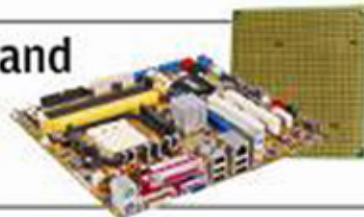www.thinkdigit.com

November 2007

digit

YOUR TECHNOLOGY NAVIGATOR

AdSense: Holed?

An Indian Security Analyst Insists Google AdSense Is Vulnerable.
We Tell You How

48 Motherboards and 21 Processors. Pick Your Combo!

The Definitive Guide To Your Diwali Shopping Spree!

Optimise Your Site—All By Yourself

Your Very Own Mashup In Just About 16 Minutes!

An Enhanced MS Office Is Just Clicks Away

Google AdSense

Questioning Values

NETWORKING SITE FACEBOOK last month sold a mere 1.6 per cent of its stake to Microsoft—for a substantial $240 million. The valuation of the popular social networking site was pegged at $15 billion. Compare that with Netscape's valuation of $2 billion in 1995.

I'm wondering what the valuation indicates. Could numbers put things in perspective?

A recent report by UK-based Datamonitor, a provider of online database and analysis services, stated that social networking sites will sign up 230 million active members by the end of this year, attracting new users until at least 2009. The report titled *The future of social networking: Understanding market strategic and technological developments* also says revenues from social networking services will go to $965 million this year, to go up to $2.4 billion by 2012.

Even so, investors in such sites are wary because long-term growth here is not a guarantee. The report predicts that growth—in terms of the number of users signing up—will peak by 2009 and plateau by 2012.

I'm naturally reminded, by this hype, of the dot-com boom. There are two reasons. First, about networking sites currently being fuelled by innovation around the communication possibilities—can it possibly be wise to base a business strategy purely around innovation potential? It doesn't seem like the sites can ensure a prolonged period of sustained innovation; so *what are Microsoft and the others thinking*?

Second, are advertisers willing to spend enough on networking sites? In fact, do these sites even have an advertising revenue plan? Facebook's current advertising strategy is that it's developing an advertising strategy...

Most importantly, these are *personal spaces*. Advertising is likely to only distract from, if not disrupt, the experience.

During a panel discussion of advertisers at a recent Internet summit, some expressed apprehension in regards to associating their brands with the possibly risqué or inappropriate material that gets generated on such sites. Even if the sites do get advertising, it will, like I said, very probably just annoy site members and make them migrate to a new one. There are as many social networking sites as Web mail providers, it seems; besides, the loyalty and stickiness of this internet generation is not a given.

Deepak Ajwani Executive Editor

"Are social networking sites really the next-generation portals, or flash-in-the-pan communities?"

Michael Cassidy is president and CEO of Undertone Networks, an online ad network. It was he who gave Netscape the valuation I mentioned. He has now said in an interview that it is a "big waste of money" for advertisers to buy ads on social networks like Facebook and MySpace. Users of those sites "are going there to interact with their friends and play with their profile," he says. "They're not in the frame of mind to respond to an ad." Yes, *frame of mind*. Take a look at the now ad-saturated MySpace and you'll see what I mean.

Ultimately, are social networking sites really the next-generation portals, or flash-in-the-pan communities? We can't make a comparison to the dot-com event, really; things have changed a lot. From the hard facts, all we know is that it could turn out either way. Some—like Microsoft and Google—are betting on the former possibility. I personally wouldn't, but it'll be interesting indeed to see how it turns out. A new chapter in Web history might just begin.

editor@thinkdigit.com

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

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Advertisers' Index

Products Reviewed This Month

HARDWARE
Motherboards 00
For Intel Socket LGA775
Abit (HDMI) Fatal1ty F-190HD
Abit Fatal1ty FP-IN9 SLI
Abit IP-35 E Off Limits
Abit IP-35 Pro Off Limits
ASUS Blitz Extreme
ASUS BLITZ Formula
ASUS Commando
ASUS P5B Deluxe WiFi-AP
ASUS P5B Premium Vista Edition
ASUS P5B-E
ASUS P5K Deluxe WiFi-AP
ASUS P5K Premium
ASUS P5K3 Premium
ASUS P5K3 Deluxe WiFi-AP
ASUS P5N32-E SLI
ASUS P5N-E SLI
ASUS Striker Extreme
Biostar Tforce P965
Biostar TP35D2-A7
ECS P 35T-A
ECS P33T-A

Galaxy 650I LT
Galaxy 680i LT SLI
Gigabyte (HDMI) GA-G33M-S2H
Gigabyte GA-G33-DS3R
Gigabyte GA-P35 - DQ6
Gigabyte GA-P35 - DS3R
MSI G33M
MSI G965MDH
MSI P35-Diamond
MSI P35-Neo
MSI P35-Platinum
MSI P965 Neo
MSI P965 Platinum
XFX MB - N650 - IUL9
XFX MB-N680-ILT9
Zebronics ZEB-650i SLI

For AMD Socket AM2
Abit (HDMI) AN-M2HD
ASUS M2A-VM
ASUS M2A-VM HDMI
ECS AMD690GM-M2
Galaxy (HDMI) AN68M
Gigabyte GA-MA69G-S3H

Jetway M28GT3-SDG
Jetway JM2A692-GDG
MSI (HDMI) K9AGM2 (690G)
MSI K9AGM2 (690V)
Zebronics ZEB-N61M2

Processors 00
Intel
Intel E4400
Intel E6300
Intel E6400
Intel E6600
Intel E6700
Intel E6750
Intel E6850
Intel Q6600
Intel QX6850

AMD
Athlon 64 X2 4200+
Athlon 64 X2 5000+
Athlon 64 X2 5200+
Athlon 64 X2 5400+
Athlon 64 X2 5600+
Athlon 64 X2 6000+

Athlon 64 X2 6400+
Athlon 64 X2 BE-2300
Athlon 64 X2 BE-2350
Sempron 3600+
Sempron 3600+
Sempron 3800+

Bazaar 00
Hardware
HP Compaq 2510p
Sandisk Sansa Shaker
Leadtek WinFast DTV1800 H
LG Black Label Series KE970 "Shine"
Sennheiser PXC 450
Buffalo DriveStation TurboUSB 250 GB (HD-HS250U2)
Brother MFC-5460CN
Viewsonic PJ258D

Software 00
Kaspersky Internet Security 7.0
CopyToDVD 4
CAD-KAS PDF Editor 2.6
ACDSee 2 Pro

To Advertise

Contents Magazine

Digital Business

November 2007

Digital Leisure

Productivity

PERSONAL

Lotus Symphony

IBM Lotus Symphony offers something for everyone—a community-oriented site, a template gallery, and tips and support to help you succeed. Lotus Symphony supports Microsoft Windows and Office applications.

Peanut Butter PC 2.2

Peanut Butter PC is used by parents, grandparents, schools, and daycare centers. Peanut Butter PC lowers the barriers to learning by creating a straight-forward, kid-friendly interface for your PC. Adults and children can learn how to use Peanut Butter PC quickly and easily without any training.

- 3D Topicscape Student Edition Beta 1.0
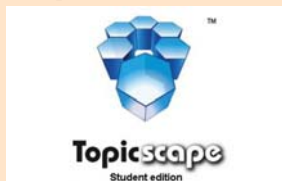
- SoftMaker Office 2008 Beta
- AstroGrav 1.4.2
- IngoLingo 1.02

DEVELOPERS

KompoZer 0.7.10

KompoZer is a complete web authoring system that combines web file management and easy-to-use WYSIWYG web page editing.

- Microsoft Insider: Bonus Insider Tip SP1
- PyPE 2.8.7
- PostgreSQL Code Factory 7.5.0.1
- NAntBuilder 1.0
- RJ TextEd 4

Gaming

INDIA'S FIRST MULTIPLAYER ONLINE DANCE GAME.

FREE

Dance Mela

Dance Mela is India's first Multiplayer Online Dancing Game. Groove to the latest Bollywood hits. Enter the never-ending party. For Digit readers only: Register at http://dancemela.kreeda.com/partner/digit/ to get your free points!

FREE

Vega Strike

Vega Strike is an Open Source 3D Action-Space-Sim that lets you trade, fight, and explore in a vast universe.

DEMOS

Escape from Paradise City

The demo gives players a taste of the upcoming game which combines RTS and RPG elements against a backdrop of a crime-infested seaside city. In the two available demo missions, taken directly from the campaign, players will be challenged to take over neighborhoods infested with vicious gangs while earning new skills and hiring henchmen in your quest to take over the city.

Tools

MULTIMEDIA

SONY Vegas Pro 8.0 Build 144

Combines real-time SD, DV and HDV video editing with unrivaled audio tools to provide the ultimate all-in-one environment. Install the .net 3.0 Framework from this DVD before installing Sony Vegas

Claymation Studio Trial

Claymation Studio helps you to easily create stop motion videos.. Capture images using a digital camera, webcam or DV camcorder, create characters, apply small changes, and add background images and music to create your own claymation movies.

Comic Book Creator—Self Publishing Software 1.04

Add text bubbles to your digital screenshots, as well as classic comic book features like POWerful action-word graphics that emphasize the game play. Select from one of the 500 unique layout and design templates; drop in your captured digital images; and insert text bubbles, icons, captions, and clipart to bring to life whatever story you can imagine. Comic Book Creator will work with any JPEG, BMP or GIF digital image.

- CyberLink PowerDVD 7
- Recomposit 1.9
- Site Studio 6 Pro
- Toon Boom Studio 4

SYSTEM

Nero 8 8.1.1.0 Ultra Edition

Using Nero 8 Ultra Edition you can now create and edit, convert and share, rip and burn, backup and protect your digital media, all from one easy-to-use interface!

Parallels Workstation 2.2.2204
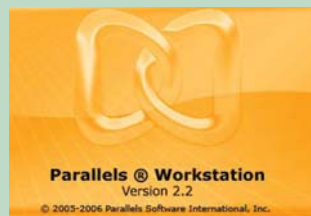
Parallels Workstation is a powerful desktop virtualization solution that empowers IT professionals with the ability to develop, test and deploy in multiple operating systems on a single PC.

- .net Framework 3.0
- Norton AntiVirus Definitions 9/30/07
- Office 2003 Service Pack 3
- FileSee 6.30
- NOD32 AntiVirus 3.0.414
- Norton 360 1.0 Final

- NovaBACKUP 8.0

INTERNET

HP Smart Web Printing 2.0
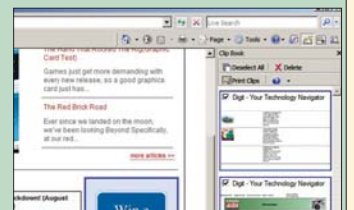
"This enhancement to Microsoft Internet Explorer improves upon IE's ability to print what you see on the Web page. HP Smart Web Printing allows users to: Select text and graphics easily from any web site and save a handy list of clipsSave paper by combining portions of numerous web pages Preview and modify clips before printing "

Joost for Windows 1.0 Beta

Joost is a new way of watching TV on the Internet. You get all the things you love about TV, including a high-quality full-screen picture, hundreds of full-length shows and easy channel-flipping.

- BitTorrent Mp3 2.5.7.0 (Adware)
- Skype Recorder 1.2
- VoiceMask Pro 1.2

For any queries regarding the CD or DVD, e-mail **help@jasubhai.com** with "CD/DVD" as the subject. If the subject is not mentioned, your mail might not reach the right person.

OPENSUSE 10.3 (DVD)

openSUSE provides everything today's Linux user needs for home computing and computing-on-the-go. This product includes a Linux operating system plus dozens of essential integrated tools that showcase the latest that open source has to offer. Boot from this DVD to install openSUSE.

BOOTABLE

openSUSE™

Entertainment

MOVIES
Utopia
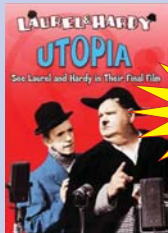
Movie of the Month

Utopia is also known as "Atoll K" and "Robinson Crusoe Land." This is last film Laurel and Hardy made together. It was filmed and produced in Europe in 1951.

MUSIC
Sophomore Jinx by Rob Costlow—Solo Piano
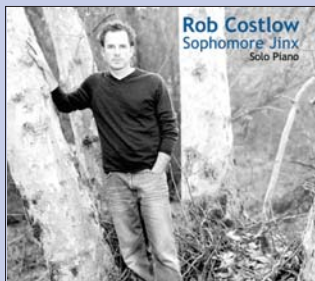
The artist's description: "Sophomore Jinx is my first professional recording effort. This album is about second chances, hopes, dreams, and following my passion." Preview this album in the Digit Media Player

Peace in The Valley by Jennifer Avalon
A collection of songs that are both spiritual and thought-provoking. A journey through life, love, disappointment, triumph and rebirth.

Live at Wood Hall (originals) by Allison Crowe
Live at Wood Hall is a journey through the artist's concert repertoire, recorded at the Conservatory of Music, (a converted church chapel), in Victoria, British Columbia, Canada in March, 2005. Alongside more than an album's worth of original songs of love and hope

to social and political commentary, Allison covers her favourites—in a range from rock and pop through roots and blues, folk, jazz and more.

Samadhi by SaReGaMa
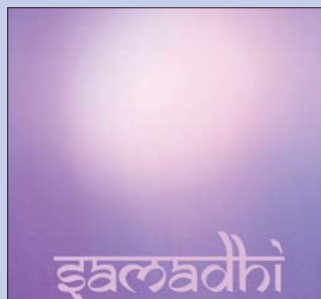
The artist's description: "Samadhi is the highest state of mental concentration or absorption that a person can achieve while still bound to the body and which unites him with the highest reality"

Wild and Free by DEREK
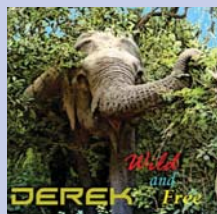
Wild and Free is an instrumental compilation of various feelings. An invitation in the journey where the west and the east merge varied atmospheres with guitar for witness.

COMPACT DISC DIGITAL DATA

FREE for Digit Readers!

Ashampoo Burning Studio 2008
Ashampoo Burning Studio has changed the way CD/DVD/Blu-ray burning software works.

Ashampoo Office 2006
With Ashampoo Office 2006 you can get your work done faster, with higher quality and for a fraction of the cost of some other office suites.

GAMING

FREE
Tower Of Goo

The basic aim of the game is to build a tower made of droplets of goo (which you are able to stretch into beams of goo to support your tower). The higher your tower, the better.

