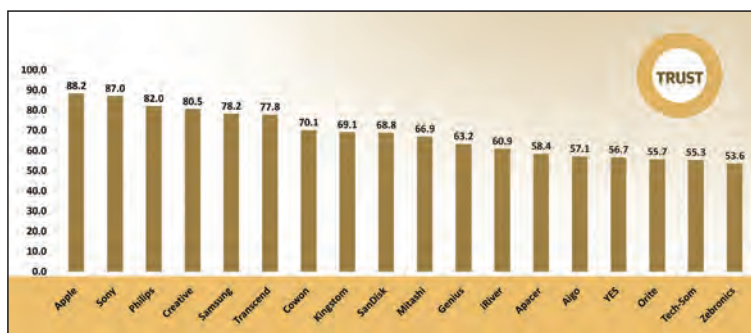
Last year's results saw Sony at the top, with Apple quite a bit behind. This year, however, Apple's fought back to claim the top spot, with Sony very close on its heels. Apple won on overall, despite Sony winning in three of the five parameters. So how exactly did this happen?

The answer lies in the awareness factor. Despite contributing the least weight to the overall score, Apple kept up with Sony on all counts, but trounced the entire list of brands here when it came to awareness. Consider this, over 60 per cent of all people polled said "Apple" when they were asked to name the first PMP brand that came to mind. In comparison, only six per cent of people said "Sony".

Credibility saw Sony take top spot, and Apple was a close second with Philips, Creative and Samsung following. When it came to quality of the products, Sony edged ahead of Apple, and remained there when we asked about sturdiness. People also

felt that Sony was more technologically advanced, more responsive to consumer needs, and also a tad more stylish.

When it came to satisfying customers, owners of PMPs felt that Apple products were of a better quality than Sony. People also voted that information about Apple's players was a lot more easy to get, but salesmen knew more about Sony products. Philips was considered to have the



It's the ultimate music player and world leader in this department. The iPod is just perfect.

Raghav Gupta, Udaipur

best after sales service, and had the best turnaround time for repairs. Apple was regarded as the brand to make all their models most easily available.

People were more inclined to talk positively about both Sony and Apple to others, but more people were keen on using Apple products over the coming years. Sony was way ahead when we asked the respondents whether they would buy products of different categories.

When it came to cost of ownership, Philips, Creative and Transcend won the top three spots, with Apple and Sony at sixth and fourth respectively.

All the buzz around Apple's products has earned it this award simply because most people think Apple (or iPod) when they think of PMPs. This was by far the hardest category to call, with the smallest margin of victory.

Laptops/Netbooks

When it came to buying different products from the same manufacturer, Sony won, but more laptop owners said their next laptop purchase would be a Dell

PMPs

When asked which brand people would recommend to friends and family, Sony was just a tad ahead of Apple by a fraction of a per cent

Readers of distrust

Some people were disqualified from the Readers' of Trust competition for trying to find innovative ways to vote for themselves – several hundred times

Icons of Trust

MFDs / Printers

An easier call

Last year, HP dominated this category, with Canon and Epson left fighting for second spot. This year, not surprisingly, there was no change in the top three, again. The biggest change was Wipro's fall from fourth to eighth this year, and the biggest climb was Brother – up two places to sixth.

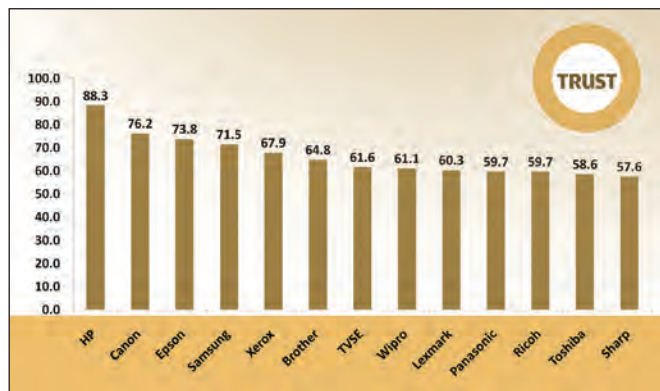
When it came to awareness, HP dominated the top of mind recall, and over 71 per cent of people had HP spring to mind when thinking of printers or MFDs. HP topped aided recall as well, with Wipro coming in second. Overall, HP was first and Epson second in the awareness field. HP actually topped in all the five parameters, so we're going to stop stating the obvious and look at the rest.

As for credibility, Canon

overtook Epson to get to second place. Canon did better than Epson in terms of quality of products, durability, improvements, listening to consumers, advanced technologies, design style, innovation and ease of use. Basically, Canon was no match for HP, but managed to beat Epson on all counts in the credibility index.

Despite losing a rank to Canon in terms of satisfaction as well, Epson did manage to upset Canon in terms of availability of products and information. Canon got its own back by having better informed sales people, after sales service, quicker resolution of queries and problems and also having more models available for purchase at stores.

Samsung was the surprise here, and managed to edge out



Because it is one of the most trusted brands, I use only HP printers. I've tried my friends printers, of other brands, and I find the printing and ink quality to be better on an HP.

Jepil Philip, Coimbatore

Epson for the third spot behind HP and Canon. Samsung was the second most popular brand, when we asked whether people would purchase other products of different categories from the brands. Samsung was also second when people were asked whether they would continue to use the same brand for some time.

Even in total cost of

ownership, Samsung came in a commendable second, ahead of Epson and Canon. Although this fight hardly seems fair, it's still good to see a lot of competition, because our Indian market certainly has the space for at least three or four big players. As of this year, our readers have spoken, and for this category, HP is the undisputed king.



PRASHANT JOSHI, 46 YEARS OLD, NAGPUR, SELLS HARDWARE AND CONDUCTS IT TRAINING

Made most recommendations in the PCs, Netbooks and Laptops categories. Twenty-five years in IT has given Prashant Joshi plenty of learning room and 1000s of people who have gone with his recommendations before making their purchase. Prashant says he is in the 'business of faith', because so many people have trusted his word before buying their computer. "We would provide consultation before people made their purchase.

In some cases we even told a potential customer that they didn't need to buy a computer. We would say 'buy that computer only if you're going to use it for at least one hour a day', he says, continuing, "This would usually surprise the customer, but then they grew to trust us because of this and this made our clients into an extended warm family, instead of just clients."

Many of his clients went on to build multi-crore businesses from the terminals he sold them. He therefore feels a sense of participation in helping build these businesses. Along the way, he says, Digit has helped him at many points. He points out the issue on netbooks in particular, which has helped convince many people to not waste money on a full-blown laptop when their requirements were just for net-based computing.



ROHAN MATTHEW, 23 YEARS OLD, KALPETTA TECHNICAL ASSOCIATE AT A RESEARCH INSTITUTE

Made most recommendations in the Assembled PCs, Monitors and External Hard disks categories. Living in rural Wyanad, Kerala can be tough for a technophile or even anyone who just wants to choose a new computer. Internet connectivity just about got there and there is only shop that sells your favourite magazine, says Rohan. He says that there is an increased need for advice in his neighbourhood and he seems to have become the local consultant for gadget-buying advice. Friends, family and people he's never met call him up regularly to make sure they make the biggest bang for their buck. He recalls how he's made the most recommendations, based on the Monitor-special issue of Digit. He's been a regular reader since 2001 and he says this has been the biggest source of his learnings. He gives advice on scanners, printers, speakers, laptops and almost everything else PC-related as he is the only person that can provide that sort of advice there.



ANISH SAWANT, 24 YEARS OLD, VASAI, MUMBAI, ENGINEERING STUDENT

Made most recommendations in the Mobile phones and Laptops categories. This young guy has a special place in the heart of a cellphone shop in the Borivali area. He's got over 40 people, among his friends and family, to buy a cell phone from that shop. He says that his subscription to Digit has been

a good guidance for his recommendations. His recommendations have spanned 10 years. Yes, that's right. Since he was 13 years old which he calls the "AIWA CD player days". It was around that time he came across a 286 PC. From there he relates how he spent hours upon hours researching the inner workings of computers and everything that surrounds it. He would then go into shops and spend even more time just talking to the

salesmen about their wares. He's never considered making money out of this hobby, especially since it's been with family and friends. "It's just the passion and interest of knowing as much as I can about this stuff that makes me the person people come to for advice. They know that they can trust me because there isn't any money involved and that's all that matters to me," he says.



3D notebook?

Acer's Aspire 5738DG claims to be the world's first 3D laptop. The screen has a 3D coating which is used along with polarized eyeglasses



Acer Liquid

It'll be the first Android-based smartphone to have a 800x480 pixel capacitive touchscreen and a 1GHz Snapdragon processor

Corsair H50 Hydro CPU Cooler

Keep your processor chilled-out!

The Corsair H50 is a water-based cooling solution for your CPU. It is meant for people who want to fiddle with the overclocking possibilities of their processor without the need of a fire extinguisher! The setup consists of a pump connected to a radiator and a 120mm intake fan. All the necessary accessories such as motherboard backplate, screws and pump ring are provided in the package. It isn't very hard to setup. Dimensionally, it won't fit easily in a standard-size cabinet. Thus, for our testing we used the Cooler Master ATCS 840. We used an Intel Core 2 Extreme X6800 2.93 GHz processor which is known to run fairly hot along with a MSI P43 Neo 3 board. The machine was powered by a Corsair HX620 PSU. Initially, we used the stock



Intel heatsink. Prime95 was used to load the CPU to 100 per cent. We monitored the CPU temperature using an application called Everest. The temperature was at 40 degrees centigrade under idle. After running Prime95 for about 5 minutes, it shot to 74 degrees on stock cooling. Next, we replaced the stock heatsink with the H50 cooler setup.

Here, the idle temperature was at 33 degrees. On working up the CPU, it stabilised at 57 degrees. As you can see, there's a quite considerable difference of 17 degrees and this delta will only rise on overclocking. At Rs. 5,900, it is expensive as compared to basic water coolers. But it does the job well, and we're giving it our thumbs up.

Contact

Tirupati Enterprises
Phone: +91-93392 07519
Email: mail@tirupati.net
Web site: http://www.tirupati.net
Price: Rs. 5,900

Specifications

Cooling type: Liquid pre-filled, closed-loop, 120 mm fan
Socket Support: LGA 775, LGA 1366, LGA 1156, AM2/AM3

RATINGS

Features.....	7
Performance.....	7.5
Build quality.....	6.5
Value for money	6.5
Overall	7

NVIDIA GeForce 3D Vision

The Third Dimension

NVIDIA has just given gamers a serious shot in the arm, and we're not talking about the yet unreleased GT300 chip that is causing quite a stir. At first glance, you'll be forgiven for mistaking the 3D Vision to be a really goofy green and black pair of sunglasses, which they're obviously not! Given the abysmal history of attempting to give gamers a true 3D experience, these are quite a revelation. Not without the odd flaw as we found out. They're well built and there's a mini USB port on one of the temple-arms for charging the tiny built-in Li-Ion battery. There's a small IR transmitter-cum-USB controller, two extra nose-pieces for fit and a rather long DVI-to-HDMI cable bundled. Each lens is actually

a monochrome LCD and it works by alternatively blocking light to either eye. Therefore only certain frames are visible by each eye, while others are blocked and alternating frames are slightly offset – while this makes the monitor blurry to look at with the naked eye it also serves to allow the wearer to perceive 3D where there is, (obviously!), none. Driver integration is good, although there is definitely scope for improvement. All graphics cards from the 9800 GTX era and later are supported.

Obviously games need to support this and we had two titles that did – *Crysis Warhead* and *Batman Arkham Asylum*. *Warhead* looks decent but is full of glitches, especially issues



with seeing two aiming reticules are unforgivable. *Batman* works flawlessly with a little tuning, however, and the game characters and environs seem to reach out and grab you – super immersive and this was, we have to admit, something that frankly adds a whole new layer to the gaming experience. Priced at Rs. 11,490 it's expensive but hardcore gamers will not mind. When more titles support the 3D Vision properly, we'll heartily recommend it. Till that time, hold your horses.

Contact

Aditya Infotech Ltd
Phone: +91-11-46665666
Email: sales@adityagroup.com
Web site: www.adityagroup.com
Price: Rs. 11,490

RATINGS

Features.....	8
Performance.....	8.5
Build quality.....	7.5
Value for money	6.5
Overall	7.5



Core i7 notebook

HP Pavilion dv8 stocks a Core i7 CPU with a full HD screen, up to 8GB RAM, NVIDIA GeForce GT230 graphics and Blu-ray



Nikon D3s

Nikon's D3s is announced and it sports a 12.1 megapixel sensor with 720p24 video mode and a ridiculously high maximum ISO of 1,02,400

Bazaar

Circle Multimedia Keyboard and Mouse

A razor-thin keyboard and a mouse with striking looks

The Circle Multimedia C44 keyboard is a wired USB keyboard.

With a thickness of just 15 mm, it's way thinner than your average keyboard. Combined with the large palm-rest the keyboard is quite comfortable. Unfortunately, the build quality is a bit flimsy. The function keys feel weird to use at first, owing to their different, rounded design.

The keyboard has a plethora of hotkeys. It offers a soft key input response. Certain typical positions like the navigation keys or the Home-Page rows of keys are reorganised and takes some time to get used to them.

The mouse is USB-powered as well. As soon as you plug it in, the centre lining of the mouse emits an orange glow. This, along with the odd

design raises an eyebrow. It seems to be designed with better ergonomics in mind. While it feels good to use at first, it can be a little painful to use after some time, especially for large hands. Secondly, the design is not ambidextrous. The mouse offers good sensitivity for basic usage purposes. Other than the scroll, it does not have any other shortcut buttons.

Out of the two, we feel the keyboard is a decent buy! The

mouse can be given the boot, unless you are really smitten by its weird looks.



Neon Mouse

RATINGS

Features.....	6
Build Quality	5.5
Performance.....	6
Value for money	5
Overall	5.5

C44 Keyboard

RATINGS

Features.....	7
Build Quality	5.5
Performance.....	6.5
Value for money	6
Overall	6.5

Contact

Circle

Phone: +91-22-6671 1234

Email: sales@entercircle.com

Web site: www.entercircle.com

Price: Rs. 699 (C44 Keyboard)

Rs. 549 (Neon Mouse)

Specifications

Sensor resolution: 800 dpi

Buttons: 2 buttons + wheel - mouse, 16 multimedia buttons - keyboard

Apple iPod Nano

Shoot! It's got video...

First reactions are 'WOW!' – they actually included a video camera'. Then, sadly, you use it. That is

how we'd like to sum the latest iPod Nano. It's identical to the previous generation except the silver version we got looks ultra classy – it's not matte finished like its predecessor, but the aluminium has a satiny finish and this is quite frankly more reason to buy one than the integrated video camera. With the 8 GB one costing Rs. 9,400 and the 16 GB Nano priced at Rs. 11,200, they're significantly better value-for-money than the earlier Nanos. Another addition sure to go down well with Indian audiences is the FM Radio with live pause – a first for iPods.

The video camera captures at VGA resolution (640 x 480 pixels) and while quality isn't bad, (for the resolution), the

inability to zoom in and lack of flash or low-light assist ensures the recording functionality is basic. Music performance is identical to earlier Nanos – which is pretty excellent. Only the treble is a little unruly compared to the iPod Classic and the bass isn't as focussed and detailed, but these are nitpicks by someone of a discerning nature and most people will not find anything amiss. The display, now larger at 2.2 inches, is good for video and seems to have marginally better colours than the older Nanos. There are a number of colour options available for both 8 and 16 GB versions, unlike earlier when certain colours were reserved for the larger capacity models.

A worthy successor with two nifty additions – one a godsend for many – FM radio. The other, the video camera that needs



some work. It's a great buy and is highly recommended though current Nano users gain little from the upgrade.

Specifications

8/16 GB flash storage, video recorder – 640 x 480 pixels, FM

Radio with live pause

Screen size: 2.2-inches

Weight: 36.4 g

Contact

Apple India

Phone: +91-80-4140 9000

Email: indiasales@mac.com

Web site: www.apple.co.in

Price: Rs. 11,200 (16 GB)

RATINGS

Features.....	8
Build Quality	9
Performance.....	8.5
Value	7
Overall	8



Proximity Sensor

NIO bluetooth security device can be placed on your valuables and warns you if it goes out of proximity



Nokia's Booklet 3G netbook is reportedly going to sell for USD 600 (Rs. 28,800).

Cooler Master ATCS 840

Aluminium monstrosity!

The ATCS 840 from Cooler Master is part of the elite range of cabinets for really discerning folk. An all-aluminium design gives this huge cabinet a classy and corrosion-resistant look. Given its size and weight, it's not something you'd want to move often. The external ports neatly hide in a clickable flap on the top. It's got a total of three giant 230-mm fans on top and front, and a standard 120-mm fan at the back. You can also place a fan at the bottom grille which is protected by a neat removable dust cover. Both side covers as well as the top are removable via hand-removable screws. But the covers don't slide back in a single stroke.

The two 230-mm fans on the top can be replaced by a radiator on top and there are openings for cooling pipes. A PSU can either be top, or bottom mounted. We liked the easily removable mechanisms

for the hard disk and the optical drive, although the latter did not fit in as securely. Another great thing about this cabinet is the removable motherboard tray that makes installation quite easy. The cutout on this tray allows easy installation of backplate coolers. The cabinet comes with an external GPU cooling chassis that we doubt will be a necessity for such a well-ventilated cabinet.

At Rs. 15,000, it's obviously not for everyone. We have almost no qualms, except that the price could have been a couple of thousand rupees cheaper, considering it's not as well built as Cooler Master's Stacker RC 830.

RATINGS

Features.....	7.5
Performance.....	7.5
Build quality.....	7
Value for money	6
Overall	7



Contact

Cooler Master
Phone: +91-94225 01592
Email: Tanmay_I@Coolermaster.com
Web site: www.coolermaster.com
Price: Rs. 15,000

Specifications

Size: Full tower
Cooling: 2 x 230 mm, 2 x 120 mm fans
Weight: 13.25 kgs

Gigabyte ODIN Plus 700W PSU

No Thor's hammer

The Gigabyte ODIN uses the more expensive active Power Factor Correction (PFC) thus providing more efficient power frequency, than a passive PFC. It is also certified with an 80 Plus Bronze rating which is a standard to gauge energy-efficient power supplies. It's build quality isn't as sturdy as Corsair's HX series SMPS', but is quite fair in general. It is not based on a modular design, that is, the power outlet connectors are detachable. At the bottom, we have a standard 120-mm fan for exhaust purposes and a honeycomb grille at the rear

aids excavation of hot air. Surrounding the fan are blue LEDs. For those who don't want this lighting effect, a small power switch is provided to turn the LEDs off.

It's got two 6+2 pin PCI-E connectors that are colour-coded for easy identification. Thus running under SLI mode is possible, provided your graphic card just needs one power connection each. Many high performance cards these days need two connectors. Thus, using them under SLI would be impossible with this PSU. Along with SATA



power connectors, it also has the typical molex connectors for older hard/optical drives without the need for conversion wires. At over Rs. 10,000, it's grossly overpriced. One of our major qualms with this PSU is its non-modular design.

Contact

Priya Ltd
Phone: +91-22-4220 3100
Email: sales@priyagroup.com
Web site: www.priyagroup.com
Price: Rs. 10,499

Specifications

Dimension: 150 x 150 x 86 mm (W x L x H)
Weight: 2 kg
24-pin Motherboard Connector: 1
4+4-pin +12V CPU Connector: 1
(6+2)-pin PCI-E 2.0 Connectors: 2
SATA Connectors: 6
4-pin Peripheral Connectors: 4
4-pin Floppy Connector: 1

RATINGS

Features.....	5.5
Performance.....	6.5
Build Quality	6.5
Value for money	3
Overall	5.5



Samsung's Blue Earth phone is a 3.5G full-touch handset that sports a solar panel



X4 flash!

Sandisk ships world's first X4-based memory card. The X4 technology can hold twice as many cells as traditional NAND chips

Bazaar

Creative Inspire T6160

Surprise punch

This is the latest 5.1 channel speaker offering from Creative's stables. However, this diminutive audio device acquired quite a few double takes. Let's look at the physical attributes and build first. The wires for the rear satellites are adequately long, while the ones for the front pair were a tad short. The volume control is on a wired remote dial similar to the older Creative Inspire systems like the 5200, except for the bass control, which is located on the back panel of the subwoofer. This is quite a pain since most of us don't have perfectly normalised files and have to reach for the bass control almost as often as the volume knob. The T6160 speaker system is positioned as a gaming and movie entertainment device. Still, what else is a good speaker for, if not music? So

we brought out our Creative Audigy 2 Platinum soundcard and gave it a thorough run with tracks from various genres, before moving on to the games and movies. The sound quality was unexpectedly good, especially the highs. The mids were slightly suppressed and instrument separation started dropping in the more instrument heavy tracks. Bass was quite tight and while being more powerful than we expected considering the RMS rating and size of the downward-firing subwoofer, it could've been better. The speakers retained clarity without distortion till about 70 per cent up its volume spectrum, which is quite good for a speaker system in



this range. Coming to movies and games, the rumble of the theatre and the location-based sounds of games were rendered quite well. Overall, a worthy contender if you're shopping for an entry-level 5.1 system.

Contact

Compuage Infocom Ltd
Phone : +91-92233 25430
Email: vinod.thakkar@compuageindia.com
Web site : http://in.creative.com
Price : Rs. 4,999

Specifications

Power: 6 Watts RMS satellites
20 Watts RMS subwoofer
Frequency response: 40Hz ~ 20kHz
SNR: >75dB

RATINGS

Features.....	6
Performance.....	7
Build quality.....	6.5
Value for money	7
Overall	7

WD TV Mini Media Player

A tiny digital media player

The WD TV mini is a tiny media player that connects to your TV and plays media from any USB storage medium. Unlike its elder brother, the WD TV HD, the mini does not sport an HDMI port. On connecting it to our full HD LCD TV, it automatically detected the optimal resolution. The interface looks cool and is fairly responsive. The nifty search feature lets you key in the file that you're looking for. We are happy to report that NTFS formatted storage is supported. The bundled remote is comfortable to use; but sadly, there is no separate volume control, so you'll need to use the



TV's remote for the same. To test the device, we threw a variety of encoded video files at it, and it played most of them perfectly. One of its features is upscaling typical videos to 1080i resolution. Comparatively, the difference in quality is not as good when up-scaled. But overall, we were pretty happy with the video quality. What

it could not play were high-definition video files (720p resolution and above), but that's what differentiates it from its elder cousin, the WD TV HD. Music as well as photos played without a hitch. Its file management menu lets you copy-paste and delete files on the connected drive.

At Rs. 6,000, the WD Mini is way overpriced. Its functionality can be served by any sub-Rs. 3,000 DivX-compatible DVD player with a USB port. We would have recommended it, had the price been around half of that.

Contact

Western Digital Corporation
Phone: +91-93210 29204
Email: amarjeet.singh@wdc.com
Web site: www.wdc.com
Price: Rs 6,000

Specifications

Video: AVI (Xvid, MPEG1/2/4), MPG/MPEG, VOB, MP4/MOV (MPEG4), RM or RMVB 8/9/10
Photo: JPEG, GIF, TIFF, BMP, PNG
Audio: MP3, WAV/PCM/LPCM, WMA, AAC, FLAC, MKA, OGG, APE
Interface: Component A/V, Composite A/V, USB 2.0, S/PDIF

RATINGS

Features.....	6.5
Performance.....	7.5
Build quality.....	7
Value for money	4
Overall	6.5



Aino & the PS3

Sony Ericsson's Aino can turn your PS3 on and off, browse its user interface and access content on the PS3's hard drive



Power-saving

Sony's touchscreen all-in-one PC lets you switch the PC part off and use it as an LCD monitor

Contact

Rashi Peripherals Pvt. Ltd.
Phone: -1800-209-0303
Email: response@rptechindia.com
Web site: www.asus.com
Price: Rs. 7,000

Specifications

LAN ports: WAN x 1, LAN x 4 RJ-45 for 10/100/1000 Base T
USB port: USB2.0 x 2
Size: 216 x 161.9 x 40.5 mm
Weight: 470 g
Encryption: 64/128-bit WEP, WPA/WPA2-PSK, WPA/WPA2-Enterprise, Radius with 802.1x
Network Protocol: ic IP, Static IP, PPPoE(MPPE supported), PPTP, L2TP

RATINGS

Features.....	7.5
Performance.....	6.5
Build Quality	6.5
Value for Money	6.5
Overall	7

Asus RT-N16

Boasts 'high' performance and ease-of-use

ASUS' RT-N16 has a distinct appearance – a cool white shade and three protruding antennae. It's a tad larger than some other routers. Although having support for 802.11n, it's sad to know that it doesn't support the 5-GHz band; which comes in handy to reduce interference if you have many 2.4-GHz devices around (like cordless phones). It has an easy-to-use interface. The automatic diagnostics and setup tutorials are quite helpful. Some of its key features include file sharing on USB over FTP, automatic bandwidth allocation and a nifty app called Download Master that lets you set HTTP, FTP as well as BitTorrent downloads to be saved directly

on a USB drive. You can also connect printers and scanners to its USB port and use them wirelessly.

We tested this router by physically connecting it to our test PC. We hooked up an Acer Aspire 4736z laptop to the router in the 802.11n mode. We tested in three zones – Zone 1 was close, Zone 2 was roughly 10 meters away outside a closed room and Zone 3, was on a lower level in the same building.

Overall, from what we



could observe, the router does a good job when the device is used at moderate ranges. At longer ranges, the speeds would be hampered. We liked the feature set on this device but it's pricey at Rs. 7,000. Moreover, it's not the best performer around.

Apple LED Cinema Display

24-inches of Mac-only joy

Apple's 24-inch Cinema Display is built around the same design ethos as their latest Macbooks – slick, sleek and tough. It's much heavier than

typical 24-inch LCDs on account of the aluminium bodywork. It uses an S-IPS panel with LED backlighting.

Our Spyder3Elite reported the maximum contrast ratio at 745:1, which is very respectable for an S-IPS panel. Brightness levels are a bit weaker than expected i.e. 325 cd/m², but not bad for an S-IPS panel. After doing a few calibration tests, we were pretty impressed with its colour rendition. For some reason, Apple chose to impart a glossy finish to the panel. The result? Loss in beauty with not-

so-beautiful reflections. Movie quality is good and the display gives very decent contrast and colour with no noticeable pixel lag. The inbuilt web camera and speakers have good quality and volume.

A mini DisplayPort connects to all the latest Macbooks and Macbook Pros. There is no DVI or HDMI connectivity, and so forget using this with a regular PC or notebook.

There are a few quirks when using with any Macbook Pro like a bit of an input lag while using apps like MS Office 2008.

Priced at Rs. 60,900 it's expensive as similar panels sell for as little as Rs. 40,000. But its LED based, slim and sexy and of course only for Mac users who are used to paying premiums for hardware – so we'll give it a nod.



Contact

Apple India
Phone: 1-800-425-0744
Email: indiasales@mac.com
Web site: www.apple.co.in
Price: Rs. 60,900

Specifications

Response time: 14 ms
Maximum supported resolution: 1920 by 1200 pixels
Ports: Three USB 2.0, mini DisplayPort, Magsafe power

RATINGS

Features.....	5
Performance.....	8
Build Quality	9.5
Value for Money	5.5
Overall	7



Android & XP

The Acer Aspire One AOD250 is the first netbook to dual-boot between Google Android and Windows XP OS



Storm part deux

The BlackBerry Storm 2 previews hit the internet and it seems to provide faster and smoother typing than its predecessor

Bazaar

Philips GoGear Raga and Vibe Media Players

A swarm of portable music players

The square-shaped GoGear Raga has a metal-clad red body that makes it feel tough and look cool. The front bears a small three-line monochrome display. The navigation buttons are a bit stiff. The simple-design UI works swiftly. FM reception is average. Its voice recording feature couldn't capture voices very clearly. Sound quality is just about average but the earphones are a bottleneck. It sounds somewhat flat and will not tingle your audiophile senses. However, swapping to a better pair of earphones will do the trick.

The Philips GoGear Vibe is a slightly advanced cousin of the Raga. It looks quite decent; it's built decently too. The Vibe has a 1.5-inch display that's easy to read; but definitely not that good to use the video playback feature religiously. The buttons on the

Vibe are quite tactile, especially the navigation ones. The sound quality on the Vibe is, fortunately better than the Raga; and unlike it, the output delivered by the default pair of earphones is quite decent. Voice recording and FM like the Raga is pretty average.

The Philips GoGear Raga 2GB is available for Rs. 2,499 and the Vibe 2GB sells for Rs. 3,499. Off the two, we'd recommend the GoGear Vibe if you're looking for a pocketable MP3 player with decent sound.

Contact

Contact: Philips Electronics India Ltd.

Phone: 1860-1801111

E-mail: customercare.India@philips.com

Web site: www.india.philips.com

Price: Rs. 2499 (Raga), Rs. 3499 (Vibe)



Specifications

GoGear Raga

Screen: 128 x 48 pixel, 3 line LCD

Audio Format: MP3, WAV, WMA

Built-in memory: 2GB

Other features: FM Radio, Voice Recorder, FM recording

Playtime on internal battery: Up to 27 hours

RATINGS

Features.....	6
Performance.....	5.5
Build Quality	7
Value for Money	6.5
Overall	6



Specifications

Vibe Media Player

Screen: 128 x 128 pixel, 1.5-inch LCD

Audio Format: MP3, WMA

Built-in memory: 2GB

Other features: FM Radio, Voice Recorder, FM recording

Playtime on internal battery: Up to 25 hours audio or 4 hours video

RATINGS

Features.....	6.5
Performance.....	7
Build Quality	6
Value for Money	6.5
Overall	7

Contact

Contact: Nikon India Private Ltd

Phone: +91-124-468 8500

Web site: www.nikon.co.in

Price: Rs. 39,990

Specifications

10.2-MP CCD sensor (23.6 x 15.8 mm), 18-55 mm VR lens

Shutter speed range: 1/4000 - 30 seconds

ISO range: 100 - 3200, 1080

MAH Li-ion Nikon battery

Dimensions: 126 x 97 x 64 mm

Weight: 485 g

RATINGS

Features.....	7
Performance.....	7.5
Build Quality	7.5
Value for money	7
Overall	7

Within reach of many

Intended as a replacement for the D60, Nikon's new D3000 comes with the same standard 18-55 mm VR, 3x optical zoom lens found on other entry-level models. There's no lens motor in the body – typical for its price range. The sensor is the same 10-MP CCD unit in the D60.

The body is a bit bulkier than the D60 with a larger 3-inch screen. Live view is still missing. In contrast, Canon has this feature on their cheaper EOS 1000D. The move to an 11 focus point system up from the 3-point system is good – a welcome feature. Image quality is good with the default lens, although it's a bit inadequate for various shooting conditions.

The high ISO performance is rather good and ISO800 is passable; although it's definitely not in the D90s league.

Nikon's Guide mode simplifies things for newbies with a colourful main menu for the basic operations. The controls are simple to use and unlike the costlier DSLRs, there is no dedicated ISO button and the D3000 makes do with a single jog dial. So, you're forced to use a few more buttons while shooting – good for newbies but not hardcore DSLR users.

The D3000 is a good camera – the body has the right build, the controls are pretty simple



and it gives very good results. It has a great aperture range and shutter speed. At Rs. 37,950, it's a worthy replacement for the entry-level winner of our DSLR test – the D60. For those who already have a D60 or any other cheap DSLR in this range, this isn't for you. You're better off with a Sony A330, a D5000 or even the D90 if those fall within your budget.



The iDriver app for the iPhone is able to wirelessly drive a prototype test vehicle



The next firmware version of the Playstation 3 rumours to have cross-game voice chat support

Nokia E63

E71 minus some equipment

Nokia's E63 is a cheap alternative to the E71 business phone. One of the biggest differences between the two phones is the standard plastic body on the E63. Thanks to the slightly wider body, the keys are larger and thus typing on it is easier. It fits in easily into pretty much any pocket.

The processor and the rest of the hardware is identical to the E71. We noticed no slowdown while using the phone's built-in applications. The interface is simple to use. Audio quality on the phone is great and so is the reception. The signal strength stays high and stable even in areas that usually don't give great reception. The bundled earplugs are average, but fortunately the E63 uses a 3.5-

mm audio jack to plug in any other earphones. The quality of the 2.0-MP camera is average. Unlike the E71, the E63 doesn't have GPS.

The E-series phones might be designed for businessmen, but with so many people looking out for QWERTY phones for the sake of a good keyboard for messaging and emailing, the Nokia E63 is the perfect solution. At Rs. 12,699, it's easily one of the more affordable QWERTY phones. When you buy the E63, you can be rest assured that you've bought something that's pretty much the E71 except for the fancier metal back and the built-in GPS. If you need those features, you can still go in for the E71, but for a whole Rs. 4,300 more!

Contact

Nokia India Pvt. Ltd.

Phone: 1800-4253388

E-mail:

communications@nokia.com

Web site: www.nokia.co.in

Price: Rs. 12,699

Specifications

2.36-inch screen, ARM 11 369-MHz processor, 2-MP camera, QWERTY keypad, Symbian S60 9.2, Wi-Fi 802.11b/g, Bluetooth 2.0, 3.5-mm audio jack, microSD memory expansion slot

Dimensions: 113 x 59 x 13 mm

Weight: 126 g

RATINGS

Features.....	7
Performance.....	7.5
Build Quality	7
Value for Money	8
Overall	7.5



Samsung Omnia Pro B7320

Just another QWERTY phone...



The B7320 has a classy, business-friendly appeal although the brown color tone may put-off a few. It's sleek and fairly light. The fairly-sized screen disappoints owing to average sunlight legibility. The keyboard has well-sized keys, but they're hard and not intuitive to use. On the inside, we have the ageing Windows Mobile 6.1 OS laced with Samsung interface customisations. The internal hardware is fairly powerful to run the UI at a decent pace, a welcome change from the laggy performance we're used to from Windows Mobile devices.

The praise ends there. Internet Explorer is simply unusable to view full-fledged web sites. It comes only with viewers for MS Office files, there's no option to create documents. GPS works well with Google Maps. Photos from the camera appeared slightly washed out, but acceptable for

a camera phone. Call quality and network reception is pretty good. Surprisingly for a Windows phone, the phone belts out decent audio quality and the headset also has a 3.5-mm headphone jack. The phone lasted about 1.5 days under heavy usage, which is quite fine. Spec-by-spec, it is comparable to the Nokia E71. If heavy typing is what you're looking for, we'd recommend the E71 over this one. But if you are specifically looking for Windows Mobile device, then it's not a bad option to consider, but we feel, that, for a non-touch device it should have been priced lower.

RATINGS

Features.....	7
Performance.....	6.5
Build Quality	6
Value for Money	6.5
Overall	6.5

Contact

Samsung India

Phone: +91-11-4151 1234

Email:

sarfaraz.b@samsung.com

Web site:

<http://in.samsungmobile.com>

Specifications

Network: Quad-band GSM, HSDPA at 3.6 Mbps

Dimensions/Weight: 111.8 x 59.6 x 12.6 mm / 110 grams

Screen: 2.4 inches 320 x 240 pixel

Processor: Qualcomm MSM 7201A 528 MHz

Memory: 256 MB RAM, 256 MB ROM

OS: Windows Mobile 6.1 Professional (upgradeable to WM 6.5 when released)

Connectivity: Wi-Fi 802.11 b/g,

Bluetooth 2.0, HSDPA, A-GPS

Camera: 3.2 MP auto-focus, Geo-tagging, face and smile detection, Video

Battery: 1480 mAh

Price: Rs. 16,500



N97 mini

The Nokia N97 Mini to get a Limited Edition design in collaboration with fashion brand RAOUL



WD TV

WD TV's new Live model supports 1080p, HDMI and an Ethernet jack

Bazaar

Aperture 2

Let the photos flow

Aperture 2 is a powerful photo management and post production image editing software for Mac, that is aimed mainly at professionals. For a Windows layman, Aperture is essentially like Picasa on steroids. It includes several features to manage workflow and make life a lot easier for professionals who ordinarily shoot tons of pictures.