- Letteria
- Madness Interactive
- Motocross The Force
- The Euchmich Legacy
- Well Of Souls

DEMOS
Scavenger

One human, one droid and a Scavenger class space ship. Enter the Star Hulk Icarus on one last mission: to locate and capture the Energy Source. It was to be a simple job, but nobody mentioned the alien mass spreading across the massive vessel's interior.

ENTERTAINMENT

MUSIC
Thread Soul by Revolution Void
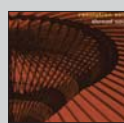
Revolution Void combines electronic music with live improvisation to create a style of music called electronic breakbeat jazz.
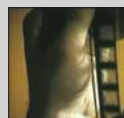
We Edit Life
The creator's description: "Experimenters in visual perception are using computers to create weird and random patterns that never occur in real life to find out what and how people see when these patterns are shown to them. The art of computer graphics is only in its infancy yet it is already stimulating creative thought in far out areas where research is likely to get complex and unwieldy. If offers not only the means to quicken the pace of discovery but an ideal of communicating what we may discover"

TOOLS

MULTIMEDIA
ReValver Mk II

ReValver Mk II is a second generation guitar amp modeler. It models several "classic" amps with a lot of detail, and most of all, capturing the true nature of the vacuum tube sound. Over 15 programmable features of each tube stage can be set with a graphical interface. Every tube in all amps can be tweaked. As many as 17 tube types are included to choose from.
- AVS Audio Editor 3.6.1.30
- CoffeeCup Flash Firestarter 7.1
- D'Accord iChords 2
- Nendo
- Virtual DJ 5

SYSTEM
Exposer for Windows
Exposer is the revolutionary way to visually represent all the open windows on your desktop and expose them to you.

- ATI Catalyst
- CDBurnerXP 4.0.015.277
- Double Driver 1.0
- Folding@home for Windows XP/Vista
- GPU 5.91 Beta 6
- Mousotron
- NVIDIA ForceWare
- NVIDIA nTune
- TestDisk and PhotoRec 6.8 Beta
- Vispa 0.1.1
- Wubi 7.04.04
- CopyToDVD
- Desktop3D 1.5
- SlyControl
- SpeedCommander 12.00.5130 Beta 3
- WinForcer 3.2
- WinPatrol 2007

INTERNET
Orbit Downloader 2.1.5
Orbit Downloader, leader of download manager revolution, is devoted to new generation web application downloading to make downloads easier and faster. It is a free all-in-one downloader which can download streaming media, social music or video from anywhere include YouTube, MySpace, iMeem, Pandora, etc.

Online

By Demand
You get to choose what goes on **Digit Interactive**. This month, you chose:

Sony Vegas Pro 8.0
Size: 73 MB

OpenSuSE 10.3
Size: 4.1 GB

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Web Special
On The Lot
All the gear you need to make your first open source movie
(Log on to **www.thinkdigit.com**)

FEATURED TUTORIAL FROM DIGIT FORUM (www.thinkdigit.com/forum)
This month we feature a member tutorial from the forum here.

Click here to go back to
thinkdigit.com

Tutorial: Learn How to create an invisible folder

11-10-2007, 10:23 PM

adiCted

Fresh Stock
Join Date: Nov 2006
Posts: 9

Create an invisible folder
You ever have a folder on your computer that you really dont want any one to find? You can make this folder hidden but then you have to un-hide all the folders when ever you want to find it. So how can you make a folder truly invisible? Follow these simple steps and your unmentionables will stay that way.

1. Right-click where ever you want the invisible folder to be and select create a new folder.
2. Right-Click on the folder and hit rename. Erase the name of the folder so there is nothing there.
3. If you try to stop here windows will tell you that you need to provide a name. So to get around this… with the name field still active hold down ALT and press 0160 on the number pad (make sure Num Lock is on), release alt
You should now have a blank name with nothing but a folder next to it
4. Now click on the nameless folder and right-click. Select Properties.

5. Go to the Customize tab.
6. Find and press the Change Icon button. Scroll through the icons until you find one that has no image.
7. Hit OK and you have an invisible folder!
With the invisible folder you can hide what ever undesir-ables you have. Be it video games at work, pictures of your family or any-thing else you can think of "wink".
The folder will show up for a brief second if you put it on your desktop. For that reason it might be smart to place it inside a folder or amongst a group of folders.
Happy Hiding!

For more visit:
http://www.thinkdigit.com/forum/showthread.php?t=70402
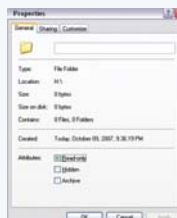
The New-age Napster
Napster has changed its revenue model yet again. Now, subscribers pay a monthly fee to access the catalogue. Napster said mid-October that it is launching a Web-based platform that will make Napster compatible with any Internet-enabled device.

"YouTube Video Identification"
YouTube recently launched a copyright-protection system for content owners in which they could send in a master copy of their work, and any infringing videos relating to that content could be taken off the site if requested. The filter has received mixed reviews.

Enter

TECH TALK

Vinay Goel
Head of Products
Google India

The Google SMS service has been launched in India. You can now send directory-like search queries to Google via SMS from any handset—find a pizza outlet near Peenya, Bangalore, by sending an SMS to 54664 with the query: "pizza near Peenya Bangalore"! We asked Vinay Goel of Google India about related issues.

Will you extend the service to smaller cities too? By when?
For now we're focusing on Bangalore, Delhi, Hyderabad, and Mumbai, because users here will have the fullest access to information through the service. Google SMS is also available in other cities, but not all the search categories will be immediately available. As we get more user feedback, we will add more cities.

Any tie-ups to report?
Google SMS is currently available on the Airtel, Aircel, BPL, BSNL, and Reliance networks.

Apart from saving locations, will the service store personally identifiable information?
It will, as outlined in our Mobile Privacy Policy—which can be found at our Web site. Users can opt out of personalisation by sending "Save off" to 54664.

Any plans for a Web directory service—like AnyWho.com, for example—for India?
We have also launched Google Local Search and Local Business Center as a part of our efforts to help users find locally relevant info. This includes listings of local businesses (movie theatres, ATMs, restaurants, etc.), weather forecasts, and more. Local Business Center allows business owners to add/edit their business information for free using a Web interface—www.google.com/local/add—so their listings are easily found by users.

DRIVING LINUX

Dumping The Linux Device Driver Kit

Every newbie who installed Linux came to know of it the hard way—Linux needs stable, working drivers for tons of peripherals. The current answer to this is the Linux Device Driver Kit—documentation designed by the Linux kernel community for hardware manufacturers. Manufacturers could also choose from the nearest drivers and reverse-engineer them to work with the hardware.

This process was not always fruitful. Considering its small user base compared to Windows, not many companies were interested in dabbling with Linux drivers. And then, hardware vendors have been wary of opening up their device designs or Application Program Interface (APIs) to the open source community. Another obstacle is the fact that most companies do not favour drivers they didn't develop themselves.

Now, a project from Novell is offering to write free drivers—for any manufacturer who is willing to open up the specifications of their hardware.

It's not a new project—it was announced last year by the main developer, Greg Kroah-Hartman, a programmer at Novell. But mid-October, Kroah-Hartman posted an update on his blog, announcing that Novell had moved him onto the project full-time.

Kroah-Hartman is an influential Linux kernel hacker; his original blog post called on Linux
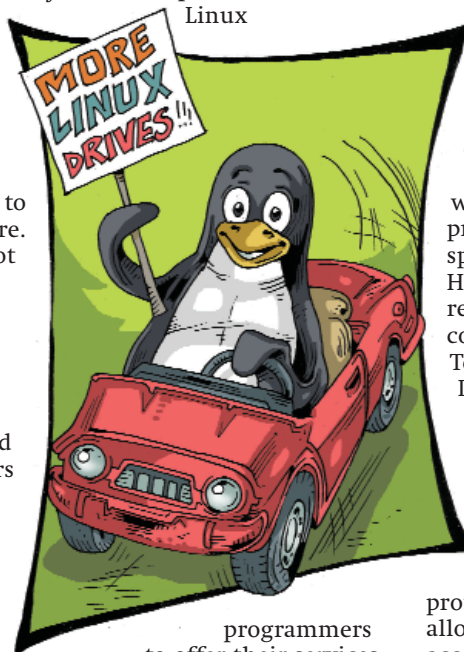
programmers to offer their services for free to any company that wanted to write Linux-compatible drivers for their products. He also proposed that all that was required from the companies was the specs, and perhaps a technician who could be frequently e-mailed when help was needed. He requested sample devices so that debugging didn't have to be done over e-mail. And what would the manufacturers get in return? A fully-functional Linux driver that is added to the Linux kernel resource tree, and which is updated with every kernel revision.

Dangling the marketing carrot, Kroah-Hartman went on to say that since the drivers would be included in the Linux kernel, it would be supported by the largest number of CPU types in the history of computing!

For manufacturers wary of sharing their protocols and specifications, Kroah-Hartman clarified that if required, companies could approach the Linux Tech Board to draft Non Disclosure Agreements (NDAs) for the programmers working on the drivers.

Companies that were earlier apprehensive of showing their proprietary protocols were now allowing programmers full access to their APIs under the NDAs. Kroah-Hartman and his team are willing to sign NDAs for the actual details of the devices that the companies give out, all the code generated will be licensed under the GPLv2. Manufacturers therefore wouldn't even need to worry about supporting the drivers; the community would take care of that (since the drivers would be incorporated in the kernel).

Some Linux community members are apprehensive,

■ XBox Live service launched in India ■ Facebook founder Mark Zuckerberg most influential in tech industry, says Silicon Research ■

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Skype Targeted

Skype has reported a vulnerability that can be exploited by a Trojan.

The PWS-Pykse Trojan relies on social engineering techniques to trick the victim into executing it; it is usually posted on dodgy sites or forums. The Trojan has also been known to spread through IMs and spam.

It appears as an installer with the Skype logo and named "SkypeDefenderSetup.exe". It infiltrates systems when downloaded.

A fake Skype interface appears with the username and password fields. On entering the details, a message appears: "Your Skype username and password are not recognized. Please check and try again". And while the user keeps trying, the Trojan sends the user's Skype credentials along with other logins and passwords stored in Internet Explorer to the attacker.

The Solution

There's only things you can do—update your virus definitions, and avoid clicking on instant messages with links or read spam (you wouldn't, of course). In addition, just be wary of installing any add-ons to Skype.

though: they argue that any future programmer updating the Linux kernel drivers would need the same level of understanding that the original driver developer received by looking at the manufacturer specifications.

It goes to be seen how far this Linux initiative will go, but this move by Novell is, in general, great news for Linux users—and could certainly mean better device support on various distros.

GAME BLAME

Chinese Universities Ban Personal Computers

Games like *EverQuest* are all the rage in China, and as you might have a clue about, the authorities aren't very happy about it. China being China decided to do what it does best—apply a ban. So later this year, when students join college for the first time, they will not be

allowed to bring their laptops or PCs with them—at the country's top three universities: Zhejiang University, Nanjing University, and Shanghai Jiaotong University. The ban is applicable to all first-year students, irrespective of whether or not they are doing a computer course.

The ban seems rather unenforceable, considering that quite a few students have found ways to install the games on computers in university labs (ostensibly so they can play them at night).

A small poll conducted at Shanghai Jiaotong University revealed that the ban will have no effect whatsoever: after having spent a year playing the games in clandestine fashion, we presume, most of the students polled plan to get their laptops or PCs the next year and continue with their gaming. Some in China believe the only way to be rid of the "menace"—a word the authorities in China seem to like to use—is to approach the root of the problem and educate youngsters on the perils of continuous gaming.

This is not the first time China has proposed a ban

HOT

Mail, unlimited

Yahoo!, Rediff, and Zapakmail have announced unlimited e-mail storage space. Microsoft bumps it up to 5 GB for Live Mail. It's pretty much the same old story of catch-up.

Stuck on old glory **NOT**

Gmail, the original catalyst of large inboxes, recently upgraded its space to (just!) 4 GB in spite of rumours speculating a 9 GB upgrade. Leaves us not a little surprised—haven't they been following the news?

on gaming—with the hope of creating the perfect working-class society. Back in April, the government hoped to limit the number of hours kids spent on online games by reducing game credits for excessive play.

Essentially, China is trying hard to wean its citizens from dependence on computers and get them to be more responsible in the real world. Of course,

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■ **RIAA sues Usenet, calls it source of all piracy** ■ **Greenpeace finds "hazardous chemicals" in iPhone** ■ **Microsoft Live launches GTD and Wiki service**

The Digital World

RUSSIA
All schools in the country will move to Linux by 2009. Students as well as teachers will soon be taught how to work with Linux.

FRANCE
The Government is funding the development of an open source toolbar for Outlook and Thunderbird so spam can be reported to ISPs under a project dubbed Signal Spam.

SOUTH KOREA
Men are turning to the Net and mobile phones for sex; there are 11,724 sites and mobile content operators involved in prostitution—four times that in 2005.

JAPAN
Under threat from the Internet and problems with maintaining the home delivery system, three leading newspapers have made an alliance to set up a common Web site for their articles.

SOUTH AFRICA
The Sunday Times now offers news the easy way via Net-connected phones. Readers move their phone cameras over the front-page bar code to get access to the respective sites!

AUSTRALIA
The Government has proposed an energy rating system for TVs. Current plasma HDTVs might soon be banned—a majority of them guzzle too much power.

one could think up theories of all sorts—get rid of the Western Influence, perhaps, or get citizens to believe in the virtues of regimented hard work. In any case, half-baked laws like this one can only lead to what any old ban means—Work Around. But do not forget that the Chinese government, while progressive, still wields power of the sort that can say, "No more games." Or perhaps "No more American games."

WE SAW THIS COMING

Health Records Go Online...?

Imagine a family doctor looking up your medical history online after you've gone to him or her with a complaint. On the face of it, it seems a good idea: everything is categorised, your doctor needn't ask you for too much extra information, and so on. HealthVault, a

Web service Microsoft is now offering, stores your medical records online. For once, this comes before—something we're now anticipating—"Google Health."

The site incorporates a health-specific search engine and lets you save your searches. The money will come in to Microsoft through health-related ads on the search pages, but those won't be targeted ads—for now. Access to the site will require a Windows Live ID and password, which you can, of course, share with healthcare providers.

Now the system just allows *you* to enter personal details along with medical statistics like blood pressure, blood glucose levels, and so on. So what happens if you enter something incorrect? There's no way a doctor can add medical details to your profile, so it's hardly a formal programme—the information is unverifiable by a medical expert. As a matter of fact, the site proclaims, "HealthVault was built on the principle that you should control your own health records." Unless we're

missing something really obvious here, we thought *doctors* should tell us what we're suffering from.

In 2001, EPIC (the Electronic Privacy Information Center) filed complaints alleging that the Microsoft Passport system facilitates online profiling. EPIC claimed Microsoft officials had stated that the goal of the system was to create a profile of every Internet user, to "up-sell" individuals to subscription accounts, and to use targeted advertising.

Some are alarmed: they can see a problem with too much information getting online. It's all usernames and passwords as of now; people tend to reuse passwords—and then there's the idea, pretty much Passport-like, that you should have a single sign-in for all your services. Perhaps we'll have something beyond passwords when we get to "single sign-on to the Web," but that's another story.

"Whether you need to search the Web for the most up-to-date treatments, catalog existing health

records, receive test results, or monitor current physical readings, HealthVault gives you the control you need," goes the verbal jingle. Search the Web? It's been reported that too many searches bring up porn results, even searches for which Google's *general* search engine brings up fewer porn results. Catalogue health records? Why, we do have paper and files. Receive test results... how about posting or e-mailing them over?

It just seems a push to go online, online, online—with little justification or even attraction. Along the lines of EPIC, we don't see much but targeted advertising here.

CATCH-UP

Yahoo!— More Google Than Ever!

Various search engine comparisons and polls have been done by people or bodies with

Image **Ashish Tripathy, Chennai**

Each month *Digit* will carry a caption for a photo. Come up with something funnier, and beat the *Digit* team at their own game! Entries accepted by the **20**th of this month.

varying authority, and Google almost always comes up tops—and, as you know all too well, Live Search and Yahoo! seem perennially locked in a fight for #2.

But slowly and quietly, Yahoo! is making improvements to its search engine, and that has not gone unnoticed in the Webosphere. The new Yahoo! Search incorporates some slick features which bestow upon Yahoo! no bragging rights.

Changes include the Search Assist tool, a space that shows up below the search field and suggests keywords as you type in your query. Then there's integration of the user's query with Flickr photo tags on the search results page, audio snippets when a music band or song name is searched for, and the inclusion of inline video elements on the search results page.

No-one is very impressed, because even if it's cool, it's been done before. Google has had the blended search option for a while now. The Search Assist tool is a clone of Spotlight in AOL Search and of Google Suggest, and Ask.com's Smart Box features.

One thing must, however, be said: in a recent test conducted by Web analysis firm Compete, Yahoo!'s search query replies generated more clicks than Google's or Microsoft's. Now how many competitors are there to Compete, we don't know, so...

The company says more improvements are in the pipeline. We'll look forward to them.

SOON UP FOR GRABS

.Asia Domains—Finally

The Internet Corporation for Assigned Names and Numbers (ICANN) recently approved a proposal for creating .asia as a top level domain name by 6 December 2007.

Currently, registration for that domain is limited to businesses that can prove they are functioning in the Asia-Pacific region. Registration can be done from the 90-odd authorised registrars in the region till 15 January 2008. After that, businesses can register without the need to prove that they operate from the region. Public registration will begin by February, 2008.

It has been well planned out. Registration being limited to *bona fide* businesses running out of the region thwarts the menace of cyber-squatting—buying a popular-sounding domain to sell it later at a higher price. The ICANN has decided to continue with the practice of verifying the business industry a buyer belongs to before registration of a site. All .asia domain registrations will be overseen by the non-profit DotAsia Foundation.

According to research conducted by the ICANN, 11 percent of all domain name registrations occur from the Asia-Pacific region despite the region having an online population of 33 per cent of all Internet users. The Web arrived in Asia much later than in the West; popular .com and .net domain names had already been taken by North American and EU users, therefore the push for a .asia domain. Moreover, it gives a geo-specific flavour to businesses. It is interesting to note that .eu is the only other regional, non-nation-specific TLD.

FOR KERALA STUDENTS...

Free Software Becomes Compulsory

The Director of Public Instruction for Education in Kerala has issued an order informing all schools in

■ **Asus officially launches the Eee PC: Linux, 7-inch, Intel, 512 MB, less than 20K** ■ **China "hijacking" Google, Yahoo!, MS search sites, redirecting to Baidu**

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STAT ATTACK
It's all in the numbers

Worldwide PC Shipments (in millions)

Legend: Desktop & x86 Server, Portables
Years: 2006, 2007, 2008, 2009, 2010, 2011

Worldwide, each day, about 40 billion person-to-person e-mails, 17.1 billion auto-alerts, and 40.5 billion spam mails are sent.
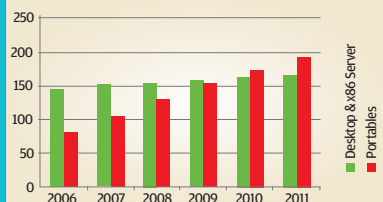
Legacy data centres use 300 to 400 watts of power per square foot, and by 2011 this could rise to more than 600 watts.

Indian broadband connectivity methods: ADSL is at 83%, followed by cable at 10% and Ethernet LAN at 3.4%. And 1% actually have fibre connections!

Only one out of five PC monitors sold in the Asia/Pacific region (excluding Japan) is now a traditional CRT

the state to start computer classes from standard VIII onwards on open source software. This comes a year after the Kerala government declared that all schools in the state would only run on open source software.

Till last year, schools had the freedom to conduct computer examinations based on free or Microsoft software. When the computer literacy program—Akshaya—was started in schools all over the state in 1995, it used Windows. Licensing costs of Windows being too high, it was

shelved half a year later.

Due to popular demand, the government had to reinstate the programme using free software tools that were half-baked, not ready for the classroom environment. It was then that the government announced that all schools would get a modified version of open source software suited for classrooms within the next year.

Currently, the schools run a customised version of Ubuntu called IT@School GNU Linux Version 3.0. This software is available to

students in classes VIII, IX and X. The syllabus and the question papers are either biased towards free software or they are platform- and application-neutral.

The Kerala government is also doing its bit to popularise open source software like The GIMP and OpenOffice.org by arranging digital art and presentation competitions at the state level, and having workshops on the advantages of open source software.

Open source software (OSS) seems to be catching on in India thanks to the Central and State Governments' efforts. The Karnataka government uses OSS for all its computers. It has also mandated the use of Kannada software— NUDi—to create government documents in Kannada. BSNL uses open source OSes in all its offices around India. The Kerala government is also planning to network all schools, postal offices, and district headquarters with a state-wide wide area network. Look at more e-governance projects being taken up by the Government at http:// egovindia.wordpress.com.

DOUBLING DRIVES

Storage In The News— Again

Western Digital recently announced the

world's highest-density hard disk drive. It has a capacity of 520 GB.

What's special here is that this was possible due to recent successes in reducing the size of the head - the part that reads and writes data to and from off the disk surface. As the size of the head reduces, it can read from denser areas of the disk, thereby increasing the amount of data you can store on a platter.

Disk heads of today run on the Tunnelling Magneto-Resistive (TMR) technology, that read and write data using the principles of electromagnetic induction; with certain advances in nano-manufacturing, Western Digital has been able to shrink the head to about 50 nanometres.

Hitachi—one of the other pioneers in hard disk technology—is, however, sceptical of TMR for the future; it has claimed that TMR is impractical for disk drives with a capacity of more than 500 GB. Hitachi has predicted that by 2011, disk capacity will reach 4 TB.

This will, according to Hitachi, be possible using the 30 nanometre manufacturing process for heads. It also plans to do away with TMR and use a new technology based on "Current Perpendicular-to-the-Plane Giant Magneto-Resistance" (CPP-GMR). This will arrange data bits vertically in smaller crystalline grains that are stable at room

Universal Flash Storage

Buzzword of the MONTH

Be it a digital camera, mobile phone, PDA, or other such gadgets, you need to know about the compatible memory card format.

Universal Flash Storage (UFS) is a newly-proposed open standards-based specification for the standardisation of removable Flash memory. The standard promises high data transfer speeds, fast speed access to large media files, greater storage capacities, and a decrease in power consumption—and most importantly, it is hoped that it will become a one-size-fits-all solution. Too good to be true? Could be. Several mobile phone technology and semiconductor companies support this specification, but many users are sceptical—saying it'll become just another format.

Besides, what about the billions of gadgets and consumer electronic devices already sold? Memory card manufacturers make money off proprietary formats, and they might not take to UFS too kindly... and we'll have to wait until 2009 for even the UFS specification to get finalised.

■ Ubuntu 7.1 released ■ *Die Hard* DVD to also carry DRM-free AVI file ■ Apple to fire up Intel dual- and quad-core Penryn-based Mac Pros

Universal Mobile Access

What is it?

UMA (Universal Mobile Access) is a technology that allows you to use your GSM phone on accessible WiFi, WiMax, and Bluetooth networks. The local network devices become like mini cell sites.

How does it work?

A UMA-enabled mobile has GSM and Wi-Fi radios that can work simultaneously. When the phone moves into the range of a Wireless LAN (connected to the Internet), the user connects to a UMA Network Controller (UNC). The UNC authenticates and authorises the user and updates the IP and MAC addresses on the central network of the mobile service provider. This done, all GSM services are routed through IP to the location of the user. The switching of network happens automatically and seamlessly, without the user's knowledge.

Why will anyone be interested?

UMA reduces the burden on cellular towers, and covers poor-coverage areas such as inside buildings, tunnels, and basements. It reduces transmission costs of calls as well. Customers see fewer call drops, better voice clarity, and increased browser speeds.

Who developed it?

It is a standard accepted by members of the 3rd Generation Partnership Project (3GPP).

Where is it currently deployed?

T-Mobile has been providing the UMA system in the US, and now has 8,500 WiFi hotspots. TeliaSonera, a telecom company, provides the service in Norway, Finland, and Sweden.

When will you see it in India?

We don't know about other manufacturers, but you can expect to see India's first UMA-enabled Nokia phones in the first quarter of 2008.

temperature, and will allow the creation of denser drives that will also last longer.

Back in June 1995, Fujitsu had announced a different method of creating disk drives - by using an anodised aluminium coating. This creates "nano-dots" on the surface of the disk, which are later magnetised to store a single bit of data. The anodised aluminium protects each dot *individually*, thereby reducing the chances of data corruption. (This is known as the patterned media approach, which we've spoken about in an earlier issue.) Currently, the company has announced the radius of each dot to be around 25 nanometres. Fujitsu aims to bring that down to 13 nanometres, which makes for 4 TB of data per square inch! The company hopes to get this technology out by 2010.

But while we're going on and on about hard disk technology, we're wondering what happened to holographic memory! Last we heard, there was a lot of buzz around its capabilities: 4 GB in a volume at the millimetre range.

Daewoo Electronics had also designed a working prototype, and, indeed, TDK came out with holographic-storage disks - but the drive is ridiculously expensive.

In conclusion, it does look like there's plenty to look forward to when it comes to the good old hard disk - it's *not* going to die anytime soon! Unless there's a breakthrough in nanotube storage - but that's a big, big "unless."

Dump Vista, They're Saying

The general consensus in tech circles for some time now has been that Windows Vista does not deliver what it promised, or work how it should, or satisfy. That idea has now been reinforced by

Illustrations **Harsho Mohan Chattoraj**

the Dutch Consumers Association: it has said all computer outlets in The Netherlands must provide XP "downgrades" to all Vista users who are not satisfied with it.

As you might know, this is not the first time a body has said, in effect, "Perhaps Vista isn't good"; in April, Dell had buckled (in the US) under consumer pressure to give users the option to select between XP and Vista after having made Vista the only operating system available on new laptops and desktops.

The fact that Microsoft has extended the availability of Windows XP

by five months—up until June 2008—also isn't going to help the sales of the new operating system. As if attesting to the tech community's claim that the OS was released before it had been sufficiently tested for bugs, the company offered to give disgruntled Vista customers a copy of Windows XP.

A recent survey by an independent specialist business and consumer technology research company, Context, indicated that sales of Vista have actually dropped by 17 per cent in the last few months, contrasting with steady sales of Windows XP.

Vista has been plagued by product launch delays—the OS was supposed to have been launched in June 2006, and eventually only became available in January 2007—and poorly-performing drivers (such as those for NVIDIA graphics cards). Bucketsful of bugs will be addressed in Service Pack 1.

Vista critics stand redeemed: Microsoft plans to release Service Pack 3 for Windows XP by early 2008, which will borrow features from Vista!

Microsoft's constant patch releases for the seemingly ill-fated OS has not stopped well-known bloggers like Om Malik from dismissing Vista as being unstable and an unnecessary upgrade.

"Reinstall XP, Remove Vista," goes the header of one of Malik's posts dated May 2007. In fact, who *has* said Vista is just great? People know it's pretty, and some eminent Netizens have said they'd gotten "very used to it," but that's about it. Still, Service Pack 1 might just change everything, let's not forget.▣

Lead Feature

Clickety-Clack: Googlewhack!

Starting off from an Indian security analyst's claim, we try and look at exactly how secure Google's AdSense programme is

Team Digit

"Google is God," many are apt to declare. And they are, really, close to being right… in certain senses. For example, you get a .odt file from someone when you expected a Word document. You scratch your head for a while—"open document something?"—and then you give up and do the usual thing: www.google.com. Type in just ".odt" without the quotes, and you're in business: a link to a forum, a link to a page, and *seconds* later, via a link you find, you have a Word document. Try it!

Now go to, for example, Yahoo! Search. *Otago Daily Times*. Not so helpful…? Next up: some world maps. Not so helpful…?

That example graphically demonstrates why Google is the most popular search engine. No-one can say it is "the best," because that's a much tougher question.

Now, back to the clicks: all this fabulous search technology, all the power that Google has come to be known for, all its great products, rest on one edifice—its advertising programmes, AdWords and AdSense. (We're focusing here on AdSense.) It seems *money* is just a click away—to be precise, a few thousand clicks. Those clicks can be engineered.

The Working

For those of you hearing the word for the first time, AdSense is Google's word for the programme whereby they place ads on a site or blog based on its content. Anyone can have an AdSense account, though to actually make money off it, you'll probably need a blog or site with good, extensive content.

The concept is simple: after you sign up for an AdSense account, bots "look" at your page and place relevant ads on it. Those are the "Ads by

Shrikrishna Patkar

Google" links you see. The advertiser pays Google when someone clicks on one of his ads (on your site). Google pays the "publisher"—that is, you—some of that money, and keeps some for itself.