In terms of image editing, the software has functionality that is akin to developing film in a studio, i.e. post production touch ups such as hue, tint, white balance and exposure rather than full-scale image manipulation offered by suites such as Photoshop. The ease of use comes across right from

the installation. Both Mac newbies and fanboys alike will find the software pretty intuitive. The software handles EXIF data and RAW files well. You can create smart albums from multiple parameters that allow you to filter down to the exact photos that you want. Once you have a set of images, you can work on them in different ways; be it a light table or comparing them side by side. Loupe is very useful tool in this regard that essentially mimics magnification. The heads-up display brings the Projects, Metadata, and Adjustments panes together in one tabbed pane for easy access. We loaded a few sample projects as well as the multitude of test shots from



last month's camera test. The application imports very well from a camera, but importing from folders was quite a pain as it didn't recurse sub-folders automatically. Still, such minor irritants aside, this software is a must have for a professional photographer as well as any Mac user who has more than a cursory interest in photography and a great deal of money to spare.

Contact

Apple
Phone Number: 1-800-425-0744
Email Address: indiasales@mac.com
Web site: www.apple.co.in
Price: Rs. 9,500

Requirements

Mac Pro / MacBook and above
Mac OS X v10.4.11 Tiger
Mac OS X v10.5.2 Leopard
5GB of hard drive space
1 GB RAM or 2 GB on Mac Pro

RATINGS

Features.....	7
Performance.....	7
Ease of use	6.5
Value for money	5
Overall	6.5

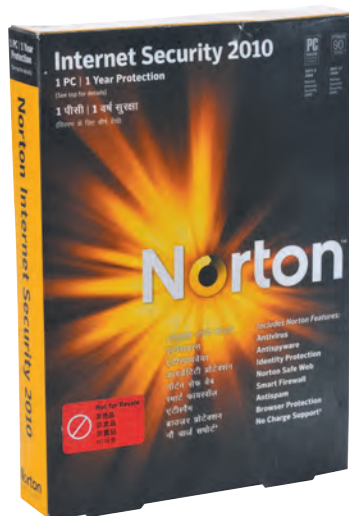
Norton Internet Security 2010

A good primary line of defence

With this latest edition of NIS, Norton aims to enhance user experience and bring more information to the user. To this end, the Insight feature lets you view processor and memory usage, important downloads, installations and scan points historically against a timeline. At the same time, Norton has muted the pop up alerts by giving users the option to control notifications. 2010 is compatible with Windows 7, yet on our RC1 machine, it popped up a non-compatibility error and refused to live update or register an account for a while. One of the newer features added to this edition is a reputation engine called Quorum. This is Norton's attempt at going beyond heuristics and virus signatures to try to detect unknown threats. It cross references files you

are downloading, with data from other users who've downloaded the same file. If there isn't enough information about the file, it asks you to steer clear for a while. Still, going by the way it works, we fail to see how Quorum can work without sacrificing the first few proverbial lambs. Other options in the package include customising idle time usage for scans as well as battery management for portables. With this edition it takes a page out of NIS 2009, by keeping its footprint as small as possible. Rounding up all the modules in this suite such as firewall, new safe web protection that annotates links in search results, network security map and password management; NIS 2010 is a good overall AV solution for most purposes. There is also a parental control feature that requires users to download another small application

called SafetyMinder – a small gripe since it could have as well been included in the main package. At Rs 2,495 for a three PC license, and Rs 1,450 for a single PC license you may consider buying it as a step up over free suites, for personal as well as small office use.



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Contact

Symantec Corp
Phone: +91-99209 29298
Email: nortonindia@symantec.com
Web site: in.symantecstore.com, norton.com
Warranty: 1 year update subscription
Price: Rs. 2,495 (3 PC) and Rs. 1,450 (Single PC)

System Requirements

Windows XP SP2 / Vista / Win7
300 MHz or faster processor
512 MB RAM

RATINGS

Features.....	7
Performance.....	6.5
Ease of use	7
Value for money	6
Overall	6.5

piloting a bus powered by ultracapacitors in Washington DC. Ultracapacitors are considerably cheaper and can be recharge completely in under a minute



DirectX 11 games

AMD showcases the DX 11 games roadmap from now till the end of 2010

NVIDIA SLI Update

New version adds SLI support for more games with the 191.07 drivers

Michael Browne

michael.browne@thinkdigit.com

Graphics gurus ATi and NVIDIA at each other's throats again and vying for a place in your motherboards PCI Express slot. We test all the latest GPUs available, putting them through the best games around. Who won, who lost? And which one will you buy?

One are the days when choosing a GPU was simply decided by the coins jingling in your pocket, because of the meagre options available at any price. And a bittersweet goodbye it is, for while choice is a boon it also a bane as it involves 'proper' decision-making — a task easier said than done for most people. Additionally, GPU manufacturers have been guilty of 'kissing-up' to game developers on occasion for optimising a game for their hardware thereby making your choice (sometimes) dependent on the titles you play. If this isn't bad enough, DX 11 is around the corner and while everyone is thrilled to bits about it being backward compatible, this only pertains to DX 11 working on Windows Vista. Obviously, your shiny new ATi Radeon HD 4870 will not support DX 11 and while it will play a DX 11 game in DX 10, (or even DX 9), mode, you will miss out on the goodness that DX 11 brings; be it in the form of eye-candy or frames per second (fps hereon). In fact, DX 11 has a lot of goodness promised and as sceptical we were given the DX 10 fiasco, we're pleased that for once Microsoft has really worked well with game developers and hardware manufacturers alike. To conclude, the next-gen API is shaping up well.

The Battle Rages On...

Imaging: Chaitanya Surpur
Photography: Manas Parekh





ZOTAC MAG

ZOTAC enters net-top business with its compact, low-powered solution called the MAG



Flash on mobiles

Adobe launches Flash player 10.1 with GPU support on mobile phones

Graphic Cards Test

BEST BUY
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NOVEMBER 2009



Galaxy GeForce GTS 250

Mid-range cards up to Rs. 10,000

This was the most populous category by far and with good reason – 80 per cent of the gaming fraternity will look to spend within this range. No fools themselves, ATi and NVIDIA are wise to the fact. Such cards are more than suitable for gaming and you can buy a fair bit of graphics grunt for under Rs. 10,000 these days. A sweet, shiny-new entrant to this category is ATi's shiny new Radeon HD 5770. Codenamed 'Juniper', this card is a DX 11 part and surprised us (spoiler!). The other GPUs falling into this price range are the NVIDIA GeForce GTS 250, 9800 GTX and 9800 GT, and ATi Radeon HD 4850, 4830 and 4770.

Sapphire is careful with their

HD 4850 cards' cooling solution. The infamous single-slot cooler was woefully inadequate and these cards heated a lot. It wasn't uncommon to see core temperatures soar northwards of 90 degrees. Sapphire's custom cooler with aluminium fins and a small shroud only covers the core but it is a dual-slot design and obviously better than the stock solution. XFX's HD 4850 (HD-485X-YD HD) has a heatsink and shroud like NVIDIA's cards – it's large, runs along the entire card and is dual-slot design – in fact, XFX seems to be using this very same design on a lot of their cards. ZOTAC's GTS 250 512 MB is a small card – no bigger than the PCB of a 9600 GT and it has a neat custom cooler with large aluminium fins. Unfortunately, it also gets

pretty hot, the body of the cooler and the rear of the card also heats up. The ZOTAC 9800 GT Synergy has no requirement for additional power and makes do with the power supplied by the PCIe slot. The cooler on this card has a large surface area and covers nearly the whole card with a lot of fins and a small fan. Palit's GTS 250 has two 6-pin molex power connects unlike the two ZOTAC cards that have a single 8-pin connect. ASUS has designed a neat cooler for their MATRIX series and they persist with the same design for all cards which is a bit disorienting since there is no NVIDIA or ATi badging to tell, say a Radeon HD 4850 apart from a GeForce 9800GT.

Galaxy's GTS 250 cards have a unique cooler – neat design and slightly smaller than a full length cooler as the shroud is a lot smaller but the cards get slightly hotter than stock-cooler bearing GTS 250 cards.

MSI 9800 GTX (N9800GTX-T2D512) has an issue with the cooler shroud foiling with the retention on the 6-pin molex power connects although the flexible shroud bends slightly

HOW WE TESTED

Our test configuration had to be the fastest around since we needed to minimise bottlenecks. So we chose premium components throughout. Our unanimous choice for the CPU was Intel's Core i7 975 Extreme (3.33 GHz). For the motherboard, we used our last month's Best Performer, the ASUS Rampage 2 Extreme motherboard (Intel X58 chipset-based). This is a uber feature-rich board that's packed to the gills with quality components. Kingston's HyperX tri-channel DDR3 kit (3 x 1 GB, 1600 MHz @ 9-9-9-24) and a 10,000 rpm, 300 GB Western Digital Velociraptor hard drive were also used. Corsair's excellent HX620 provided the juice to power this system. For the display component, we used HP's 2475 LCD monitor, a 24-inch display based on an H-IPS panel.

In the BIOS, we disabled all dynamic stepping, multiplier and voltage settings thereby ensuring the i7 975E processor ran unimpeded at 3.33 GHz all the time. The memory was set at 1600 MHz at timings of 9-9-9-24. Two partitions were created. We used a 32-bit version of Vista Ultimate and disabled all unnecessary features like System Restore and Remote Logging. Unnecessary services were also disabled and a 6 GB permanent swap file was created on C: drive.

All games and benchmarks were installed on D: drive and after install we patched everything to their respective latest versions. Once installation was done, a disk cleanup was run on both partitions. Both partitions were then checked for errors and defragmented.

For game benchmarks, we wanted something that was fairly new with really good engines. The challenge was selecting titles that are also popular. We tried a lot of games, around 15 in all and tested each game on four cards, two ATi and two NVIDIA. This allowed us to check scaling on cards from both vendors. We eventually selected six of the best games on the basis of how well they scaled in performance, the visual appeal of the engine and of course the popularity of the game. We also watched out if any game seemed to favour a particular vendor. Such games were removed to prevent giving an unfair advantage to either ATi or NVIDIA. Latest versions of all games were used. 3D Mark Vantage Professional was patched to its latest version 1.0.2.1.

We segregated cards into two categories on the basis of what chipsets they were based on and not primarily on price (pricing was the secondary factor). Similar GPUs from AMD and NVIDIA were compared –

this means the Radeon HD 4850 was compared to the GeForce 9800 GT and the GTX, while the Radeon HD 5870 was compared to the Radeon 4870 x2 and the GTX 285 / 295 combo. This ensured that a costly 9800 GTX (for example) would find itself with other 9800 GTX cards and not compared to a GTX 260. Within a single category, a division on the basis of price was made.

For the high-end cards above the Rs. 10,000 price mark, we used higher resolutions – 1920 x 1200 and 1680 x 1050 – common for 24 and 22-inch LCD monitors. This screen size is affordable for someone spending on a high-end card. For lower graphics cards that were in the price range of Rs. 7,001 to Rs. 10,000, we used resolutions of 1680 x 1050 pixels and 1280 x 1024 pixels, but at the same visual settings for the sake of comparison. Similarly, FSAA was used at 4x for all cards. Shader detail and other effects were kept at maximum. For benchmarks that allowed it, we recorded the maximum and minimum fps as well as the de facto average fps. Although the maximum value is pretty useless for anything more than a cursory comparison with pretty figures, the minimum fps gives a realistic look at how fast the game will run on that

card. In general anything above 30 fps is playable, although for first person action games we recommend a frame rate in the range of 50 to 60.

We used Riva Tuner's latest version to record temperatures and also checked the drivers reading for the same to check for discrepancies. The cards specifications were noted by using the latest version of GPU-Z. We used the latest version of drivers from NVIDIA's and ATi's websites. For NVIDIA, this was version 190.62 while for the Radeon cards, we used the newest driver for the HD 58xx series since it works fine with the older 4xxx series of cards as well.

Besides raw fps values, we also used took two screenshots each from *Crysis Warhead* and *S.T.A.L.K.E.R. Clear Sky* for visual comparisons. Taken at fixed points in the timedemo benchmark, we used a resolution of 1920 x 1200 pixels, with maximum Anisotropic Filtering and 4x Antialiasing and all effects set to maximum. The score for each game marked on a scale of 10 is a result of aggregates of visual quality – Specular Highlights and HDR lighting quality, Shader Detail, shadow detail and quality, MSAA and its effectiveness as well as particle effects like smoke, fog and explosion effects, quality of body physics.

Mid-Range Graphic Cards

Up To Rs. 10,000							
Brand	XFX	XFX	Galaxy	Sapphire	ZOTAC	ASUS	Galaxy
Model	HD-483X-YDFK	PV-T98G-YN	GeForce GTS 250	Radeon HD 4850	9800 GT Syn-ergy Edition	EAH 4770	GeForce GTS 250 1 GB
GPU	Radeon HD 4830	GeForce 9800GT	GeForce GTS 250	Radeon HD 4850	GeForce 9800GT	Radeon HD 4770	GeForce GTS 250
Price (Rs)	Rs. 6,000	Rs. 6,100	Rs. 6,300	Rs. 6,900	Rs. 7,000	Rs. 7,000	Rs. 7,300
Grand Totals (Out of 100)	53.33	52.61	57.09	61.68	55.27	55.80	58.50
Features (Out of 15)	7.35	6.00	5.48	6.75	6.98	6.60	5.48
Performance (Out of 85)	45.98	46.61	51.61	54.93	48.29	49.20	53.02
Features							
No. of Stream Processors	640	112	128	160 (800 / 5)	112	640	128
Core / Shader Clock (MHz)	575 / -	550 / 1375	738 / 1836	650 / -	550 / 1375	750 / -	738 / 1836
Memory Type / Memory Clock (MHz)	GDDR3 / 1800	GDDR3 / 1400	GDDR3 / 2200	GDDR3 / 2000	GDDR3 / 1600	GDDR5 / 3600	GDDR3 / 2200
Memory size (MB) / Interface	512 / 256-bit	512 / 256-bit	512 / 256-bit	512 / 256-bit	512 / 256-bit	512 / 128-bit	512 / 256-bit
Connects on card	2 x DVI, 1 x S-Video	1 x DVI, 1 x HDMI	1 x DVI, 1 x S-Video, 1 x HDMI	1 x DVI, 1 x D-Sub, 1 x HDMI	2 x DVI, 1 x S-Video	2 x DVI, 1 x S-Video	1 x DVI, 1 x S-Video, 1 x HDMI
In the Box							
Bundled Connects and Cables	1 x DVI - D-Sub converter, 1 x 4-pin to 6-pin power converter, 1 x S-Video to component converter	1 x DVI - D-Sub converter	S-Video - Component converter	1 x DVI - D-Sub converter, 1 x HDMI converter, 1 x 4 pin - 6 pin molex power converter	1 x DVI - D-Sub converter	1 x DVI - D-Sub converter, 1 x DVI - HDMI converter, HDMI audio cable, 1 x 6 pin to 4 pin molex power converter	S-Video - Component converter
Software and Games	-	-	-	-	-	-	-
Performance							
Temperature (Idle / load)	42 / 63	40 / 54	48 / 60	38 / 48	43 / 51	44 / 54	49 / 62
3D Mark Vantage (Overall / GPU)	7823 / 6443	6012 / 4627	8457 / 6637	8770 / 7347	6100 / 4760	8121 / 6734	8523 / 6682
Game Benchmarks (in frames per second)							
Crysis Warhead (1680 x 1050, Max / Avg / Min)	16 / 12 / 7	15 / 10 / 6	22 / 14 / 8	19 / 14 / 9	16 / 11 / 7	18 / 14 / 8.2	22 / 14 / 9
Crysis Warhead (1280 x 1024, Max / Avg / Min)	21 / 15 / 10	20 / 13 / 8	27 / 18 / 11	25 / 18 / 12	21 / 14 / 9	22 / 15 / 10	28 / 19 / 12
S.T.A.L.K.E.R Clear Sky (Day, 1680 x 1050, Max / Avg / Min)	23.6 / 12.4 / 4.9	22.1 / 10.5 / 6.3	28.4 / 12.2 / 4.7	29.3 / 15.7 / 6.8	22.3 / 11.7 / 7.2	25.4 / 15 / 7.1	28.2 / 13.2 / 5.6
S.T.A.L.K.E.R Clear Sky (Day, 1280 x 1024, Max / Avg / Min)	33.7 / 16.3 / 5.2	32.1 / 14.7 / 7.5	43.2 / 15.6 / 4.3	40.2 / 20.5 / 10	32.1 / 15.1 / 8.9	35.4 / 17.2 / 6.5	44.5 / 16.4 / 6
Far Cry 2 (1680 x 1050, Ultra High, 4x AA) Max / Avg / Min	44.7 / 18.7 / 6.5	44.23 / 29.23 / 19.32	63.2 / 40.27 / 18	48.57 / 29.95 / 16.82	44.84 / 30.84 / 20.66	51.2 / 18.3 / 7.1	66.3 / 41.2 / 19.2
Far Cry 2 (1280 x 1024, Ultra High, 4x AA) Max / Avg / Min	112.3 / 35.84 / 23.62	50.32 / 34.17 / 25.73	55.24 / 37.23 / 12.3	162.62 / 37.6 / 26.99	51.34 / 35.51 / 26.13	115.3 / 36.3 / 25.2	56.43 / 36.43 / 13.15
Unreal Tournament 3 (1680 x 1050 / 1280 x 1024)	89 / 123	87 / 109	125 / 145	111 / 139	93 / 114	98 / 128	126 / 146
Company Of Heroes: Tales Of Valor (1680 x 1050, Max / Avg / Min)	162.2 / 92.1 / 42.1	221.2 / 101.2 / 46.2	231.2 / 118 / 56.2	195 / 108.3 / 50.7	199.2 / 95 / 45.4	173.2 / 96.4 / 44.3	241.2 / 119 / 57.5
Company Of Heroes: Tales Of Valor (1280 x 1024, Max / Avg / Min)	194.2 / 119.1 / 66.2	316.4 / 142.2 / 71.8	355.4 / 172.2 / 84.3	252.4 / 145 / 77.6	309 / 133.9 / 67.4	216.8 / 128.3 / 72.4	363.9 / 173.2 / 85.4
Visual Quality (Out of 10)							
Crysis Warhead / S.T.A.L.K.E.R Clear Sky	8 / 8	8 / 7.75	8 / 7.75	8 / 8	8 / 7.75	8 / 8	8 / 7.75

BEST BUY
digit
NOVEMBER 2009



Sapphire Radeon HD 4850

to accommodate the power connects — this wasn't an issue on other 9800 GTX cards using the same stock cooler.

One thing's for sure — none of these cards can really handle *Crysis Warhead*, unless of course you're really willing to sacrifice on eye-candy, but then that's a major part of the charm. *Clear Sky* is another game that is surprisingly taxing. Unfortunately, both these games are also the

most visually splendid. *Far Cry 2* is infinitely more forgiving. ATI's Radeon HD 5770 makes quite a splash as it dominates proceedings. The GeForce GTS 250 and 9800 GTX GPUs can still give it some competition but they're built on older, costlier manufacturing processes and with it's 40 nm core, the 5770 is also cost-effective. When it comes to visual quality, the Radeon 5770 has a very slight but noticeable edge over all

the other cards, we feel this is due to improved multi-sample antialiasing techniques among other visual tweaks.

However, let it be said that we don't recommend any of these cards for someone looking to play the latest and upcoming games at high resolutions and with eye-candy enabled. However, if you're willing to sacrifice on the detail for the most taxing games around, you'll be rewarded with some sweet



WD TV Live

This new model adds network support to the already popular HD-playback device

GPU-Z update

A new version of the graphics card diagnostic utility GPU-Z (version 0.3.6) is released

Graphic Cards Test

ZOTAC	Sapphire	PowerColor	FX	FX	FX	ZOTAC	PowerColor	Palit
GeForce GTS 250	Radeon HD 4770	AX 4770 512MD5-M	GS-250X-YD GS	HD-477A-YD	HD-485X-YD HD	GeForce GTS 250 1 GB	AX HD 4850 1GB	GeForce GTS 250 1 GB
GeForce GTS 250	Radeon HD 4770	Radeon HD 4770	GeForce GTS 250	Radeon HD 4770	Radeon HD 4850	GeForce GTS 250	Radeon HD 4850	GeForce GTS 250
Rs. 7,500	Rs. 7,500	Rs. 7,500	Rs. 7,900	Rs. 8,000	Rs. 8,400	Rs. 8,400	Rs. 8,500	Rs. 8,750
65.77	55.43	54.55	61.32	57.07	57.97	63.38	62.16	65.33
8.25	6.38	5.85	7.58	7.35	5.03	8.55	5.25	6.00
57.52	49.05	48.70	53.74	49.72	52.94	54.83	56.91	59.33
128	640	640	128	640	160 (800 / 5)	128	160 (800 / 5)	128
740 / 1836	750 / -	750 / -	738 / 1833	750 / -	650 / -	740 / 1836	625 / -	745 / 1848
GDDR3 / 2200	GDDR5 / 3600	GDDR5 / 3600	GDDR3 / 2200	GDDR5 / 3600	GDDR3 / 2100	GDDR3 / 2200	GDDR3 / 1900	GDDR3 / 2200
512 / 256-bit	512 / 128-bit	512 / 128-bit	512 / 256-bit	512 / 128-bit	512 / 256-bit	1024 / 256-bit	1024 / 256-bit	1024 / 256-bit
1 x DVI, 1 x D-Sub, 1 x HDMI	1 x DVI, 1 x D-Sub, 1 x HDMI	2 x DVI, 1 x S-Video	2 x DVI, 1 x S-Video	2 x DVI, 1 x S-Video	2 x DVI, 1 x S-Video	2 x DVI, 1 x S-Video	1 x DVI, 1 x D-Sub, 1 x HDMI	1 x DVI, 1 x D-Sub, 1 x HDMI
2 x 6 pin to 4 pin molex power converter, audio HDMI cable	1 x DVI - HDMI converter, 1 x DVI - D-Sub converter, 1 x 4-pin to 6-pin molex converter	1 x DVI - D-Sub converter, 1 x 4-pin to 6-pin molex converter	1 x DVI - D-Sub converter, 1 x 4-pin to 6-pin molex converter, 1 x S-Video - Component converter	1 x DVI - D-Sub converter, 1 x 4-pin to 6-pin molex converter, 1 x S-Video - Component converter	1 x DVI - D-Sub converter, 1 x 4-pin to 6-pin power converter, 1 x S-Video to component converter	1 x DVI - D-Sub converter, 2 x 6 pin to 4 pin molex power converter	1 x DVI - D-Sub converter, 1 x 4-pin to 6-pin molex converter	1 x DVI - HDMI converter, HDMI audio cable, 1 x 6 pin to 4 pin molex power converter
-	-	-	3D Mark Vantage Professional	-	-	XIII Century: Death Or Glory	-	-
43 / 56	42 / 52	43 / 53	46 / 57	42 / 50	44 / 62	45 / 58	34 / 54	39 / 50
8372 / 6637	8134 / 6754	8132 / 6783	8543 / 6729	8159 / 6781	8811 / 7396	8234 / 6543	8358 / 6967	8534 / 6813
18 / 13 / 9	18 / 13 / 8	18 / 13 / 7.4	23 / 15 / 9	23.2 / 14.2 / 6.1	20 / 14 / 10	18 / 12 / 7	19 / 14 / 10	22 / 14 / 8
26 / 19 / 11	22 / 16 / 10	23 / 15 / 9	29 / 19 / 12	23 / 16 / 11	25 / 18 / 13	26 / 18 / 9	24 / 17 / 12	30 / 19 / 12
29.3 / 14.2 / 8.9	24 / 14.4 / 6.1	25 / 14.5 / 6.4	29.5 / 12.6 / 5.3	26 / 14.6 / 6.9	26.6 / 15.7 / 7.3	28.2 / 14.1 / 7.6	28.4 / 16.5 / 10.1	30.2 / 15.3 / 9.1
43.3 / 19.5 / 11.1	35.3 / 17.9 / 6.7	35.3 / 17.5 / 6.5	44.5 / 16.9 / 5.5	36.2 / 18.9 / 7.2	41.4 / 20.7 / 7.8	43.2 / 18.6 / 10.4	39.2 / 20.9 / 11.8	44.3 / 20.3 / 11
56.32 / 39.4 / 27.2	48.11 / 20.42 / 6.12	49.2 / 19.3 / 7.3	63.5 / 41.36 / 19.75	33.43 / 18.72 / 9.98	49.12 / 32.77 / 22.32	55.34 / 38.82 / 25.84	146.68 / 33.42 / 22.66	56.53 / 40.37 / 28.2
76.32 / 44.24 / 32.53	120.62 / 36.98 / 26.03	117.54 / 37.64 / 25.3	56.21 / 38.07 / 13	56.01 / 37.68 / 24.68	54.04 / 27.37 / 15.94	74.53 / 41.23 / 29.3	158.95 / 39.8 / 28.08	80.12 / 46.43 / 32.24
126 / 149	96 / 124	97 / 125	126 / 148	98 / 125	112 / 140	123 / 148	105 / 132	128 / 151
255.3 / 133.4 / 65.7	173.3 / 97.3 / 45.4	172.6 / 96.4 / 46.4	233.2 / 123.2 / 61.3	177.2 / 97.7 / 48.6	192.6 / 106.8 / 48	234.1 / 124.5 / 62.12	194.6 / 102.2 / 47.5	286.4 / 137.3 / 66.8
368.5 / 189.7 / 93.2	218.5 / 128.5 / 70.7	223.3 / 127 / 70.2	356.3 / 177.5 / 87.5	216.3 / 127.7 / 71.3	254.2 / 144.4 / 77.2	355.91 / 178.19 / 89.74	233.5 / 131.9 / 72	389.5 / 196.5 / 95.4
8 / 7.75	8 / 8	8 / 8	8 / 7.75	8 / 8	8 / 8	8 / 7.75	8 / 8	8 / 7.75

priced offerings that can easily run most games, excluding the deadly duo of *Crysis Warhead* and *Clear Sky*.

When talking graphics cards, bang-for-buck is all that matters and our two *Best Buy* winners have that in spades. Sapphire's Radeon HD 4850 and Galaxy's GeForce GTS 250 win owing to their very competent pricing. The *Best Performer* was none other than ATI's newcomer – the Radeon HD 5770 – DX11

support, great performance in DX 10 games and a new 40 nm process that means its quite affordable at just under Rs. 10,000. Being super new, this was the only 5770 card we received, but other manufacturers are bound to come up with offerings and a couple of vendors have promised us Radeon 5770s which we should have by the time you're reading this.



ATI Radeon HD 5770

Mid-Range cards above Rs. 10,000

This has to be a category for the rich. We say this because many of the cards in this category don't offer optimal bang for buck. If you take a look at the neighbouring high-end cards you'll see many of them are priced similarly. This may seem weird – having two cards with the same price in two different categories but we felt that it should be the lineage of the GPU

Mid-Range Graphic Cards

					Above Rs. 10,000	
Brand	MSI	MSI	ZOTAC	ATI	ASUS	Sapphire
Model	R4850-T2D512	N9800GTX-T2D512	GeForce GTS 250 AMP! 1 GB	Radeon HD 5770	EN 9800 GT HB	Radeon HD 4850 1 GB
GPU	Radeon HD 4850	GeForce 9800GTX	GeForce GTS 250	Radeon HD 5770	GeForce 9800GT	Radeon HD 4850
Price (Rs)	Rs. 9,000	Rs. 9,500	Rs. 9,900	Rs. 9,990	Rs. 10,850	Rs. 10,900
Grand Totals (Out of 100)	56.93	59.74	69.36	72.31	51.61	63.77
Features (Out of 15)	6.98	5.85	8.18	7.13	6.98	6.38
Performance (Out of 85)	49.95	53.89	61.18	65.18	44.63	57.39
Features						
No. of Stream Processors	160 (800 / 5)	128	128	800	112	160 (800 / 5)
Core / Shader Clock (MHz)	625 / -	720 / 1750	750 / 1890	850 / -	600 / 1500	625 / -
Memory Type / Memory Clock (MHz)	GDDR3 / 1986	GDDR3 / 2200	GDDR3 / 2300	GDDR5 / 4800	GDDR3 / 1800	GDDR3 / 1986
Memory size (MB) / Interface	512 / 256-bit	512 / 256-bit	1024 / 256-bit	1024 / 128-bit	512 / 256-bit	1024 / 256-bit
Connects on card	2 x DVI, 1 x S-Video	2 x DVI, 1 x S-Video	2 x DVI, 1 x S-Video	2 x DVI, 1 x HDMI, 1 x DisplayPort	2 x DVI, 1 x S-Video	1 x DVI, 1 D-Sub, 1 x HDMI
In the Box						
Bundled Connects and Cables	1 x DVI-D-Sub converter, Crossfire connect, S-Video-Composite connect, S-Video to component	1 x DVI-D-Sub converter, Crossfire connect, S-Video-Composite connect, S-Video to component	1 x DVI - D-Sub converter, 2 x 6 pin to 4 pin molex power converter	-	1 x DVI - D-Sub converter, 1 x DVI - HDMI converter, HDMI audio cable, 1 x 6 pin to 4 pin molex power converter	1 x DVI - D-Sub converter, 1 x HDMI converter, 1 x 4 pin - 6 pin molex power converter
Software and Games	-	-	XIII Century: Death Or Glory	-	-	-
Performance						
Temperature (Idle / load)	45 / 85	40 / 58	44 / 57	46 / 57	52 / 62	44 / 56
3D Mark Vantage (Overall / GPU)	8322 / 6936	8223 / 6462	8699 / 6853	10124 / 8657	6019 / 4623	8480 / 7077
Game Benchmarks (in frames per second)						
Crysis Warhead (1680 x 1050, Max / Avg / Min)	19 / 14 / 9	21 / 14 / 8	23 / 16 / 10	22 / 16 / 10	18 / 12 / 7	29 / 16.7 / 10.2
Crysis Warhead (1280 x 1024, Max / Avg / Min)	25 / 17 / 12	29 / 18 / 11	30 / 20 / 13	28 / 19 / 13	23 / 15 / 9	40 / 21.4 / 12.4
S.T.A.L.K.E.R Clear Sky (Day, 1680 x 1050, Max / Avg / Min)	28.5 / 15.5 / 9	41.3 / 13.5 / 5.3	31.5 / 16.8 / 10.2	36.9 / 19.3 / 10.5	23.3 / 9.9 / 4.5	29 / 16.9 / 10.6
S.T.A.L.K.E.R Clear Sky (Day, 1280 x 1024, Max / Avg / Min)	39.6 / 20.1 / 7.5	44.3 / 17.2 / 7.5	46.7 / 21.4 / 12.9	50.3 / 23.9 / 13.5	34.2 / 12.3 / 2.6	40.1 / 21.4 / 12.3
Far Cry 2 (1680 x 1050, Ultra High, 4x AA) Max / Avg / Min	37.8 / 18.06 / 7.81	56.33 / 34.23 / 11.3	58.8 / 41.41 / 30.13	150.41 / 43.45 / 28.02	43.23 / 26.23 / 16.85	50.27 / 33.9 / 23.14
Far Cry 2 (1280 x 1024, Ultra High, 4x AA) Max / Avg / Min	53.57 / 36.99 / 24.03	65.27 / 41.62 / 18.78	80.36 / 47.23 / 35.32	130.49 / 51.4 / 36.82	46.32 / 32.12 / 24.78	149.5 / 40.56 / 28.73
Unreal Tournament 3 (1680 x 1050 / 1280 x 1024)	107 / 133	128 / 146	129 / 152	125 / 153	93 / 112	107 / 135
Company Of Heroes: Tales Of Valor (1680 x 1050, Max / Avg / Min)	195 / 101.8 / 47.1	323.2 / 137.4 / 61.4	289.1 / 138.5 / 67.5	282.8 / 147.1 / 69.5	183.3 / 89.3 / 43.2	188 / 102.5 / 45.3
Company Of Heroes: Tales Of Valor (1280 x 1024, Max / Avg / Min)	246.2 / 135.8 / 69.7	412 / 176.1 / 89.2	398.8 / 197.2 / 97.3	383 / 200.3 / 106.4	302.5 / 129.4 / 64.9	237 / 136.9 / 70
Visual Quality (Out of 10)						
Crysis Warhead / S.T.A.L.K.E.R Clear Sky	8 / 8	8 / 7.75	8 / 7.75	9 / 8.5	8 / 7.75	8 / 8

and not the price tag of the card that determines its placement either the high-end or mid-range category. ASUS' Radeon HD 4850 MATRIX has a dual-slot, dual-fan cooler but it's the tiny cooler aboard the ASUS 4850 TOP that takes the cake as far as cooling goes. MSIs N9800GTX PLUS-T2D512-OC was a real cool customer in 2D mode, but start up a game and this card clocked the highest temperature in this category (65 degrees). While not dangerous, you will need good air circulation inside the cabinet you're using.

Among these cards as in

the previous category, we see the Radeon HD 4850 vying for power with the GeForce 9800 GTX cards. With the resolution and details cranked all the way up, these cards start to huff and puff when running *Clear Sky* and *Warhead*. At times we see an inexplicable drop in frames, like the ASUS Radeon HD 4850 TOP dropping to a minimum of 4 fps in Far Cry 2 at a resolution of 1680 x 1050. Such oddities are difficult to explain – it could be due to the card overheating at some point or some internal fault in terms of design could be the culprit. The ATI cards seem

a little better equipped to handle demanding resolutions and the Sapphire HD 4850 with 1 GB of RAM clearly has a lead especially in the minimum fps values. This makes us believe that the extra video RAM is alleviating the bottleneck that occurs with higher resolutions and visual settings. This means the GPU on the 4850 is powerful enough to be bottlenecked by 512 MB of RAM, something not commonly seen on cards in this price range. Unfortunately, this card is also comparable in price to some of the high-end graphics cards including some of the cheaper

Radeon HD 4870 cards, needless to say someone shopping for a graphics card in this price range should consider buying one based on a higher GPU.

High-end cards up to Rs. 17,500

A small but increasing number of gamers and enthusiasts in our country are shopping for the right GPU in the price range of Rs. 15,000 and though, (we repeat), this is a rarity it's also an interesting category for a number of reasons. For one, prices of GPUs have tumbled and while Rs. 15,000 may be considered



Stream power

NVIDIA shows interest in using CUDA with antivirus software

YouTube, the popular online video hosting service gets a billion views a day

Graphic Cards Test

MADE FOR EACH OTHER

Matching your display size with your graphics card

So you just spent Rs. 15,000 on a new graphic card and you're burning to see how good *Crysis Warhead* looks on a large screen. So you buy a 24-inch LCD monitor. Upon running the game at a glorious resolution of 1920 x 1200 pixels at ultra settings you suddenly realise your game is framing and in-game gunfights sequences appear to run in slow motion. You, sir, are a victim of 'improper-display-matching' as we like to call it. The fact is when choosing a monitor for gaming you need to be doubly careful about the kind of games you're going to be running. There's no sense in buying a super large monitor only to find the games you play slowing to a crawl and having to adjust the resolution and/or eye-candy down as it'll ruin the experience. Unless you've got pots of money to blow on SLI and Crossfire configurations involving high-end cards, pay close attention to which games you play and how fast they run on your current monitor and resolution. For people looking to play demanding games like *Warhead*, *Clear Sky*, *GRID 2* and so on here are a few formulae to help you: generally, for an NVIDIA GTX 260 / ATI HD 4870 class card, we recommend a 19 to 22-inch display, nothing larger. This equals a resolution of 1680 x 1050 pixels. Those with NVIDIA GTX 285 / ATI HD 4890 and above cards can consider a 24-inch display (equating to 1920 x 1200 pixels). If you have anything in the GeForce 9800 GTX / Radeon HD 4850 range of cards forget about anything larger than a 19-inch LCD with a maximum resolution of 1440 x 900 pixels. This will ensure your games run at playable fps, although to be honest this is also dependent on the games you play.

MSI	ASUS	ASUS	ASUS	ASUS
N9800GTX PLUS-T2D512-OC	EN 9800 GT MATRIX	EAH 4850 TOP	EAH 4850 MATRIX	EN 9800GTX DK TOP
GeForce 9800GTX	GeForce 9800GT	Radeon HD 4850	Radeon HD 4850	GeForce 9800GTX
Rs. 11,000	Rs. 13,000	Rs. 14,950	Rs. 15,700	Rs. 15,700
63.51	51.47	58.94	58.74	62.48
5.85	5.48	6.23	5.85	6.60
57.66	45.99	52.71	52.89	55.88
128	112	160 (800 / 5)	160 (800 / 5)	128
760 / 1880	600 / 1500	680 / -	625 / -	775 / 1950
GDDR3 / 2300	GDDR3 / 2600	GDDR3 / 2100	GDDR3 / 1986	GDDR3 / 2360
512 / 256-bit	512 / 256-bit	512 / 256-bit	512 / 256-bit	512 / 256-bit
2 x DVI, 1 x S-Video	1 x DVI, 1 x S-Video, 1 x HDMI	2 x DVI, 1 x S-Video	2 x DVI, 1 x S-Video	2 x DVI, 1 x S-Video
1 x DVI-D-Sub converter, Crossfire connect, S-Video-Composite connect, S-Video to component	1 x DVI - D-Sub converter, 1 x DVI - HDMI converter, HDMI audio cable, 1 x 6 pin to 4 pin molex power converter	1 x DVI - D-Sub converter, 1 x DVI - HDMI converter, HDMI audio cable, 1 x 6 pin to 4 pin molex power converter	1 x DVI - D-Sub converter, 1 x DVI - HDMI converter, HDMI audio cable, 1 x 6 pin to 4 pin molex power converter	1 x DVI - D-Sub converter, 1 x DVI - HDMI converter, HDMI audio cable, 1 x 6 pin to 4 pin molex power converter
-	-	-	-	-
41 / 62	52 / 65	45 / 51	43 / 55	52 / 60
8798 / 6936	6221 / 4789	9092 / 7655	8499 / 7098	9041 / 7137
23 / 16 / 10	18 / 12 / 6	20 / 14 / 6	20 / 14 / 9	24 / 16 / 10
30 / 19 / 12	23 / 15 / 8	25 / 18 / 12	24 / 17 / 11	31 / 20 / 12
45.1 / 18 / 7.4	23.5 / 10 / 4.8	30.5 / 16.5 / 9	28.5 / 15.5 / 9.1	32.4 / 13.2 / 5.5
46.1 / 18.1 / 8.7	31.4 / 13.4 / 6.4	42.4 / 21.1 / 7.5	39.7 / 20.1 / 8.3	46.7 / 18.4 / 7
58.37 / 38.2 / 16.23	46.03 / 28.23 / 14.88	41.75 / 17.97 / 4.04	47.22 / 30.44 / 19.01	55.6 / 37.14 / 12.75
67.4 / 42.92 / 20.19	50.61 / 36.24 / 22.37	163.69 / 39.87 / 28.06	51.1 / 26.86 / 15.8	93.01 / 44.07 / 20.32
130 / 163	99 / 122	114 / 143	108 / 136	132 / 155
289 / 138.3 / 65.2	239.2 / 104.8 / 47.9	197 / 108.5 / 50.7	253 / 140.9 / 70.7	319.6 / 143.9 / 64.3
425.5 / 190.1 / 93	326.6 / 146.2 / 76.7	250 / 148.8 / 72.2	196 / 103 / 44.9	420 / 199.8 / 100.8
8 / 7.75	8 / 7.75	8 / 8	8 / 8	8 / 7.75

an extravagance by some there is actually good value-for-money to be had. Sounds shocking doesn't it? People build entire PCs for Rs. 15,000 these days, but we're not talking about *those* PCs. We're talking about gaming rigs replete with quad core processors, 4 GB of RAM and RAID 0 storage etc. ATI's Radeon HD 4870 and newer 4890 clash with NVIDIA's GTX 260 and GTX 275 GPUs. And a mighty battle it is, with contestants from both sides drawing blood. One thing needs clearing, NVIDIA officially has two versions of the GTX 260 and the naming convention

used to distinguish between the two is horrible. The older, (and supposedly phased out), GPU, is called the GTX 260 and has 192 stream processors. The newer one has 216 stream processors and is called the GTX 260 216. Some people like ZOTAC choose to call theirs the GTX 260² while others like ASUS and XFX do not really differentiate and the only way we could tell the

difference was using GPU-Z. Although the newer 216 SP GPU is faster, an overclocked GTX 260 can easily perform comparably. ATI's



Palit GTX 260 SONIC 216

Radeon HD 4870 and 4890 are also nearly identical GPUs. AMD chose to keep the same number of clusters of SPs, so both have 800 units. However, the clocks on the HD 4890 are higher, evidently with the 4870 over-clocking really well, it was only a matter of time before AMD tweaked things. With the core running at a whopping 850 MHz, the HD 4890 meant to take on the GTX 275, while the HD 4870 is positioned against the GTX 260 216.

Unlike the HD 4850 that had a pretty useless single-slot cooling solution the HD 4870

High-end Graphics Cards

Up to Rs. 17,500							
Brand	PowerColor	ZOTAC	Palit	XFx	ZOTAC	XFx	
Model	AX HD 4870 1GB	GeForce GTX 260 ²	GTX 260 216 SONIC	GX-260X-ADJF	GeForce GTX 260 ² AMP!	GX-260X-AHBF (Black Edition)	
GPU	Radeon HD 4870	GeForce GTX 260 216	GeForce GTX 260 216	GeForce GTX 260	GeForce GTX 260 216	GeForce GTX 260 216	
Price (Rs)	Rs. 11,000	Rs. 11,000	Rs. 11,200	Rs. 11,500	Rs. 11,500	Rs. 12,000	Rs. 12,500
Grand Totals (out of 100)	54.00	55.48	55.66	57.68	54.22	58.77	58.26
Features (Out of 10)	6.05	4.95	7.60	6.25	6.15	7.40	6.15
Performance (Out of 90)	47.95	50.53	48.06	51.43	48.07	51.37	52.11
Features							
No. of Stream Processors	160 (800 / 5)	160 (800 / 5)	216	216	192	216	216
Core / Shader Clock (MHz)	750 / -	770 / -	576 / 1242	- / -	576 / 1296	650 / 1400	666 / 1440
Type of memory / Memory Clock (MHz)	GDDR5 / 3600	GDDR5 / 3600	GDDR3 / 1998	GDDR3 / -	GDDR3 / 2000	GDDR3 / 2100	GDDR3 / 2300
Memory size (MB) / Memory Interface	1,024 / 256-bit	1,024 / 256-bit	896 / 448-bit	896 / 448-bit	896 / 448-bit	896 / 448-bit	896 / 448-bit
Connects on card	DVI x 2, S-Video x 1	DVI x 2, S-Video x 1	DVI x 2, S-Video x 1	DVI x 2, S-Video x 1	DVI x 2, S-Video x 1	DVI x 2, S-Video x 1	DVI x 2, S-Video x 1
In the Box							
Bundled Connects and Cables	1 x 4 pin to 6 pin molex, 1 x DVI-D-Sub converter, 1 x S-Video - Component	1 x DVI-D-Sub converter, S-video-Composite connect	2 x 4pin to 6 pin molex, 1 x DVI-D-Sub converter, 1 x DVI-HDMI converter, HDMI audio cable	2 x 4pin to 6 pin molex, 1 x DVI-D-Sub converter, 1 x DVI-HDMI converter, audio cable	1 x 4 pin to 6 pin molex, 1 x DVI-D-Sub converter, 1 x S-Video - Component	2 x 4pin to 6 pin molex, 1 x DVI-D-Sub converter, 1 x DVI-HDMI converter, HDMI audio cable	1 x 4 pin to 6 pin molex, 1 x DVI-D-Sub converter, 1 x S-Video - Component
Software and Games	-	-	3D Mark Vantage Advanced, Race Driver Grid	3D Mark Vantage Advanced, Race Driver Grid	Far Cry 2	3D Mark Vantage Advanced, Race Driver Grid	Far Cry 2
Performance							
Temperature (Idle / load)	44 / 50	45 / 51	50 / 68	46 / 66	47 / 70	46 / 72	43 / 71
3D Mark Vantage (Overall / GPU)	10,507 / 9,022	10,914 / 9,425	11,484 / 9,197	12,640 / 10,162	11,610 / 9,298	12,835 / 10,321	12,896 / 10,387
Game Benchmarks							
Crysis Warhead (1680 x 1050, Max / Avg / Min)	25 / 19 / 14	26 / 20 / 15	26 / 20 / 14	29 / 22 / 17	26 / 20 / 14	29 / 22 / 16	30 / 22 / 15
Crysis Warhead (1920 x 1200, Max / Avg / Min)	21 / 16 / 12	21 / 17 / 12	21 / 16 / 12	23 / 18 / 14	21 / 16 / 12	23 / 18 / 13	24 / 18 / 12
S.T.A.L.K.E.R Clear Sky (Day, 1680 x 1050, Max / Avg / Min)	38.1 / 20.4 / 9.4	39.2 / 21.8 / 11.2	39.7 / 20.9 / 12.8	43.8 / 22.8 / 13.9	40 / 21 / 12.9	43.9 / 23 / 13.7	43.6 / 23 / 14.2
S.T.A.L.K.E.R Clear Sky (Day, 1920 x 1200, Max / Avg / Min)	32.3 / 18.2 / 9.5	33.1 / 19.3 / 9.7	30.2 / 16.4 / 7	33.4 / 18 / 7.2	30.5 / 16.5 / 7.2	33.5 / 18 / 7.4	33.1 / 18.2 / 7.5
Far Cry 2 (1680 x 1050, Max / Avg / Min)	151.71 / 40.77 / 28.32	154.59 / 44.55 / 31.64	84.34 / 47.89 / 36.72	83.22 / 51.18 / 38.12	69.28 / 48.26 / 37.02	105.86 / 53.05 / 40.04	95.55 / 53.22 / 39.68
Far Cry 2 (1920 x 1200, Max / Avg / Min)	53.42 / 37.75 / 27.86	135.5 / 40.84 / 27.29	62.18 / 43.24 / 32.41	68.1 / 47.53 / 34.37	61.57 / 43.22 / 33.21	68.07 / 47.54 / 35.32	89.8 / 47.56 / 35.75
Unreal Tournament 3 (1680 x 1050 / 1920 x 1200)	141 / 115	146 / 119	138 / 118	149 / 129	138 / 118	149 / 129	148 / 129
Company Of Heroes: Tales Of Valor (1680 x 1050, Max / Avg / Min)	233.5 / 120.6 / 55.1	248.5 / 130.8 / 54.9	388 / 162.9 / 72.3	381.6 / 179.3 / 85.1	283 / 140.3 / 58.3	366.6 / 179 / 82.2	384.4 / 183.7 / 87.3
Company Of Heroes: Tales Of Valor (1920 x 1200, Max / Avg / Min)	195.8 / 102.6 / 46	200.5 / 107.4 / 47.7	282 / 134.5 / 61.8	310.6 / 149.2 / 67.4	372.6 / 168.4 / 75.5	311.6 / 150.2 / 64.8	350 / 156.5 / 78
Visual Quality (Out of 10)							
Crysis Warhead / S.T.A.L.K.E.R Clear Sky	8 / 8	8 / 8	8 / 7.75	8 / 7.75	8 / 7.75	8 / 7.75	8 / 7.75



ZOTAC GeForce GTX 260² AMP! Edition

has a nice dual-slot cooler.

PowerColor goes a step further with a custom heatsink that although bulky looks neat with three embedded heatpipes. Palit's GTX 260 216 SONIC also has a custom cooler, whose design is shared by all Palit's 'SONIC'

editions. The cooler is large, but the shroud is plastic and the heatsink minimal keeping its weight down. There are two large fans that do a pretty good job of cooling as we see XFX and ZOTAC cards with stock solutions get quite hot during testing. Curiously, while the heatsinks become quite hot to touch, the temperature showed by Riva Tuner is not as high as

expected. We feel this is actually good heatsink design since the GPU core is cooler and heat is being whisked away into the metal parts of the heatsink thereby radiating away from the core. On that note, kudos to everyone who participated in this test – not a single card crashed throughout the entire test. Even XFX's HD-489A-ZDD7 (HD 4890) clocked at

					Rs. 17,501 to Rs. 24,500				
PowerColor	ASUS	Galaxy	ZOTAC	FXF	ASUS	ZOTAC	ZOTAC	ASUS	
AX HD 4890	EN GTX 260 MATRIX	GeForce GTX 275 896M	GeForce GTX 275	HD-489A-ZDD7	EAH 4890	GeForce GTX 285	GeForce GTX 285 AMP!	EN GTX 275	
Radeon HD 4890	GeForce GTX 260 216	GeForce GTX 275	GeForce GTX 275	Radeon HD 4890	Radeon HD 4890	GeForce GTX 285	GeForce GTX 285	GeForce GTX 275	
Rs. 12,750	Rs. 13,850	Rs. 14,000	Rs. 14,000	Rs. 14,500	Rs. 19,500	Rs. 21,000	Rs. 22,000	Rs. 22,000	
56.78	55.53	59.30	61.33	58.53	58.57	65.28	66.98	60.18	
5.15	6.75	5.25	7.40	6.25	5.90	7.60	7.60	6.05	
51.63	48.78	54.05	53.93	52.28	52.67	57.68	59.38	54.13	
160 (800 / 5)	216	240	240	160 (800 / 5)	160 (800 / 5)	240	240	240	
850 / -	576 / 1242	633 / 1404	633 / 1404	900 / -	850 / -	648 / 1476	702 / 1512	633 / 1404	
GDDR5 / 3900	GDDR3 / 2000	GDDR3 / 2262	GDDR3 / 2268	GDDR5 / 3900	GDDR5 / 3900	GDDR3 / 2484	GDDR3 / 2592	GDDR3 / 2268	
1,024 / 256-bit	896 / 448-bit	896 / 448-bit	896 / 448-bit	1,024 / 256-bit	1,024 / 256-bit	1,024 / 512-bit	1,024 / 512-bit	896 / 448-bit	
DVI x 2, S-Video x 1	DVI x 2, S-Video x 1	DVI x 2, S-Video x 1	DVI x 2, S-Video x 1	DVI x 2, S-Video x 1	DVI x 2, S-Video x 1	DVI x 2, S-Video x 1	DVI x 2, S-Video x 1	DVI x 2, S-Video x 1	
1 x DVI-D-Sub converter, Crossfire connect, DVI-HDMI converter, S-Video-Composite connect, S-Video to component	Leather mouse-pad, 1x 4pin to 6 pin molex, 1 x DVI-D-Sub converter, 1 x S-Video to component converter	DVI - D-Sub converter, 1 x 4 pin - 6 pin power converter	2x 4pin to 6 pin molex, 1 x DVI-D-Sub converter, 1 x DVI-HDMI converter, HDMI audio cable	1 x 4 pin to 6 pin molex, 1 x DVI-D-Sub converter, 1 x S-Video - Component, DVI - HDMI converter, S-Video to Composite converter	1x 4 pin to 6 pin molex, 1 x DVI-D-Sub converter, Crossfire connect	2 x 4 pin to 6 pin molex, 1 x DVI-D-Sub converter, 1 x DVI-HDMI converter, HDMI audio cable	2 x 4 pin to 6 pin molex, 1 x DVI-D-Sub converter, 1 x DVI-HDMI converter, HDMI audio cable	Leather mouse-pad, 1 x 4 pin to 6 pin molex, 1 x DVI-D-Sub converter, 1 x S-Video to component converter	
-	10% off discount coupon on up to 5 games	-	3D Mark Vantage Advanced, Race Driver Grid	HAWX	-	3D Mark Vantage Advanced, Race Driver Grid, Terminator Salvation download Voucher	3D Mark Vantage Advanced, Race Driver Grid, Terminator Salvation download Voucher	10% off discount coupon on up to 5 games	
48 / 65	41 / 60	46 / 67	43 / 71	49 / 65	48 / 62	46 / 75	52 / 72	50 / 69	
11,826 / 10322	11,589 / 9,285	13,786 / 11,110	13,673 / 11,020	12,334 / 10,839	11,858 / 10,355	14,739 / 11,945	15,567 / 12,650	13,786 / 11,124	
28 / 21 / 16	26 / 20 / 14	30 / 23 / 16	32 / 23 / 16	30 / 22 / 16	28 / 22 / 15	33 / 24 / 20	36 / 26 / 19	32 / 25 / 17	
24 / 18 / 13	21 / 16 / 12	25 / 19 / 14	25 / 19 / 14	24 / 19 / 13	23 / 18 / 14	26 / 20 / 17	28 / 22 / 16	23 / 18 / 13	
43 / 24.1 / 15.1	40 / 20.9 / 12.9	47.5 / 24.5 / 14.9	46.9 / 24.3 / 14.9	44.8 / 25.4 / 16.1	43.1 / 24 / 12	51.5 / 26.6 / 16	54.2 / 28 / 16.9	48.4 / 24.6 / 15	
36.3 / 21 / 10.2	30.5 / 16.5 / 7.2	36.2 / 19.2 / 8	35.8 / 19.2 / 7.9	37.9 / 21.9 / 11	36.4 / 21.2 / 10.5	39.4 / 21.2 / 13.6	41.9 / 22.4 / 14.2	36.1 / 19.5 / 8.3	
71.65 / 48.56 / 27.92	95.49 / 48.32 / 35.53	94.35 / 54.77 / 41.33	99.4 / 55.27 / 39.79	75.08 / 50.75 / 21.76	129.28 / 48.61 / 35.63	99.2 / 57.17 / 42.5	106.99 / 61.34 / 45.72	95.71 / 54.7 / 41.27	
147.3 / 44.94 / 31.28	69.8 / 43.07 / 32.49	81.83 / 49.27 / 37.08	91.61 / 49.64 / 37.14	123.66 / 46.58 / 33.36	138.8 / 44.94 / 31.68	88.35 / 51.6 / 39.39	94.62 / 55.24 / 41.26	100.44 / 49.25 / 37.18	
158 / 129	139 / 118	155 / 136	153 / 134	163 / 134	157 / 130	165 / 150	166 / 149	163 / 135	
275.1 / 138.1 / 68.1	319 / 137.2 / 60.2	403 / 199.1 / 94.9	415.5 / 193.6 / 92.2	268.4 / 145.8 / 67.2	257.7 / 142.6 / 62.4	465 / 206 / 97	499 / 216.9 / 90.6	408.5 / 194.6 / 96	
221.3 / 119.6 / 49.8	291.1 / 139.3 / 58.1	349 / 169.6 / 85	347.3 / 157.6 / 76.6	226.7 / 128 / 56.1	247.5 / 141 / 63.9	366.2 / 170.9 / 82	395.2 / 183.9 / 83.4	351.6 / 166 / 78.9	
8 / 8	8 / 7.75	8 / 7.75	8 / 7.75	8 / 8	8 / 8	8 / 7.75	8 / 7.75	8 / 7.75	



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High end Graphic Cards Test

					Above Rs. 24,500	
Brand	ASUS	ASUS	ASUS	ASUS	ATI	Sapphire
Model	EAH 4870 TOP	EAH 4870	EN GTX 260	EAH 4870 MATRIX	Radeon HD 5870	HD 5870
GPU	Radeon HD 4870	Radeon HD 4870	GeForce GTX 260 216	Radeon HD 4870	Radeon HD 5870	Radeon HD 5870
Price (Rs)	Rs. 22,175	Rs. 22,425	Rs. 22,800	Rs. 24,295	Rs. 24,990	Rs. 26,000
Grand Totals (out of 100)	49.81	46.78	52.33	52.54	71.96	75.61
Features	5.90	5.60	5.95	5.60	3.65	5.70
Performance	43.91	41.18	46.38	46.94	68.31	69.91
Features						
No. of Stream Processors	160 (800 / 5)	160 (800 / 5)	192	160 (800 / 5)	320 (1600 / 5)	320 (1600 / 5)
Core / Shader Clock (MHz)	815 / -	750 / -	576 / 1242	770 / -	850 / -	850 / -
Type of memory / Memory Clock (MHz)	GDDR5 / 3700	GDDR5 / 3600	GDDR3 / 2000	GDDR5 / 3680	GDDR5 / 4800	GDDR5 / 4800
Memory size (MB) / Memory Interface	512 / 256-bit	512 / 256-bit	896 / 448-bit	512 / 256-bit	1024 / 256-bit	1024 / 256-bit
Connects on card	DVI x 2, S-Video x 1	DVI x 2, S-Video x 1	DVI x 2, S-Video x 1	DVI x 2, S-Video x 1	2 x DVI, 1 x HDMI, 1 x Display Port	2 x DVI, 1 x HDMI, 1 x Display Port
In the Box						
Bundled Connects and Cables	1 x 4 pin to 6 pin molex, 1 x DVI-D-Sub converter, Crossfire connect	1 x 4 pin to 6 pin molex, 1 x DVI-D-Sub converter, 1 x S-Video to component converter	Leather mousepad, 1 x 4 pin to 6 pin molex, 1 x DVI-D-Sub converter, 1 x S-Video to component converter	Leather mousepad, 1 x 4 pin to 6 pin molex, 1 x DVI-D-Sub converter, 1 x S-Video to component converter	1 x 4 pin to 6 pin molex, 1 x DVI-D-Sub converter, Crossfire connect	2 x 4 pin to 6 pin molex, 1 x DVI-D-Sub converter
Software and Games	-	-	Alone in the Dark	-	NA	Battlestations Pacific, Dirt 2 voucher
Performance						
Temperature (Idle / load)	51 / 67	49 / 76	44 / 71	50 / 63	48 / 61	48 / 61
3D Mark Vantage (Overall / GPU)	11,277 / 9,780	10,648 / 9,148	10,778 / 8,613	10,637 / 9,353	16,832 / 15,845	16,991 / 15,984
Game Benchmarks						
Crysis Warhead (1680 x 1050, Max / Avg / Min)	26 / 19 / 13	25 / 18 / 13	25 / 19 / 13	24 / 18 / 13	38 / 28 / 21	39 / 29 / 21
Crysis Warhead (1920 x 1200, Max / Avg / Min)	21 / 16 / 11	21 / 15 / 11	20 / 16 / 10	19 / 14 / 9	33 / 24 / 17	34 / 25 / 18
S.T.A.L.K.E.R Clear Sky (Day, 1680 x 1050, Max / Avg / Min)	34.4 / 20 / 10.5	36.8 / 19.1 / 9.7	37.1 / 19.7 / 12.1	40.2 / 21 / 9.2	70.2 / 35.6 / 15.7	71.9 / 36.3 / 16.1
S.T.A.L.K.E.R Clear Sky (Day, 1920 x 1200, Max / Avg / Min)	29.6 / 17.6 / 6.5	28.4 / 16.6 / 6	28.6 / 15.5 / 6.8	32.3 / 17.3 / 6.2	58.6 / 30.2 / 14.2	60.5 / 31.6 / 14.7
Far Cry 2 (1680 x 1050, Max / Avg / Min)	60.12 / 37.03 / 15.62	54.04 / 24.27 / 10.78	83.57 / 47.16 / 34.8	155.3 / 43.63 / 30.43	128.6 / 76.2 / 53.4	144.79 / 76.26 / 55.76
Far Cry 2 (1920 x 1200, Max / Avg / Min)	55.73 / 35.96 / 17.99	52.03 / 29.14 / 10.55	61.36 / 41.97 / 31.14	134.32 / 40.11 / 26.33	138.5 / 66.4 / 46.74	139.04 / 67.08 / 47.22
Unreal Tournament 3 (1680 x 1050 / 1920 x 1200)	151 / 123	143 / 116	133 / 113	147 / 118	194 / 169	195 / 171
Company Of Heroes: Tales Of Valor (1680 x 1050, Max / Avg / Min)	235 / 132.8 / 58.7	219.7 / 124.9 / 57.6	332 / 156.5 / 62.6	253.2 / 130.2 / 53.1	445.3 / 215.3 / 100.2	434.5 / 219 / 101.1
Company Of Heroes: Tales Of Valor (1920 x 1200, Max / Avg / Min)	203.5 / 110 / 47.6	195.2 / 107.2 / 42.8	287 / 129 / 50.4	198.5 / 105.3 / 45.4	478.3 / 241.4 / 110.3	502.4 / 266.3 / 130.7
Visual Quality (Out of 10)						
Crysis Warhead / S.T.A.L.K.E.R Clear Sky	8 / 8	8 / 8	8 / 7.75	8 / 8	9 / 8.5	9 / 8.5



ZOTAC GeForce GTX 285

an incredible 900 MHz showed no signs of overheating – testament to build quality as well as ATI's excellent RV 770 GPU.

Warhead proves a bit too much for these cards. Sure, the maximum fps values are impressive but it isn't representative of gameplay. When one looks at the minimum fps values, we find none of these cards can reach even 20 fps at a modest resolution of 1680 x 1050 pixels

– definitely not for the hardcore gamer who wants a future-proof offering. *Clear Sky* is nearly as bad and at times worse. In fact, owing to the huge levels and viewing distance, the frames dip to unplayable levels when settings are maxed on these cards. *Far Cry 2* is playable, but starts to become a little choppy at a resolution of 1920 x 1200 pixels; however, if one turns off FSAA, things become much better. *Warhead* is one game where FSAA kills nearly all cards. Thankfully, the game looks great

without enabling FSAA and jagged edges aren't as apparent. Older games like *UT 3* and *Tales Of Valor* are no challenge for these cards. A strange trend is noticed when one looks closely at the fps scores. While *Warhead* and *Clear Sky* are equally hard on both ATI and NVIDIA cards, *Far Cry 2*, which is also a new game seems to favour the Radeon HD 4890 over the GTX 260 cards. *UT 3* is also faster on ATI hardware, only *Tales Of Valor* favours NVIDIA.

If you're looking at value for

ASUS EN GTX 285	ASUS EN GTX 285 TOP	ZOTAC GeForce GTX 295	ASUS EAH 5870	FXF GX-295N-HWFF	ASUS EN GTX 295	ASUS EAH HD 4870 x2	ASUS EAH HD 4870 x2 TOP
GeForce GTX 285	GeForce GTX 285	GeForce GTX 295	Radeon HD 5870	GeForce GTX 295	GeForce GTX 295	Radeon HD 4870 x2	Radeon HD 4870 x2
Rs. 29,150	Rs. 29,800	Rs. 30,500	Rs. 31,900	Rs. 32,000	Rs. 39,250	Rs. 39,990	Rs. 41,100
63.75	65.60	79.60	74.14	75.11	77.63	74.56	75.09
6.05	6.05	7.95	5.65	4.35	6.30	5.90	5.90
57.70	59.55	71.65	68.49	70.76	71.33	68.66	69.19
240	240	240 x 2	320 (1600 / 5)	240 x 2	240 x 2	160 x 2 (800 x 2 / 5)	160 x 2 (800 x 2 / 5)
648 / 1476	670 / 1550	576 / 1242	850 / -	576 / 1242	576 / 1242	750 / -	790 / -
GDDR3 / 2.484	GDDR3 / 2600	GDDR3 / 1998	GDDR5 / 4800	GDDR3 / 2016	GDDR3 / 1998	GDDR5 / 3600	GDDR5 / 3600
1024 / 512-bit	1024 / 512-bit	896 x 2 / 448-bit	1024 / 256-bit	896 x 2 / 448-bit	896 x 2 / 448-bit	2048 / 256-bit	2048 / 256-bit
DVI x 2, S-Video x 1	DVI x 2, S-Video x 1	DVI x 2, HDMI x 1	2 x DVI, 1 x HDMI, 1 x Display Port	DVI x 2	DVI x 2, HDMI x 1	DVI x 2, S-Video x 1	DVI x 2, S-Video x 1
Leather mousepad, 1 x 4 pin to 6 pin molex, 1 x DVI-D- Sub converter, 1 x S- Video to component converter	Leather mousepad, 1 x 4 pin to 6 pin molex, 1 x DVI-D- Sub converter, 1 x S- Video to component converter	2 x 4 pin to 6 pin molex, 1 x DVI-D- Sub converter, 1 x DVI-HDMI con- verter, HDMI audio cable	1 x 4 pin to 6 pin molex, 1 x DVI- D-Sub converter, Crossfire connect	1 x 4 pin to 6 pin molex, 1 x DVI-D- Sub converter, 1 x DVI-HDMI converter	Leather mousepad, 1 x 4pin to 6 pin molex, 1 x DVI-D- Sub converter, 1 x S- Video to component converter	1 x 4 pin to 6 pin molex, 1 x DVI- D-Sub converter, Crossfire connect	1 x 4 pin to 6 pin molex, 1 x DVI- D-Sub converter, Crossfire connect
10% off discount coupon on up to 5 games	10% off discount coupon on up to 5 games	3D Mark Vantage Advanced, Race Driver Grid, Ter- minator Salvation download Voucher	Dirt 2 voucher	Far Cry 2	10% off discount coupon on up to 5 games	-	-
43 / 69	49 / 70	47 / 76	47 / 61	46 / 70	48 / 76	44 / 79	45 / 87
14,832 / 12,013	15,407 / 12,505	21,656 / 18,324	17,035 / 16,029	22,013 / 18,824	21,870 / 18,640	16,543 / 15,491	17,603 / 16,726
33 / 24 / 20	34 / 25 / 21	52 / 38 / 29	42 / 29 / 21	51 / 36 / 28	53 / 38 / 29	43 / 31 / 22	47 / 32 / 21
26 / 21 / 17	28 / 21 / 18	43 / 32 / 24	34 / 25 / 17	41 / 32 / 24	42 / 32 / 24	38 / 27 / 18	40 / 28 / 18
52.1 / 26.4 / 16	54 / 27.7 / 16.5	83 / 41.4 / 20.9	72.3 / 36.5 / 15.8	83.1 / 41.4 / 18.8	82.8 / 41.4 / 20.4	60 / 33.8 / 13.3	76.1 / 41.4 / 15.5
39.8 / 21.4 / 13.5	42.2 / 22.1 / 14.1	63.4 / 30.1 / 11	60.4 / 31.7 / 14.6	64.4 / 30 / 10.4	63.1 / 29.8 / 10.3	71.3 / 38.4 / 16.3	65 / 36.2 / 13.4
102.1 / 57.46 / 35.33	113.4 / 58.71 / 44.76	129.47 / 85.48 / 59.2	129.14 / 75.71 / 52.37	134.2 / 82.34 / 56.47	138.5 / 82.49 / 55.39	155.94 / 73.96 / 50.92	150.15 / 79.35 / 55.3
88.57 / 51.66 / 38.71	85.04 / 52.57 / 39.48	116.92 / 79.12 / 56.08	111.99 / 66.81 / 38.71	112.46 / 76.21 / 51.35	110.81 / 76.06 / 56.38	160.79 / 66.95 / 44.19	157.38 / 71.31 / 45.26
165 / 145	170 / 150	178 / 177	195 / 171	184 / 178	204 / 176	221 / 195	224 / 174
453 / 204.4 / 98.5	489.2 / 223.2 / 108.6	341.3 / 191.2 / 77.5	451.5 / 236.8 / 109.3	342.3 / 189.3 / 78.2	347 / 195.2 / 78.4	351 / 190.3 / 92.7	331 / 192.3 / 96.3
357.2 / 177.4 / 79.9	374.7 / 185.3 / 84.2	299.5 / 142.3 / 70.1	488 / 237 / 112.4	306.4 / 141.3 / 69.3	310.3 / 143.2 / 71.3	294.1 / 162.9 / 85.1	308.6 / 174.5 / 79.4
8 / 7.75	8 / 7.75	8 / 7.75	9 / 8.5	8 / 7.75	8 / 7.75	8 / 8	8 / 8

money, Palit's GTX 260 216 SONIC and ZOTAC's GTX 260² will satisfy and owing to their price to performance ratio, they're joint winners of our Best Buy award.

High-end cards between Rs. 17,501 and Rs. 24,500

This category is somewhat of a spin-off from the previous one because we found many graphic cards based on the same GPUs but priced higher. This indicates lower value for money, although

there were a couple of GTX 285 cards from ZOTAC that kept things interesting. Other than the ZOTAC cards, the rest of the bunch were all ASUS cards, which are known to be slightly costlier than others. There were ASUS cards based on the GTX 275, GTX 260, HD 4870 and HD 4890 GPUs – all interesting options but not at these prices. The ASUS Radeon EAH 4870 MATRIX was the only card with a custom heatsink; everything else was on reference coolers.

When you are spending this

amount on a graphics card, it goes without saying you're expecting performance, tons of it. Suffice to say, all the Radeon HD 4870 and 4890 cards will not cut it and the ones in this category are in our collective opinion, overpriced, regardless of the features. Give us a lower priced vanilla card sans fancy heatsink anytime. Based on higher-end GPUs, one might

think the ZOTAC cards are built cheaply – quite the contrary! Both of them feature a 10-layer PCB – the stuff that the best cards are built on.





Cyberlink and AMD

The two companies will work hand-in-hand to improve performance using Stream and DirectX 11



320 GB Blu-ray

TDK announces 320GB optical discs which can be played on Blu-ray drives

ZOTAC's duo of GTX 285s are faster than the other cards in this price range and quite understandably so since both feature high-end GPUs with a full 240 stream processors. If you're shopping for a card within this price range you'd probably be best off settling for a ZOTAC GTX 285 – the winner of our Best Buy award. Priced at Rs. 21,000 it blows away everything at a similar price.

High-end cards above Rs. 24,500

This price point is where we start to get dreamy-eyed as all the big guns come out. Admittedly, super high-end cards are the most expensive, but paradoxically manufacturers also make the biggest losses selling them. This is because both NVIDIA and ATI load their biggest, most technologically advanced GPUs on these cards and it is here that the pinnacle of today's technology is found. Two GPUs on a single PCB, 512-bit memory buses and other similarly tantalising goodies are to be found here. No wonder, margins are slim. To be honest, it was surprising to see ZOTAC's GTX 285 cards well below this price point, kudos to them. But it was another entrant that had us all wet-palmed with

excitement: the new Radeon HD 5870 GPU from AMD. Codenamed 'Cypress', there were three of these DX 11 offerings around, one each from ASUS and Sapphire and one reference card from AMD. The Radeon HD 5870 also has a neat cooler – very long, encase entirely in a plastic shroud but owing to the 40 nm process the card doesn't get as hot as its predecessors. While on the topic of monster cards, the GTX 295 is a dual-GPU setup featuring two GTX 285 GPUs (at lower clock speeds) and a massive 1792 MB of DDR3 VRAM. The older Radeon HD 4870 x2 is also around, and ASUS had two cards based on this solution. One of which had one of the most massive looking cooling solutions we've seen, with a large heatsink and three large fans. Needless to say, the 4870 x2 heats up quite a lot and the stock cooling solution doesn't really cut it, making ASUS' innovative heatsink a godsend. XFX also uses a unique cooler on their GTX 295 that looks very similar to the cooling solution on the NVIDIA 7900 GTX of old. There is a full-length heatsink with heatpipes and the fan is larger

than the stock GTX 295 fan and placed in the middle.