The Problem

The obvious thing here is, if clicks on ads mean money, minds of the money-grubbing type find ways to generate clicks. Well, if you're the publisher, you can't just click on your own ads, sorry—Google just detects those as "invalid" clicks. Tell your office co-workers to click on them? Sorry again: same IP range, so they're detected as invalid. Yes, Google does keep updating its technology to detect invalid clicks.

But it goes like this: someone—let's call him a hacker—comes up with a *new* technique to make money off clicks. He uses his method and makes lots of money, *in the time that Google fixes* that newly-discovered problem with AdSense. And in that time, the advertiser loses money.

Which, naturally, leads to lawsuits. You've probably heard this headline at least once: "Google sued for click fraud." Click fraud is *it*: the potential Google-killer. As a matter of fact, May 2004, there was this article by Garrett French (Managing Editor of *Search Engine Lowdown*) titled *Click Fraud: The Google Killer*. And the text went on: "Google listed click fraud as one of the potential 'worries' that would-be investors should consider. In fact, they admitted to regularly paying refunds because of click fraud and stated that they may have to make retroactive payments."

Formally, from **www.clickz.com**, Yahoo! Sponsored Search defines click fraud as "clicks arising for reasons other than the good-faith intention of an Internet user to visit a Web site to purchase goods or services or to obtain information."

Google is more specific, defining click fraud, "or invalid clicks, as any method used to artificially and/or maliciously generate clicks or page impressions," as Salar Kamangar, Vice-President of Product Management, once defined it.

▼ The Lawsuits

In May 2006, the following appeared on networkworld.com: *"Google has agreed to settle a class action lawsuit brought against it over the issue of click fraud, which some industry experts believe could seriously threaten the company's main source of revenue: pay-per-click advertising. Google will pay as much as $90 million to affected advertisers in attorneys' fees and credits as part of the settlement.*

"The case was filed in an Arkansas court against Google and other search engine operators and providers of pay-per-click ads, such as Yahoo and AOL. The lead plaintiff is Lane's Gifts & Collectibles, which sells items such as dolls, figurines and teddy bears online, over the phone and by mail." Now $90 million *is* material—refer Schmidt's comments alongside.

On Google's official company blog, Nicole Wong, then associate general counsel at Google, wrote: "This agreement covers all advertisers who claim to have been charged but not reimbursed for invalid clicks dating from 2002 when we launched our 'cost per click' advertising program through the date the settlement is approved by the judge."

It works the other way round, too. 15 November 2004, Google filed a suit against an Internet operation that it claimed "systematically" (from news.com) clicked on text ads. That case was amongst the first civil lawsuits to relate to click fraud. It charged that Texas-based Auctions Expert International signed up for a Google AdSense account, then "fraudulently clicked on the ads to profit from its pay-per-click system."

Examples of invalid clicks, according to Kamangar, include manual clicks on an ad to purposefully increase the ad spend; deliberate clicks on an ad to increase profits by site owners hosting the ads; and clicks that arise from the use of automated clicking tools, bots, or other deceptive software.

The CEO

In May of 2005, Google CEO Eric Schmidt had said, in regards to click fraud, as reported by zdnet.com (emphasis placed by us): "One of the great technical challenges, which our computer scientists like, is detecting these at scale. We have been able to detect them, so it appears as though the problem, which I don't think will ever go away, is both manageable and from a financial perspective at the company *it's not material*."

That was Google's third lawsuit in the context of click fraud. But 9th August, 2006, at the Search Engine Strategies Conference, as reported by Google themselves at google.com, Schmidt was quizzed about click fraud by David Krane, then director of Corporate Communications at Google.

He had this to say: "As part of a litigation, which was settled, we produced a technical report which actually analysed this, which is now public information. We also have chosen to disclose what we estimate is the bad click rate on a per advertiser basis... I've also been misquoted by a number of people as somehow saying that this was not an important issue. It is an important issue that is under control. We have very good technical people. We have very good computers. We're monitoring it. *It's not material* to the company. It is important, and it's not going to go away.

"It's hard to know [the precise extent of click fraud] because we only know what we detect, but based on our estimates, the problem is manageable. And we have a lot of ways of detecting it, but I can't make you an absolute guarantee, because you never really know."

In other places, Schmidt has been reported as indicating that he didn't think click fraud was a big deal in the long run. He is quoted as saying that the "perfect economic solution" to click fraud is "to let it happen." This is perhaps what Schmidt was referring to when he said "I have been misquoted..."

Schmidt's theory, as reported in July 2006 at blogs.zdnet.com: "Eventually, the price that the advertiser is willing to pay for the conversion will decline, because the advertiser will realise that these are bad clicks, in other words, the value of the ad declines, so over some amount of time, the system is in fact self-correcting. In fact, there is a perfect economic solution, which is to let it happen."

We will not comment on Schmidt's theory, but during that "eventually," advertisers are paying for fraudulent clicks. Google gets "smarter" with each breach—at the cost of advertisers, of course.

And now, Manish Arora seems to have come up with something they haven't gotten over yet...

Trying To Help

Arora is a security analyst. Google still doesn't seem to have been able to find a solution to his method of committing click fraud—which he's reported to Google, and to no avail. It seems to us that Arora has been doing this with entirely benign intentions, but as a disclaimer, we must say that we cannot verify every single fact. However, we have little reason, from our inter-action with him, that Arora ever had any intentions to make money off AdSense.

We looked up the Net—in fact, we Googled a lot—to see if anything similar to what Manish did has been done before by anyone, and it hasn't, to the best of our knowledge. That said, here's the story.

Naturally, we can't tell you how Arora's "AdSense Crack"—our term— works; but here's what happens. You have a blog. You sign up for an AdSense account—for that, Google first "approves" your blog for the programme. Once they confirm that your blog is fit for an account, your account is activated, and the "Ads by Google" start appearing on your page.

Manish Arora, a security analyst who claims it's very easy to make money off Google AdSense

And then, if you have Arora's script (a set of commands that automate a task), you run it on your site—any site you own. You then send out mails to people you know, inviting them to visit—not your blog—but just about anything they'll find inter-esting, like a YouTube video, or pics of yours, etc. Those people you mail don't even need to know about the existence of your blog (where the AdSense ads are).

When they click on your links and watch, say, the video you linked to, Google credits *your* AdSense account!

Yes, you read that right—read it again for the full impact. The AdSense ads are *on your blog*; you send links to, say, videos, to people you know; they click and watch *that* video; and *you* get paid.

Arora can control the scene, as it were: if he chooses to, he can stop all activity by ceasing to send out his mails. Google's bots detect the drop in click activity—and usually disable the account. Arora can then open a new account, and get back into "business."

When he first created and ran his script, he "made" thousands of dollars—"made" is in quotes because he never actually took any of the money.

Google says he was lying, and that what he claimed is impossible. Now Arora also tells us he received gifts from Google—two, to be precise—one of which is pictured on this page. It's not for us to decide if the picture has been doctored, but let's just leave it at "We don't now."

One of the gifts Arora claims Google sent him for being a valuable AdSense customer

In November 2006, Arora to Google: "I would be glad to provide you the complete mechanism, which will take one hour a day to produce thousands of dollars a month from Adsense. I would like to explain this model to any of your representatives." And later the same month, from Google to Arora: "We've investigated your claim. At this point, all we can verify is that our automated systems ter-minated your accounts as a result of your trying to inflate the clicks. This is exactly how the system is designed to work. If (sic) supply us with the code and technical details of the method you mention below, we will investigate further." That was Cory Altheide, Incident Response Lead, Google Security Team. We'll have more to say about this later.

Visits 58 % of Site Total: 100.00%	Pages/Visit 16.97 Site Avg: 16.97 (0.00%)	Avg. Time on Site 00:05:18 Site Avg: 00:05:18 (0.00%)	% New Visits 84.48% Site Avg: 84.48% (0.00%)	Bounce Rate 41.38% Site Avg: 41.38% (0.00%)	
Country/Territory	Visits	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
India	32	21.47	00:07:02	93.75%	46.88%
United Arab Emirates	7	3.29	00:00:48	71.43%	42.86%
United States	4	20.75	00:06:59	75.00%	0.00%
Philippines	3	1.00	00:00:00	0.00%	100.00%

A map—followed by country-wise figures—of what Arora claims is the report for September 2007 for his AdSense account

The Test

Arora's "earnings" screenshot—which Google claims is doctored—is the first screenshot below. Then, *we* tested the script; it works like Arora claimed it would. (Second screenshot below.) Our account was disabled when Arora stopped sending out his e-mail invitations to click on his links.

To prove that he had full control, Arora started yet another account into which money is still flowing in. See on the previous page a slightly outdated screenshot of where the clicks are coming from. Make no mistake: this method—which involves a simple script and lots of connections to people—is powerful.

Naturally, we contacted Google and told them about how we had tested a certain click fraud script. Andrew Kovacs, a Google spokesman, got back and told us he'd like to speak with us. The only thing he asked us was, "When you ran the script, was it Manish Arora's?"

Clearly, *his is a name they're familiar with.*

The Actual Rate...?

Click fraud happens all the time—it's so easy. Some people quote it at a ridiculous high of 50 per cent; some say it is 10 per cent, some analysts quote figures in between. Shuman

> "The total number of invalid clicks we detect—whether for suspected malicious or non-malicious intent—is in the single digit percentages"
>
> **Shuman Ghosemajumder**
> Business Product Manager for Trust And Safety
> Google

A report of Arora's earnings as of 18 December 2006—his screenshot

A report of our earnings in the AdSense account we used to try out Arora's method

Ghosemajumder, Business Product Manager for Trust And Safety at Google, says... well, there's a wee bit of controversy here. He has been quoted as saying that the click fraud rate is less than 2 per cent. But here's how he clarifies what he actually said, at shumans.com:

"... I never said that our click fraud rate is less than 2 per cent. Instead, what I said is that

the quantity of invalid clicks which we detect as a result of reactive investigations is a 'negligible proportion' of the total number of invalid clicks. Andy (Beal) asked me if that percentage is less than 2%. I told him that I was not able to provide a bound, but yes, 'negligible' certainly means less than 2% of invalid clicks.

"So what is our overall 'click fraud rate'? ... it is virtually impossible to know the intent of every click. However, we can do a very effective job using statistical techniques to detect potentially malicious behavior, and the total number of invalid clicks we detect—whether for suspected malicious or non-malicious intent—is in the single digit percentages."

(Andy Beal is a blogging and search engine marketing consultant. "Overall Click Fraud Rate" is commonly used to refer to the number of fraudulent clicks as a percentage of all clicks that happen, regardless of whether Google issues a refund or doesn't bill, according to Danny Sullivan of searchengineland.com.)

Kovacs informs us: "Less than 0.02% of clicks that are billed to the advertiser turn out to be fraudulent." That corroborates with a March 2007 claim by Google that less than 0.02% of all clicks slip past its filters and are caught after advertisers request reviews.

But there are plenty of things we can't get into here—including the idea that there are sceptics who don't like that figure. If you're interested, you should visit http://tinyurl.com/yrh87l for a detailed explanation by Sullivan.

But The Questions...

There are a lot of these, not entirely clear. Let's take a look at all of them.

Q. *Why has Google said Arora is lying?*
Proposed answer: We don't know. Arora could be lying. But then we tested his system ourselves and found that it works. Google categorically tells us it's "impossibe" for Arora to have "earned" how much he did, but there's no explanation—while they *could* have given us one: Arora spelt out on his blog what he'd been doing.

Q. *How can Digit be sure that Arora's system works?*
A. We're referring to the fact that we "got" paid, as in, the money accrued in our AdSense account. However, would the clicks have been *later* detected as invalid and we wouldn't have been paid? We asked Kovacs about this, and there has been no response.

Q. *Is Google taking Digit seriously?*
A. We believe so. Kovacs has been our point of contact; he invited us to speak to Ghosemajumder about the issue. In one e-mail, he said our questions were "top priority."

Q. *Is Google taking Arora seriously?*
A. On the one hand, consider the alacrity with which Kovacs called us to ask if it was Arora's script we had been using. He said they had *"dealt"* with him before. On the other hand,

when we got into the details and began e-mailing him, there has been only one concrete response. Why the reticence here?

Q. *Why do they all say "that's the way it's supposed to work"?*
A. (Our italics) Refer what Cory Altheide said to Arora: *"This is exactly how the system is designed to work."* Then here's what Kovacs said to us in the last communication we received: "When we learn about fraudulent accounts we terminate them before the individuals earn any money. *This is exactly how the system is designed to work.*" Then, like we've asked earlier, would our clicks have been *later* detected as invalid—and we would have ended up not being paid? Why have we not received a response on this? And second, if everything is working "exactly the way it's supposed to work," why does click fraud occur at all?

Q. *Finally, does Google have a mechanism in place to prevent activity of the type Arora claims to have been successful in doing?*
A. We're not sure. Kovacs says: "Do we have (sic) multiple ways to distinguish between clicks that originate on a site approved for AdSense and those that originate on other sites." There's no further explanation, and we have to ask: how did money come into our account? Were we to try and cash into it, would we have been told that our clicks were fake? It doesn't seem that way to us, but we don't know.

Something's missing along the way.

The Moral Of The Story
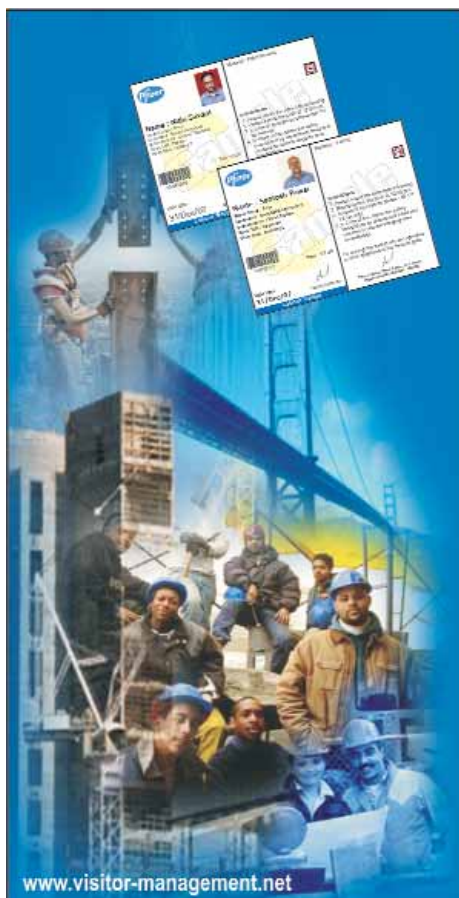
So what's our point? Just this: that each time someone comes up with a new method to exploit a problem with AdSense, some people lose money. Each time Google fortifies its defences, and it gets better. But the programme, therefore, is far from perfect. Did we mention that click fraud is *the* potential Google-killer?

And that is the reason we're reporting this: it's not just to say "someone found an exploitable loophole in AdSense." It is to inform you of the fact that AdSense is far from perfect—and that we think Google should not underestimate the gravity of the situation. Will it need one more class action suit to wake Google up? Should it?

We certainly hope—in fact, we're almost sure—that Google will find a way to patch the AdSense exploitation method that Arora has found. For the sake of all of us—so that Google remains what it is today, a benign giant, organising the world's information.

But in this instance, they're taking rather a long time to respond—we wish them God Speed! ⊠

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October 2007

Akai 32LW7 LCD Television

Rossi Fernandes

I've been given a month, more or less, to enjoy this humongous (32-inch!) LCD TV from Akai. That company may not be on the same level as Sharp or Sony, but then it's still something to have a 32-incher staring back at you

Day 1

It's here! I'm sitting right in front of it and I feel like a dwarf in comparison. One really has to place a regular screen—even including 21-inchers—next to a 32-incher to get an idea of the size difference. This one isn't exactly elegant like the Bordeaux range of TVs from Samsung, which have the smooth glossy finish and all. This one has a black matte finish with a standard, grey border. The speakers at the bottom of the screen give it an even larger look. I can even mount it on my wall, if I want to.

Day 5

It's been four days now and it looks like someone moved the TV a little. I try and adjust the position a tiny bit and it starts wobbling in giant-globule-of-jelly fashion. I've also noticed the flimsy plastic on the poorly-built back cover. A mildly punch and you can easily make a hole in it.

Day 10

The novelty has begun to wear off. One of the major flaws has to be the display itself! It's got this rippling wave effect that originates from the top centre and radiates to the bottom, and it's fairly prominent and rather distracting. Viewing angles are surprisingly good, and there are no signs of any kind of motion blurring either. Contrast ratio is pretty good too. There is a backlight feature to turn down (or up) the brightness of the screen more effectively.

Day 14

Connected the Xbox 360 Elite to the TV—that's where it should shine. There are two HDMI connectors along with an array of others including VGA input and audio. I'm pleased—playing games on an Xbox 360 sitting a few feet away is rather enjoyable. 1366 x 768 is good as long as you sit at a decent distance. Unlike computer LCD monitors, you can count the pixels on the screen—that's how coarse it is! Still, it would be the same with any other LCD of this size and resolution. The games run at 1080p but the TV doesn't support it, so it downscales 1080p to its native resolution.

Day 20

Sound: not great. Loud enough for the daily-type TV, but not crisp. I'd say if you want to watch high-definition, action-packed movies, you'll definitely want to connect better, external speakers.

Day 25

I'm busy punching away at the remote wondering where they've gone terribly wrong. Its light and doesn't feel nice in my hand. The volume and channel-changing directional buttons are clunky and get stuck. The on-screen menu interface is easy to navigate, though.

Day 29

The end of the "joyride". I'm not really going to miss it as much as I thought I would. I'm told the price is somewhere around Rs 40,000. I'm not totally blown away by the quality of the video or the sound—forget about build quality. This is just a good entry-level LCD TV for anyone wanting to make that leap—one of the cheapest 32-inch LCDs you can get. Would I buy it? I think not.

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FESTIVE SHOPPING

'Tis the time to be spending, but what to buy? Tech shopping over the holidays can get confusing. Allow us to suggest a few things for you to splurge on

Robert Sovereign-Smith

You're probably already sick of all the ads screaming out to you from billboards as you navigate your way through rush hour traffic. (And also those in papers, mags...) Every year around *Diwali* (or *Deepavali*), companies put everything up on sale, advertise like mad and hope to win your heart over, along with your *Lakshmi* (money, wealth, paisa, etc.). Friends and relatives all act as facilitators when it comes to decision time—except when it's something from the tech domain. Here, the majority of we Indians depend a lot on ads. Most of us have friends who know less (or at best, as much) about technology as we do. Those of you who read *Digit* ought to know better than to base a decision on an ad, and should whip out those old issues of *Digit*, or head on over to our site (**www.thinkdigit.com**) to look at our tests and decide on a product. But this year, we're making it even easier—with our holiday shopping list, sourced from those in the *Digit* editorial team: "If you had a million rupees, this *Diwali* you would buy...". Answers varied across categories, and we present what we're calling "Digit's Ultimate Holiday Shopping Guide."

Gaming
Because everyone loves gaming!

Sony PSP

If it's portable entertainment, nothing beats the Sony PSP (PlayStation Portable). There's a new version out called the PSP Slim, widely available with your local grey market vendor. Price varies between Rs 7.5 and 8.5K. So what's so good about it? Well, the Slim (PSP 2000) is lighter than the PSP (PSP 1000)—down to 189 gm with batteries. It has been optimised to use less power. The RAM has been doubled to 64 MB. The screen remains unchanged—480x272 (16:9) widescreen TFT LCD. The buttons are more responsive and stick out a little further from the body. The drive seems a little less noisy. The Slim features a video-out connector. When you're at home or in a Wi-Fi hotspot, you can connect and start surfing.

For the price, nothing beats the PSP if you're into gaming on the move. If you're a movie buff, however, move on to *Entertainment* (three pages down).

Microsoft Xbox 360 Elite

This black beauty comes with an HDMI-out—perfect if you're planning on getting an LCD HDTV. The Elite sports a full 1080p HD resolution; it also comes with a 120 GB hard drive, and unfortunately, not much more in terms of features than the regular Xbox models. But well, you'll be able to actually use it as a media centre to play back movies on your HDTV. Besides, with the Elite you get digital audio. And more...

The Elite is supposed to be backwards-compatible with previous Xbox and Xbox 360 games, but this doesn't hold true all the time. However, if you want to enjoy the games you buy in full HD splendour, the Elite is your only option when it comes to the Xbox 360. The Elite is being sold in India at **www.indiatimes.com** for Rs 34,990. We're mentioning both the Elite and the PS3 because choosing between them often comes down to what games you like to play. We suggest you look at the games available for each platform, decide on which has more of the games you'd like to own, and only then make your purchase. Also, the Xbox 360 Elite is available in the Gulf for considerably less than the Indian price.
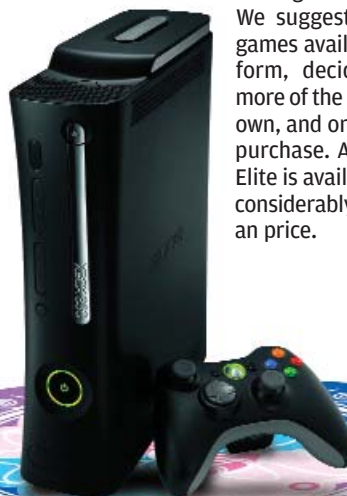
Sony PS3

Coming to the PS3, we wonder if we really need to explain any further. Well, here's a look at its spec sheet: Cell processor (capable of 218 GFlops); Full HD capability (1080p); 2xHDMI ports; Dolby 5.1/DTS capable audio; Blu-ray DVD player (CD/DVD/BD); wireless controllers; and more... What makes the PS3 special is its native support for HDTV using the two HDMI inputs and the mind-blowing sound experience it offers. The PS3 has always been full HD compatible (1080p), so you can enjoy it on any HDTV out there. The inbuilt Blu-ray DVD player is a huge bonus, making you quite future-proof. Incidentally, you can get an HD-DVD player for the 360 Elite, to future-proof it, but it's an external player and will cost you about Rs 8,000 more—huge advantage for Sony's PS3 here. Currently, the game selection for PS3 available in India makes it a formidable force, and considering that you get Dolby 5.1/DTS, a Blu-ray player, 2 HDMI ports... the choice when buying from India is simple—get the PS3 for Rs 34,990 (MRP, and a little cheaper at certain stores). The PS3 will cost between Rs 25,000 to 30,000 abroad, so it might not be worth losing support for it.

Overall, this Diwali, make sure you get yourself a gaming console—an Xbox via friends or relative from abroad or a PS3 right here. Nintendo fans will complain about us not mentioning the Wii, but lack of official availability and games forces us to ignore it at this time—maybe next Diwali!

personaltech

What good is it to earn if you can't splurge on yourself?
Go ahead, pamper away!

Nokia N95

Looking to buy a stylish phone? If you have a budget of about Rs 25,000 for a phone, the Nokia N95 is your best bet. This 3G phone weighs in at just 120 gm, features a 240 x 320 TFT screen, a camera that is capable of 5 mega pixel pictures, with a Carl Zeiss lens, and an almost unlimited supply of phonebook space, and much more.

What's that "much more", you ask? For starters, quad-band GSM, class 10 GPRS (48 Kbps), EDGE (296 Kbps), HSPDA (3G), WiFi (b/g) and Bluetooth are the options you have for connectivity to networks and other devices. It features a 3.5 mm audio jack so you can connect a decent set of headphones without worrying about proprietary formats. The built in GPS navigation ensures you never lose your way, while the 5 mp (2592x1944 pixel) camera let's you capture every trip you take. The camera with Karl Zeiss optics lets you capture VGA (640x480) video at 30 fps, more than enough for capturing your family frolicking on a holiday. The phone provides 160 MB of internal memory, comes with a 128 MB microSD card, which you can safely ignore because you know you're going to want to buy a multiple-GB microSD replacement for it! With over six hours of talk time and over 200 hours of standby time, you'll rarely find yourself running low on charge between plug points. The phone is running Symbian OS 9.2, and hooks up to your PC via the mini USB port, so file transfers are easy. As for looks, take a look at the picture alongside—you know you want this cool slider from Nokia!

Apple iPod Touch

Rumoured to be launched officially some time before Diwali, the iPod Touch is what everyone wants—at least until the iPhone is officially launched here. So what is the iPod Touch? Think the iPhone, without the phone function! There are two variants to the Flash memory-based Touch: 8 GB and 16 GB. Already available and quite popular in the grey market, the iPod touch is retailing at around Rs 15,000 for the 8 GB and 19,000 for the 16 GB models. Featuring the already famous Apple Multi-touch interface, a 3.5 inch 480 x 320 touch-screen, the Safari Internet browser, WiFi access to connect the browser to the Net, and the ability to download songs from iTunes, this is a must buy for those who can afford it. Regular specifications are: Weight 120 gm; Display 3.5-inch; Audio AAC, MP3, Apple lossless, AIFF, and WAV; Video capabilities M4V, MP4 and MOV; Other Features 3.5 mm headphone jack, 22 hours of music playback, etc. Heard enough? If all the specifications and pictures are making you drool over this magazine, close mouth, run to your tech retailer and get one of these!

Sony Ericsson S500i

Not everyone will set themselves a budget as high as Rs 25K for a phone. Most of us Diwali shoppers will look for more mid-range phones... so we decided to recommend something new, something that will let your purchase stand out from the crowd. Sony Ericsson launched the S500i in the beginning of October, and at first glance, this phone looks really cool. Of the four colours available—Mysterious Green, Ice Purple, Contrasted Copper and Spring Yellow—our favourites are the first two. The phone is a slider; the 2-inch TFT display works at 240 x 320, with 262K colours. It's EDGE-capable, has quad-band GSM capability and supports Bluetooth (A2DP stereo, for wireless headphones). The phone weighs just 92 gm, and is 14 mm thick. Onboard memory is scarce—just 12 MB—but you can upgrade to 2 GB using the Memory Stick Micro (M2) slot. The phone features Sony's Walkman software for phones, so your music experience will be good. The 2MP camera offers decent pictures, and is on par with other phones in this range. The buttons are small, but well-designed and tactile enough. Talk time is 9 hours and standby time is 370 hours. The menu is exciting to play with, and Sony Ericsson says, "...S500i keeps you in harmony with the world around you. Let desktop and menu themes change with the season; or as day turns to night." So your phone menu looks different on different days and even changes between day and night! You can personalise the phone's "light effects"—the way the phone lights up when a call comes through. In terms of specs, the phone is quite what you'd expect for the price—nothing extraordinary. However, if you'd like to make a style statement with your phone, the S500i can be the centre of attention... if you want it to be.

Cameras
From semi-professional to point-and-click

Nikon D40x

The D40x is our personal favourite camera. We suggest you use this as a benchmark for other "Diwali offers" you might find. This is a 10.2MP camera that seems to fit perfectly in your hands. It's light—a mere 495 gm without the battery. Even professional photographers have showered praises on the camera's image quality at its low price. The D40x is in India available for around Rs 29,000. We should warn you that the older D40 (6.1MP) is also still being sold in India for around Rs 22,000, so make sure you don't get confused between the D40 and D40x. Although the older D40 is a very good camera in itself, the D40x comes with an 18-55 mm Nikkor lens bundled, so it's actually a way better deal. The D40x uses SD memory cards to store pictures, which is good because SD flash memory prices are plummeting. The camera features auto white balance, Nikon's

Sony Cyber-shot DSC W200

For those of you on a smaller budget, or if you just want a pocket-able camera that gives you great quality and ease of use, we recommend the DSC W200. This Cyber-shot camera from Sony is really compact for its 12MP rating. The DSC W200 features Sony's Super SteadyShot optical image stabilisation technology, face detection and 9-point autofocus. This translates to an easy to use camera that very rarely gives you blurry shots. Video capture is possible at 30 fps VGA. The camera has a Carl Zeiss lens with 3x optical zoom, which provides good results in well-lit scenarios. At 142 gm, the camera is as light as you'd expect it to be, but still feels good and steady in your hands. The design also helps you get a good grip of the thing when you're shooting, and coupled with the image stabilisation software you're not likely to get motion blurs. Apart from standard USB and AV connectors, the camera features a HD output jack, so you can hook it up directly to your HDTV. Software running on the camera lets you set up slide-shows for viewing on your HDTV. The DSC W200 is available at quite a varied price—between Rs 13,000 and Rs 16,000—because some dealers sell only the camera, some sell it with a carry pouch, and some even throw in a 2 GB Memory Stick Pro Duo.

Multi-CAM 530 autofocus technology, five shooting modes, Nikon's 3D Color Matrix Metering II exposure control system, and a lot of shooting controls to give you a perfectly exposed and timed picture. Shutter speeds range from 30 to 1/4000. The pop-up flash is good for indoor-low-light shooting. The D40x uses a custom Li-ion battery that has a decent life, but shutterbugs who shoot in excess of 500 pics on a single charge might need a spare battery. Overall, any semi-professional shooter would be quite happy with this camera.