With double the shader units of its predecessor, the Radeon HD 5870 is furiously fast, and easily the fastest single-GPU solution till date. It is easily faster than the NVIDIA GTX 285 solutions although it still cannot manage an average fps of 30 running *Crysis Warhead* on either of our test resolutions. Similarly *Clear Sky* is also choppy – it's not often that older generation

fps in *Warhead* at 1920 x 1200 pixels, but the GTX 295 skids past this figure (but only just).

Older games are a cakewalk with these cards, but what's more important is that cards based on the GTX 295, 4870 x2 and 5870 should be able to run most upcoming games. Of course, every category has to have a shining star and ATI's new Cypress is it. That a single GPU card can hold its own amid dual-GPU monsters is testament to its pedigree. It's also the first DX 11 card available, so future proofing should not be an issue. Obviously, these are early days, and NVIDIA promises a DX 11 monster of their own early next year, but for now the HD 5870 rules supreme. But wait! – didn't we just say the GTX 295 cards were faster? Well, true, but it's not always about raw fps values. The Radeon HD 5870 is the future and will definitely spawn faster variants. AMD is reportedly working on 'Hemlock' a dual GPU 5870 variant which will surely be faster than the GTX 295. We also noticed better visual quality with the Radeon HD 5870, just like the 5770 in the mid-range category. Add to this support for DX 11 – a little future proofing can't hurt! Although the difference is minor, it's



ZOTAC GeForce GTX 295

games do this to latest hardware but it has happened, whether a result of improper, inefficient coding, or engines that classify as before-their-time or whatever, the fps numbers dip before our eyes. Throughout the tests, the GTX 295-based cards are faster by varying margins. Even the HD 4870 x2 cannot manage 30+

Choices and decisions

You Need

The fastest single graphics card on the planet at the moment

We Recommend



ZOTAC GeForce GTX 295
Rs. 30,500

Things to check

Your power supply. This should be at least 600 watts and of a good brand

You Need

A high-end GPU that is also future proof and not astronomically priced

We Recommend



Sapphire Radeon HD 5870
Rs. 26,000

Things to check

At least a 500-watt power supply from a reputed brand

You Need

A gaming graphics card within a budget of Rs. 10,000

We Recommend



Sapphire Radeon HD 4850
Rs. 6,300

Things to check

A decent 450-watt power supply should suffice. And make sure your board has a PCIe slot

You Need

The best gaming card for a price of Rs. 15,000

We Recommend



XFX HD-489A-ZDD7
Rs. 14,500

Things to check

A 500-watt power supply and a well ventilated cabinet – this baby can get hot!



Kindle in India

Amazon's E-book reader, the Kindle is now available globally



NVIDIA Tegra

Nintendo might grab NVIDIA's Tegra to power their upcoming handhelds

Graphic Cards Test

Contact Sheet

Brand	Company	Phone	Website	Email
XFX	Rashi Peripherals Pvt. Ltd.	+91-22-67090828	www.rptechindia.com	response@rptechindia.com
ZOTAC	Aditya Infotech Ltd.	+91-11-46665666	www.adityagroup.com	sales@adityagroup.com
ASUS	ASUS Technology Pvt. Ltd.	+91-22-67668800	www.asus.in	media_india@asus.com
PowerColor	Tirupati Enterprises	+91-9339207519	www.tirupati.net	mail@tirupati.net
Palit	Tirupati Enterprises	+91-9339207519	www.tirupati.net	mail@tirupati.net
Galaxy	Technology And Gadgets	+91-22-23823331	www.technologyandgadgets.com	manish@technologyandgadgets.com
MSI	MSI	+91-11-41758808	http://in.msi.com	marketing@msi-in.com
Sapphire	Aditya Infotech Ltd.	+91-11-46665666	www.adityagroup.com	sales@adityagroup.com
ATI	AMD India	1800-425-6664	www.amd.com	fusion.india@amd.com

visible and the Sapphire Radeon HD 5870 wins out *Best Buy* award for a very good price to performance ratio – something the GTX 295 cannot achieve. The *Best Performer* award goes to the ZOTAC GTX 295 for its slightly lower price than the ASUS and XFX GTX 295 cards that had nearly identical performance.

The game continues...

With DX 11 just around the bend, and a slew of new DX 11 titles already promising to line shelves before the year is out, there is much happening in the PC gaming space. For everyone who embraced consoles and wrote off PC gaming as history, the proverbial finger has been flashed by the industry, as it, as a whole fights back. The fact that no console can offer the

visual quality and flexibility that a PC offers is something console fans have ignored. DX11, it seems, will restate the part about image quality. And for the first time, this occurs without the accompanied performance hit – DX 11 titles run 30 per cent faster than their DX 10 versions. AMD is first to market with a DX 11 part as the Radeon HD 58xx and 57xx cards have been birthed from their 40 nm womb. We've tested the Radeon HD 5870 and Radeon HD 5770 and they're really interesting to say the very least.

Into this seemingly bright future comes the proverbial cloud – wilful sabotage on the part of game developers. We've seen titles optimised for a particular brand and to be honest this is part of the industry as aid whether financial

or in terms of development or problem-solving / hurdle-overcoming is rendered (pun!) to developers. But aggressive marketing plays play spoilsport. After all, when working with a developer to optimise a game for ones hardware, it's all too easy to implement techniques to limit performance and/or visual quality on competitors products and quite honestly, this is sad for the gaming industry as a whole. One such example is the game *Batman Arkham Asylum* – an excellent title in every respect and optimised for NVIDIA cards. When we tried to benchmark this title on AMD hardware we were surprised to see its abysmal performance in terms of fps. Not only this, but we were unable to set any sort of antialiasing and without this the game loses its visual appeal; worse

still this seems intentional. NVIDIA cards can run FSAA on a selective (need) basis that varies scene to scene and of course MSAA can also be used. Sadly, ATI cards can do nothing here and even a Radeon 5870 is slowed to a crawl – slower than a GeForce 9800 GTX. Needless to say we dropped this otherwise spectacular title from our test repertoire. And both parties have been guilty of such tomfoolery in the past, a disturbing trend we're hoping (against all hope) will cease. After all gaming is different things to different people – a sport, a hobby as well as a leisurely activity and we're happy to report that the industry is growing. But it needs to grow as a whole and the pie's large enough for everyone to get a healthy slice, so play nice... **d**

You Need

A cheap multi-GPU solution

We Recommend



Galaxy GTS 250 x 2 (SLI)
Rs. 6,300 x 2 = Rs. 12,600

Things to check

Does your motherboard support both SLI and Crossfire? You need a PSU with four PCIe power cables

You Need

Something that will play all games with high settings at a resolution of 1680 x 1050

We Recommend



ZOTAC GTX 285
Rs. 21,000

Things to check

At least a 500 watt power supply from a good brand and a well ventilated cabinet

You Need

Something that will play all games with high settings at a resolution of 1920 x 1200 with FSAA enabled

We Recommend



ZOTAC GeForce GTX 295
Rs. 30,500

Things to check

At least a 600 watt power supply and a high-end cabinet to dissipate all the heat

You Need

The fast gaming solution available, price no bar

We Recommend



ZOTAC GTX 295 x 2 (SLI)
Rs. 30,500 x 2 = Rs. 61,000

Things to check

A high-end 850 watt PSU and a high-end cabinet, a core i7 CPU and an SLI-ready X58 mobo



Of Chips And Sockets

Craving to upgrade to a Socket LGA 1156 processor? You'll need a supporting motherboard. Here's a look at the boards that support Intel's latest CPU

Rohan Naravane

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Last month, in our extensive motherboard test, we saw a variety of boards for both Intel and AMD platforms. From Intel, the mid-range performance segment comprised of boards having the P45 chip-set for Core 2 series of processors while the high-performance ones were the X58 chip-sets for the Core i7. After Core i7, Intel has planned to continue with the Core "i" moniker for future CPUs.

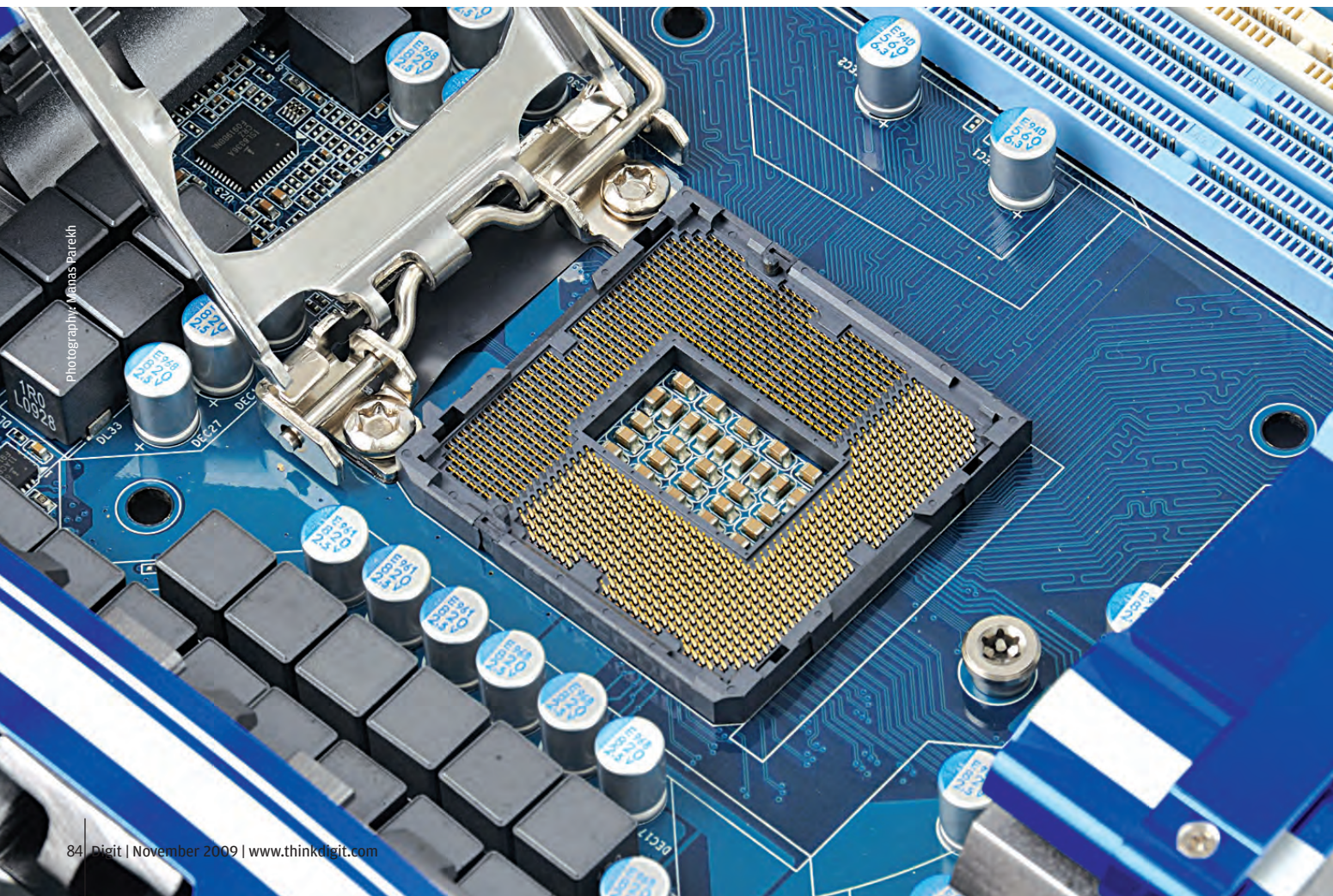
And then there were two sockets...

For a long time, the LGA 775 was the mainstream socket design used by all the Core 2 series processors. Currently, the LGA 1366 socket is what the high-end Core i7-9xx series sit on. The platform is the X58 chipset that we tested last month. Two months ago, Intel gave the world the Core i5 processor. A newer LGA 1156 socket was developed, which is compatible with all the Core i5 and the Core i7-8xx series processors. This socket will be based on the P55 chipset.

To point out a few differences between the Core i5 and the Core i7 — first, the Core i5 will not feature hyper-threading. Second, it will not support tri-channel memory; only dual-channel like the Core 2 platform. Lastly, it will also not feature Intel's point-to-point interconnection system called QPI (QuickPath Interconnect). But the Core i5 brings performance improvements over the Core 2 series being based on the mighty Nehalem architecture. Thus, we have the Core i7 as the performance king, while the Core i5 as the

mid-range performer in Intel's line-up. Thus Intel plans to do away with the LGA775 socket associated with all the Core 2 processors. There will be a Core i3 in the future to cater to the entry-level segment.

A quick brief on the major differences between the predecessor (the P45) and the successor (the P55); first, we have the memory controller integrated into the processor on the P55. Second, (and this is a new achievement for any platform), which is the connectivity of the available 16 lanes of PCI Express 2.0 to the



MSI's 'Big Bang' is the first motherboard model to utilize the Lucid HYDRA chip which allows to use NVIDIA and ATI based cards for multi-GPU scaling



Motherboard and GPU maker ZOTAC launches its first NVIDIA ION based Nettop with a dual-core Intel Atom, 2 GB memory and 160GB of HDD space

Motherboard Test

HOW WE TESTED

For all seven boards, we used Intel's Core i7 870 processor running at 2.93 GHz, since this is the fastest processor till date for the P55 platform. Corsair's Dominator dual-channel DDR3 4GB (1333 MHz) kit was used. During the test, Windows Vista Ultimate Edition ran off a Western Digital 300GB

Velociraptor HDD. Graphics was provided by an Asus GeForce 9800GTX+. All the boards were powered by Corsair's HX620 PSU. We ran PCMark Vantage to test the performance across various usage scenarios. That was followed by the ScienceMark Memory Bandwidth test. CineBench R10, an independent tool based on

the popular 'Cinema 4D' 3D modelling program was used to test just the processor and memory. Another way to test the processor was by using WinRAR 3.9s built-in benchmark tool.

Coming to the real world tests, we tested the time taken to encode a .VOB video file into the DivX format using DivX Encode 7.0. That was

followed by a single large file and assorted 8GB file transfer test to simulate sequential and assorted from one partition to the other.

In order to see how these boards performed in the graphics department, we tried running S.T.A.L.K.E.R Clear Sky benchmark and the Crysis CPU and GPU benchmarks as well.

processor directly; thus reducing the CPU-GPU data transmission latency and bottlenecking that occurs as a result. This brings us to another shortcoming of the P55 chipset as compared to the higher X58 chipset that might displease gamers who want to play every game at its best quality. The P55 will support two graphics cards that will utilise those 16 lanes of PCI-E 2.0 only at x8 mode, whereas the X48 supports up to 36 lanes, hence supporting two graphics cards running at full x16 speed.

Since Core i5 is currently the hot stuff, we decided to give you a comparison of the latest motherboards based on the P55 platform.

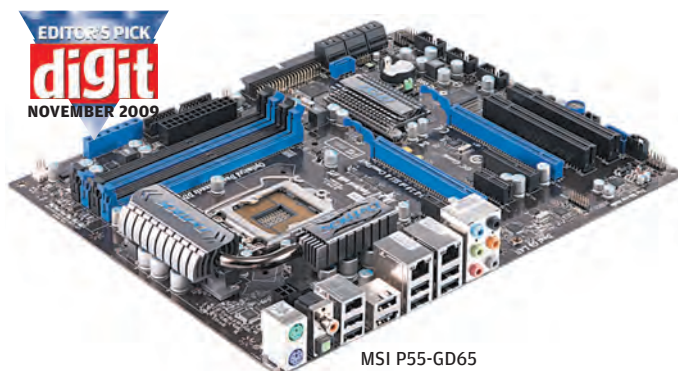
Biostar TPOWER I55

The first thing that the Biostar TPOWER I55 reminded us of was *The Transformers*. This resemblance we feel is pertaining to the three heat-sink units surrounding the CPU – a very Optimus Prime-ish look. Overall, the quality of the materials used seems to be pretty good. All that metal makes the board feel heavy and pretty sturdy. The heat pipes are also built well. There are dedicated power/reset switches

and a two-digit LED status code display. All six SATA ports are placed in an array on the right corner. Nowadays, motherboard manufacturers are skipping the keyboard/mouse PS/2 ports altogether. The Biostar has at least had the decency to place the PS/2 keyboard port on the board. Automatic or manual over-clocking can be performed either through the BIOS or via a Windows-based application.

MSI P55-GD65

The MSI board has two heatsinks as compared to three on the Biostar board above. Now this frees up a little space and possibly makes space for one more PCIe x1 slot. The build of the board seems to be quite satisfactory. MSI is trying to win overclockers' hearts by providing hardware buttons on the board itself. There's one that activates the automatic overclocking feature and a plus/minus button to change the CPU base-clock without any kind of software/BIOS intervention. MSI also provides a couple of utilities bundled with the package. Some mentionable ones are a light-weight fast-booting Linux distribution called Winki.



MSI P55-GD65

Unlike quick-boot OSES we've seen earlier that are directly embedded onto a separate memory on the motherboard, Winki runs via either a bootable USB drive or DVD. Next is a nifty bootable HDD backup utility. Another cool feature on this board is the 'Power eSATA' port, which means that eSATA devices will not require an additional power cable while connecting to the eSATA port.

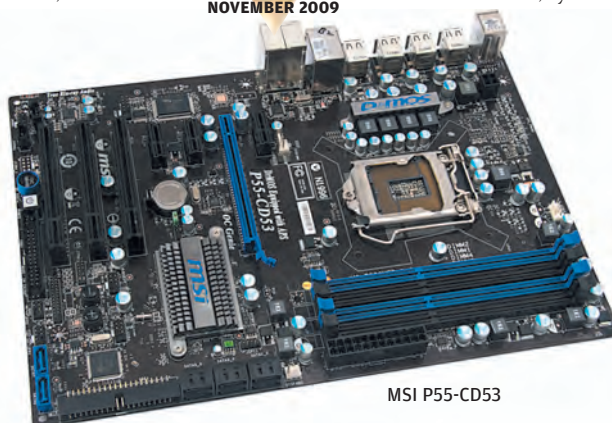
feels pretty spaced-out since it has one tiny heatsink as opposed to the dual-piped heat-sinks on the GD65. The RAM slots are packed closely. The CD53 bears a single PCI Express slot, and thus isn't meant for a SLI/CrossFire setup. The board's build otherwise is quite similar to the GD65 and is satisfactory. The auto overclocking and base clock tweaking buttons are still present.

MSI P55-CD53

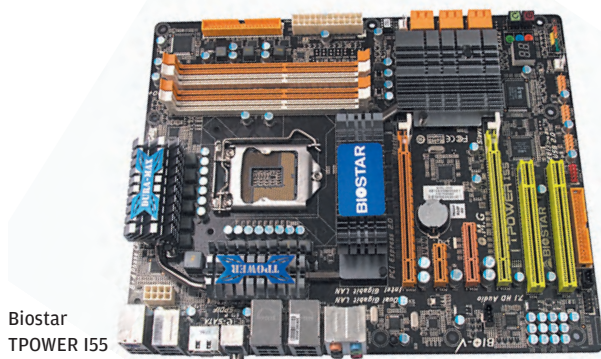
Hot on the heels of its older brother – the GD65, comes the P55-CD53. To cite the major differences, this board

ASUS P7P55D Deluxe

We'd call the P7P55D from ASUS as something that isn't commonly associated with motherboards; eye



MSI P55-CD53



Biostar TPOWER I55



Motherboard Test

Brand	ASUS	MSI	Gigabyte	Gigabyte	MSI
Model No.	P7P55D Deluxe	P55-GD65	GA-P55-UD3R	GA-P55-UD6	P55-CD53
Price	Rs. 18,650	Rs. 9,200 + Taxes	Rs. 13,800	Rs. 20,000	Rs. 7,000 + Taxes
Overall (Out of 100)	76.17	76.39	77.69	80.40	69.56
Features (Out of 60)	41.04	39.78	40.68	42.99	33.00
Performance (Out of 40)	35.13	36.61	37.01	37.41	36.56
Max. Memory Supported (GB) / No of DIMMs	16GB / 4	16GB / 4	16GB / 4	16GB / 6	16GB / 4
No. of SATA ports / IDE Ports	9 / 1	7 / 1	8 / 1	10 / 1	8 / 1
No. of E-SATA Ports	0	1	2	2	0
No. of PCI Express x16 graphics slots	2	2	1	2	1
No. of PCI / PCI x1 / PCI x4 Slots	2 / 1 / 1	2 / 2 / 1	4 / 1 / 1	2 / 2 / 1	3 / 3 / 0
Multi GPU (SLI/CrossFire) Support	Y	Y	N	Y	N
No of PCIe Lanes per GPU	X8 / X8	X8 / X8	N/A	X8 / X8	N/A
Integrated Audio Controller	VIA VT2020	Realtek ALC889	Realtek ALC888	Realtek ALC889A	Realtek ALC889
Number of Sound channels	10	8	8	8	8
SPDIF Port / Optical Port	Y / Y	Y / Y	Y / Y	Y / Y	N / N
No of Gigabit LAN Ports	2	2	1	2	1
Integrated Wi-Fi (Y/N)	N	N	N	N	N
No. of ports - USB / Firewire	8 / 1	7 / 1	10 / 0	8 / 2	10 / 0
All Solid State Caps (Y/N)	Y	Y	Y	Y	N
BIOS options					
CPU voltage range	0.85~2.1 volts	0.87~2.07 volts	0.5~1.9 volts	0.5~1.9 volts	0.006~0.371 volts
CPU Voltage increments	0.00625	0.006	0.00025	0.00625	N/A
Memory voltage range	1.2~2.5 volts	0.906~2.405 volts	1.3~2.6 volts	1.3~2.6 volts	0.906~2.405 volts
Memory Voltage increments	0.0125 volts	0.006 volts	0.02 volts	0.02 volts	N/A
BIOS update flash drive/External USB device (Y / N)	Y	Y	Y	Y	Y
Board Layout (So 10)					
Region around the CPU	7	6.5	7	8	4.5
Location of SATA ports	7	7	8	6.5	7
Placement of Memory modules	6.5	7	7	7	6
Graphics card slot and PCI slots	6.5	7	7	7	7
Package Bundle					
No of SATA / PATA Cables Provided	6 / 1	4 / 2	4 / 1	6 / 1	2 / 1
Other Miscellaneous Accessories	Overclocking control switch, USB + E-SATA bracket	USB bracket	-	E-SATA bracket	-
Performance					
PC Mark Vantage (Overall)	6919	6951	6967	7528	7394
TV & Movies	5126	5250	5186	5320	5241
Memories / HDD	5235 / 6231	5148 / 6043	4964 / 6122	5371 / 6053	5239 / 6186
Gaming / Music	8199 / 5720	7890 / 6632	7909 / 6573	8520 / 6920	8145 / 6714
Communications / Productivity	5949 / 5986	5662 / 5623	5769 / 5882	6707 / 6420	6154 / 5748
ScienceMark (Memory Bandwidth)	9476	12007	12257	13179	12510
3D Mark Vantage (Overall)	8688	8774	8785	8759	8767
3D Mark Vantage (CPU / GPU)	41205 / 6878	42027 / 6943	44985 / 6927	44031 / 6913	41402 / 6943
CINEBENCH R10 (CPU)	13602	13711	14827	14975	13498
WinRAR 3.8	3872	4313	4453	4479	4236
100 MB file Video Encoding (VOB-DivX 6.8) (sec)	24	22	22	21	22
File Transfer - Sequential / Random (8 GB) (Mbps)	36.74 / 44.3	42.01 / 44.3	39.77 / 44.3	38.64 / 43.81	40.55 / 43.81
S.T.A.L.K.E.R Clear Sky (1280 x 1024, low)	79.1	81.9	82.2	81.4	81
Crysis (CPU - 1024 x 768, low)	74	75	79	79	75
Crysis (Graphics - 1280 x 1024, high)	44	44	44	44	45



Dane-Elec has stated that their USB 3.0 compatible spinning and solid state disks will be available soon. Sizes range from 500GB to 2TB (HDDs) and 80 & 160GB (SSD)

AMD's Congo platform for Netbooks to be out soon sporting AMD's Athlon and Turion Neo processors and ATI's graphics chips that support HD and DirectX 10.1

Motherboard Test

Intel	Biostar
DP55KG	Power I55
Rs. 11,000	Rs. 14,480
69.13	75.13
33.06	38.82
36.07	36.31
16GB / 4	16GB / 4
8 / 0	6 / 1
2	2
2	2
2 / 2 / 1	2 / 1 / 1
Y	Y
X8 / X8	X8 / X8
Intel HD Audio	Realtek ALC888S
10	10
Y / N	Y / Y
1	2
N	N
8 / 1	8 / 1
N	Y
N/A	+ 0.7875 v (max)
N/A	0.00625
1.3~2.0 volts	1.6~2.53 volts
0.01 volts	0.015 volts
Y	Y
5.5	7.5
6.5	6.5
6.5	6.5
7	7
N/A	6 / 1
-	6 SATA to Std. Power cables
6987	6975
5008	5124
4720 / 5679	5171 / 6110
8071 / 6455	7891 / 6617
5239 / 6147	5955 / 5848
12607	12865
8765	8733
41165 / 6943	41501 / 6913
13921	13871
4256	4331
22	24
38.82 / 43.57	41.80 / 44.52
80.5	78.4
73	74
44	43



ASUS P7P55D Deluxe

candy. From the glowing LED design at the Southbridge to the radically-shaped blue heat-sinks at the top, this board is certainly quite the looker. The build quality is pretty amazing and the Northbridge heatsinks are plated at the bottom, thus adding a bit more firmness. Other than the Power/Reset buttons on the board, it also has a clear CMOS switch placed along with the array of peripheral ports to the side. The RAM slots have an odd one-sided lock design which is slightly inconvenient. The RAM chips don't pop-out as they usually do when unlocked. While the MSI boards had overclocking buttons on the board, ASUS goes one step further by providing a wired remote with the necessary over-clocking buttons on it. Thus, you can instantly bump up the bus speed or select a different profile without opening the cabinet. This will be very convenient for overclockers.

Gigabyte P55-UD3R

The Gigabyte UD3R follows the ASUS' blue-white colour scheme. The dual heatsinks at the Northbridge are as sturdy as the rest of the boards we've seen. Overall, the board has a nice finish as it is typically expected from Gigabyte. The single PS/2 port can be used either to connect a keyboard or a mouse. Although the pictures might be misleading, this board actually has only one PCIe 2.0 x16 slot. The other similarly-sized slot is actually a PCI-E

Northbridge. All heatsinks are piped in a linear fashion — from the top all the way down to the Southbridge. Build-wise, this board is all quality. It incorporates six RAM slots. It's also got a status LED display that was missing from the UD3R.

Intel DP55KG

Intel's Extreme series board for the P55 chipset has a rather odd design. For starters, although the board is designed for the full ATX form factor, there seems to be a lot of empty space on it. Intel has decided to do



Gigabyte P55-UD3R

x4 slot. Thus, SLI/Crossfire setup on it is out of question. Otherwise, the board is very basic in terms of features. There are no direct control buttons for overclocking, no dual LAN and no FireWire port.

Gigabyte P55-UD6

For those not very intrigued by the vanilla feature-set of the UD3R, Gigabyte gives you the UD6. This monster of a board packs two standard and one large heatsink at the

away with the IDE port, which could be a hassle for somebody owning an older PATA optical drive or even hard drive. The heatsinks on the Northbridge and Southbridge are smaller than its counterparts. One of the radical design concepts on the board is a skull at the right corner that has two blinking red LED eyes. A feature seen on all other boards, the DP55KG does not have all solid state capacitors; that are known for their longer life and



Gigabyte P55-UD6

Logitech's G11 gaming keyboard supports multi-color LEDs, automatic game detection for custom profiles, integrated headset support and a USB port

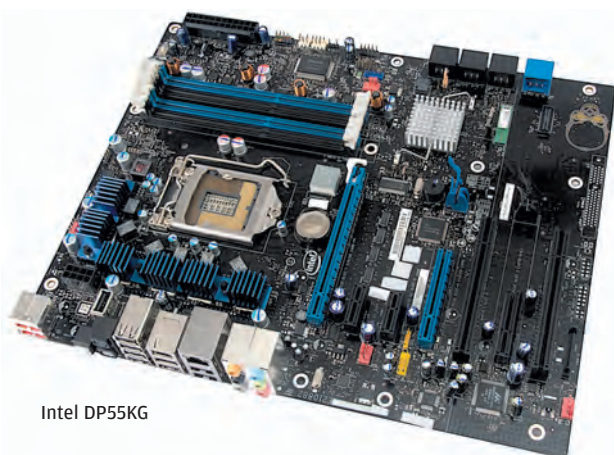


Kingmax introduced cap-less USB drives that are water proof, have pressure resistance and can manage temperatures in the range of 100 to minus 40 degrees

stable operation over typical electrolytic capacitors. A vertical USB port is placed right on the motherboard – ReadyBoost ready?

Conclusion

As you might have already known, there isn't a great difference in the benchmark scores in motherboards mainly because a motherboard is more a facilitator than a performance enhancing component like say, a processor, or memory or a graphics card. Thus, it was important for us to give the features of these boards more weight than the performance. With respect to features, the Gigabyte P55-UD6 aced the list, with the ASUS P7P55D Deluxe just a single point behind it. The third in that list is the MSI P55-GD65. With respect to performance, the prize again was bagged by the Gigabyte P55-UD6, with the MSI brothers right behind at second and third place. But aggressive pricing has been MSI's biggest feat, with both the boards selling at a price of under Rs. 10,000! Out of the two, we feel the MSI P55-GD65 is quite well priced at Rs. 9,200 + taxes. It has quite a list of features, is well built and lets you over-clock at the click of a button on the board itself. Thus,



Intel DP55KG

INTEL BEST PERFORMER COMPARISONS

Brand	ASUS	Gigabyte	ASUS
Model No.	P5Q3 Deluxe WiFi @n	GA-P55-UD6	Rampage II Extreme
Price (Rupees)	Rs. 17,900	Rs. 20,000	Rs.28,500
Chipset	Intel P45	Intel P55	Intel X58
Socket	LGA775	LGA1156	LGA1366
CINEBENCH R10 (CPU)	11847	14975	15490
WinRAR 3.8	2530	4479	4722
DivX Video Encoding (100 MB VOB) (sec)	33.1	21	18
File Transfer - Sequential / Random (8 GB) (Mbps)	50.32 / 42.38	38.64 / 43.81	47.08 / 42.90
STALKER Clear Sky (1280 x 1024, low)	81.2	81.4	84.9
Crysis (CPU - 1024 x 768, low)	84	79	83
Crysis (Graphics - 1280 x 1024, high)	42	44	45

This table compares the best performing motherboards from our tests using the P45, P55 and the X58 chip-set platform respectively. The P45 based board used an Intel Core 2 Extreme QX9650 3.0 GHz processor. The P55 board (winner of the test in this article) used the Core i7 870 at 2.93 GHz which is the fastest for the LGA 1156 socket platform. The X58 based one was paired with a Core i7 975 Extreme Edition clocking at 3.33 GHz; once again the fastest in the LGA 1366 based platform till date. All boards were


tested with the same ASUS GeForce 9800GTX+ Dark Knight graphic card. Identical memory was used, except on the X58 for which tri-channel memory was used. As you can see, certain benchmarks like CineBench and WinRAR show considerable performance gains. The performance gain is clearly visible in the DivX encoding test. To give you a rough estimate of how much it costs to build these rigs; the P45-based CPU-motherboard combo described above would cost roughly around Rs. 65,900. The P55 based setup

would actually cost almost Rs. 20,000 less, at around Rs. 47,000. Intel's fastest and meanest combo (based on the X58 chip-set above) would make your pockets lighter by a whopping Rs. 76,500.

There you have it. This is your money's worth. This is what you'll get for spending those extra thousand rupees to be faster than others. If you compare the numbers of the P55 to the X58, there's not a great difference that's worth the extra Rs. 30,000. Thus, the cost-to-benefit ratio tips in the favour of the P55 based setup.

you can get your Core i5 based CPU-motherboard combo for lower than Rs. 20,000. The Intel DP55KG is just over Rs. 10,000, but does not give you a lot for your money. The Gigabyte P55-UD3R is a decent performer, but the lack of features such as dual-LAN and Firewire ports on-board doesn't quite justify its Rs. 13,800 price tag. If you have deep pockets, and want a really solid board with the highest performance, then the Gigabyte P55-UD6 gives you all that, for Rs. 20,000.

We re-iterate that Intel intends to discontinue LGA 775.

Thus, if you are in the market looking to upgrade or buy a new Intel-based mid-range PC, we'd advise you to go for a P55 based chip-set to ensure compatibility of future processors based on the LGA 1156 socket. Here comes another issue; the decision to either go for a semi-conservative LGA 1156 based board, or go all-in on a high-performing LGA 1366 based one. The table above gives you a comparison of all Intel platforms with the best of CPU-motherboard combinations. We hope you make the right decision. Happy shopping! 

Contact Sheet

Brand	Contact	Phone	Email	Web site
ASUS	ASUS Technology Pvt. Ltd.	+91-22-67668800	media_india@asus.com	www.asus.com
Biostar	Abacus Peripherals Pvt. Ltd	+91-22-40914603	sajid@abacusperipherals.com	www.biostar.com.tw
Gigabyte	Gigabyte Technology Co. Ltd.	+91-22-40633206	viveks@gigabyte.in	www.gigabyte.com.tw
Intel	NA	NA	NA	www.intel.com
MSI	MSI Co. Ltd.	+91-11-41758808	marketing@msi-in.com	www.msi.com

More from Firefox

Firefox is a good browser, but it is the Extension Eco System that makes it a great browser. Extensions allow you to add functionality and convenience to your Firefox install and help you enjoy flawless browsing. So here is our top ten list in no particular order.