Entertainment
High-fidelity and high-definition here

Samsung Bordeaux LA32R81B

Chances are you're going to get a pretty good offer on this TV these holidays. The 32R8 is a black beauty from the Samsung Bordeaux collection, and is one revision up from its predecessor the LA32R71B. The newer model is slightly sleeker looking (not that any improvement was required to begin with), and the contrast ratio has been beefed up from 5000:1 to 8000:1 on the new range. Prices have fallen as well, and the TV was retailing for Rs 52,000 the last time we checked, and may even fall further during the shopping season.

The display is not true HD, and is 1080i (1366 x 768), which shouldn't be much of a problem for most, because we hardly have any 1080i capable outputs. If you own a PS3 or Xbox though, you might want to look at full HD displays.

The brightness is rated at 550 cd/m2, and coupled with a viewing angle of 178 degrees, this makes the TV well viewable from everywhere in your room. The inbuilt speakers aren't great, and at 10 watt RMS don't pack a punch—but you can't have everything now can you?

There are 3 HDMI inputs, so those of you who want to be able to simultaneously connect multiple HD sources are in luck here. There's PC connectivity as well, via a D-sub port that connects directly to your graphics card. We love the picture-in-picture implementation on this TV though, which comes in handy when you've connected your PC up and want to watch the cricket match while you work. Picture quality is good and this is a good buy for most people.

Also available in the Indian market are the older R7 models of this 32-inch TV, and you should check carefully what you're buying. There's nothing wrong with the R7 series per se, and if you get a good deal on one, they're still great buys. The difference is that the R7s feature just a single HDMI port and a reduced contrast ratio of 5000:1. A good idea would be to look for clearance sales of the R7, and if you get lucky, you could get them for Rs 42,000 or less—a good buy if you're not interested in hooking up too many HD sources (of which we have so few anyway in India). Those of you with friends / relatives going to the gulf might want to ask them to check for the R7s there—one of our colleagues got an LA32R71B for a mere 27,000 at a clearance sale in the gulf!

Now there are those of you who will want larger than 32 inch TVs, or just insist on full HD (1080p) TVs. Be prepared to pay a steep price though. If you've got a budget of over 1,50,000, you may want to take a look at full HD LCDs and Plasmas from Philips, Sony and Hitachi. The Philips Ambilight LCE TVs are also something you may want to look at—they're different and definitely a good looking addition to any wall. Speaking of good looking, the Sony Bravia line has some really nice full HD TVs, and they've got some good discounts and offers lined up this Diwali.

Bose QuietComfort 3

With all that shopping you're planning, chances are you're going to have a lot of new audio-visual gear at home—all of which is useless at 2:00 AM when you want to catch that flick on TV or when you just want to chill to some loud music. If your family doesn't kill you first, your neighbours will. The only option is to take your entertainment to more personal level, and get headphones. However, not just any headphones, because what use is it watching your favourite movie or listening to that Beethoven/Van Halen/Madonna/Linkin' Park/(we could go on forever) CD on a substandard pair of headphones.

Audio quality is something you can stop worrying about as soon as the word Bose is mentioned. We all know they're good, period. Bose's QuietComfort 3 Acoustic Noise Cancelling Headphones are something everyone should have, but not just anyone can afford. Priced at Rs 21,263, these headphones cause most of us to sputter in awe when we hear the price tag. "Why?" is generally the next question we all ask; here's the answer:

The headphones are *really* noise cancelling, and putting them on isolate you from the noise around, as well as ensure that any noise in your music is electronically cut out. They also feature active equalisation—electronics in the headset analyse and control the frequency response of the headphones, on-the-fly, to ensure the best audio quality always. In short, you have to hear them to believe them. Only for those with money to splurge though, or those who have ears as sensitive as professional composers. They do make for some serious flaunt value though!

Time To Open The Goodies

We certainly hope that this article has inspired you to go out and look for good deals... Remember, there are plenty more great ones out there in every segment we've mentioned; these are just suggestions.

If you *do* buy any of the products we've mentioned, write in and let us know about your experience. We'd also love to hear what you *did* buy this Diwali, even if it's not on our list! ∎

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UNDER THE DIE

Shirkrishna Patkar

How processors go from idea to your PC

Nimish Chandiramani

If you've ever handled a transistor—in your college lab, for instance—you've probably had a brain cell or two pop trying to imagine 291 million of them inside the diminutive package that is the Intel Core 2 Duo. And if it isn't enough to imagine just transistors on that little chip, try to imagine that those transistors are actually connected to each other in circuits, which ultimately power all our PCs. Hurts, doesn't it?

So how *do* you design circuitry when millions of transistors are involved? And how do you fit the lot on a chip that's barely the size of a fingernail?

Drawing Board

Before the actual design of your microchip commences, you first have to decide what it's going to do—and not just in vague terms like "Oh, it'll decode video files." You'll have to draw up algorithms for how exactly the chip will decode video—which codec it'll use and so on.

The next step is dividing the chip's job into hardware and software—what tasks will be performed by the chip directly, and what you'll write drivers or software for. If you implement all the chip's functionality on the hardware itself, you'll have yourself a real cracking performer, but you won't be able to add to those functions later. For example, your mobile phone manufacturer could very well incorporate all the functions of your phone on to the same chip, but if they had to make even the simplest change to the phone—

like adding an FM radio function—they'd have to design and manufacture a whole new chip: an embarrassingly expensive proposition. Instead, they build a chip with all the essential features—making phone calls, for instance—and write software to implement the rest of the functions.

Once the hardware's role in the Big Picture is fixed, it's time to design.

Drawing Board, II

We talk about circuitry with millions of transistors, but the truth is that even in the early days of chip manufacture, designers never had to bother with individual transistors—the smallest units they had to care about were *logic gates*; this was a time when digital circuits weren't nearly as complex as today's. If you were to design a microprocessor at that minute level today, it would take years to just *finish* the design, let alone test and refine it. The solution? Don't bother with circuit diagrams at all—tell a computer what you want, and let *it* do the dirty work.

Today, designing hardware has become a matter of writing code—using a special "Hardware Descriptive Language" (HDL), you describe every function of the chip you're designing—right down to what the chip does in each clock cycle. That code, once interpreted (by a *logic synthesiser*), results in a circuit diagram—which can now be refined by hand, if necessary. Before your design is shipped off for manufacture, it'll need manual looking-over to see if the design can be optimised beyond what the logic synthesiser brought up.

Finally, it's tested in a simulation to see if it really does what it's supposed to.

And now, it's off to the fabrication plant...

In The Clean Room

Even the smallest speck of dust can turn an IC into a worthless piece of silicon, so everything we're talking about here takes place in a "cleanroom," which is, well, a *very* clean room. We're talking millions of dollars worth of dust filters, special furniture that won't leave particles, even specialised cleaning materials.

It all starts with a wafer of pure silicon; the wafers are rinsed in pure water and a special cleaning solution. The huge number of transistors that will be made on this chip are going to be packed together real close, so it's necessary to isolate them from each other using an insulating material. Rather than slap on a layer of material on the silicon wafer, the wafer is exposed to heat and oxygen to create a layer of silicon dioxide on it. Now, we'll remove the oxide only from those areas that we need to create the transistors on.

The layer of silicon dioxide is then coated with a material called *photoresist*, which turns into an incoherent goo when exposed to ultraviolet light. Here's where you use the circuit diagram that came out of the design process. The circuit's layout is etched on to a *mask*, which is then placed on the layer of photoresist. This is then exposed to ultraviolet light, which causes the photoresist under the mask's transparent areas (which is where the transistors need to be) to turn gooey so it can be washed away. The wafer is then doused in acid, which eats up the exposed portions of the silicon dioxide layer, giving us access to the silicon underneath; this is called *etching*.

Now, through a process called *ion implantation*, ions are diffused into the silicon to create transistors. Note that we're talking *only* transistors here—even resistors and capacitors are created using transistors connected in special configurations; the gory details are too much to fit in here.

So we've created our components on the wafer; now it's time to bring in the wiring.

Inevitably even C will fall short in the face of the complexity of newer hardware, so manufacturers are looking to newer methods to make processor design easier

Connecting Them All

We use the term "wiring" rather loosely, but we *are* following the intention. The components have been created, but they're not connected. The first thing to do is to close up the transistors inside insulating material—more silicon dioxide. This time, the process of masking and etching is repeated, only the mask is creating windows that lead to the transistors' terminals. A layer of metal is deposited now, which establishes the connections.

This is only the first layer of metal, which establishes only part of the connections that need to be made—another cycle of insulating, masking, etching and metal depositing follows, creating the next set of connections—this goes on for up to twenty layers. This is how they're able to connect so many components in such a small area.

And speaking of small...

The Nanometre Kerfuffle

If you've been following technology news for the past few months—specifically the antics of the processor giants—you've most likely encountered talk about the old 90 nm (nanometre) process, the on-its-way-out 65 nm and the new wave of 45 nm processes. What are these numbers and what's the big deal?

To put it in non-engineering terms, these numbers represent the effective length of the transistors on the chip—so in the same chip area, it's possible to put more 45 nm transistors than 60 nm. However, it's not just that bit that's causing the hype—it's the transistors themselves (more specifically, the transistors that you'll see on Intel's upcoming Penryn and Nehalem processors). The transistors are called *high-k metal gate transistors*, and their design reduces the amount of current wasted in the transistor, which in turn pulls down the power they consume and the amount of heat dissipated by them. A more detailed explanation would fill up a few issues of this magazine, so we won't go that deep.

Ahead

Even with the new technologies, processor designs are getting more complex—HDLs have become cumbersome, and designers now prepare their specifications in variants of the C programming language. Inevitably, though, even C is going to fall short in the face of the complexity of newer hardware, so manufacturers are looking to newer methods to make processor design easier.

One way is to modularise the processor—break it into parts in such a way that they can be added or removed as necessary. An approach that looks promising is AMD's Fusion, which enables them to give you processors with as many CPU or graphics cores you want on the same chip. With the earlier method, if they wanted graphics and CPU on the same chip, they'd have to design it from the ground up—with Fusion, all they need to do is add the extra graphics core to an existing CPU core design, and *voila!*

And then there's talk of offloading even *more* of the design to computers. Who knows, maybe we'll soon see processors whose sole purpose is to design better processors... ⊠

The process we've described above—how we start with a piece of silicon, go through the process, and end up with circuits etched on top of silicon dioxide

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HP Blackbird 002 PC

HP recently bought VoodooPC, and already we're seeing the effects of that in the way new systems are designed. The Blackbird 002 PC is one of the most amazing looking designs from HP in a while now. With a price range of anywhere between $2,500 and $7,000 (Rs 1,00,000 to Rs 2,80,000)—depending on configuration—there better be power under the hood.

You can get an over-clocked Core 2 Extreme QX6850, SLI-ed 8800 Ultras and 4GB of memory. All that hot hardware is cooled using liquids, heat pipes and heat sinks. You can customize your configuration and opt for AMD instead. A special HP Blackbird Dedicated Edition will be released soon, which will add on a Voodoo keyboard and mouse and the Half Life 2 Orange Box. What's subtracted is the overclocking on the QX6850 and a *mere* 2 GB of RAM instead of 4. The price for the Dedicated Edition is $5,500 (Rs 2,20,000).

Droolmaal

Goldmund U-room

In a world of HDTVs, HD audio with giant LCDs and audiophile sound systems, all available at a retail store near you, nothing seems to awe us anymore. Until now, that is. The $300,000 (Rs 1,20,00,000) Goldmund U-room will make you want to smash your LCD and sound system. Here's why: The U-room consists of a 6-metre screen that is 1080p compliant, a 64-channel surround sound setup that outputs 130db of sound with a frequency range from 5Hz to 50kHz. If you have Rs 1.2 crore to spare, give the Goldmund crew a call.
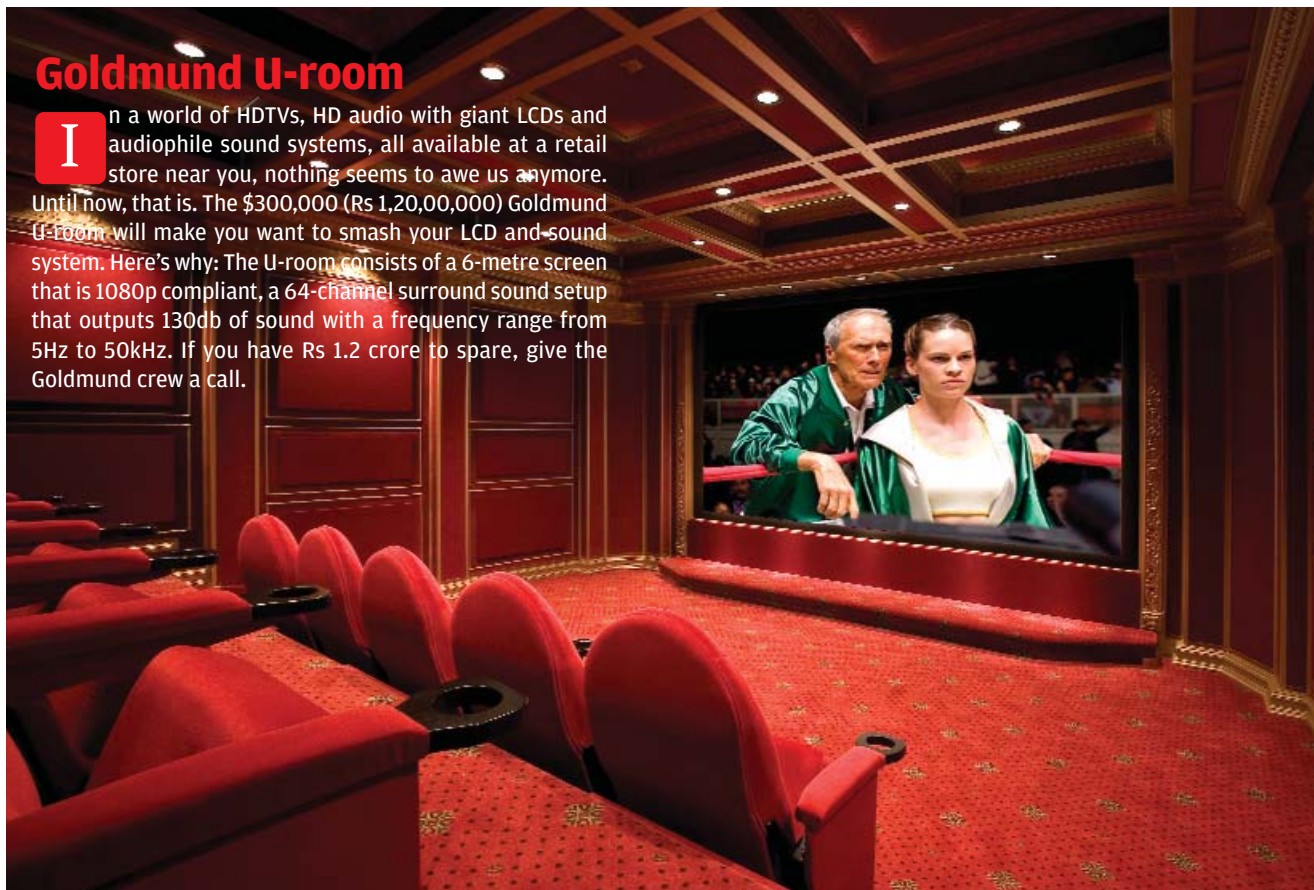
Fanatec Porsche 911 Turbo Wheel

W e all love cars, but not all of us can afford a Porsche, can we? Thanks to Fanatec, you can own something by Porsche that your grandchildren will not still be paying for! The Fanatec Porsche 911 Turbo Wheel is brilliantly designed for racing game enthusiasts. The steering has hand stitched leather, an H-pattern gear shift, force feedback and the wheel has a turning angle of 900 degrees. It connects wirelessly, but you have to power it to get force feedback. The battery operated pedals are designed to feel just like the real thing—no plasticky nonsense here. The USB dongle and wheel have neat Porsche badges. Price? A mere $350 to $420 (Rs 14,000–Rs 16,750) depending on where you plan on buying it.

iRobot ConnectR

T he iRobot ConnectR might look like a hi-tech baby potty at first, but is in fact a very smart gadget. The ConnectR uses the power of the Internet (and a webcam and microphone) to allow its users to talk with others. Spy on your loved ones, or keep an eye on your toddler using this little robot. It moves around the house, controlled over the Net using a joystick or a mouse. So how much does a walking, talking, potty seat cost? A mere $499.9 (Rs 20,000).

The good stuff • Stuff to lust after • Stuff for the well-moneyed

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Pacemaker

N o, this gadget will not save a life; it will, however, let you party wherever you go. It's a cool looking portable DJ-ing system with 120 GB storage. You can mix music easily, and on the move. All the well known audio formats—MP3, WMA, AAC, WAV, Ogg Vorbis and even the lossless FLAC are supported!

The Pacemaker has a set of effects like crossfade, bend, pitch, etc., which can be controlled using the multifunctional touchpad. Outputs include headphone and line-out, and the device lets you control two channels individually. Even if you aren't a DJ, its huge storage capacity lets it double up as a really good portable music player! We're clueless about the price but we'll assume that the rumours hold some truth—around Rs 30,000 is what it might be.

OQO model e2

O QO model e2 is a new comer in the UMPC market. It's powered by a VIA 1.6 GHz processor, 1 GB DDR2 memory and comes with Wi-Fi. The 5-inch screen is capable of a resolution of 800 x 480, and if this doesn't suffice, you're free to connect to a display using the VGA, DVI or HDMI outputs for a maximum resolution of 1920 x 1200. Did we mention that it runs Windows Vista?

There's an option of a 120 GB hard drive, or a 32 GB solid state drive. A QWERTY keyboard (with a number pad) are designed into it—all in the size of a small notebook. At 450g, it's heavy only to the weakest of geeks. Price is another matter, and the rumoured figure is between £846 and £1,359 (Rs 47,782 to Rs 76,756)—making it heavy on your pocket. Pun not intended.

TAKE a CRACK

How would you e-mail a page in Internet Explorer by right-clicking on it?

Send in your solution with the subject "Take a Crack", and your postal address, to **takeacrack@thinkdigit.com**

THIS MONTH'S CHALLENGE

Create A Context Menu Item To Mail An IE Page

Create An XP Live CD

Solution To Last Month's Challenge

One of the easiest ways to do this is using a software called pebuilder. Using it, you can create an XP Live CD in just about 15 minutes!

Here's all the software you'll need:

1. pebuilder3110a1.exe, from **ftp://dl.xs4all.nl/pub/mirror/nu2files/pebuilder3110a.exe**

2. Plugins:
▶ xpe-1.0.7.cab (the GUI shell) from **http://sourceforge.net/project/downloading.php?group_id=126922&use_mirror=nchc&filename=xpe-1.0.7.cab&10619721** (**http://tinyurl.com/2ct72t**)
▶ Other plugins from **www.bootcd.us/BartPE_Plugins_Complete.php**
3. Nero Burning ROM
4. A (bootable) XP CD

Step 1: Download pebuilder3110a1.exe and install it.

Step 2: For the wallpaper, replace `C:\pebuilder3110a\bartpe.bmp` with the image you want as your wallpaper. You can find the default XP wallpaper at `C:\WINDOWS\Web\Wallpaper\bliss.bmp`. (Both these, of course, assume the C drive as the installation location.)

Step 3: Download the plugins:
▶ xpe-1.0.7.cab: This will create the XP start button and taskbar. It is the GUI shell of the XP Live CD.
▶ Network Driver Plugin Pack: This provides many network card drivers
▶ FreeAV Virus Scanner: This integrates FreeAV
▶ diskexplorer_for_ntfs.cab: A very good file explorer
▶ And more... you can choose what you want to download to add functionality. There are 537 plugins right now to choose from!

Step 4: Open pebuilder. Specify the source path to the Windows installation file. This should be your Windows XP installation bootable CD, where the i386 folder resides.

Step 5: Click Plugins and add the plugins you've downloaded. Since you've included xpe-1.0.7.cab, disable nu2shell and the startup group.
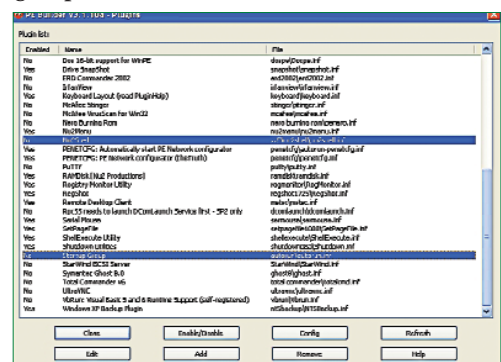
Disable nu2shell and the startup group

Step 6: Specify the ISO image file, and click Build.
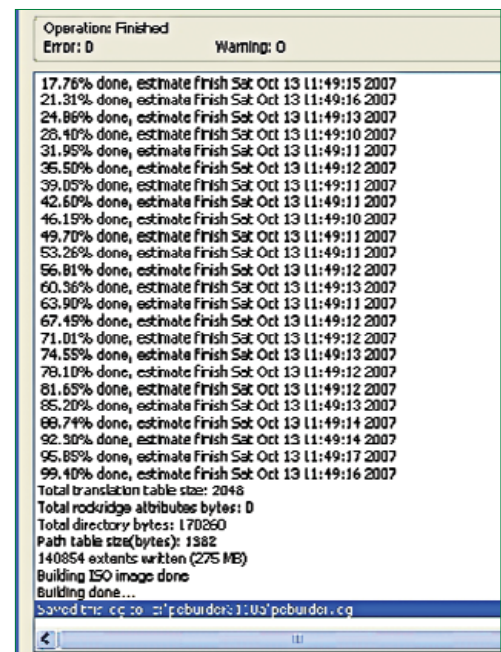
Click Close after the ISO has been created, then burn it

Step 7: After that's done, use Nero (or any other burning software) and burn the image file to a CD. You're done! ⊠

Enhance

AN IMPROVED
Office

Even the best software has its limitations. Here are a few tools that can supercharge your Office experience

Asfaq Tapia

When it comes to Microsoft Office, we are normally a happy lot. However, we like the idea of being able to do more than what is possible, or possibly accomplishing a set task faster than normal. Since Office allows you to add third-party functionality in the form of add-ons, we decided to go out and find the best Microsoft add-ons that will help you augment MS Office to make your daily tasks easier.

OUTLOOK
VCard4Outlook

At some point, all of us have needed to (or will need to) transfer a large amount of contacts from the Outlook address book to another program; this could be to or from a mobile device, another e-mail client or even to a Webmail account.

Outlook allows you to convert your contacts into the vCard format (this will be a .vcf file). This is a standard file format that can be read by most personal information management (PIM) software. So, for example, if you want to send someone your contact details, you send them your vCard file—which contains your address, telephone numbers, e-mail address, and more. This file can be read in Outlook or even on a mobile phone. The only disadvantage of using the vCard format in Outlook is that you can convert only one contact at a time.

Using the vCard Wizard software, you can easily convert all your contacts (or even a few of them) to the vCard format with a few clicks. Transferring address books becomes easier and faster, and you can even import multiple vCard entries into the Outlook address book using this add-on.

To import vCard entries into Outlook: click on the Import-Export icon in the Outlook file menu, go into the folder where the vCard entries are stored, and click OK.

In order to convert contacts into the vCard format, click on Contacts, and either select all

Chaitanya Surpur
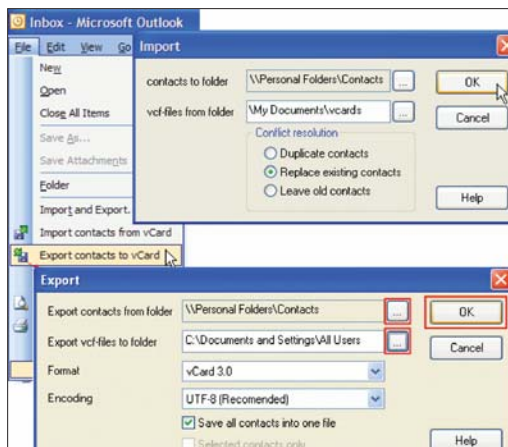
The trial version of VCard Wizard allows you to convert five contacts at a time

of them by pressing `[Ctrl] + [A]`, or select each contact individually and press the Export icon on the toolbar.

You can find the trial version of vCard Wizard on this month's CD. It is available for $14.95 (Rs 590) from **http://vcard4outlook.4team. biz/** .

LinkedIn Outlook Toolbar

The most common problem you'll have faced with your Outlook address books is that your contacts change their contact details and neglect to inform you. Now, you can't be informed about changes in each contact's details, but you can at least know when your LinkedIn friends update their contact details.

The LinkedIn Outlook toolbar allows you to integrate your Outlook address book with the LinkedIn database. When you install it, it will compare all the e-mail addresses in your address book with the LinkedIn database.

A new icon will be created next to each e-mail address that matches the database, and if and when they update their details, the add-on will ask you whether you want to update the information in your contact list. In addition, the software keeps checking to see if those people

What better way to keep your business contacts up-to-date?

on your address book who weren't on LinkedIn have signed up; if they do, it informs you about their presence.

Besides just updating details, if you haven't interacted with any contacts for over 60 days, you are reminded to keep in touch with them—this could be really good or really irritating depending on who the contact is!

When someone on your address book updates contact information on the site that was not listed in your Outlook address book, it asks you if you want to effect the update—sweet!

WORD
WordToys

For those of you who often find yourselves struggling with the Windows Character Map to insert special characters in Word, we bring great news. No more struggling to find that Euro sign—just install WordToys! The add-on works with Word 2000, XP and 2003—no Microsoft Word 2007 support yet, unfortunately.

There are plenty of useful features here. Using WordToys you can save multiple Word documents all in one go. You can also save all open documents as a workspace, and then close them; when you return, all you have to do is choose to restore your workspace—and all the files you had open will be opened up again. You can also
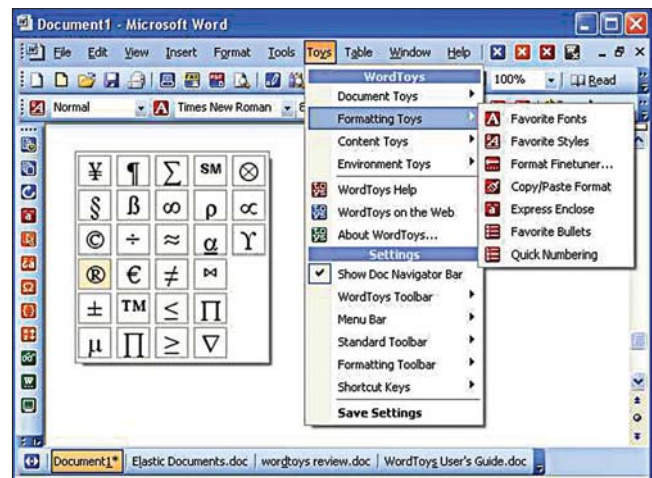
WordToys: the most feature-rich add-on for Office 2000 to 2003

choose navigate through your open documents using tabs!

After you've installed it, you will see that WordToys takes over your Word Toolbar and allows you to set favourite fonts, symbols, bullet menus, and more. You will also now have the ability to save any document as a PDF even if you don't have Acrobat installed. By default, Word 2000 displays all the options on its toolbars, just greying out the unusable ones. WordToys will remove these to help you unclutter the toolbar. If you want to remain anonymous when ratting out your boss—or in any similar scenario—you can use WordToys to remove information such as Author, Organisation, and more from the Word document. There's so much more this software can do,

you're going to have to try it to learn any more!

It is available at **http://tinyurl.com/ysyaer** (or you can just search Download.com for it) for free. It's also on our June 2007 DVD.

POWERPOINT
Shortcut Manager For PowerPoint

If you are a keyboard warrior (and that's a good thing), you will love Shortcut Manager for PowerPoint software made by OfficeOne. The Shortcut Manager allows you to configure innumerable keyboard shortcuts for PowerPoint. You can configure all these key combinations to do tasks like closing all slideshow windows, selecting pen colour while presenting slideshows, and more. You can also run individual macros based on the assigned keyboard shortcuts. What's more, you can download OfficeOne Shortcuts, a free add-on to Shortcut Manager that provides additional functionality.

Shortcut Manager is priced at $30 (Rs 1,180) and can be downloaded from **http://tinyurl.com/38unsl**. You can also download the free OfficeOne Shortcuts from **http://tinyurl.com/ 2ve7m5**.

EXCEL
Excel Conditional Formatting

The ability to achieve conditional formatting when working with a lot of numbers is a real boon in Excel. The only challenge here is that you can have a maximum of three conditional

You can edit the data in tables just like you would in an Excel worksheet

Using the mouse will no more be necessary (well, almost!)

YouTube Video Wizard

Why increase your presentation file size by embedding videos in it when you can stream them off the Internet right inside your slideshow? YouTube Video Wizard (available at skp.mvps.org/youtube.htm) does just that. All you do is provide the YouTube video URL—and the add-on automatically converts this data to an embedded object format. When you start your slideshow and click on the Play button in the frame, the video starts streaming over the Net. Need we say more?

formatting options at any given point of time. This restricts you from getting more out of your worksheet. Not any more!