FoxTab

Think of it as Windows' Aero/Linux's Compiz/Mac's Exposé in your browser. You can preview and then open all your tabs via this extension in various 3D Views. You can select from six different views to display the tabs. One interesting and very useful feature is you can switch to Foxtab view (if you have multiple windows open with multiple tabs in each of them) and it will show all the tabs from all the Windows for easy switching in full 3D

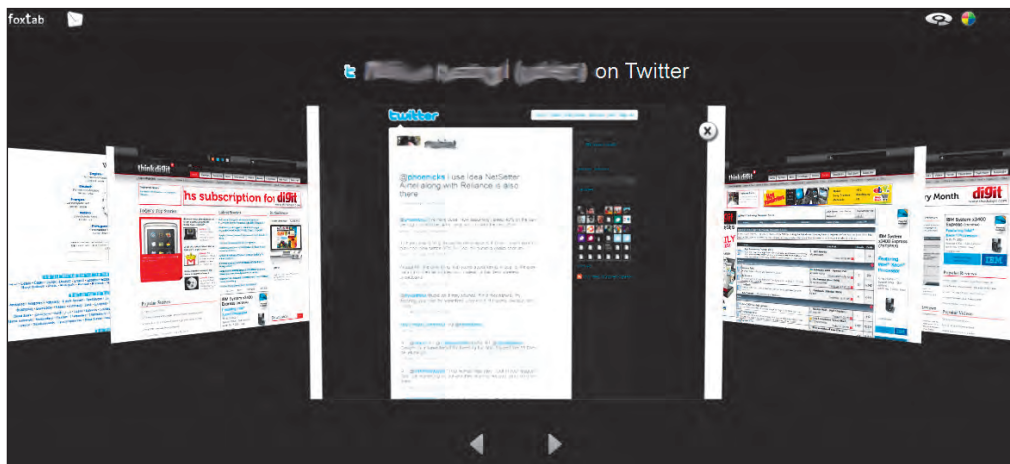


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glory. If you find yourself frequently working with more than 20 tabs, some of which were opened a few hours before and have difficulty in remembering what is there in

what, this extension should significantly reduce your neural processing load. You can download FoxTab from <https://addons.mozilla.org/en-US/firefox/addon/8879>



3D Goodness of the FoxTab Extension



FoxTab in a different avataar

GreaseMonkey

While shopping at Ebay US or any other site, you would've wished the prices were displayed in rupees instead of US dollars; or there were no ads or sponsored results on the Google search page. May be even Google image results open directly as the full size image. This extension is the genie's reply to all that and more. This extensions allows you to customise a web page on the fly based on small bits of Java scripts that can be downloaded according to what you want from userscripts.org. With the aid of this extension you can make your choosen web sites fit exactly into your desired mould. With the a strong and large user base, you can be assured of customisation, in the form of a user script. To get this add-on, go to <https://addons.mozilla.org/en-US/firefox/addon/748>.

RoboForm

Tired of repeatedly filling forms and remembering various login IDs and password for the gazillion sites that you have traversed through till now, don't sweat – AI RoboForm is the answer. It is not the only player in this area, but of the various options evaluated, it is the most user friendly and feature rich option. It comes complete with AES encryption to store your passwords. A version for various browsers, including for iPhone and even an online interface is available, ensuring you can access your data and details from where ever and when ever you want. Install it once, fill in your details, and you won't have to ever fill those irritating forms manually again or remember those excruciatingly complex passwords. Add RoboForm to Firefox from <https://addons.mozilla.org/en-US/firefox/addon/750>.

Sage RSS Reader

To satisfy the RSS-holic in you, Sage RSS Reader is the perfect compromise between



the extremely limited live bookmarks feature of Firefox and a separate RSS client. Sage RSS reader neatly integrates within your browser window, is light on memory, enables full print and you never have to leave your browser window to keep yourself updated about global news or your friend's blog. It packs decent punch in terms of features and has support for RSS 2.0 and Atom and even has feed discovery. Makes shifting from one client to another easy by supporting import and export of OMPL lists and even connects with the Firefox bookmarking system to give you a seamless browsing experience. You can add Sage RSS reader from <https://addons.mozilla.org/en-US/firefox/addon/77>.

EchoFon

If you're a Twitter ambassador, this is a must-have Firefox extension. This is a non obtrusive way of tweeting and keeping yourself updated about your friend's tweet. It supports direct tweeting of the current tab link, so you can tell the world about the awesome site you just visited in one click. It has separate internal tabs for direct messages and replies along with showing your timeline. All links can be opened by clicking on them in a new tab from a tweet. It supports multiple accounts so you can tweet conveniently from multiple accounts. The reply tab also shows references to you from across the globe, so you can track your popularity. You can even assign a keyboard shortcut for checking the latest tweet to satisfy the ninja in you. EchoFon also notifies you pop-up alerts for new tweets. Add this extension at <https://addons.mozilla.org/en-US/firefox/addon/5081>.

AdBlock Plus

If you think your productivity is being hampered by the extra download time of those irritating ads or you just plain find them annoying while

browsing the internet, this extension eliminates almost all ads from most web sites. When you start the extension for the first time, you can subscribe to a block list. Also, if you find out later that an ad that should be blocked, isn't, you can add it manually or even add them on a generic pattern basis. You can also white-list any content you really need but has been mistakenly blocked by Adblock as an advertisement. This extension gives you a much cleaner and leaner web page to browse through. To get relieved from ads, download the add-on from <https://addons.mozilla.org/en-US/firefox/addon/1865>.

WebMail Notifier

This Firefox extension automatically checks for your online web-based accounts such as Gmail, Yahoo! or Hotmail and notifies you on the arrival of a new mail. It supports multiple account at the same time and resides as a small icon in your Firefox notification panel. The extension uses the inbuilt Firefox password manager to store your password for enhanced safety, so that neither are passwords stored locally without encryption or are stored online. A lot of web sites are also supported via user scripts. Give it a try and you will never turn back. It is also a "recommended" add-on by the Firefox team. You can get this add-on from <https://addons.mozilla.org/en-US/firefox/addon/4490>.

Xmarks

Formerly known as Foxmarks, this is the easiest and simplest way of synching your bookmarks across different machines and across different platforms. You simply create an online account and it



Xmarks setting window, you can choose your sync and other settings over here

automatically synchs the bookmarks according to your specified settings. You can merge or overwrite the extensions, depending on your choice. Also, the latest version adds functionality to your search results on Google and other search engines. There's an icon next to the link, indicating that link has been bookmarked by other people, greatly aiding in finding quality content out of search results. The bookmark discovery feature also doubles up as an alternative to Digg and Reddit. To add this extension, go to <https://addons.mozilla.org/en-US/firefox/addon/2410>.

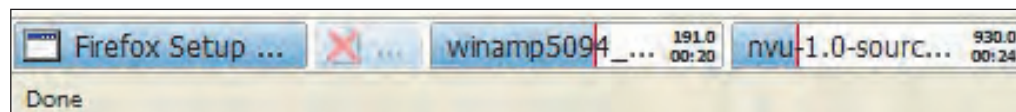
Download StatusBar

Simplicity is the USP of this extension. It creates a coloured status bar for all your downloads and the progress is depicted by filling the tab icon in the status bar. It auto hides when not in use and does its job very well. You can pause and cancel a download by clicking on the status bar. Very useful with Windows 7, because with auto-grouping, your download tab is hidden from

direct view and repeatedly having to check it to monitor your download progress can be inconvenient. The download status bar supports multiple downloads at once and automatically assigns a different coloured progress bar to each for easy tracking. Get it from: <https://addons.mozilla.org/firefox/26/>.

FlashBlock

It blocks all Flash content from any web site, leading to faster downloads and rendering times. But it still leaves a nice placeholder there with a play icon, so that you can click and selectively allow whatever Flash content you want. Effectively, on a YouTube page, you can allow just your video to play and block all the unnecessary Flash paraphernalia on the web page. Currently, it supports blocking Macromedia's Flash, Shockwave and Authorware content. It works flawlessly on Windows, but some users have reported problems with Linux installations. Add this extension from <https://addons.mozilla.org/en-US/firefox/addon/433>.



The Download Status bar extension

Twitter

Twitter Analyzer

<http://twitteranalyzer.com>

If you're one with attention to detail and need statistics and graphs, this one's for you. This is an analysis tool with a strong focus on quantitative analysis.



Twitter Analyzer is meant for you if you love statistics

With Twitter Analyzer, you can have all of this. You'll get to know your "Reach", which is basically how many people saw your tweet including your followers and the followers of the person who retweeted your tweet if any.

Twitalyzer

<http://www.twitalyzer.com/>

This online twitter analyser is probably the most comprehensive online tool for twitter statistic analysis. As you can see in the attached screenshot, the focus here is qualitative – on the content of your tweets, rather than just numbers. The analysis, of course, is not completely independent of your tweeting frequency. Signal-to-noise

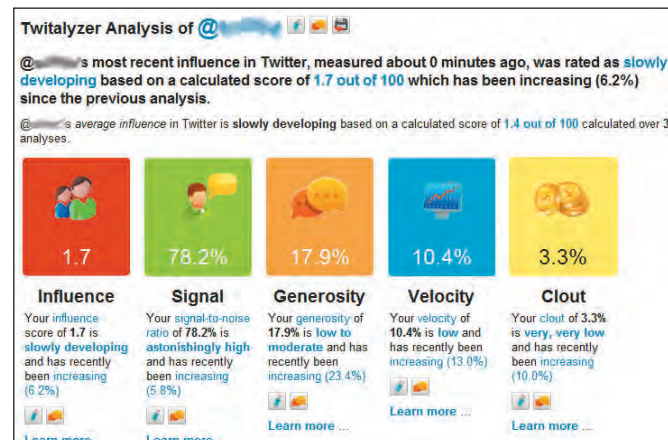
ratio and the clout seems to be unique features of this site. The former tries to estimate the ratio of your useful tweets to pointless babble. The clout, as the name suggests is a cumulative measure of your influence on tweeples. Satan's guidebook suggest comparing

yourself to @aplusk as a way of boosting confidence.

Twitter Friends

<http://twitter-friends.com/>

This analytics tool focusses on your relationship with other Twitter users. It gives you a sorted view based on recent activity in terms of other Twitter users you replied to. It just doesn't stop at that, it even produces your own "twitgraph" that analyses your CQ (Conversation Quotient), LQ (Link Quotient) and many many more. Hit the link for a fun-filled 5-minute insight into your twitter habits. It also gives your follow cost – useless but extremely interesting (<http://followcost.com/about/milliscoble>).



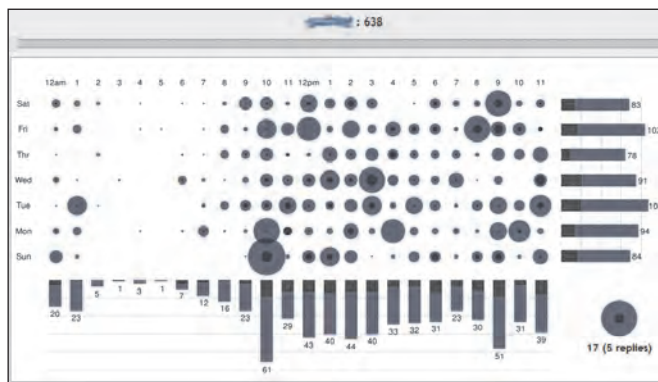
PERSONAL INFORMATION:	
Name:	(redacted)
Location:	delhi (Time zone: New Delhi)
Description:	full time devotee of all things tech
URL:	(redacted)
STATISTICS:	
Account Created:	12 Feb 07
Status Updates:	638
Followers:	184
Following:	52
ANALYSIS:	
Tweets per day:	0.7
Readability index: (?)	12
% conversations:	41
% retweets:	7
% links:	16
% hashtags:	0
% content:	27

Xefer

<http://xefer.com/twitter/>

This is definitely the best visual representation of your tweeting frequency with respect to time. It shows your tweets and replies in forms of concentric circles with radii proportional to frequency plotted against days of the week and hours of

"Tweets per day", "retweets" and "conversations", as well as a qualitative picture of your Twitter profile. By analysing your retweets and the number of conversations among other parameters. It gives your profile a social personality type, and even offers tips to improve if necessary.



Xefer analyses are visually appealing

each day. Very comprehensive yet simple to grasp. A sure shot recommendation.

Twanalyst

<http://twanalyst.com/>

Don't consider this to be a replacement for a psychoanalyst. This online tool gives you quantitative analyses such as

Twitt(URL)y

<http://twitturlly.com/>

This service doesn't specifically give you statistics relevant to your profile, but gives the most popular URLs that people are talking about on Twitter, in Digg style. It's a good way to discover cool links floating around the web in real time.



Get to know the most popular URLs on Twitter with Twitturlly

Windows 7

Search within ZIP files

- Open Computer (Win + E)
- Click on Organize > Folder and Search Options
- Under the search tab, check 'Include compressed files' and click on Ok.

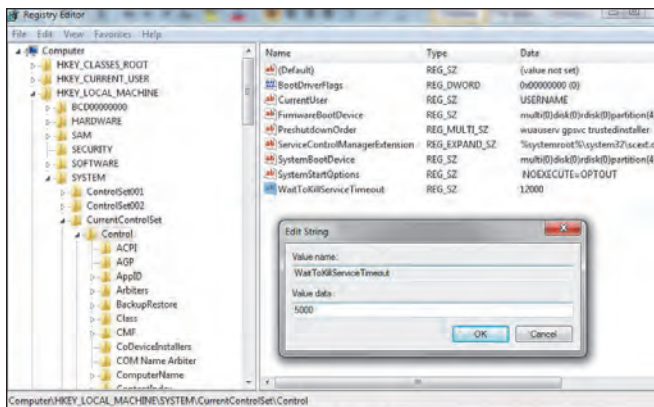
Faster Windows shutdown



With Windows 7, you can search contents of ZIP files

Windows takes some time to stop or kill a service once you give the Shutdown command. But, in most cases, it does not harm to reduce this delay and boost your shutdown time. Here's how:

- Go to Start > Run and type regedit.
- Navigate to HKEY_LOCAL_MACHINE > SYSTEM > CurrentControlSet > Control in the left pane.
- In the right pane, right-click on the key called 'WaitToKillServiceTimeout' and click on Modify.

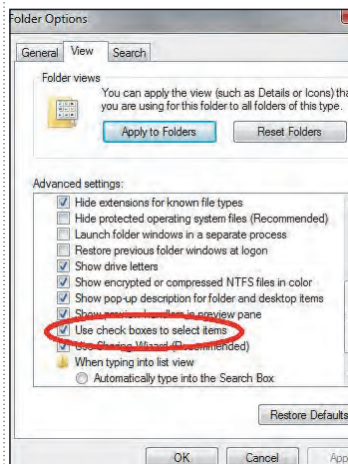


A minor tweak can make Windows shutdown faster

- Change the Value data from 12000 (12 seconds) to 5000 (5 seconds). To be on the safer side, do not reduce it below 5 seconds because some programs need a couple of seconds to close properly and killing before that will result in data loss.

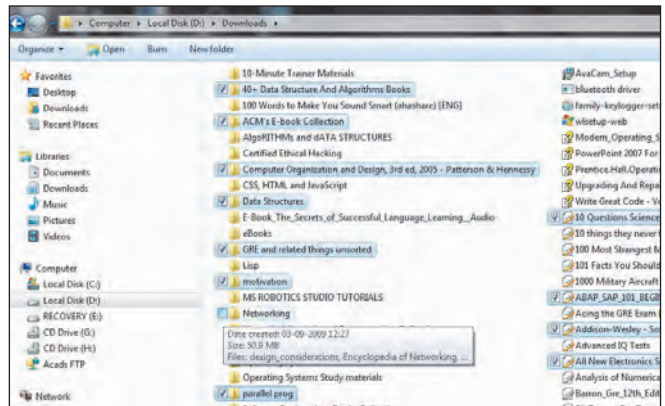
Multiple file selection

Whenever you have to select multiple files, you need to keep the [Ctrl] key pressed while clicking on filenames. How many times has it happened to you that you let go of the [Ctrl] key before selecting another file and your entire selection was lost? It's irritating when sorting large number of files. Windows 7, however, comes to your rescue with checkboxes that allow you to select files without having to



You can select multiple items with checkboxes

- hold the [Ctrl] key.
- Once in a folder, Click on



Multiple selection is convenient even through a long list of files

Organize > Folder and Search Options.

- Go to the View tab.
- Under Advanced settings, check the item labeled "Use checkboxes to select items"
- Press Ok and you are done.

Automatically delete temporary files

Windows 7 comes with the Disk Clean-up Wizard like Windows Vista and XP, but that utility only deletes your temporary files if they are more than a week old. You can automate the process by creating a simple batch file and then making it run at start-up so that you never have to worry about manually freeing up space from your Temp folder.

- Open Notepad and click on File > Save As.
- In the File Name dialog box, Type "tempclean.bat"
- Change the entry in Save As Type dropdown box to "All files"
- Click on save.
- Then in your file, type the following:
cd C:\Users\%username%\AppData\Local
Rmdir /S /Q Temp
- Save the File.
- Navigate to the folder where the file is saved.
- Right-click on it and click on 'Create Shortcut'.
- Place this shortcut in your 'startup' folder in your Start Menu.

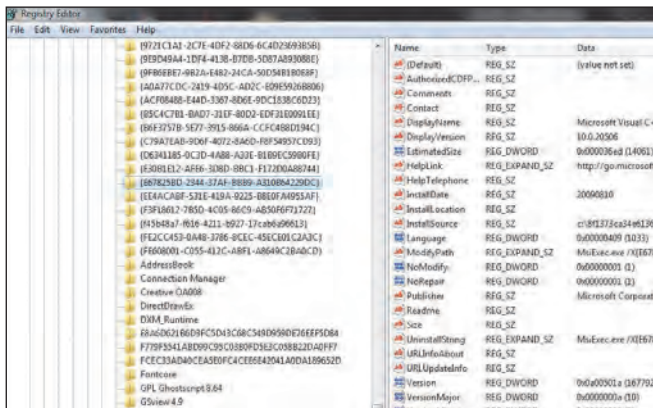
Every time you log in to Windows, the file will be executed and your temporary files will be cleaned. This is very useful for netbooks and laptops

with small hard-disk space. In case you get an access error while the file is being executed, replace %username% in the file with your Windows login username.

Modify Add/Remove list

If your Add/Remove list is getting cluttered after you installed an application that makes multiple entries in it (Visual Studio added more than 10 things while we were testing) and you have no intention of uninstalling it from there, or you want to remove a Key logging/Screen Capture program you installed to monitor your kids from the programs list because you don't want your smarties to simply uninstall it, there is a way to remove entries from 'Programs and Features' List.

- Open Run Dialog box with [Win] + [R]
- Type RegEdit and press Enter to Open Windows Registry Editor.
- Scroll to the entry:
HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Uninstall
- In the left pane, there are programs installed on your computer, some represented by their name, and some by random numbers and letters. Right Pane shows you their display name.
- Find the key of the program you intend to hide.
- Back it up so that at least you can uninstall it by restoring the key. Select it in the left



Optimising your Add/Remove list

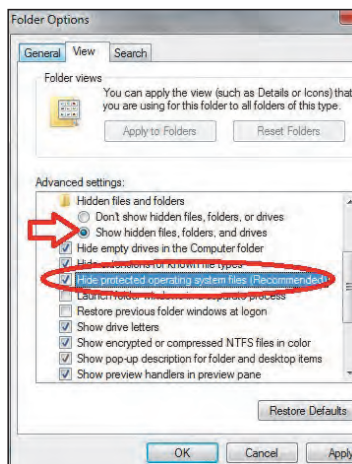
pane. Then click on **File** > **Export** and save it with a name that reminds you of what you are about to do.

- Now delete the key by right clicking it and Selecting **Delete**. This removes the entry for that program from the Programs list. You can Restore it back by double clicking the reg file you just saved in the last step.

Activate Regional Themes

Windows 7 comes with some very good themes by default. But in case you have already got bored of those, you will be glad to know that there are some hidden regional themes also with region-specific Windows 7 wallpapers which only show up if the appropriate region is selected. You can activate them without going through the trouble of changing your region.

- Open My Computer by pressing [Win] + [E]
- Click on **Organize** > **Folder and Search Options**
- Go to the **View** tab.
- Check 'Show hidden files, folders and drives' under **Advanced Settings**.
- Uncheck 'Hide protected operating system files (Recommended)' and apply the changes.
- Now navigate to C:\Windows\Globalization\MCT
- The folders contain theme files of respective regions based on their name such as CA for Canada, ZA for South Africa and US for United States among others.
- Just open them, open theme

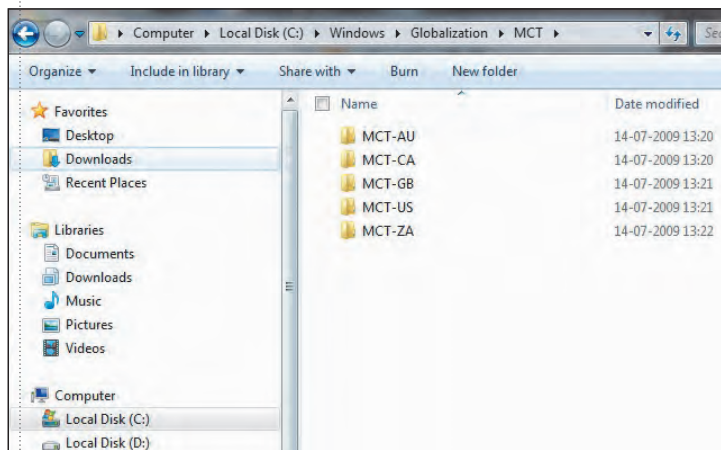


You can activate regional themes in Windows 7

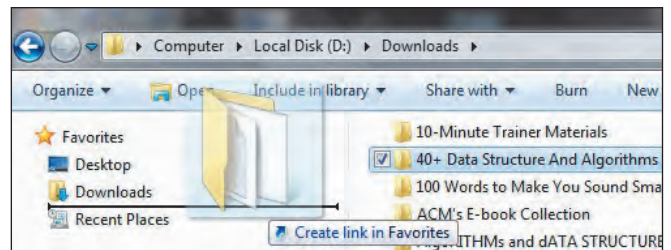
folder and click on the theme file to activate it. Now, it will also become available from your Themes menu in the Personalize window.

Favourite Folders

Windows Explorer has a great feature called 'Favorites',



You will see the list of themes depending on your location



Adding Favourites is as simple as drag and drop in Windows 7

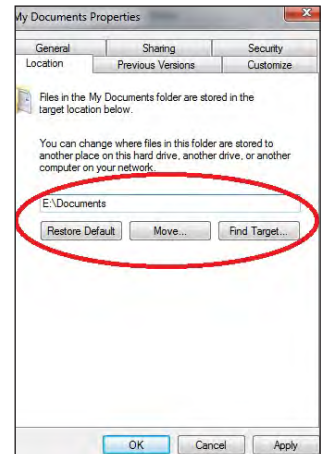
present in the left pane of the window. You can add your frequently accessed folders for quick access. Left-click the folder and drag it on the Favorites to create a link there.

Change the location of your Personal Folders

If you frequently reinstall your operating system, or your primary hard-drive partition is small and not enough for all your media and documents, you will want your personal folders point to a location that is on a separate partition. This also ensures that in case of a system crash, you can just pop in the Installation disc and install Windows again on your primary partition after formatting it and still not worry about losing your personal folders data.

Here's how you go about it:

- Navigate to your Users folder by clicking on Start and then your User name, or Opening Windows Explorer and going to C:\Users\- Right-click on the personal folder that you want to relocate and then click on properties.



Change the default location of your personal folders

- Go to the Location tab
- Enter the address to which you want to relocate your personal folder.
- Click on Ok. Windows will as you for permission to create the folder if it doesn't exist already.
- Windows will also give you an option to move all your files from the old location to the new location. We recommend you click on yes as some programs need access to them to function properly, like games for instance which store game profiles in the Documents folder.

Modify Windows 7 Search Index

Windows 7 uses a Search index for faster searches on the computer. Instead of looking through your entire hard disk for a file, Windows first just scans the index and saves you a lot of time. You can notice the difference when searching in locations that aren't index. By default, only your Users folder and the folders included in a library are indexed. However, you can add more folders to it.

It is not advisable to index



your entire computer because the Indexing service is resource intensive and your index will also become too large and your routine searches will slow down. You should selectively add folders that you search from frequently to suit your needs.

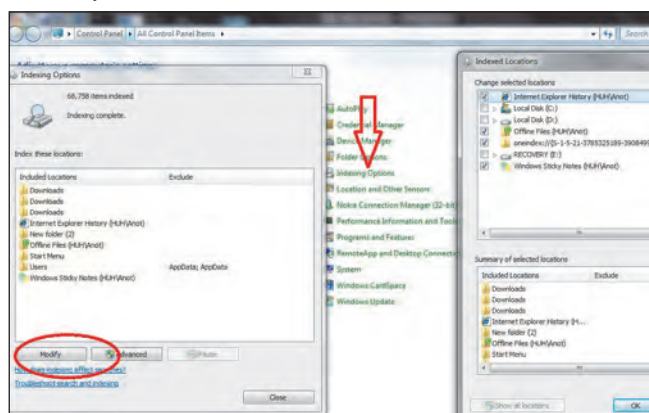
To customise the Search Index locations,

- Go to Control Panel > Indexing Options.
- You will see the indexed locations here. To exclude or include folders from that list, click on Modify.
- Select all the folders that you want indexed and click Ok to save your preferences. If you want to include a folder, but not all of its subfolders, then click the folder, and clear the check box next to any subfolder that you don't want

to index. These folders will appear in the Exclude column of the Summary of selected locations list.

- If the index can't find a file that you know exists in a recently indexed location,

you might need to rebuild the index. In Indexing Options, Click on Advanced. In the Index Settings tab, click on the Rebuild button under Troubleshooting category.



Indexing reduces search time, but is resource intensive

Some useful commands

Normally you would not associate Windows with commands. For everything, you have to navigate through a couple of menus using the mouse before getting to the concerned window/utility/tool. But Windows does come with commands that give you quick access to tools for configuring and fixing your computer. Some of these are very helpful if you prefer the use of keyboard more than your mouse and don't like moving your hand back and forth between them or suddenly the touchpad of your laptop stops working/ behaves erratically. Just press [Win] + [R] to get the Run Command Dialog box to get started.

Command	What it opens
%temp%	Temporary files folder. Your recently downloaded files, unzipped setup packages, etc. will be present here
appwiz.cpl	Add/Remove Programs window for uninstalling applications.
hdwizwiz.cpl	Add Hardware Wizard for connecting any new piece of equipment you recently connected to your computer
fsquirt	Bluetooth File Transfer Wizard for sending and receiving files from your Bluetooth enabled mobile phone/ PMP
calc	Calculator
charmap	Character Map for inserting special characters such as copyright and trademark symbol
chkdsk	Check disc Utility
devmgmt.msc	Device Manager for troubleshooting hardware.
cleanmgr	Disk Cleanup Utility for cleaning up your temporary files and retrieving wasted hard-disk space
dfrg.msc	Disk Defragment Utility
dismgmt.msc	Disk Management to help you manage your hard-disk partitions and removable storage devices
diskpart	Disk Partition Manager
desk.cpl	Display properties for changing display resolution
gpedit.msc	Group Policy editor
ciadv.msc	Indexing Service settings
inetcpl.cpl	Internet Properties. Very helpful when you want to change your proxy settings without going through Internet Explorer
iexplore	Internet Explorer
logoff	Log off from your account
main.cpl	Opens Mouse Properties
main.cpl	Opens Keyboard Properties
keyboard	
ncpa.cpl	Network Connections Window to manage your networks
netsetup.cpl	Network Setup Wizard to create an ad hoc network among other things
notepad	Notepad
perfmon	Performance Monitor
powercfg.cpl	Power Management to change power profiles
regedit	Registry Editor
services.msc	Services to disable unused services and boost computer speed. We, however, recommend you not to play around with this, unless you are an advanced user
fsmgmt.msc	Shared Folders
shutdown	Shutdown Windows
msconfig	System Configuration Utility, mainly used to change boot options and disable startup items
sysdm.cpl	System Properties
taskmgr	Task manager for killing processes that are not responding and monitoring resource usage
firewall.cpl	Windows Firewall

Winamp Cheat Sheet

Main Window Playback

Shortcut	Function
[X]	Play, Restart and Resume
[V]	Stop
[Shift] + [V]	Fade out
[C]	Pause and Resume
[B]	Next Track
[Z]	Previous Track
Right Arrow	Rewind 5 seconds
Left Arrow	Fast Forward 5 seconds
Numeric key [7]	Rewind 5 seconds
Numeric key [9]	Fast Forward 5 seconds
Numeric key [1]	Jump 10 songs back
Numeric key [3]	Jump 10 songs forward
Numeric key [0]	Load file
[Ctrl] + Numeric key [0]	Load location
[Shift] + [Insert]	Play directory
Numeric key [8]	Increase Volume
Numeric key [2]	Decrease Volume

Equalizer

Shortcut	Function
[1],[2],[3]...[0]	Increase corresponding equalizer bands
[Q],[W],[E]...[P]	Decrease corresponding equalizer bands
[']	Increase Pre-amp
[Tab]	Decrease Pre-amp
[S]	Open Preset menu
[Ctrl] + [S]	Load Preset
[A]	Toggle auto-loading
[Ctrl] + [F4]	Close equalizer
[N]	Toggle equalizer

Menu Functions

Shortcut	Function
[Alt] + [F]	File Menu
[Alt] + [P]	Play Menu
[Alt] + [O]	Options Menu
[Alt] + [I]	View Menu
[Ctrl] + [P]	Preferences Menu
[Alt] + [S]	Open Skin Browser
[Alt] + [K]	Configure Visualisation
[F1]	Open About Winamp Window

MiniBrowser

Shortcut	Function
[Alt] + [Left]	Go Back
[Alt] + [Right]	Go Forward
[Ctrl] + [L]	Open "Go" Menu
[Ctrl] + [O]	Go to Location
[Ctrl] + [R]	Refresh
[Ctrl] + [Alt] + [R]	Refresh links list

Playlist playback

Shortcut	Function
[R]	Toggle repeat
[S]	Toggle shuffle
[L]	Add file
[Ctrl] + [L]	Add Location
[Shift] + [L] or [Insert]	Add directory
[Enter]	Play file
[Ctrl] + [Shift] + [1]	Sort by title
[Ctrl] + [Shift] + [2]	Sort by filename
[Ctrl] + [Shift] + [3]	Sort by path
[Ctrl] + [R]	Reverse playlist
[Ctrl] + [Shift] + [R]	Randomize playlist

Playlist Controls

Shortcut	Function
[Ctrl] + [N]	New playlist
[Ctrl] + [O]	Load playlist
[Ctrl] + [S]	Save playlist
[Alt] + [3]	Edit tags
[Ctrl] + [E]	Edit file name
[Ctrl] + [A]	Select all
[Ctrl] + [I]	Invert selection
[Delete]	Remove selected items
[Ctrl] + [Delete]	Remove all but selected
[Alt] + [Delete]	Remove all non-existent files
[Alt] + Down Arrow	Move files downward
[Alt] + Up Arrow	Move files upward
Down arrow	Select downward
Up arrow	Select upward
[Shift] + Up Arrow	Select multiple files upward
[Shift] + Down Arrow	Select multiple files downward
[Page Up]	Move up by a fifth of the displayed playlist
[Page Down]	Move down by a fifth of the displayed playlist

Visualizer Window

Shortcut	Function
[Ctrl] + [O]	Visualization Options
[Alt] + [K]	Configure current plug-in
[Ctrl] + [Shift] + [K]	Start/Stop current plug-in
[Ctrl] + [K]	Open Visualization preferences

Global Hotkeys

Shortcut	Function	Works on Winamp irrespective of which program you are running. Go to Preferences>Global Hotkeys and check Enabled.
[Ctrl] + [Alt] + [Insert]	Play	
[Ctrl] + [Alt] + [Home]	Pause	
[Ctrl] + [Alt] + [End]	Stop	
[Ctrl] + [Alt] + [Page Up]	Play previous track	
[Ctrl] + [Alt] + [Page Down]	Play next track	
[Ctrl] + [Alt] + Up Arrow	Increase Volume	
[Ctrl] + [Alt] + Down Arrow	Decrease Volume	
[Ctrl] + [Alt] + Left Arrow	Rewind 5 seconds	
[Ctrl] + [Alt] + Right Arrow	Fast Forward 5 seconds	
[Ctrl] + [Alt] + [J]	Jump to Box	
[Ctrl] + [Alt] + [L]	Open File Dialogue	



Deskcretary

Most people like their desktops to be neat and clean, devoid of any icons and clutter. But do what you may, your desktop gets cluttered with literally hundreds of icons. Sure, some people take out free time to keep their desktops tidy, but no matter how particular we are, often we find our desktop to be a complete mess. Apart from obscuring your jazzy wallpaper, there are several niggles you face because of having a littered desktop. You waste hours trying to locate that one particular file you downloaded months ago, or that important notepad file with some detail you took down - of course you don't remember its name or you'd use the search function right? The Windows desktop cleanup tool which pops up every now and then is of little use and doesn't have too many options. Enter Deskcretary - a powerful desktop cleanup application that allows the user to perform manual and scheduled desktop cleanups. It conveniently archives the cleaned up files and provides a file explorer to view, search and restore archived files based on file type and date archived. Quite a nifty little tool that can actually double up as a file management tool.

Getting started

When you install and run the application for the

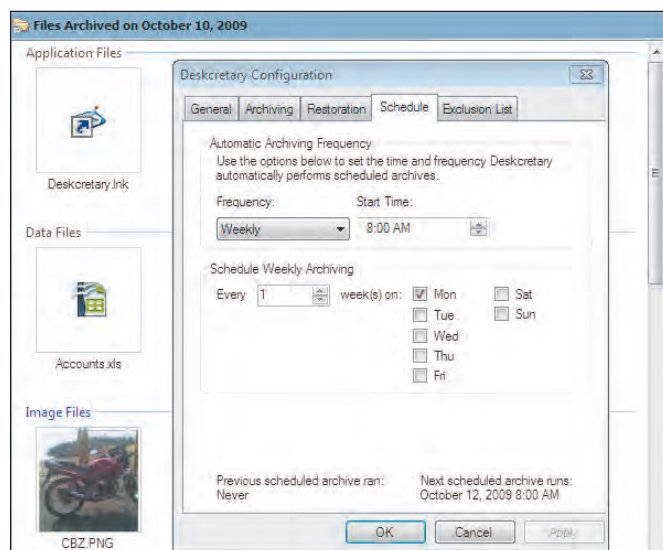
first time, a wizard pops up with several options to configure Deskcretary. Click the next button to set up different attributes such as exclusions, and scheduling. You can choose to set up the application here itself or cancel the wizard to be able to do it one at a time. Once the archiving of the desktop is completed, you get to view all archived files through the application conveniently sorted by file types. It also offers a tree view of archives by date.

Archiving

Before archiving files, click on Tools > Configuration > Archiving tab to set up the archiving parameters. Here, you have two options for dealing with folders on the desktop. The first option is to move each file from a folder into the archive, while the second one lets you compress all the files in the folder (including subfolders) into a single file on the desktop. You'll find moving files from folders is more convenient and goes through the software's sorting mechanism. Click OK after selecting the appropriate radio button. Now simply click on the Archive Desktop button at the top-right corner of the interface or hit [Ctrl] + [P]

Scheduling

With Deskcretary, you can also schedule clean up instead of doing them manually from time



Scheduling clean ups

to time. Click on Tools > Configuration > Scheduling tab to view scheduling options. Here you can choose Archiving frequency as Never, Daily, Weekly or Monthly, from a drop down list. You can choose the time and day for archiving and clean up to take place. Depending on how cluttered your desktop gets in a certain amount of time choose the appropriate option and click OK.

Restoring

While restoring there can be several issues that crop up such as treatment of duplicate files or clashing file names. To configure restoration, go to Tools > Configuration > Restoration tab. Here, you can even select whether files should be deleted once restored or if a copy should be maintained in applications archive. Select the appropriate option as per preference and click OK. To actually restore files, you can navigate to the appropriate date of the archive, select individual files or entire groups, right-click and say restore. The files will pop right back to your desktop.

Explore files and icons without Deskcretary

With Deskcretary you have the option of navigating to your files from its inbuilt explorer or you can do it the normal way (with Windows Explorer).

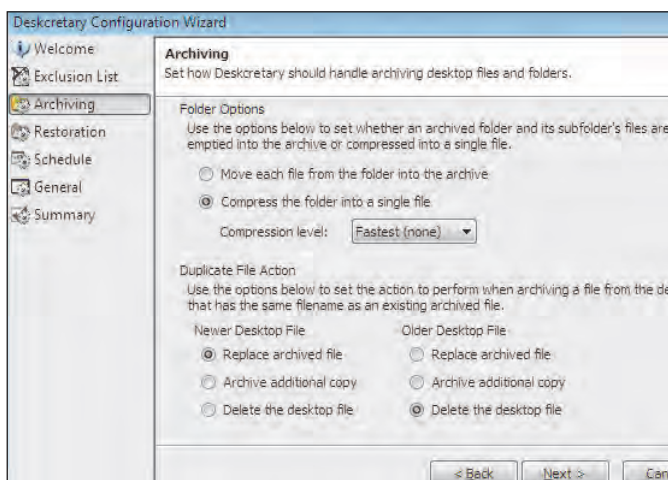
You will find a single folder on the desktop called Deskcretary, created by the application. In this folder, there are two subfolders viz. Archive and File Cabinet. Under File Cabinet, there will be further subfolders for each and every file type such as DOC, EXE and PDF. Your files are automatically sorted and slotted here under the relevant folders! In the Archive folder, you will find subfolders for each and every archiving date. Within these are shortcuts to the actual files stored in the File Cabinet.

Setting up exceptions

By default, Deskcretary archives all types of files. However, there are some files that we absolutely must have on our desktops. To set such exceptions, go to Tools > Configuration > Exclusion List Tab. Click on Add Files button to bring up the files on the desktop. Select the files and click OK.

Search for files

Apart from navigating by file type groups and date-wise archives Deskcretary provides the user with a powerful search function. Simply type the keyword in the search bar at the top of the interface. It will then bring up advanced search options that let you filter by file type, date and size. The interface even maintains a clickable search history.



Navigating the configuration wizard

Digit at your service

From antivirus to overclocking, all your questions answered!

COM SURROGATE problem

I have a Dell Studio 15 laptop with a 2 GHz Intel Core 2 Duo processor, 250 GB hard disk, 2 GB of memory with McAfee antivirus preloaded. I haven't updated my antivirus and now, I have errors "COM SURROGATE has stopped working" and "Rundll32 error; Windows has stopped working" that occur when I open any folder on my laptop. I need to know what the reason is for it and also the solution.

Sathiya Moorthy

The problem you're facing is because of some kind of codec issues. If you use a codec pack, uninstall it and check if the problem is fixed. Try installing individual codec from here on. Also, go to the Advanced System Settings from the Control Panel > System menu. Try changing the DEP settings for the binary dllhost.exe.

Multiple queries

My system configuration is as follows:

- Intel Pentium Dual Core E2200
 - Intel DG31PR motherboard
 - Transcend 1 GB DDR2 RAM
 - 250 GB 7200 rpm SATA HDD
 - Sony DVD RW AW-G170A
 - Benq 52X CD ROM DRIVE
 - Windows XP Service Pack 2
- If this isn't any good, how can I improve? My DVD writer doesn't read some DVDs. Those DVDs are playable on standalone DVD Players. What could be the problem? I need to buy a graphics card. My friends play great games on their PCs using dedicated graphics card. I would love to play games such as Crysis, Burnout Paradise, The Sims, Far Cry 2, Fear 2 and Call Of Duty. Please suggest me a cheap graphics card. Are Blu-Ray writers available in the market? Tell give me more details. I also want to buy a cheap 4 GB pen drive. Suggest one.

Amal Raj

In our opinion, your PC is getting slightly outdated. A processor upgrade will go a long way for now and you should also upgrade to 3 or 4 GB of RAM.

There might be a problem with your DVD writer. You should try using it on another PC. If it isn't working, send it for replacement if it's under warranty.

For the games you want to play, look for a GeForce 9800GTX+ or a Radeon HD4850 if your budget is under Rs. 8,000 or so. If you can spend around Rs. 15,000, look for the Radeon HD4890 or a GeForce GTX275. Do this after you've upgraded your processor.

Blu-ray writers are difficult to

find in India. If available, they will be extremely expensive. The price in the US market is somewhere over Rs. 20,000. A 4 GB Kingston Data Traveller USB drive should be under Rs. 500. Also, look around for OCZ drives.

Internet connection crashes

Whenever I connect to the internet from the BSNL USB LAN card, an error window pops up. After clicking on Don't Send, the internet connections stops.

My computer configuration is given below:

Intel Pentium 4 2.66 GHz, 768 MB RAM, 80 GB HDD.

Sandip Patel

The crash could have been caused by a number of things. If you are using any kind of Windows theme enhancements programs, turn them off or uninstall them completely to be safe. If you have any other Windows OS in dual-boot, try using it to see if you have the same problem with your LAN card. If the dialer comes as an program, uninstall it and reinstall.

How do you overclock?

My PC consists of a XFX n630i/ Geforce 7100 motherboard, Intel Core 2 Duo E7200@ 2.53 GHz, 2 GB Transcend single channel 800 MHz. I want to overclock my CPU but I don't know how to overclock. Please



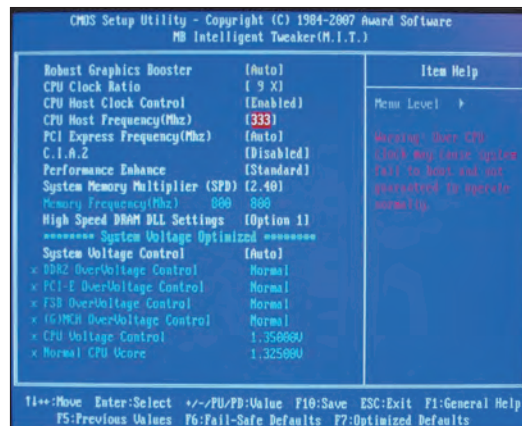
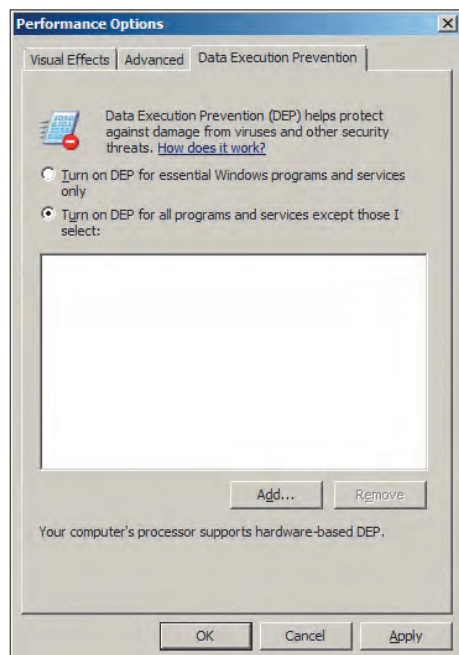
Windows crashing on connecting to the internet

tell me about it. Also, is there a limit I can overclock it to without using any cooling solution.

Shrirang

Firstly, the motherboard you are using needs to support overclocking features in the BIOS. Get into the BIOS by pressing [Del] during bootup. Overclocking is extremely risky and is not recommended. It involves changing the multiplier and FSB of the board in really tiny increments (by 1 MHz at a time) till you get a stable overclock where Windows boots and runs flawlessly. Run CPU intensive games to be sure that the system is stable.

There is no set limit to what speeds a processor can be overclocked to. If you see that the temperature of the processor is already over 45-50C, then there is little you can overclock. A separate cooler is



Windows crashing on connecting to the internet

Toshiba drives

Known for its industry firsts, Toshiba is set to launch 32-nm SSD drives

CG goes lucid

Lucid's Hydra could allow AMD and NVIDIA graphics cards to work in harmony

recommended. It's a matter of overclocking till you find the safest and most stable speed for that processor and setup.

Game makes screen go blank

I have an ASUS motherboard M2NPV-VM having Windows Vista Home Premium. I have an NVIDIA GeForce 6150 graphic card. I have installed Call of Duty 4, but whenever I start the game, the monitor goes black and shows a "low frequency" message. I thought it was a problem with the graphic card, so I installed a game with lower graphics requirements, but the problem still exists. Advise.

Tushar Agrawal

The problem you are facing is because of the game is running at a resolution much higher than your display can support. It could also be if the display refresh rate of the game is set to something much higher. If there's a configuration file for COD4, delete it and then try starting the game again.

Removing Ubuntu from the drive

I have Ubuntu and Windows XP on my PC. I deleted the partition in which Ubuntu was installed using Easus partition manager but when I rebooted my PC, it displayed a message saying "Boot loader missing error". I installed GRUB boot loader again from the Ubuntu CD. Now, it's working again, but 10 GB of my hard disk is used by it. Now I want to know how to remove it without losing any data. Please help.

Krishna Singh

If you've already deleted the 10 GB partition, that should now be available as free space. It's just not been added to any partition. You can create an empty 10 GB partition and use that space. Disk partitioning tools like Partition Magic will be able to merge two partitions without losing any data.

If you only run Windows XP and want to fix your boot loader, boot through the installation CD and you should be able to repair the existing boot loader.

Many queries

Which the most powerful antivirus for my computer? I have 512 MB of RAM and my processor is 1.60 GHz. Is Avira Antivir personal alright? I am also not connected to internet and I have to update my antivirus manually.

What is .net framework? I also want to know how to merge two video files. I have a 2 GB Moserbaer pen drive. I was formatting my pen drive using the format feature. Then, I lost 0.3 GB of the total space on the drive. How can I recover it?

Nishchay Maurya

It's difficult to say that a particular antivirus is the most powerful. Generally, security suites and antivirus programs from Kaspersky, ESET, McAfee and G DATA are good ways to keep your PC safe. There are no anti-virus that have a 100% detection rate.

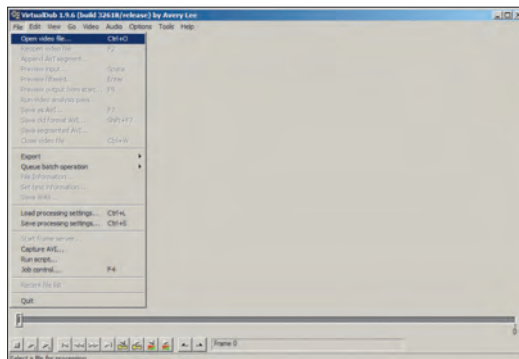
.NET framework is a platform or a environment for .net applications to run. Without it, you won't be able to run .net applications.

If the movies you're trying to add together are standard AVI files, you can try using Virtualdub (www.virtualdub.org) to do it. Windows Movie Maker is another option that you can try.

There is some amount of confusion over the bits and bytes conversion while talking about disk space. It's the same reason you'll never have 500 GB of space in a drive. In a flash drive, it's obviously a lot lesser loss of space.

DVD drive woes

I bought my DVD drive three months bac. It worked well for 15 days but after that after burning DVDs on it, it works for 2 to 3 uses. After that while accessing the discs, the the drive shows them as blank discs. Digit DVDs work fine on it. All kinds of CDs also work fine. The problem only comes with single-layer 4



Virtualdub is a free compact software for working with video files

GB DVDs. I tried to replace it at LG center but it worked fine on their PC. Because of that, I can't replace it although it's within warranty period.

Rohit Dandnayak

If the drive works at the service centre, then try using different media when you're using the drive and also a different software. Make sure that you burn discs at 8x. Also, try replacing the data cable to the drive and make sure there are no loose connections with the power cable. If nothing works, try it another PC. DVD writers usually deteriorate over time, so maybe your drive has started acting up.

Lost my Windows password!

I have forgotten my Window Vista administrator password. Is there some way of changing or recovering the password. I need it because I cannot install any software on my computer.

Pawan Maurya

You'll have to use a password recovery tool for Windows. Try www.password-changer.com and <http://home.eunet.no/pnordahl/ntpasswd/>.

Problems with memory speeds

My PC specifications are as follows:

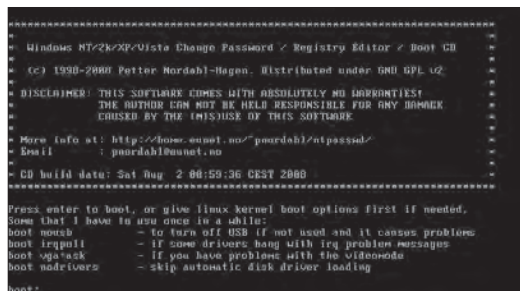
- Intel Pentium Dual Core E2140
- MSI G31M motherboard

- 3 GB RAM
- 320 GB Western Digital HDD
- XFX 8600 GT 512 MB DDR2

The problem is that I was using 1 GB DDR2 800 Zion RAM (6-6-6-18), and then I added 2 GB DDR2 800 (5-5-5-15) Starlite RAM. That makes it 3 GB in all. After adding the 2 GB RAM, both the RAM sticks are running at 667 MHz (5-5-5-15). Why this is so?

Sayan Chakraborty
Kolkata

It look like some kind of mismatch is causing the problem. I don't think you should be very concerned about the speed at what the modules are running. If you're certain that both the modules are DDR2 800MHz, then you can force it do run



Offline NT Password & Registry Editor can help reset lost Windows passwords

at 800MHz in the BIOS. Use the default timings if you have to. If nothing works, it might be worth upgrade the motherboard BIOS to fix any compatibility issues that might exist.

Is it time to go Vista?

I have a Gigabyte Motherboard model M61PME-S2P having a NVIDIA GeForce 6150SE nForce 430 chipset and running an AMD Athlon 7750 dual core processor with 2 GB RAM. Can I install Vista 64-bit on it? Will it support Vista and will Window run smoothly?

Amarjit Singh

Yes, Vista will run fine on your configuration. If you want, try waiting it out for Windows 7. It's a lot more optimised than Windows Vista and perform better than Windows Vista on your system.

1080p fun

Agent gets a feel of the latest HDTVs available, searches for the neatest displays and sweetest deals

Agent001

agent001@thinkdigit.com

The months preceding the year-end are shopping time. Whether it's for Diwali, Christmas or gifts for the wedding season, shopping in the last couple of months is always hot and what could be hotter than HDTVs? No doubt, being attentive readers, you will have absorbed all the *gyan* imparted by me on the topic. So I will refrain from restating everything. But all the same, please keep the following points in mind when shopping for an HDTV:

- Size matters, but not in the obvious way. Buy something that is suitable for your room size and viewing distance. A 32-inch HDTV is good enough for a viewing distance of not more than 10 feet. At 12 feet or more, this display feels small; ideally a display should be large enough to capture a major part of your viewing area. Previously, a large display viewed from too close appeared pixelated; but this is no longer an issue, thanks to higher resolutions. If your viewing distance is going to be greater than 10 feet, consider a 42-inch HDTV. For anything over 16 feet, look at a 46-inch display. Obviously your budget also matters, as larger displays are costlier, but this is ideally what you should look at.
- A dynamic contrast ratio of 50,000:1 is nonsense. We've tested such displays and noted their 'actual' contrast ratio is

not more than 1300:1. For the record, anything over 1,000:1 is good, and anything over 1,500:1 is superb. I am talking about the measured contrast ratio. Such specifications are overstated and the term 'dynamic contrast ratio' is misleading as various methods such as varying the backlight intensity or even measuring the contrast over a period of time (and not instantaneously as is proper procedure) is resorted to, which is why you see such inflated numbers. Displays with a 'static' contrast ratio of 1,000:1 are more than enough for a great viewing experience.

- Avoid getting confused between 'HD support' and '1080p supported' and other such generic statements. If you're buying a display today, 1080p is the resolution you should look at. Every display having a screen size of 32-inches and above should support this resolution. Look for the phrase 'native resolution' – this should be 1080p (1920 x 1080 progressively scanned pixels) and not lower.
- Many vendors are rushing to offer 19 and 22-inch HDTVs – these are not HDTVs in the truest sense and typically such displays use substandard LCDs. I feel a true HDTV starts from at least 26-inches, do not be caught shopping for anything smaller – save up a bit more if you have to and resist the urge to scratch the itch.
- A lot of manufacturers state 'IPS' panels. Although brilliant, such panels are meant for image professionals due to their colour accuracy. They don't have the best contrast ratios for movies and games where absolute colour accuracy and a 100 per cent colour gamut isn't necessary. PVA panels are much better for such applications since their contrast ratio is superior meaning the panel is capable of purer blacks and more variations in shade intensity.

- HDMI connectivity is important, but all you need is one or two HDMI ports; the latter in case you want to hook up two devices (like a Blu-ray player and an Xbox360) simultaneously. Please do not end up

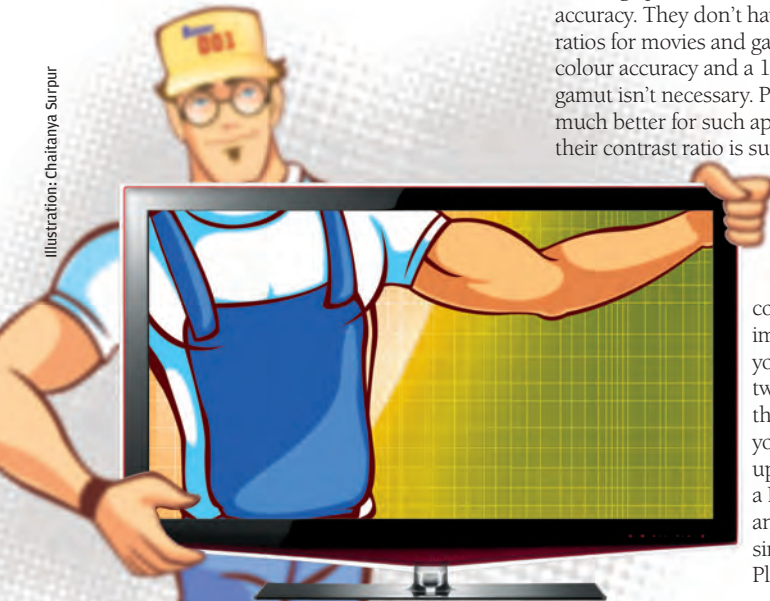
spending lots more for four and five HDMI ports – ask yourself if you'll use all of them at the same time.

- There is a common myth that 'LCD TVs' and 'LED TVs' are two different things. This misnomer is generating a lot of hype. The fact is LEDs are just the backlighting used; the display is still very much an LCD panel. Traditionally, CCFL tubes were used for backlighting, but LEDs are compact, brighter and consume less power making it a win-win situation. Obviously, this technique is pricier but better. Therefore, what is referred to as an 'LED TV' is actually an 'LED-backlit LCD display'. Technically, there is no such thing as an LED TV.
- Between LCDs and Plasmas I've noticed, while the latter traditionally have better blackness levels, LCDs are fast catching up. One issue is many plasma displays do not display sharp text – people who want to use the display with their computers please note that the newer LCDs are better as their text rendition is better.

If you are looking for a sweet value for money deal on a large screen, I recommend LG's 42LG80FR – we tested this model early this year and found its performance to be pretty amazing – great colour quality and surprisingly pretty good contrast for an IPS panel. We also found text quality to be good – this is not the case with many LCD TVs. Prices have fallen and this display is available for as little as Rs. 60,000 – a very good value deal. The recessed, slide-out speakers are neat while build quality of the same is good.

If you want anything larger than 42-inches, I recommend looking at plasma displays. No matter how tempting LCDs look, the larger ones are disproportionately costly. Unless you want the sleek, uber expensive slimness of an LED-backlit LCD HDTV in which case I recommend Samsung's 46-inch UA46B6000VR – priced at around Rs. 1,50,000, this display is all about performance. To be honest, though, I feel a 50-inch plasma might be a better deal. Unlike what most people believe plasmas aren't inferior in 'any' way. Samsung's own PS50B550 is a very good option – a 50-inch display with excellent colour and contrast at a price of Rs. 1,00,000.

In case you're shopping for something under Rs. 30,000, look at Samsung's Series 4 26-inch LCD TV; it's a decent performer priced at around the Rs. 28,000 mark. **d**





NVIDIA has launched their entry-level GeForce GTX 210 and 220 desktop graphics GPUs



IEEE Draft N2 finally becomes 'N' as all Draft N devices are deemed compatible with the final 802.11n standard

Agent 001

Q I have a Sony Ericsson W810i mobile. My old handsfree is dead and of no use. So now I want a good replacement for it. My budget is Rs.1000 to 1300. I've 2 options: buy costlier SE handsfree like the HPM-85 or better. Or, the buy lower SE handsfree (just for connecting to phone) + Creative EP630 earphones.

I've read lot of good things about Creative EP630 in your magazine. I want to know from you which way should I go? Or is there any better option available?

Bipin Thite

A I recommend buying just the regular handsfree kit and buying a Creative EP630 that will give you much better quality even when listening to music, even when you are not using the handsfree unit. The EP630 can be had for under Rs. 1,000 from many vendors like computer and cellphone shops.

Q I am planning to buy a laptop. My budget is 40-45 K. I am a B.E final year student of computer science. So I need a decent laptop. The brand doesn't matter. But a brand with good after sale service will do good. I am also a gamer so I need a laptop of that kind. And I am not going to travel often so the backup or compactness is not mandatory but a fair battery backup of 3 hours will be nice. So please suggest guys.

Kannan. R

A I recommend Acer's Aspire 5738G; available for Rs. 40,999 – it has very good specifications and a good graphics solution. Getting three hours of battery life from a notebook with a fast CPU and good graphics is not really possible so I suggest if you game please sacrifice on the battery life. Acer's service reputation is pretty good and the 5738G isn't overly heavy but has a nice 15.6-inch LED-backlit display.

Q I would like to buy a PC for purely multitasking, playing high quality games, watching full HD movies, etc. I have decided to buy an AMD Phenom II X4 940 3 GHz and NVIDIA GTX 260 graphics card. What choice of motherboard and SMPS

should I opt for? I want my motherboard to have Ethernet Port, Fire-Wire port and at least 4 USB ports. I want to add a sound card. My budget is 50,000.

Ashish Mathew

A First of all the applications you have mentioned are not really multithreaded a great deal so four cores will not necessarily be better than two. However, taking future proofing into the angle I recommend an Intel processor over an AMD – and your budget of Rs. 50,000 will allow you to easily opt for either a Core 2 Quad or a Core i7/i5 based system. With the former processor your platform will be cheaper giving you more money to spend on a graphics card while with the Core i7/i5 system the motherboard will cost much more meaning you have less to spend on the video card – which is more important for gaming. I recommend a Core 2 Duo based system based around a Core 2 Quad Q9550 CPU (Rs. 12,500), ASUS

thinkdigit news

The Web is abuzz with news that Nvidia might be killing its GT200 series of graphics cards. It all started with SemiAccurate's Charlie Demerjian – who has long been criticised as a 'tech tabloid' writer by all and sundry – stating that the company is set to kill its GeForce GTX285, GTX275, and GTX260 graphics cards, and possibly the GTX295 too; thus abandoning the entire high-range and mid-range graphics. Read more at www.thinkdigit.com/d/55378.

P5Q-E motherboard (Rs. 9,000), 4 GB DDR2 800 MHz (Rs. 4000), 500 GB Western Digital hard drive (Rs. 3700) and if your budget permits, a ZOTAC GeForce GTX 285 (Rs. 23,000) – which is a superb performer. In case you also need a monitor that will cut into your GPU budget (since you haven't mentioned anything), I recommend a Palit ATi Radeon HD 4890 card (Rs. 17,500). For an SMPS I recommend Corsair's TX 650W available for Rs. 6,200. All motherboards these days come

with at least four USB ports, Ethernet and the ability to add soundcards. FireWire isn't a necessity but this motherboard has this port as well.

Q I want to buy a digital camera with high optical zoom and better performance. I have a budget of Rs. 15,000 to Rs. 22,000. I have visited various web sites for cameras and found several models suitable. Let me know your suggest.

Aditya Didwania

A Canon's SX10 IS should be available on the street at around that price. If not, Canon's SX200 IS will definitely suit. In fact I feel the SX200 IS is better built due to its smaller size and partially metal body. The SX10 IS has a 20x optical zoom, while the SX200 IS has a very neat 12x optical zoom. From our tests the SX20 IS had slightly better low light performance, however, owing to its longer zoom the output is pretty susceptible to barrel distortion. I recommend the SX200 IS.

Q I want to buy a processor and a motherboard for my gaming PC. I'm considering Intel i7 920, Intel Core 2 Quad Q9650 or Q8400. I don't know which motherboard to buy for it but it should support 8GB RAM and a PCIe slot for my NVIDIA 8600GT 512MB GDDR3. My budget is around Rs. 16,000. Will I be able to play games like Prototype at maximum details and resolution?

Sumant kumar

A You are naming high-end components for a mere NVIDIA 8600GT. I think you need to upgrade that graphics card before buying such components. I recommend at least a ZOTAC GTX 260 available for Rs. 11,500 that will utilise such components properly. Your budget is way too paltry for a Core i7/i5 system. Therefore, go with a Core 2 Duo E8400 and ASUS P5Q-E board for Rs. 8,000 and Rs 9,000 respectively. If you want a cheaper motherboard BioStar's TPower i45 is available for Rs. 7,900 and will also suit the E8400. **[i]**

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KILLER RIGS

everything you will ever need to build your own PC. whatever your budget.

MONITOR

- ViewSonic VA1928wm / Rs. 8,200
- AOC 2230fm / Rs. 14,000
- Dell S2409W / Rs. 15,000

HARD DISK

- Seagate 250 GB 7200.11 / Rs. 1,900
- Seagate 1 TB 7200.11 / Rs. 5,500
- Western Digital Velociraptor 150 GB / Rs. 9,900 or Western Digital 1 TB Black Edition / Rs. 7,400

POWER

- VIP 350 Watts / Rs. 850
- Corsair TX 650 / Rs. 6,500
- Cooler Master RealPower Pro 850W / Rs. 11,200

CABINET

- Zebronic Antibiotic / Rs. 2,100
- Cooler Master 690 / Rs. 4,400
- Cooler Master Sniper / Rs. 11,500

GRAPHICS CARD

- None
- Palit Radeon HD 4870 1 GB SONIC / Rs. 18,100
- ZOTAC GeForce GTX 295 / Rs. 29,000

MOTHERBOARD

- ASUS NVIDIA 7025 M2N68-AM / Rs. 2,250
- Abit IP35-E Rs. 5,300
- ASUS P5Q Deluxe / Rs. 14,000

SPEAKER

- None
- Altec Lansing MX 5021 / Rs. 6,500
- Logitech Z5500 / Rs. 14,000

MOUSE

- Logitech 3 button scroll / Rs. 300
- Logitech MX518 / Rs. 1,300
- Razer DeathAdder / Rs. 2,500

KEYBOARD

- Logitech Multimedia / Rs. 400
- Logitech G15 / Rs. 4,500
- Logitech G15 / Rs. 4,500

SOUND CARD

- None / NA
- ASUS Xonar DX / Rs. 3,700
- ASUS Xonar DX / Rs. 3,700

CPU

- AMD Athlon XP 6000+ / Rs. 2,850
- Intel Core 2 Duo E8400 / Rs. 8,200
- Intel Core 2 Quad Q9650 / Rs. 23,000

RAM

- 2 x 2 GB DDR2 800 MHz (Kingston Value) / Rs. 1,350
- 2 x 2 GB DDR2 800 MHz (Corsair XMS2) / Rs. 3,600
- 2 x 2 GB DDR2 OCZ Platinum 1066 MHz / Rs. 6,500



Motherboards

Model	Market Price	Tested In	Socket	PCIe x8/x16 slots	SATA ports	USB ports
ASUS M3N78-EM	Rs. 4,300	November 2008	AM2+	1	6	4
ASUS P5Q Deluxe	Rs. 14,900	June 2008	LGA775	2	6	6
ASUS P5Q-PRO	Rs. 9,650		LGA775	2	6	6
ASUS P5Q-E	Rs. 11,350		LGA775	2	6	8
ASUS P6T Deluxe	Rs. 20,975	October 2009	LGA1366	3	6	8
ASUS Rampage II Extreme (BEST PERFORMER)	Rs. 26,000	October 2009	LGA1366	3	6	6
ASUS Rampage II GENE	Rs. 16,450	October 2009	LGA1366	2	6	6
ASUS M4A79T Deluxe	Rs. 13,050	October 2009	AM3	4	5	6
GIGABYTE EX58-UD5	Rs. 16,950	October 2009	LGA1366	3	6	8
Gigabyte GA-EP45-UD3R	Rs. 8,900		LGA775	1	6	8
GIGABYTE MA790GP-UD4H	Rs. 9,100	October 2009	AM2+	2	6	4
Gigabyte GA-EX58-UD3R	Rs. 14,250		LGA1366	2	6	8
MSI X58 PRO	Rs. 11,300	October 2009	LGA1366	3	7	6
MSI P7N Diamond	Rs. 15,200		LGA775	4	6	6
MSI X58 Eclipse	Rs. 20,250		LGA1366	3	10	8
XFX nForce 790i Ultra	Rs. 21,050	October 2009	LGA775	3	6	6
Zotac 780i Supreme	Rs. 14,500		LGA775	3	6	6
Zotac nForce 750a	Rs. 6,500		AM2+	2	6	4



Digital Cameras

Model	Market Price	Tested in	Sensor	Optical Zoom	LCD Screen Size
Canon Powershot SX120	Rs. 14,995	October 2009	10 MP	10x	3.0 inches
Canon IXUS 100IS	Rs. 12,999	October 2009	12 MP	3x	2.5 inches
Canon Powershot A480	Rs. 7,499	October 2009	10 MP	3.3x	2.5 inches
Canon A1100IS	Rs. 9,499	October 2009	12 MP	4x	2.5 inches
Canon IXUS 95IS	Rs. 10,500	October 2009	10 MP	3x	2.5 inches
Canon SX200IS (BEST PERFORMER)	Rs. 21,500	October 2009	12 MP	12x	3.0 inches
FujiFilm FinePix F200	Rs. 17,999	October 2009	12 MP	5x	3.0 inches
FujiFilm FinePix S1500	Rs. 12,500	October 2009	10 MP	12x	2.7 inches
Kodak C140	Rs. 4,999		8 MP	3x	2.4 inches
Nikon P90	Rs. 23,995	October 2009	12 MP	24x	3.0 inches
Nikon Coolpix L20	Rs. 7,750	October 2009	10 MP	3.6x	3.0 inches
Nikon S220	Rs. 8,500	October 2009	10 MP	3x	2.5 inches
Olympus FE25	Rs. 5,995		10 MP	3x	2.4 inches
Panasonic FS4	Rs. 6,750		8 MP	4x	2.5 inches
Samsung ES55 (BEST BUY)	Rs. 6,990	October 2009	10 MP	3x	2.5 inches
Sony HX1	Rs. 29,800	October 2009	9 MP	20x	3.0 inches
Sony S930	Rs. 7,800		10 MP	3x	2.4 inches
Sony H20	Rs. 17,500		10 MP	10x	3.0 inches



External HDDs

Model	Market Price	Capacity	Interface	Warranty (Years)
Seagate Freeagent GO	Rs. 5,150	500 GB	USB	5 years
Seagate Freeagent GO	Rs. 3,250	250 GB	USB	5 years
Maxtor One Touch 4 Mini	Rs. 3,200	250 GB	USB	5 years
Transcend StoreJet	Rs. 2,725	160 GB	USB	2 years
Western Digital MyPassport	Rs. 2,850	160 GB	USB	3 years
Western Digital MyPassport Essential	Rs. 4,100	640 GB	USB	3 years
Western Digital MyPassport Studio Edition	Rs. 7,800	1 TB	USB, FireWire, eSATA	3 years



Processors

Model	Market Price	Tested In	Socket	Speed	FSB	L2 Cache
AMD Sempron 140	Rs. 1,950	September 2009	AM2+	2.7 GHz	2000 MHz HyperTransport	1 MB
AMD Athlon X2 5200+	Rs. 3,200	November 2008	AM2+	2.7 GHz	2000 MHz HyperTransport	1 MB
AMD Athlon X2 7850 BE	Rs. 3,350	September 2009	AM2	2.8 GHz	2000 MHz HyperTransport	2 MB
AMD Athlon II X2 250	Rs. 4,100	September 2009	AM2+	3 GHz	2000 MHz HyperTransport	2 MB
AMD Athlon II X2 550	Rs. 5,450	September 2009	AM2+	3.1 GHz	2000 MHz HyperTransport	1 MB
AMD Phenom X4 9650	Rs. 6,025	November 2008	AM2+	2.3 GHz	3600 MHz HyperTransport	2 MB
AMD Phenom II X3 720 BE	Rs. 7,500	September 2009	AM3	2.8 GHz	2000 MHz HyperTransport	1.5 MB
AMD Phenom II X4 810	Rs. 8,350	September 2009	AM2+	2.6 GHz	2000 MHz HyperTransport	2 MB
AMD Phenom II X4 920 BE	Rs. 9,650		AM3	2.8 GHz	3600 MHz HyperTransport	2 MB
AMD Phenom II X4 945	Rs. 12,075	September 2009	AM2+	3G Hz	2000 MHz HyperTransport	2 MB
AMD Phenom II X4 955BE	Rs. 13,100	September 2009	AM3	3.2 GHz	2000 MHz HyperTransport	2 MB
Intel Dual Core E2200	Rs. 3,000	September 2009	LGA775	2.2 GHz	800 MHz	1 MB
Intel Dual Core E5200	Rs. 3,375	September 2009	LGA775	2.5 GHz	800 MHz	2 MB
Intel Core 2 Duo E7400	Rs. 5,900	September 2009	LGA775	2.8 GHz	1066 MHz	3 MB
Intel Core 2 Duo E8400	Rs. 8,850	September 2009	LGA775	3 GHz	1333 MHz	6 MB
Intel Core 2 Quad Q8200	Rs. 8,650	September 2009	LGA775	2.33 GHz	1333 MHz	4 MB
Intel Core 2 Quad Q8400	Rs. 8,750	September 2009	LGA775	2.4 GHz	1066 MHz	8 MB
Intel Core 2 Quad Q9400	Rs. 12,100		LGA775	2.66 GHz	1333 MHz	6 MB
Intel Core 2 Quad Q9550	Rs. 12,601		LGA775	2.83 GHz	1333 MHz	12 MB
Intel Core i7 920	Rs. 14,900	September 2009	LGA1366	2.66 GHz	4.8 GT/s QPI	NA



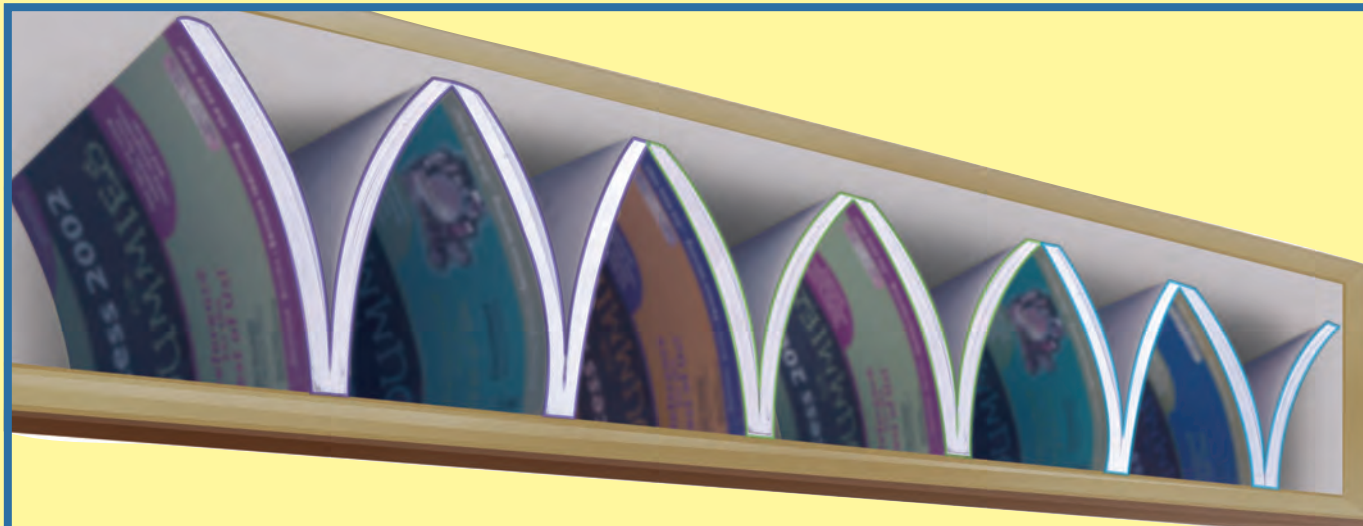
Monitors

Model	Market Price	Tested in	Size	Resolution	Contrast Ratio	Response time
Acer V203H	Rs. 7,250		20-inch	1600 x 900	10000:1	5 ms
ASUS VM193D	Rs. 6,850		19-inch	1440 x 900	800 : 1	5 ms
BenQ E2200HD	Rs. 9,950		21.5-inch	1920 x 1080	1000 : 1	5 ms
Dell 1909W	Rs. 6,800		19-inch	1440 x 900	1000 : 1	5 ms
Dell S1709W	Rs. 7,200		17-inch	1440 x 900	600 : 1	8 ms
Dell S2409W	Rs. 14,750		24-inch	1920 x 1080	1000 : 1	5 ms
LG 177WSB	Rs. 6,300	May 2008	17-inch	1440 x 900	700 : 1	8 ms
LG W1942T	Rs. 6,900		19-inch	1440 x 900	700 : 1	5 ms
Samsung 2033	Rs. 7,250		20-inch	1600 x 900	15000 : 1	5 ms
Samsung 733NW	Rs. 6,550		17-inch	1440 x 900	1000 : 1	8 ms
Samsung 943NWX	Rs. 7,500		19-inch	1280 x 1024	1000 : 1	5 ms
ViewSonic VA1918WM	Rs. 6,600		19-inch	1440 x 900	1000 : 1	5 ms
VIEWSONIC VX2255WMB	Rs. 12,500	May 2008	22-inch	1680 x 1050	1000 : 1	5 ms
ViewSonic VX2240W	Rs. 9,900		22-inch	1680 x 1050	1000 : 1	2 ms



Graphic Cards

Model	Market Price	Tested in	Core Speed	Type of memory	Memory
EVGA 9600GT Knock-out	Rs. 6,650	November 2008	700 MHz	GDDR3	512 MB
Power Color HD4850	Rs. 6,600	August 2009	625 MHz	GDDR3	512 MB
Power Color HD4670	Rs. 4,650	August 2009	750 MHz	DDR3	1024 MB
Palit GeForce 9400 GT Super	Rs. 2,525	August 2009	550 MHz	GDDR2	1024 MB
Palit Radeon HD 4870 SONIC	Rs. 13,500	October 2008	750 MHz	GDDR5	512 MB
Palit GeForce GTX 260	Rs. 1,0750		650 MHz	GDDR3	896 MB
Palit GeForce GTX 275	Rs. 1,3900		633 MHz	GDDR3	896 MB
XFX GeForce 8600 GT	Rs. 3,150		540 MHz	GDDR3	256 MB
ZOTAC GeForce GTS 250	Rs. 9,250		738 MHz	GDDR3	1024 MB
ZOTAC GeForce GTX 285	Rs. 26,000	Feb 2009	648 MHz	GDDR3	1024 MB



10 Great ways to keep learning

Nimish Chandiramani
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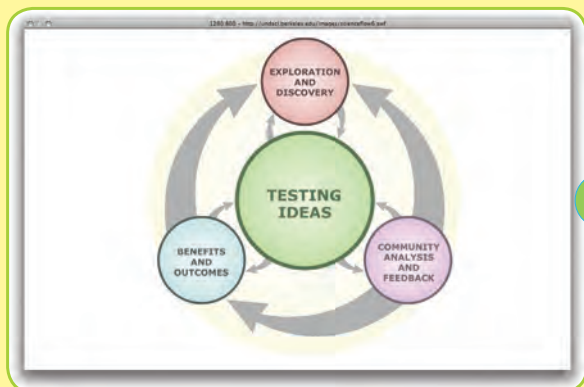
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Have Fun with Phun

Ostensibly, Phun is a game, and we're inclined to let that description stand. You create objects, give them real world properties – weight, restitution (that's physics-speak for how bouncy it is), and so on – and then set them loose within the world of Phun. Whether you're building a wall and chucking a cannonball at it, or creating a complex gear system to drive your crazy contraption of the day, Phun can be addictive. And while you're at it, maybe you'll learn (or re-learn) all those physics fundamentals you've forgotten.

For: Everyone

Get: www.phunland.com



2

Understand Science

According to a 2003 study by the British Association for the Advancement of Science, children these days don't seem to care much for science subjects, much less for their advancement. Understanding Science wants to change that. It has enough science to fill a school curriculum, but is still as friendly as your everyday science documentary. Its other purpose is to debunk all the... well... bunk that's taught in US schools today – Intelligent Design and such – and does so in a quiet, rational way that can't help but make sense.

For: High school students, teachers

Read: undsci.berkeley.edu

For: Everyone

Get: www.phunland.com

**3**

Make a Robot

Give the robot apocalypse a push in the back by building your own. The Society of Robots (not, as the name suggests, a precursor to Skynet) gives you a bunch of tutorials on basic robotics – from how to create a simple robot to all the information you need on components to build a bigger, better bot. It's even got helpful tools to help you figure out what batteries you need and how much energy your bot is going to consume. Finding the components, though, will be an adventure on its own.

For: Budding engineers, foolish optimists

Read: www.societyofrobots.com

image credit: Mr. T in DC (flickr)

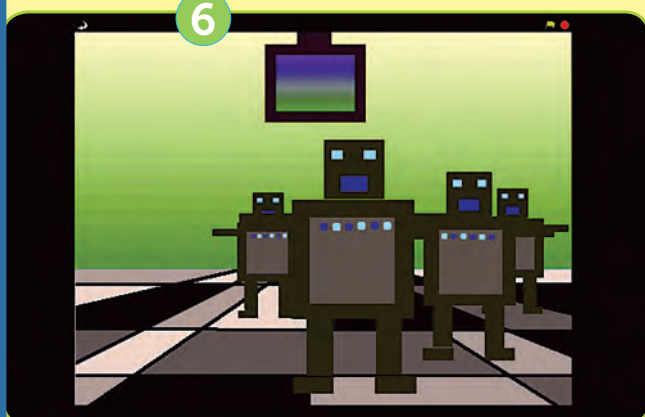
Become An Edu-tuber

Bookmark YouTubeEDU for your daily dose of academic lectures from universities such as Harvard, MIT and Stanford. The channel hosts almost every expert lecture being held at these universities, and you'll even find a course or two tucked away somewhere. Whether you want to follow up on the latest developments in brain-computer interfaces or the science behind Angels and Demons (spoiler: antimatter is harmless), YouTubeEDU's got the goods.

For: Everyone

Watch: www.youtube.com/edu

credit: doviende (flickr)

**6****4**

Talk Business

If you're planning on starting your own company eventually (and who isn't), head over to the US Small Business Administration's web site for its free "Small Business Primer". Learn how you can start your own business (on a shoestring budget, even), manage technology, create a business plan, and a lot more. Even if you aren't planning on running a business, the site is loaded with plenty of management advice that applies everywhere – managing people, time and resources, for example. If nothing else, it's great ammunition for an IIM admission interview.

For: Working professionals

Read: http://www.sba.gov/services/training/onlinecourses/TRAINING_ATC_BUS.html

credit: by Ajda Gregorčič (flickr)

**5**

Scratch Up A Movie

Computational thinking is all the rage these days. Business and design professors recommend it for students in their fields, and the world is slowly realising that it pays to think like a programmer – to apply the basics of computer science to solve problems, plan systems, and even deal with other humans. And with Scratch, MIT's Lifelong Kindergarten group wants you (and your children) to learn those basics by applying them to the fine art of silly-looking animation. Use if.. conditions, for loops, and other such constructs to tell a story, and you'll be a much happier panda.

For: Ages 8 and up

Get it: scratch.mit.edu



Garry's Mod

The \$9.99 Half-Life 2 mod allows realistic interaction with objects in 3D spaces similar to Phun or Crayon Deluxe



Showmehowtoplay

An online service that lets you view and learn how to play musical instruments online

Pocket University

The academics also gather at iTunesU, imparting their wisdom as they sit in your iPod. The podcasts range from iPhone Application Programming to Ethics and Economics. It's not all hardcore academia, either – you'll also find songs and poems by students, and even weekly podcasts on the strange and wonderful things that make up the world (we recommend Texas A&M's Engineering Works!). Want to understand the current economic crisis? Download the podcast by Oxford University, and you're ready to make your journey to work that much more productive.

For: Everyone

Get: iTunes Music Store in iTunes

Credit: stuartpilbrow (flickr)

Make Math Pretty

Thanks to Wolfram|Alpha, the name Mathematica has become the subject of lore. It's the mathematician's (and data analyst's) dream come true. It turns massive mathematical equations into awesome graphs, turns streams of data into interactive visualisations, and forms the backbone of Wolfram|Alpha. Trouble is, it costs \$295 for the Home edition.

If you want those same features, though, download Sage – an open source alternative. It's got most of the mathematical goodness of Mathematica, and should be a must-have for math geeks everywhere.

For: Engineering and Science students

Get: www.sagemath.org

Learn Everything

It's annoying when your favourite program comes out in a new version even before you've mastered the first. These days, it's more important to keep up with new software and technologies, and for that, there's Lynda.com. It has video courses for nearly everything – from

9



Illustrator CS4 (it's actually got a whole CS4 University) to AJAX – so you'll never have to go anywhere else. It's \$25 (Rs. 1,250) for a monthly all-access membership, so it makes more sense if you're actually going to use these skills at work.

For: Working professionals

Watch: www.lynda.com

Academic Earth

Academic Earth is the site that came before YouTubeEDU. It started with a bunch of guest lectures at universities, and is now the place to go for a huge library of courses. You can sit through a semester's worth of science, mathematics or history if you wish, or just pick from individual lectures on a variety of topics. In its current state, the site is a simple, no-frills affair, but apparently "social" features are in the works.

For: All students

Watch: academicearth.org

Credit: LizMarie (flickr)



Bonus! Five Ways To Keep Your Brain From Rotting

The Set Game

Start your morning with something that'll flex your little grey cells without taking as much time as a full crossword. The Set Game is a new, insanely addictive game that tests your ability to identify shapes and patterns. You have twelve cards with squiggles, ovals and diamonds on them, and



have to create sets based on their colour, pattern and number (it's much harder than it sounds). Play it at setgame.com.

Daydream!

According to researchers at Goldsmiths, University of London, the unfocused mind is more likely to come up with creative solutions to problems. So if it seems as if you're banging your head against a brick wall, take a few minutes off and think of fluffy clouds and open fields, and maybe the solution will jump out at you.



Play A Tune

If you want to try your hand at soothing savage beasts, pick up an instrument and go online for some free music courses. Start with the basics of music theory at MusicTheory.net, and follow it up with the basics of guitar at Cyberfret,



or piano at (the badly designed) GoPiano.com. And as Sohee Park of Vanderbilt University found, you'll probably end up using both sides of your brain.

Credit: MaltaGirl (flickr)

Gear up for NaNoWriMo

National Novel-writing Month (NaNoWriMo; nanowrimo.org) is coming in November, and it's a great way to unleash the creative juices in 30 days. And if you're going to do it, you might as well get better at the craft. Invest a few hours in a free Fiction Writing (or Essay Writing) course at the



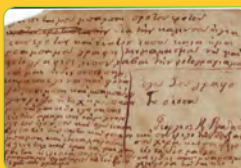
Open University, and you ought to be ready to hammer at your keyboard come November.

Credit: gadl (flickr)

Learn a new language

Learning a new language is a great way to keep your brain in shape. LiveMocha (livemocha.com) not only teaches you a new language, it lets you test your new-found skills on a native speaker.

Credit: Kim Scarborough (flickr)



CEED

The Common Entrance Examination for Design is conducted by the IITs every year for admissions to their design courses

Open source designing

Read the August 2009 issue of Digit for an interesting article on OScar – the open source car

Feature

Nash David

nash.david@thinkdigit.com

Case study House #8 was designed in the '40s, when we as Indians hadn't witnessed our *tryst with destiny*. A glance at it and you'll find it hard to believe it has been standing as a symbol of modern design for the past six decades. Upon a request by the Indian government, American designer couple Charles and Ray Eames presented the India Report in 1958 that resulted in the first design institute popularly known as the National Institute of Design located in

Ahmedabad, Gujarat.

A neglected branch till recently, design has received the much needed fillip in India with several well known brands setting up local design studios and employing design engineers and/or product designers in India. According to PayScale, an international employee compensation watchdog, a User Interface Designer with anywhere between one to three years of work experience draws an average annual salary of Rs. 3,50,000 compared to Rs. 2,00,000 for a software programmer with the same experience – that's a 57 per cent hike in salary. You'd probably not get that much even after your first salary hike.

We'd like to add here – there's no limit for talented designers in this country (some designers we spoke to earn much more than these figures).

Where we stand

We spoke to academicians and administrators who shared their insight on design. Primarily, India has a long road ahead. Prof. Balaram has been among the founding faculty at NID, Ahmedabad and is currently the Dean of DJ Academy of Design (DJAD), Coimbatore. With decades of experience as a designer, he feels there's more we need to do as a nation. When asked where India stood in terms of design globally and what scope lied ahead for someone interested in pursuing a career in design, he said, "There are, not more than, 20 design institutes across India. With the number of students per class averaging to 15, the number of designers graduating each year is not more than 500. Compare this to China that has over 500 design schools, whereas Korea that produces 36,000 designers every year. So we as a nation definitely have a lot to work in terms of infrastructure." This also means we are terribly short of skilled designers and so employment opportunities are high after completing a course in design from a design school of repute.

What it takes

According to Prof. Sekhar Mukherjee from NID, Ahmedabad, "Design is nothing, but setting in order all the elements of life to make life more meaningful. Design is a tool to solve a problem, and effectively, a designer is someone who thinks and *cares* to improve our life with the intervention of design solutions, be it communication or product."

Certainly, companies are on yare on the lookout for creative designers and design schools will let you in if you show traits of a designer. "Every human being is a designer by birth. But to specialise in this profession, you need to go through a bit of design process and experience the old design education environment. Anyone who loves to think, create, doodle and introspect ideally are better!"

That's interesting, anyone who thinks, creates or doodles. So effectively, if you were a back-bencher in school and were always picked on for sketching in your notes, you might just have it in you to make it to one of the best design institutes in the world. But this just shows being the studious one alone doesn't get you there. You'd need the right kind of attitude with aptitude to stand out of the crowd. According to Prof. Balaram, more stress is put on aptitude and attitude

Designing Careers



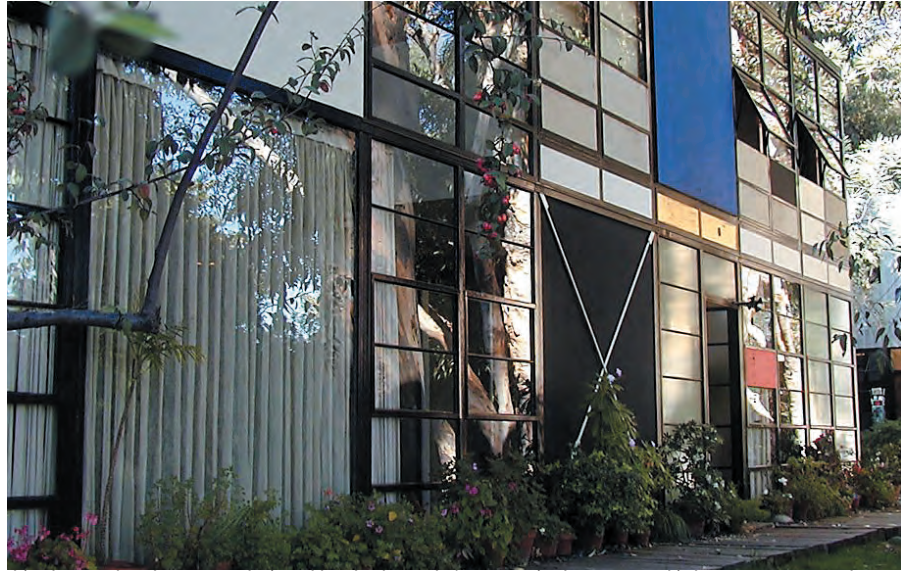
rather than academics. “We look for students with a creative bent of mind. The aspirant should also have a strong sense of aesthetics (form and colour) with a broad outlook. Divergence is most important for design and so is team work. We try to gauge all these qualities in the probable student by way of aptitude tests prior to admission. Before offering admission we also conduct a personal interview to confirm (as much as possible) he/she is genuinely talented.”

The road ahead

After graduating from design school, the obvious route is to design studios that most MNCs have set up. In fact, several Indian companies such as Onida, Videocon and TI Cycles are also setting up design studios in India and have realised the need for scientifically designed products. D J Academy of Design alumni have successfully been placed in popular companies such as Infosys, Wipro Lighting, Tata Solar, Mahindra Tech and Onida.

If you want to pursue courses abroad, institutes such as Rhode Island School of Design (Rhode Island, USA), California Institute of the Arts (California, USA), Royal

Image courtesy: ArchitectureWeek.com



This ultra modern house was designed by Charles and Ray Eames in the 1940s and is known as Case Study House #8

Design schools, in addition to imparting skills to students, perform the function of sorting probable designers. With enormous rush for admissions to design courses and the limited infrastructure in the nation, selection criteria need to be stringent and based

This is followed by an All India test in the month of April. This is known as Design Aptitude Test. The next step is a studio test and personal interview in May, where further elimination is done. Finally classes begin in the month of July.”

Placement assistance

MIT Institute of Design started in 2006 and the first PG batch graduated in March 2009. According to Mukta Khanna, “Training and Placement officer at MIT, the focus is always on innovation and new design. Last year, from over 750 applications, admissions were offered



Pass your feedback at <http://www.thinkdigit.com/d/nov09>

College of Art (London, UK) are options you could consider. Prof. Mukherjee advises you try the *best design school in the country*, work for some time and then think of going abroad for a course in design. This way, he says, “you’ll be sure of your decision and have a better understanding of the subject rather than walking blindly on a lane”.



As a designer, you'd need to have a toolkit. Industrial sculptor Paul Sandip has the following recommendations:

- Common sense, which is too uncommon
- Grey cells for sparking new connections
- Pencil (but no eraser, because every idea is worth trying out)
- Markers for attractive and informative communication.
- Rhinoceros 4.0 or any other equivalent software for 3D visualisation.
- Hypershot for photo-realistic renderings



on quality (read creativity and innovation) alone.

Deputy Registrar of MIT Vinayak Kulkarni adds, “The admission process begins in the month of November. The last date for submission of forms is January 31.



NIDUS located in the NID campus sells products designed by NID students

Adobe's design

Read our Industry Connect with Ajay Pande, VP (Engineering), Adobe India to know what Adobe seeks in a potential designer

Interest rates

Considering average fees of design schools in India, educational loans are available at an interest rate of between 10 to 12 per cent per year

Feature

FEE STRUCTURE

NID Ahmedabad

Charges	GDPD	PGDPD
Studio & KMC charges/I.T. infrastructure charges/Other services*	10,000	10,000
Hostel room rent/Electricity charges~	13,500	13,500
Insurance	200	200
Tuition fee (annual)	65,000	82,500
Student development fund	400	400
Film club	200	200
Security deposit (refundable)	10,000	10,000
Mess charges#	2,750	2,750

MIT Institute of Design Pune

Charges	DP	DM
Admission Form	1,500	1,500
Tuition fees	1,15,000	1,70,000
Development fees	30,000	-
Security deposit (refundable)	10,000	10,000
Hostel charges	35,000	35,000
Mess charges	30,000	30,000
Security deposit (refundable)	10,000	10,000

* One time charges

~ Registration, jury, student amenities, modernisation, transcripts

Monthly charges

DJ Academy of Design Coimbatore

Charges	UGPD	PGPD
Admission fee*	10,000	10,000
Convocation fee*	2,500	2,500
Caution deposit* (refundable)	25,000	25,000
Tuition fee (annual)	75,000	85,000
Lab/Workshop charges	10,000	10,000
Hostel fees	13,500	13,500
Mess charges#	1,500	1,500

List of design courses

You'd be surprised to know the number of categories under design, offered as a course, by premier design schools in the country. Some of the most sought after courses are as follows:

- Product Design •Transportation & Automobile Design
- Furniture and Interior Design •Ceramic & glass Design
- Toy & game Design •Textile Design •New media Design
- Apparel Design & merchandising •Lifestyle Accessory Design
- Graphic Design •Animation film Design
- Film & video Communication •Photography Design
- Strategic Design management •Information & Interface Design
- Design for Retail Experience •Design for Digital Experience

Most design schools hint at an expected fee hike of 10 per cent every year. Effectively, summing all your expenses, your study at NID would cost you around Rs. 1,50,000 per annum, with an increase of between 15 to 20 per cent every year. Typical under-graduate programmes are for 4 years, while the duration of post graduate courses are typically two and half years. Similarly, a course at DJ Academy of Design appears slightly costlier, but the option to pay your yearly fees in two half-yearly instalments would be a relief to many. In addition, The Ford Foundation, Government of India and NID offer fee waivers, scholarships and grants to needy and deserving students. Also, the tuition fees for Srishti School of Art, Design and Technology, Bangalore is Rs. 1.25 lakhs per annum in addition to a non-refundable registration fee of Rs. 10,000 and a refundable deposit of Rs. 50,000.

to only 200. Seats are limited to 15 per discipline."

Khanna adds, "I target manufacturing and design houses as well as MNCs, as they tend to focus more on design. Additionally, there are entrepreneurial students and internships that need to be arranged. Post graduate students have a six-week summer internship for which we assist our students. In fact, last year 100 per cent of our students were placed."

Companies that have hired MIT students include Godrej and Boyce, Philips Design, John Deere, Ogilvy & Mather, Daimler, BIG Animation and Whirlpool. The Future Group interviewed nine students and hired six of them, informs Khanna.

Living it up

Overall, Indians have tremendous potential according to Prof. Balamam, "There is no third world. There should be nothing to stop us. Calling us a poor nation may be




"If the world were to be measured by the number of skilled people, India would be the first world"

—Prof. S. Balamam

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politically correct to some extent, but in no way is it acceptable to be called the "third world". If the world is measured by the number of people in it, we should be the first world (referring to skilled population) while the so-called developed nations would be the third world. Indians are making a mark internationally."

If you've been brooding over a career in Design, but have held yourself back why not give it a try. We've provided you with information to get you started. Let go of your doubts. If you don't have it in you, these institutions would let you know for sure and you won't sit down later in life with regret at not having tried your hand at design. Either way, you win! 

Increasing productivity

Conan the Barbarian is historic. Slogging it now, is not the modern way of working but just an indication of ineffective planning. Planning well would let you unwind with a free mind and party even harder

Nash David

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From being buried

When was the last time work drove you crazy? You probably hoped you didn't have to do all that work dumped on you because of a dogged list of unattended tasks. You may probably be the nicest person around who is slogging day and night without getting anywhere. You must be chaffing when all the *prigs* in office are busy planning their nights of enjoyment with their higher-ups in praise for them. Life is so unfair, or so you think. Feel left out? Someone's whining.

...Desperate times...

...Call for desperate measures. The problem lies deep within. Something's not right in the way we approach the task. "But there's so much to do, so much to remember", "I have only two hands and one brain". Empires wouldn't have been built if these reasons were valid. There ought to be a way out of the mess we've landed ourselves in to. The first thing you need to do clean all the muddiness around. Identify your strengths first, so you can bank on them to have courage. Also, work on your developmental areas. It's time to say no to IMs, social networking or streaming music - if that's what hampers productivity. Once you've identified the problem areas, the next step is to work towards improvement.

Among the most common areas of improvement are organising, time management, efficiency and communication.

Relief. But how?

Of all self-improvement terminologies sworn by, the four quadrant method is one of the most popular. According to Dr. Stephen Covey (author of *First things first*), you can classify all your tasks in to four quadrants depending on their urgency and importance. Depending upon priority, tasks are arranged into four quadrants as – I-Important and Urgent, II-Important but not urgent,

III-Not important but urgent, and IV-Not important and not urgent. Wisdom is in prioritising it rightly.

While an assignment may be important but not really urgent (quadrant II) in the morning, it could very well be important and urgent by evening (quadrant I)! According to Covey, highly effective people live in quadrant two and as a result of their efficient way of execution and planning have time to do their tasks at ease with no pressure or stress whatsoever. What he literally meant is although they stay on the pan, they never step into fire.

Once you've identified the pattern of your life by analysing it in a way similar to that mentioned in the box, you can use several tools to make it easier for you. One of the most common tool is a calendar. A good start is iCalendar Lite. To download it, go to www.tinyurl.com/icl0910. Install the executable. Once you're done, launch iCalendar. You'll have a calendar on your desktop. Right-click on the calendar to add events and tasks. This way you can keep track of all tasks you need to do and live in quadrant II. You can export calendar files from Outlook or even Google calendar (ICL files) and use them in iCalendar Lite. There is no end to the number of software available that track your time for you. But what use are they if all you are going to do is figure out using them. Outlook 2007 has a powerful calendar feature in case your company uses Outlook.

If you're continuously on the move, and switch computers often, then using time management or organising software may not be in good order. From the infamous Mumbai *dabbawallahs* to corporate heads, organising, planning and prioritising tasks can vary from a smear of paint, to scribbling on a spirally bound notepad to even PDAs, laptops and the cloud. As with Google services, login to Calendar with your Google id. Enter all the tasks for the day at the expected time. You can enter a task such as "Start preparing report at 4 pm" and set reminder as SMS and email. This way you're reminded of your task even while on the move, probably when you are on a tea break whiling away time. To top it up, this service is free. You are not charged for SMS reminders.



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Quality control

The primary goal of complying to standards such as ISO, Six Sigma and TL is to ensure a minimum quality level (the best) and increase efficiency and productivity

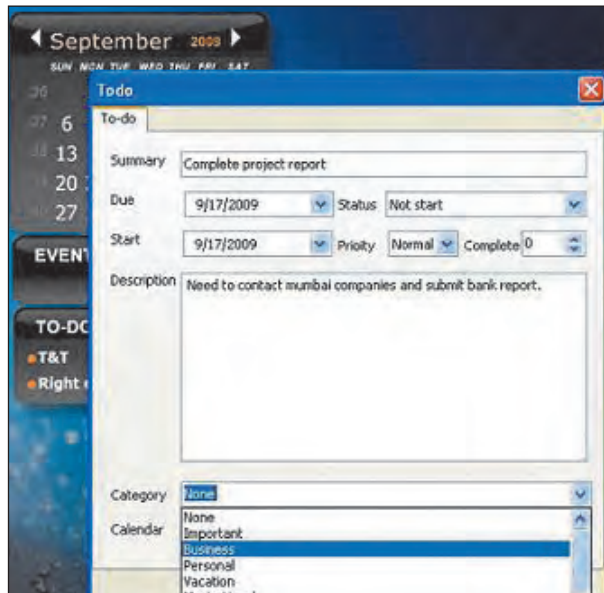
Again, turn to our Tips and tricks section for Evernote. It's a note taking software. You can take notes and use it as a post-it software. This is an efficient way of remembering tasks. Google, it is believed, uses scribble boards to jot down ideas that are randomly generated. You never know the moment when you get the answer to your question/problem. As soon as you get an idea – note it down. The best place to start could be Tasks in Gmail. If you don't use Gmail, simply save it a draft in your mailbox or a note on your mobile phone. You can delete it anytime you have finished the task.

Acting wise

After you have overcome your organising weaknesses, overcoming your performance dampeners is very important. Distractions such as IM, YouTube or even flash games (during professional hours) not only are unprofessional, but also hamper your productivity. Eventually, without realising you'd be spending some extra hours trying to get the same task done when you could have completed those eons ago. Abstinence and self control is the only way out of this.

Learn from mistakes

Once you've worked on your scheduling and straightened out your distractions, and still find it difficult to meet your targets, then you need to harness your skills and learn better ways of completing your work. It's never late to improve. You can never be too old to learn. Improve your skill sets. If you're one of those Office-suite users, you could probably fill in one an Excel sheet in a jiffy. But, on second thoughts tons of typing could be done away with a macro. Nifty two-minute tricks can save you hours of monotonous work. Depending on your profession, your tasks and tools could vary; but the never-say-die attitude will always keep you going. Albert Einstein has summed it up aptly: "You never fail until you stop trying." In fact, a task as prioritising lies



A simple tool such as a calendar, and a conscious effort to track your time will certainly increase your productivity

in the attitude rather than the available tools. For instance, email clients such as Outlook let you flag your emails – red as being critical coming down to green and even no flag as being least on priority.


MANAGING YOUR DAY

Planning your typical day, the previous night, will take you a long way. If you wake up at around 7 am every morning, you can start off by identifying your "peak productivity" hours and also your slog overs. Your first hour, 7-8 am, would be spent in getting ready – up from your bed till you're ready to start your journey. Jot down all your tasks sequentially. Surprises and spoilers will erupt and these are unavoidable. So get your list in the order of priority; from highest to lowest. Lunch time is not productive at all – add to that half an hour before and a couple of hours later when the answer to most troubles is 40 winks.

Attempting critical tasks during these hours most certainly involves reorganising and reworking, thereby reducing overall efficiency. You can lift up yourself by attempting lesser critical tasks such as

personal email. You can also plan any pending official tasks you may have. The options are endless. Again, as the end of day approaches, rush hour work increases. All those daily reports need to go out and several people need to be reminded of tasks left unattended. You should wrap up as many critical tasks as you have by now. This is your 11th hour for all practical purposes. Depending on how longer your list gets, waking up tomorrow morning is going to be more aggravating. Any remedies? On advantage if you use public transport is using your mobile phone to jot down unattended tasks. Irrespective of what you own, whether you jot them down on a piece of paper, or access Google calendar from your GPRS-enabled mobile phone – a record must be maintained and reminders need to be set.

Freedom at last

Some lessons are learnt the hard way. Criticism and feedback are part of every organisation. Learning early is evidence of wisdom. There's no running away from this. Seldom will you get praise for a job well done. But mess up once and it'll continue to haunt you for a long while. Failures are stepping stones to success. Believe in what you do and you will soon be avoiding hurdles that are higher than your leap. As an old Ethiopian saying goes, "Do not vacillate or you will be left in between doing something, having something and being nothing." No one's perfect. We're all improving. Just go ahead, reach out. Now you know how others could leave early when you felt you were slogging alone. No one can stop you either. Remember the story we learned as kids. The hare slept. The tortoise although slow, achieved its goal because it persisted. 

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Level Up:

Another Game-creating Adventure

Create your own 3D puzzle/platform/adventure/whatever game with Atmosphir, then inflict it upon the world

Nimish Chandiramani

readersletters@thinkdigit.com

Making your own game isn't easy, even if you've got C code and 3D skills oozing out of every pore. Not surprising then, that we thought we'd run out of game-creation tools to tell you about. If game-creation tools were horses, we'd all be Bethesda. Or something like that, anyway.

But we were wrong. With a spanking new program called Atmosphir, you can create your own 3D platform game (like Mario, but with a whole extra D), share it with the Atmosphir community, and explore the games that others have created. The game engine is capable of some ridiculously complex levels, so there's much fun to be had.

But first, you must head to <http://atmosphir.com/download/> and sign yourself

up for the private (as of this writing) beta. Go ahead now; we'll wait.

Making the plan

Once you've got your beta invite and downloaded Atmosphir, you can get into Design mode to start creating your level. But first, you need to have a few things decided (don't worry if some things don't make sense yet; they will as we progress):

Firstly, where is your level going to take place? The current version of Atmosphir lets you create levels using three broad themes: a generic stone theme (the Adventure Pack), a forest theme (the Forest Treehouse Pack), and a desert theme (the Sand Castle Pack). You don't have to commit to any, though you can mix and match as much as you want. For now, let's settle for the regular Adventure Pack.

Secondly, what's the main challenge going to be? Will the player have to get from point A to point B, rack up a certain number

of points, defeat a number of enemies, or a combination of them all? Will there be a time limit? How many lives will the player have? For now, let's keep this simple: get from A to B.

Finally, give yourself a clear idea of what the level is going to look like: will it be huge and sprawling, or a Tower of Doom? If you go the latter route, you can create up to 100 floors for each level, so there's plenty of room to go nuts. That sounds good, so let's do the multiple floor thing.

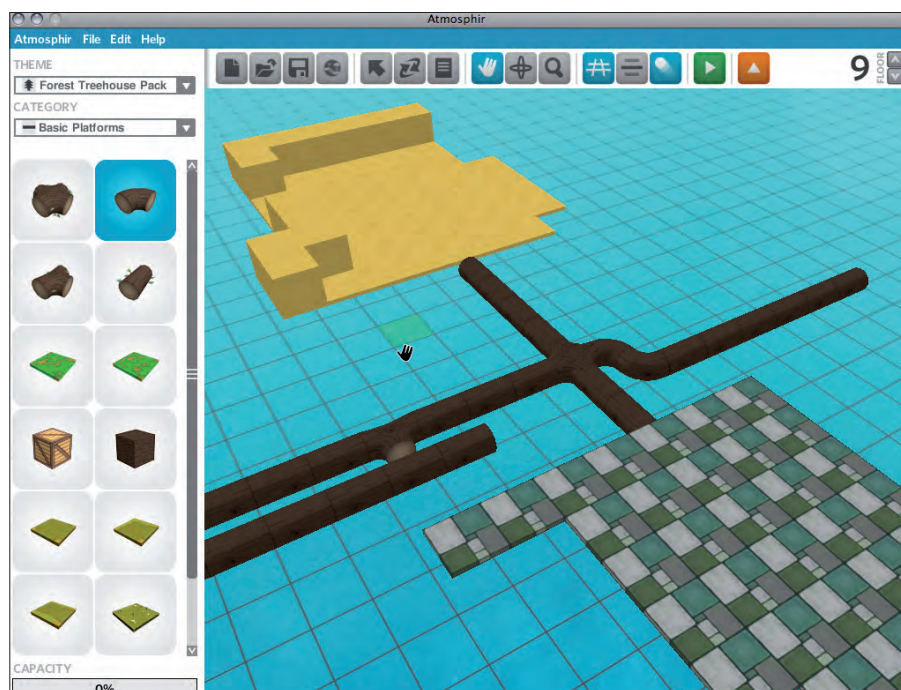
And now, to fire it up.

Getting started

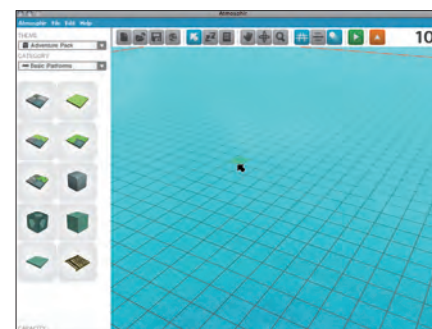
If you've used even the most basic 3D program, you should feel right at home. The panel on the left is where you'll choose the elements of your set platforms, enemies, power-ups, and such.

The big blue area in the middle is where you'll be creating your level. At the top right corner of the window, you'll see the floor (10, by default) that you're building on. At the bottom left is the Capacity bar, which tells you how much of the game engine's capacity you're hogging. As your level gets more complex, you'll need to watch this bar closely.

Let's start with creating the floor. In the left panel, select Adventure Pack under Theme, and Basic Platforms under Category. Choose the stone floor tile, and click within the scene to create it. One thing you should keep in mind is that these tiles are fairly small — your character takes roughly two steps to cross each one. As you create the



No one will grudge you your right to mix styles



Ah, that taunting blank canvas

Unwind

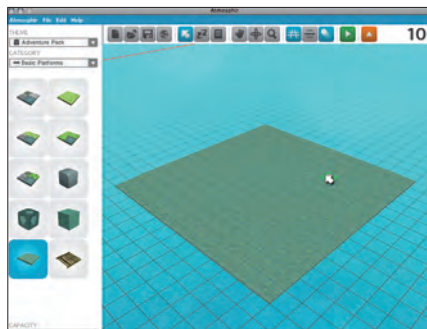
Thank you for sending us greetings. Hope you enjoyed the festivities

Community

Discussions we had with some readers. Some informative tips

The Water Trick

Atmosphir doesn't support water, so lay blue tiles on a floor, fountains one level below. The result is a "bubbling water" effect



Always start with a floor, you know

floor, if you want to delete tiles you've placed, right-click on them.

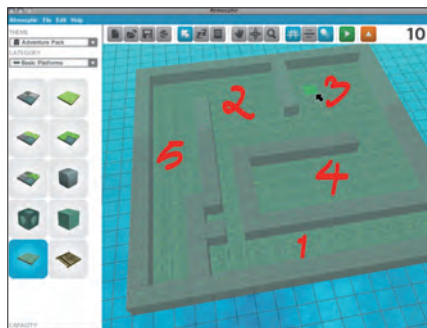
To examine your scene, you can use the Pan tool (the hand in the toolbar, or hold down middle-click and drag), and the Orbit tool (the atom-like symbol in the toolbar, or hold down [Alt] + middle-click and drag).

There. Now we can start doing some real work.

The first floor

We'll go for a dungeon-esque look here, because, well, why not? The next step, then, is to put down some walls. Under Basic Platforms, select the Stone Block and lay some of them down to use them as walls. The blocks are low enough for your character to climb on to, so you'll have to repeat this on at least one more floor. Don't worry about it right now, but don't forget that, either.

There are a couple of problems with

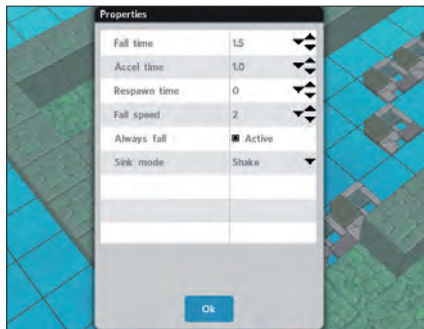


Lay down some walls for a floor plan

what we see here. Firstly, it looks really drab, even for a dungeon. Secondly, none of those "rooms" seem to have any purpose. And finally, it doesn't look like much of a challenge, does it?

Danger Room

Let's start with turning room 4 into a death trap. First, we'll start with a floor that crumbles under the player's feet. Under Category, select Falling Platforms, and choose Breaking Stone. Delete all the tiles (right-click) inside room 4, and click anywhere in the room to create a breaking stone. To configure how that stone falls, use



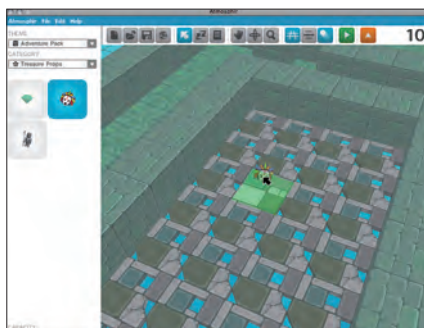
Use the Block Properties to tweak the breaking stone

[Shift] + click to select it, and click on the Block Properties button.

Here's what we're getting to: create one breaking stone, tweak its properties, and then copy ([Ctrl] + [C]), then click to paste) it to random locations. Create another breaking stone, give it different properties, and then copy it a few times. Rinse and repeat until you've filled the room.

But why would players want to enter this crazy room? To lure them into your trap, you must stick in a fancy reward or two. Firstly, because Atmosphir won't let you put a treasure and falling block in the same spot, replace one of the breaking stones with a standard block. Now, under Categories, select Treasure Props, and choose one of the props. Click on the standard block to place the treasure on it.

Now, you must test the level to make



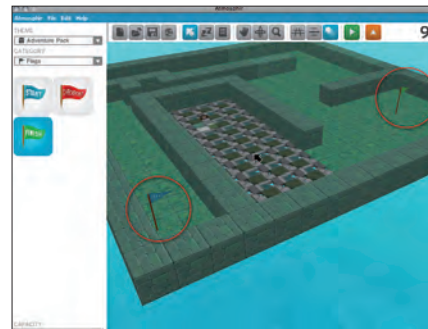
A ritual mask rewards players for their troubles

sure it's not too frustrating (or not frustrating enough, for that matter). For that, we'll create temporary Start and Finish flags. Under Category, select Flags. Lay a Start flag inside room 1, and a Finish flag in room 3. Click the green Play button on the toolbar to test the game.

It's time, quite literally, to take this to the next level.

Doors, elevators, and nasties

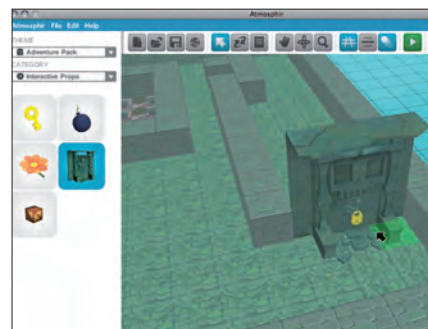
First, let's turn room 5 into an access-only region – we're going to put a locked door there. Under Categories, select Interactive Props, and choose Skull Door. If the door



Lay flags to decide where to start and end the game

isn't the right orientation, use [R] to rotate it. Place it at the entrance of room 5 (notice that the door is three floors high). This door needs a key, so select the Key, and put it in place of the ritual mask.

To justify locking up room 5, we'll give it the elevator that takes players up to the next floor (13th, because the skull door is going to take up 10, 11 and 12). First, then, let's build up to the 13th floor. Hold down [Alt] and use the scroll wheel to move up or down floors, and use stone blocks to build up the



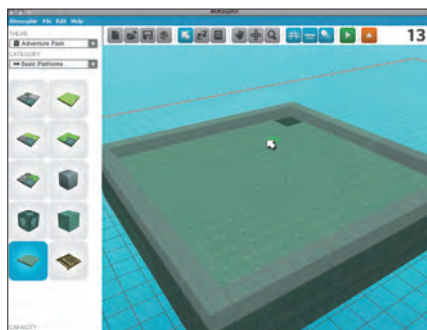
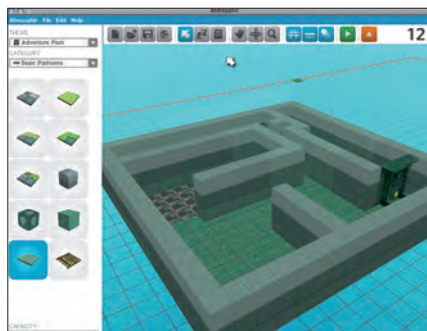
They shall not pass!

The Little Details

Don't make your floors bland and homogenous: swap out a few "standard" tiles for the unconventional, or put patches of sand in a stone floor

Use Props Wisely

Props give your level much-needed variety, but don't overdo them – they have a nasty way of filling up your capacity meter

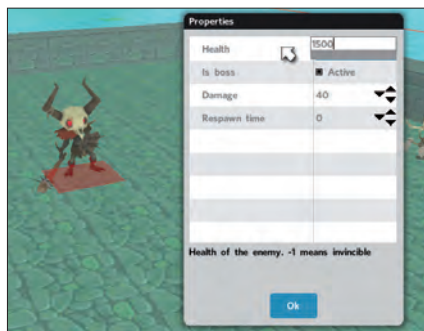


Build walls on the 11th and 12th floors, and put a floor on the thirteenth

walls.

When you lay the tiles for the thirteenth floor, remember to leave a gap for the elevator.

Now go back to the 10th floor to start putting in the elevator. If you can't see the floor in its entirety, click the Toggle Floor Visibility button in the toolbar a few times



You can turn enemies into invincible moving props for added difficulty

the path take various shapes; stop when it's vertical. Repeat this all the way to the top (paths show up as blue lines while you're editing, but are invisible in the game itself).

When you're set with the path, you can put a platform on it. Still under Moving Platforms, choose one of the platforms (we picked the round one), and place it on the path. To start or stop the platform, toggle Simulation mode using [Space].

You can now add enemies to the thirteenth floor (quite appropriate, we thought). Under Categories, select Hazard Props, and choose from the assortment of Muka baddies on offer. Use the Block Properties window to configure how dangerous they are – you can even turn one of them into a boss.

You ought to be comfortable with the basics by now. If not, you've not been



Despite what you may think, this sword doesn't go "FSHOONG!"

flag to the Finish flag", but you can change that under File > Rules.

There's just one thing missing...

All about character

If you've tested your level, complete with enemies, you may have noticed one fatal flaw – your character doesn't have any weapons. To customise your character, you need to go back to the start screen (save your design, then hit [Esc]), and select Character.

On the left is your character, and on the right is all the stuff you can get for your character. To enable your sword, select Weapon in the drop down menu for your character, and select the default Beechwood Sword. Really, though, you should buy a better sword from the store on the right. Atmosphir uses its own currency (called Atmos), which you can buy for real money,

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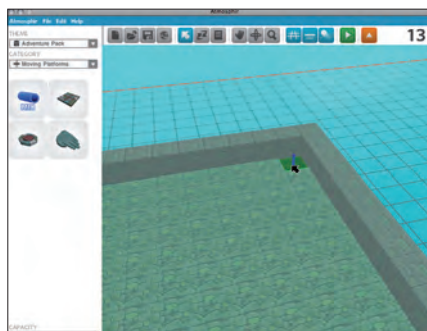
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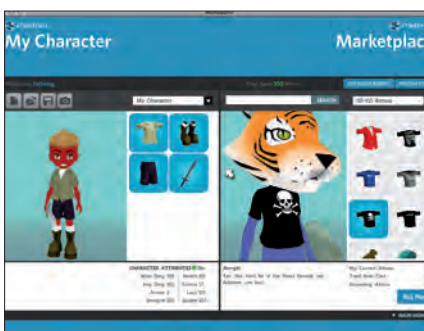
until you do.

We'll start with a path for the elevator. First, delete the floor tile where you're going to put the elevator. Under Categories, select Moving Platforms, and choose Path. Keep clicking on the empty space – you'll see



Finishing the path

paying attention, have you, you insolent litt...sorry, that was a typo. You should now be able add more of the standard platform game goodies – power-ups, jumping platforms, and even more treasures. The default game rules are "get from the Start



Customising your character

but with the 200 Atmos you get when you register, you can get yourself a respectable sword (or frying pan, or golf club, or lightsaber, for that matter). You can't sell your stuff yet, so watch how you spend those Atmos.

To use your weapon in-game, hit [Tab] to equip it, and use the middle mouse button to do your worst.

The Patience Game

You can look to Atmosphir's Level of the Day page (<http://atmosphir.com/news/category/level-of-the-day/>) for some inspiration, but don't fool yourself into believing that you'll be cranking out games like these by the dozen. Even half-decent games take a lot of work, so keep at it. You may well give up after the first few tries, but that's all right too. We won't judge you. **d**

Faiyaz Shaikh

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Shadow Complex is an inspired XBLA romp – inspired in the very sense of the word – by Nintendo's seminal classic: Super Metroid, released back in 1994 on the Super Nintendo Entertainment System (SNES). It borrows Metroid's side-scrolling, platform-jumping, enemy-exploding, exploratory gameplay well; an inspired adaptation then, but one that does little else.

That's not to say that the game isn't good. It is. In fact, the game, much like its protagonist, stares into a vast abyss and questions the contemporary gaming industry's obsession with \$60 price tags slapped on games with \$60-million budgets that offer little more than 6 hours of mediocre gameplay. In that sense, it is like an indie movie shaming the Hollywood bigwigs – at 15 dollars of fun, Shadow Complex is the District 9 to Hollywood's Transformers 2.

The setup

For those new to Shadow Complex, the game offers a simple setup: you are thrown into a vast, interconnected cavern with nothing but a bad t-shirt and a torch. As you explore the underground, your repertoire of moves, weapons, and apparel will increase and evolve, in step with your mapping of this 'Shadow Complex'.

Your motive starts off as a ruse to rescue your girlfriend, but quickly (and perhaps a little too suddenly) takes a turn to saving the world (or, in this case, San Francisco) from the evil machinations of Cobra Commander. None of which matters – as soon as you take control of Jason Flemming, the protagonist, your sole motive is to move left, right, up, down, jump, shoot, explore the complex, explode the baddies. The game succeeds in that this simple gameplay mechanic is motivation enough for the next dozen or so hours.

Where's the fun?

The game is actually a side-scrolling affair rendered in two-and-a-half dimensions: think of it as a Mario platformer (or Super

Metroid) but with an added depth. You often shoot across a two-dimensional plane, but certain enemies and bosses will rebel against society and pop-up along the z-axis; the game generally auto-aims at these misfits but you might have to intervene during the odd occasion. There is also an element of melee as you can punch and karate chop baddies (sending them flying across screens as you evolve) and kick bullet-spewing, plasma-hurling turrets (also across screens) if you are close enough. Finally, the game takes a page out of Gears Of War and offers a pop-and-shoot mechanic: find cover, duck, pop out of cover at the opportune moment, and take out your foes with well-aimed headshots.

The fun and the real meat of the game, is in the exploration. If you are the type that obsesses over finding out every secret, charting out the last centimetre of a game's map; then this game will keep you sleepless over nights. The underground complex is vast – it offers varying landscapes from jungles to underground mines, to overarching commercial 'workplaces', to tight, claustrophobic air vents. This sprawling complex then, is the true hero of the game; the sole reason to keep going, finding items, unlocking doors, and yes, punching the odd baddy in the face. Out of my way chum, there's a missile pack behind you.

In conclusion

Shadow Complex does not evolve the Super Metroid formula beyond its 2.5-dimension presentation. Is that a bad thing? Not when you are inspired by perhaps the best 2d action game. It sticks close to Metroid's formula and the greatness rubs off and transfers well.

The game could have used a bit more evolution though, some more time in the DNA vats of Chair Entertainment, the developers of Shadow Complex. Its music, for one, is truly underwhelming (except for one breath-taking

section where the piano is used wonderfully). It also could have offered 2009 a little more to the Metroid formula – traversing the map is tedious at times. Being able to teleport across save points would have been a great benefit to this game. Another point of contention, is that the map of the game – a very vital piece – can sometimes be misleading: You might find yourself plan a romp across the map, carefully charting your progress in your mind, but be stopped mid-way, frustratingly, as you find a wall that was not shown on the map, stopping you in your track. Or when the map shows a locked door but there is no such thing in the actual game. Plus representing a 2.5d world as a 2d map makes for some head-scratching instances of "where is that damn item, it should be right here!" Moments like these make you question the validity of the map; a very bad thing when the map practically serves as the game's foundation. There are also minor bugs – the rag doll physics that see an enemy fly across the screen will sometimes cause one to spin like a top.

That it succeeds is both a testament to the genre and to the audacity and meticulous planning of Chair Entertainment (the entire game was built on a "massive sheet of graph paper"). As a \$15 title that offers well over 15 hours of entertainment, Shadow Complex, is at the very least, a fresh approach to game releases. Hopefully, the game will rejuvenate the genre, and spawn many like it in the years to come.

You owe yourself the pleasure of experiencing this game. If you have an Xbox 360, an internet connection, and 1200 MS points (about \$15 or Rs. 730) to spare – download and play the summer highlight of the gaming world (well, apart from 'Splosion Man). **d**

RATINGS

Xbox 360..... (XBLA title)
1200 MS Points
DeveloperChair Entertainment,
Epic Games
PublisherMicrosoft Game
Studios
Score8.5/10



FIFA 10

Faiyaz Shaikh

readersletters@thinkdigit.com

It's the fag end of the year and time for the two football video game giants to pit their annual fruits of labor in the ever shifting race for the top spot. This year EA Sports gets a head start with the European release of *FIFA 2010*. Many of us had forsaken FIFA as the football game of choice. But, the last two installments in the series showed developers at EA were finally beginning to understand the game. Let's find out if *FIFA 10* is another commendable effort in the progressive run of sequels or if this is a step backwards.

What's in the game?

The most touted addition (or improvement as they like to call it) is the "360° Dribbling" system. At least in theory, this means greater control over the player with the ball. In our experience however, dribbling in FIFA remains something of a dark art. Mastering dribbling (and the complementing skill moves) in FIFA seem to require ninja-like reflexes and skills while handling the game pad. If you ever find yourself looking for some close control to go past a challenging player, the only option seems to be unleashing a *Skill Move*. As the name suggests, these require just as much skill to pull off as their real-life versions. For mere mortals as us, the most reliable way of taking shots at the goal is still pretty much about through passes and outpacing your opponents with certain players. Crosses and often even short passes are still a case of hit-and-miss—an old grievance players have had with FIFA apparently remains unaddressed.

Another significant change with FIFA this year, is the effect of a player's current form on his performance and vice-versa. This effectively means all the players in your team will have dynamic attributes. If you want to add some realism in the game, this makes a lot of sense.

Additionally, the effect form has on player stats is quite profound, at times changing them by as much as ten points.

Tackling has



become more effective at taking away possession of the ball. This is mainly because the game allows tackling from behind and mostly avoiding a foul. Referees seem to be quite inconsistent at calling foul on such tackles, so the best option for the player with the ball is to pass it instead of shielding.

Single player career modes

Manager mode and Pro Season (now called Virtual Pro) have been beefed up with some new features. The most apparent change in the Manager mode is in the menu system and the overall interface.

Pro career mode has been given a wider scope, allowing you to use your created player with other single player game modes like Manager Mode and Kick Off in addition to online game modes. A scrapbook style tracker of your career has been added to enhance this mode. Achieving certain milestones gives additional bonus to your players' attributes and also unlocks additional game content like football gear, goal celebrations and player traits.

Relegated

Besides all the bells and whistles, after playing 70 odd matches, issues with the core system starts emerging. The game is not too bad, but we did have a few bad experiences with the Manager Mode and the Pro Season. The worst of all was losing my saved games in both these modes.

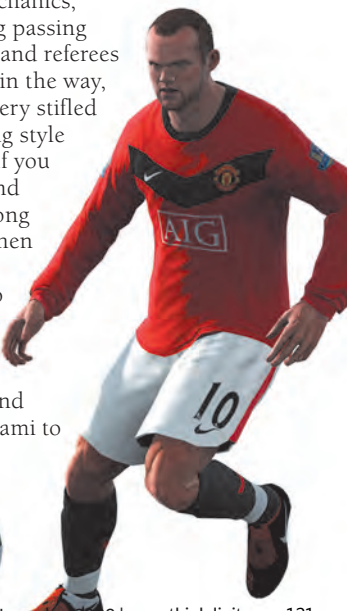


RATINGS

Score 6/10
Genre Sports
Platforms PS 3, Xbox 360, Wii, Microsoft Windows, PS 2, Nintendo DS, PSP
Developer EA Canada
Publisher Electronic Arts
Price Rs. 1,499 - Rs. 2,499 (depends on platform)

Some other issues faced include game locking up, several animation glitches and unresponsive game controller. We thought of browsing through the discussion forum on the official web site to check if this was just a case of bad karma on our part. As it turns out, users have reported issues as severe as players just disappearing from the roster, only to find him playing for some other club. This is just one example, as one of the more resourceful users on the forum had compiled a list of minor and major issues reported about the game — the last count was almost 70 in Manager Mode alone.

If you do not look beyond exhibition matches, no more than three or four matches in a single seating, you may actually like this game. Overall this feels like a rushed product, at least through the testing phase. There are some very prominent bugs in the single-player career mode that can be noticed after just a few matches. Even when considering a single match, the game mechanics do not allow for a free-flowing game. An aggressive defense system, a relatively inadequate dribbling mechanics, disappointing passing and crossing and referees often getting in the way, makes for a very stifled and ping-pong style of matches. If you are like me and need a year-long football fix, then we suggest holding on to your existing football game or maybe wait and hope for Konami to deliver). **d**



Geek culture : Time Travel

The concept is more fantasy than sci-fi, but Wikipedia lists "Time Travel" as one of the unsolved "problems of science". This pretty much means physicists sitting around on armchairs and labs theorising about space and time and other stuff, have not yet totally ruled out the possibility of time travel, and their peers don't call them loony.

Movies



Primer: A jargon filled movie with an interesting and fresh take on time travel, depicted in a realistic way.



Bill and Ted's excellent adventure: A very light-hearted and fun adventure through history.



Timecrimes: A thriller with a series of consequences, all for travelling by a mere hour.

Games



Anachronox: Sci-fi RPG, has a dedicated following, made into an award winning machinima.

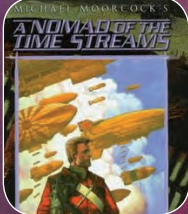


Braid: A fresh platformer with many game worlds that rely heavily on different kinds of time changes.

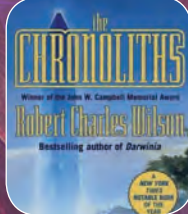


POP - Sands of Time: Responsible for reviving the POP series, and one of the best games of 2003.

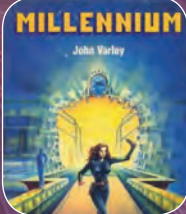
Books



Nomad of the Time Streams: part of the eternal champion series, with an eerie alternate timeline.



Chronoliths: Mysterious monuments from the future suddenly appear and unsettle the present.



Millennium: People from the future try to rescue those who died in a plane crash. Spawned a movie.

==Digit Diary==

Here at Digit, we are very careful about our equipment. This is mostly because we tend to steal parts of each other's systems just to get our job done. Robert's computer was used as a general purpose burning rig, for which it accumulated three burners stolen by Rossi, Aditya, and no one really knows about the third one. Michael was walking around looking for a drive to steal, and not finding any.

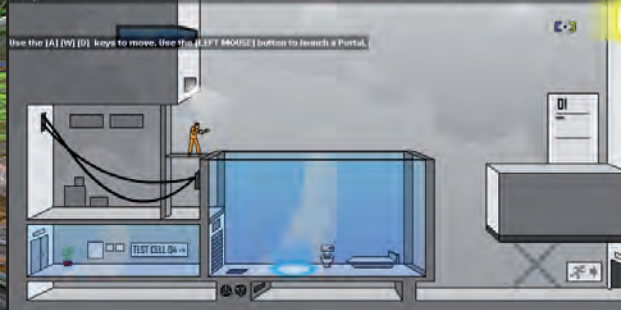
To get the bluescreening right, the Digit Team started stealing equipment from Jiten's studio. First we got up a few unused lights, then we got thermocol reflectors, and an umbrella. Eventually, Jiten showed up with his tripod, leaving his shoot of the products on hold. Siddharth was held hostage by Robert till the wee hours of the morning.

What really sent the kleptomaniac tendencies overboard was probably all the sweets that we got for Diwali. Thank you to all those who sent us e-greetings as well.

Portal in 2D

Still not over destroying GLaDOS in Portal? Do you want to experience the gameplay for some more time in the hope of getting to the cake? 2D Portal is your answer in flash, but this does not mean that the game is any less challenging or immersive. Strangely enough, the 2D-ness adds another dimension to the gameplay, as the number of creative solutions you can come up with are drastically reduced, forcing you to think harder. Head over to <http://portal.wcreatestuff.com/portal.php>

You may have realized that this morning, you woke up in a very strange location. Your task today is to find your way to the exit door, and go through it, alive. You may not be able to complete this task using your body only, but thanks to the Aperture Science Handheld Portal Device (ASHPD) - the impossible is easy. Try shooting two holes, one reachable through your cell and one out of it. See what happens. (Press [ENTER] to close)



1337sp33k

Stay up to date with internet lingo, so you don't wt? the next time you are chatting with someone

-0rz: A commonly used suffix to turn anything 1337. Use with care, in the wrong situations, it's just n00bish. Eg: H4x0rz, Lulz0rz etc.

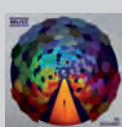
epic: It means what it means, but using it is an art. Highly over-used, so use it only when you really really mean it. Or something really is legendary.

How we unwind



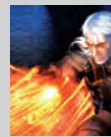
Movies

Wake up Sid: Siddharth wanted to go for the free screening and shout out "Sid!" just for the reaction.



Music

The Resistance: A great new album by Muse, we particularly like the track "Unnatural Selection"



Game

The Witcher: Michael is going on and on about the RPG elements of the enhanced edition.

I am my own Grandpa

All the buzz about the Hadron Collider spewing out miniature black holes that will eat up the planet, or opening up gateways to alien invasion, or bringing about an anti-matter cataclysm has died down, mostly because the \$6.4 billion project seems to be doing almost nothing.

Now a bunch of scientists have unearthed a paper that claims to explain exactly why the Doomsday Machine is not working. The Collider was built to create and observe a certain "God Particle", something that apparently proves or disproves some theories of physics that only physicists really care about. It won't even solve the energy crisis, or cure cancer, or for that matter, open gateways to alien civilisations. What it does, however do, according to some physicists, is create particles that nature dislikes so much, that there is a glitch in the space time fabric. Now this glitch travels back in time, and creates a parallel universe where the particles cannot be created in the first place. This is something like nature having a restore point. You may point out a dozen holes in this whole scenario, but how else can you possibly explain so many scientists working so hard and just creating the world's largest and coldest fridge? We just wish nature hated humans as much as the Higgs-Boson.

tech art: MSPaint Art



Image Credit: Grape Candy

Go to Start > Run and type `mspaint`, use the basic set of tools to go wild, and it is an art form. There are videos posted on YouTube that are too good to be true, and they are. These are worked backwards in Photoshop to look like they have been made on MSPaint. However, there are some exemplary examples on the web that really stand out. There are some pretty advanced tricks you couldn't have guessed using the basic tool set. This is before the advanced version of MSPaint in Windows 7 was around. Most MSPaint art is used for pixel art or sprite art, but a few really big, really great works are around. Head over to http://www.neopets.com/~grape_candy for a really great tutorial. Also, bookmark www.paintmash.com for more examples and an active MSPaint art community.

www.slideshare.net

Slideshare is a great web site that lets you upload and view your presentations from anywhere. What is really great is the wealth of presentations already uploaded on the site. You can go through official presentations, browse featured presentations, and even search for presentations. Slideshare is also a great way to embed and share slideshows on your blog, or social networking web sites. Slideshare business lets you upload presentations for potential clients, and get leads.



For those who came in late

Muddled by so many terms used in the mag? Here's your short guide to the tech lingo

Heatsink: Any structure or device on a motherboard that dissipates the heat produced by the processor.

Chipset: The kind of architecture, or the design of a processor. Devices based on the same chipset are compatible with each other.

Northbridge: The area on an Intel motherboard which is reserved for the RAM and graphic card slots.

QWERTY: Short for a QWERTY slider, a form factor in phones that incorporates a keyboard with individual keys for every letter for easier type input.

Heuristic: Heuristic scanning in Anti-Virus software is an approach where different processes on a system are monitored for their behavior. Based on past experience, if the behavior is suspicious, then the Anti-Virus software alerts of a possible infection by malware.

Upscaling: Changing the resolution of a video. The process is called upscaling even if the resolution is reduced, the "up" is an indication of the intended display. Commonly used in screens.

PSU: Power Supply Unit, the part of a computer that provides the electricity to all the components of the system.

API: An Application Programming Interface describes methods in which third party coders can use the resources of a web app.

Follow Agent 001

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We speak your language

Think you have it in you as a coder?
Presenting Digit's platform for developers.
Log on to devworks.thinkdigit.com today

Let the shopping festivities begin !

Digit recently hosted a Festival Shopping Guide Webinar. Lots of Digit enthusiasts showed up to get invaluable street smarts for their festival shopping. The Digit team had tested, reviewed, compared and haggled with vendors across the country to bring them the greatest festival shopping guide. The highlight ? Agent 001 himself live with his sharp wit and insightful advice. Here's an excerpt of the transcript. Read on, maybe you can pickup some interesting buying tips!

Raaabo : Hi everyone, this is a CHAT ONLY meeting in order to protect Agent001's identity | Just type your question and don't forget to mention your budget, and Agent001 will respond in the chat |

Agent001 : Hey pop 'em questions my way :)

Achuth : I need help in buying a game controller, but the problem in my area is availability.

Agent001 : My default suggestion would be a wired X360 controller. It's built well, affordable (1400 bucks), enough buttons for 90% of games. I use one on my PC for Prince Of Persia.

Vineet : Hi. Welcome all.

Agent001 : Hey Vineet, can I help you with anything? Buying decisions...except firecrackers :)

Raaabo : Everyone's too busy Diwali shopping I guess :)

Vineet : Ok I have a question. Whats the best video cam I can afford?

Raaabo : What's your budget? Around 30 to 35K?

Agent001 : The two main questions you need to ask yourself are: HD or non HD? What choice of media?

Vineet : HD of course :)

Agent001 : If you want HD + HDD you will need to pay at least 32K

Raaabo : I would recommend an HD camcorder, with hard drive storage

Agent001 : Unless there are special schemes where you can get it for lower, tapes not worth it. They suffer from recurring costs, extra service charges, higher maintenance costs and more hassles with using and storing videos

Agent001 : HDD all the way!

Agent001 : Sony's XR100E is a good model.

Vineet : price?

Agent001 : 39K

Vineet : Wow that's huge

Raaabo : Vineet for about 2.5K a month on EMIs with a down payment of about 8K you can still get it.

Vineet : Wow that's good news

Kiran : can any 1 tell me what will be the cost of a 1TB internal hard drive?

Agent001 : Rs. 6200~7100, depending on the model.

Raaabo : You want storage or speed?

Agent001 : Storage = WD Green Edition. Speed = WD Black Edition

Agent001 : Seagate will be slightly cheaper, at around 700~1000 bucks. But to my knowledge, Seagate has reliability issues with their 1 TB drives; especially the 7200.12 series

Raaabo : I would recommend the 1.5 TB Seagate, I own one and no problems

Kiran : Wat should be minimum RAM capacity when using a 1TB HDD?

Agent001 : They are unrelated

Raaabo : RAM and HDD have nothing to do with each other

Kiran : Ok. Also what will be cost of a 19inch TFT? Any brand would do?

Raaabo : do NOT buy a 19-inch monitor, it's not worth it

Kiran : Why?

Agent001 : Because a 22 inch is available at 1~2K more.

Kiran : Which brand?

Agent001 : Viewsonic, Acer, Dell, Samsung, AOC -- take your pick.

Agent001 : AOC is very cheap and they won in our LCD test.



NOVEMBER 2009
digit
events

Digit is taking interactivity to a new level, and will be organising events every month. You get to meet and interact with people that you wouldn't in the normal course of your life — industry experts, Team Digit, and other readers with similar interests. Stay updated and stay ahead of the curve by looking for this page in every month's magazine.

1 Career Webinar

INTELLECTUAL PROPERTY

Intellectual Property Research and analytics is a fast growing industry in India. Understand what it takes to stay ahead of the curve: from challenges, and a global work experience to learning and growth opportunities. Nikhil Sharma, Head of Electronics and Communications division of Evalueserve's Intellectual Property team will give you an insider's perspective on this profession. Nikhil manages a team of 60 IPR professionals and for the past five years has been working with partners at law firms, CEOs, CTOs, heads of licencing, and R&D managers at Fortune 500 companies, across multiple continents, to advise them on innovation, IP protection strategy, technology licencing and commercialisation. Send in specific questions before the webinar to careertalks@thinkdigit.com with a subject line "IP".

NOVEMBER 13
TIME: 1500 HRS

2 Webinar

SYSTEM TROUBLESHOOTING

Get simple troubleshooting solutions for common system niggles from the Digit team. From repairing your infected flash drives to recovering system files using a Windows installation disk, we'll cover it all. Also don't miss out on other topics such as scheduling a disk image, creating ghost images, manipulating registry entries and recovering data from a crashed hard drive by using simple work arounds. The floor is open; ask your queries and have them solved live!

NOVEMBER 14
TIME: 1600 HRS

For details on upcoming webinars and to view past webinars, visit thinkdigit.com/webinars

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Forum Review: NFS Shift nmenon

Right Off the Assembly Line

Join Date: Oct 2008 • Location: Cochin • Posts: 37

I got my hands on NFS Shift original version from my cousin.

Difficulty settings: Medium, TC, ABS, Stability Control, Steering Assist on, Auto Gearbox.

It seems to have borrowed elements from 3 games - Race Driver: GRID, Juiced: Hot Import Nights, and Pro Street. It also is probably the first NFS game to have the legendary Nurburgring (Nordschleife 20.74km) circuit, as far as I know its only Gran Turismo that used to have it. The damage model is similar to GRID but on a lower scale with the extreme damage being very rare. However the effects on the driver are stunning. Brushing the barriers gives blurred vision, head on impacts elicit an 'Ooof' and a temporary blackout and reaction on the radio. It also has the return of the in cockpit view where realistic head movements are mimicked by the camera. Car handling is mixed with the TC, ABS, stability control preventing you from countering a skid unless very careful, strangely front wheel drive cars also tend to have loose tails resulting in slides which are nasty. The AI reacts to your driving, barge someone off the road and they will ram you back, go through cleanly they'll show you some respect. There are rivals to be



challenged if you reach certain levels. Driving style dictates the invitational events available after driver level ups. Precise Clean driving results in more Hot Lap races while Aggressive driving results in more Eliminator races (Elimination of the last placed person after a set timer expires). The Start of a race look like the ones you see on TV; Ladies with Boards (NFS icon on them instead of numbers), mechanics talking to the drivers etc, radio from the pits providing last minute info and instructions). The car collection is pretty awesome with the possibility of in depth tuning which is similar to the options in Colin McRae: DiRT. Unfortunately, no Underground 2 style of Dyno and ECU tuning.

Personal Ratings

Graphics : 4/5 (GRID is better)

Gameplay : 3.5/5 (Car handling on the keyboard is temperamental, drifting is very difficult, else I'd give it 4 or 4.5)

Audio : 4/5 (car sounds great, effects such as the flexing of the armco barriers making metal sheet like noise, limited songs sadly)

Car Collection : 4.5/5

Overall: 4/5

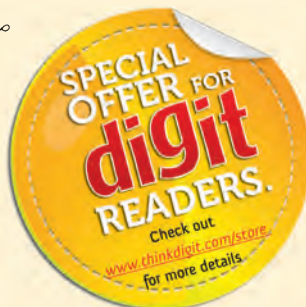


Digit's foto freaks! Come join them...

Here are some of the photographs posted by forum members like Cool G5. Visit the forum thread for more photos and discussions that followed

<http://www.thinkdigit.com/forum/showthread.php?t=118227>

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