The Excel Conditional Formatting add-on, which you can find on this month's CD, allows you to create an unlimited number of rules in a worksheet. Maths functions such as SUMIF and COUNTIF can also be used to create new sets of rules. Another advantage of this add-on is that you can freeze more than one row or column in a worksheet, this gives you greater control over all the the static data you want displayed on your worksheet.

Excel Conditional Formatting allows you to add an infinite number of conditional formats to a worksheet!

CX Now

So you're stuck with the boring task of making Excel documents full of graphs showing the performance of your company over the last quarter. Let's face it, how many of your viewers *actually* look at those graphs in detail? If you use CX Now, they probably will!

This tool is not really an add-on in the true sense. When you install it, it shows up under its own interface, from where you can choose the type of chart you want to create—from the different pie charts to the more commonly used bar graphs and loads more. An interesting feature here is the dashboard function, which allows you to see your data represented in the form of analogue dials!

Using CX Now, you can make your charts more interactive by adding sliders to them when you input different values on the X and Y axis, the charts change. All this can be done without having to recreate the chart from scratch.

Make your spreadsheets interactive

After the chart is made, you can export it to Excel.

Having said that, do bear in mind that this add-on is not for beginners. It takes a fair bit of ingenuity and chart-making experience to get the most out of CX Now, but once you've used it, it's hard to get back to Excel's inbuilt chart options! Download the free version of CX Now from **http://www.businessobjects.com /jump/cxnow/**.

THE MICROSOFT OFFICE SUITE
Zoho Add-on for Microsoft Office

This one allows you to write a document or compile a spreadsheet offline and upload it to your Zoho account without leaving the safe confines of your Office applications. The add-on works with Word and Excel but is not compatible with the DOCX and XLSX formats in Office 2007.

When Outlook is restarted after installing the Zoho add-on for the first time, you are prompted to save your Zoho account details in the software. You can access your Zoho documents from the "Open from Zoho" menu on the toolbar. After you're done writing a document or creating a spreadsheet, you can upload it online by going to the same menu.

The Zoho Add-on uploads heavily-formatted and large documents fairly quickly, and when these are accessed online, the formatting is mostly similar to the originals. Find this tool on this month's CD.

Classic Menu For Office 2007

With the launch of Office 2007, the classic toolbars are replaced by the Ribbon. If you've been using Office for some time now, moving over to the Ribbon could be daunting.

Classic Menu for Office 2007, available on this month's CD, will work with Word, Excel
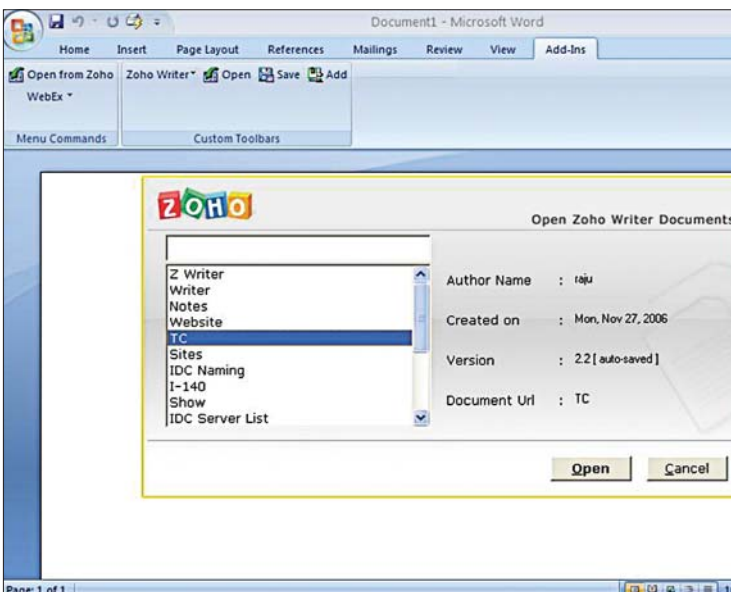
The easiest way to back up all your documents online!

and PowerPoint, bringing back the classic toolbars you were so familiar with. It's a useful tool if you intend to migrate to 2007 and have the initial intimidated feeling about it.

Microsoft's Save As PDF

This add-on from Microsoft allows you to export and save files to PDF in all Office programs. It also automatically sends files as e-mail attachments after having performed the PDF conversion.

Before this add-on came along, the only way to save documents as PDF from within MS Office applications was to use CutePDF—freeware that is still downloadable from **www.acrosoftware.com/ Products/CutePDF/writer.asp**.

Find this add-on on this month's CD.

Office Update Inventory Tool 2.2

This one comes across as a real boon to system administrators everywhere. The days of manually noting the updates rolled out to computers in an office are long gone: the

You need now never miss updating Office on any workstation

Office Update Inventory Tool enables administrators to check several computers for the status of Microsoft Office 2000, XP, 2003 and 2007 updates.

From a central location, administrators can run this add-on on client computers to find which Office updates have already been installed, which haven't, and which updates require administrator privileges. Of course, the add-on needs to be installed on every computer before the sys-admin gets to use his newfound powers. We've provided the tool on this month's CD.

Add-outs?

We've tried to restrict the add-ons mentioned here to freeware and trial versions. However, these should only whet your appetite: there are a plethora of paid add-ons too, which you can find at **www.office-addins.com**.

If you liked any of the tools we've mentioned here, you're going to love the ones at that site! ⊠

asfaq_tapia@thinkdigit.com

The Silicon
Ecosystem
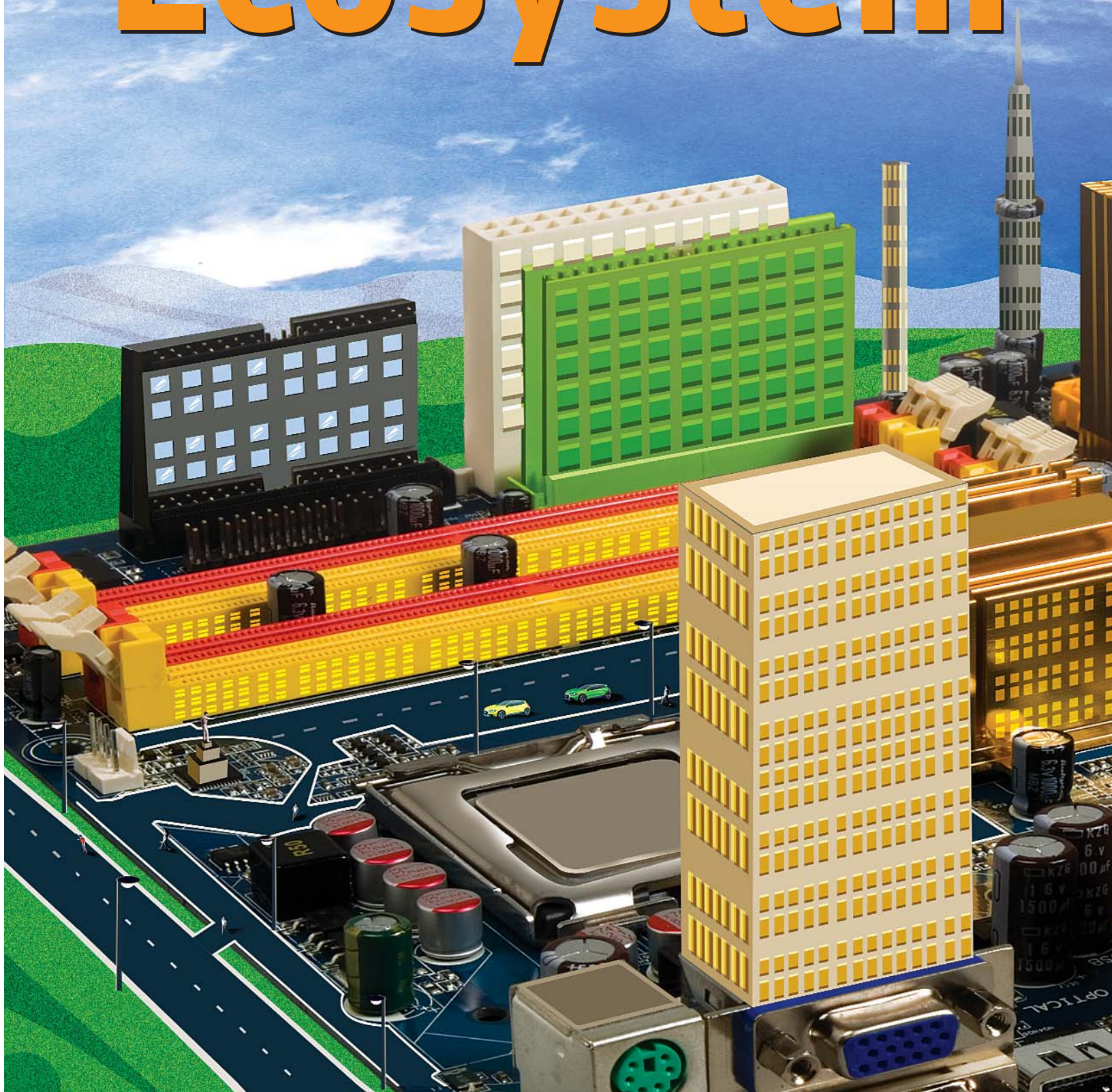
All relationships in life are based on compatibility...when it's there—it works! When absent—kaput! Same goes for our test subjects—the inseparable twosome—motherboards and processors. This time 21 processors and 48 motherboards compete for the space in your cabinet

Shrikrishna Patkar
Sandeep Patil

Sanket Naik and **Michael Browne**

It's oft said that the best things in life come in pairs. Even here—in the world of the personal computer, where philosophy and romance take a nose dive out of the window—you'll find this adage holding good. If you've ever shopped for a computer part-by-part, chances are you'll spend a good deal of time deciding on which processor is right for you—matching processing power with purchasing power.

We at *Digit* feel the relationship between motherboard and processor is akin to the relationship between chassis and engine, where the choice of one essentially limits the capabilities of the other. Thankfully akin to Maruti's and BMW's—there's something to suit every extremity of demand, with a whole lot of options in between!

THE ENGINE
The drops in processor prices—both from Intel and AMD—in the past year have made computing power ridiculously cheap. For Instance, the Intel Core 2 DUO E6700, which retailed at Rs 27,500 when we first tested it, (it was the second-best processor you could buy then) is now available for just Rs 8,250! The cheapest processor that's available today comes for a paltry Rs 1,600—of course, it's an AMD—and the sub-Rs 10,000 PC isn't a myth anymore.

Intel's Core architecture has paid good dividends, while AMD is still stuck with their older K9 architecture. The newer K10 architecture will debut on the desktop within the next two months, so stay tuned for an update. It'll be interesting to see whether the new architecture will topple Intel's dominating Core.

The Core 2 Duo and Athlon X2 have pushed desktops into the realm of dual-core computing, and now, it's quad-core that's making its presence felt. Last year, Intel's Core 2 QX6700 was atrociously priced at Rs 52,000, but it's now down to a meagre Rs 11,750. While Intel was first to market with their quad-core processors—two dual-cores slapped on to a single die—AMD is taking their own time to come with a native quad-core processor—designed from the ground up to be quad-core, unlike Intel's smart approach.
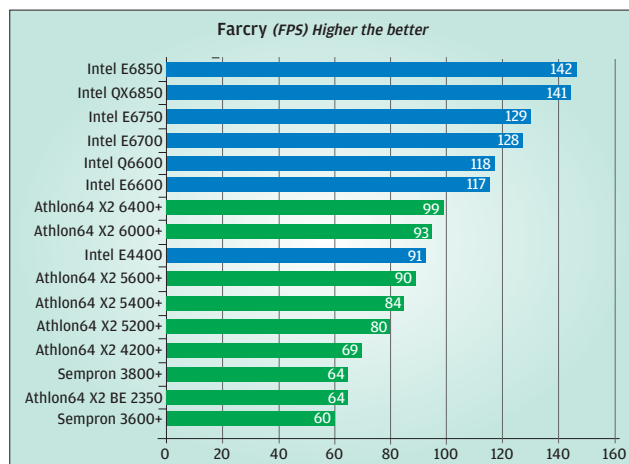
Multi-core might be the future that both Intel and AMD are projecting, but as it stands today, the software we use can hardly tap into power on offer. The software industry will take another two to three years to catch up to the hardware, and it'll be worth the wait.

We've rounded up twelve processors from AMD, from the very basic Semprons to the Athlon64 X2s and the special BE series of power-efficient processors. From Intel, we have most of the updated Core 2 Duos, the Q6600 quad-core, and the top-of-the-line QX 6850. For reference, we have included the older generation Core 2 Duos from our last test—but they aren't available in the market anymore.

Performance
We start with real-world applications like audio / video encoding, games and 2D / 3D rendering—the performance of these application depends quite heavily on the processor. After that come the synthetic benchmarks—Wprime, Sciencemark 2.0, WinRAR 3.7 and SiSoft Sandra 2007.

Gaming
Company of Heroes
In this RTS game, we see the Core 2 Duo E6850 at the top spot, outdoing even its quad-core sibling—the QX6850—by a small 5 fps. The same peculiarity turns up with the E6600
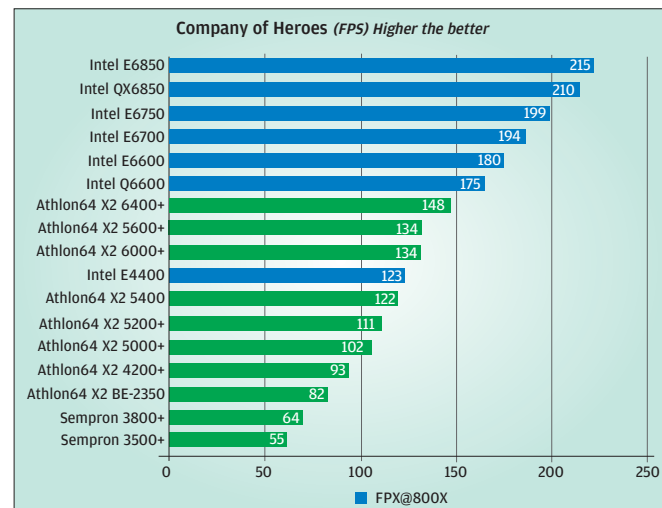
and Q6600—for some reason, the quad-core processors are taking a hit in this particular game. The top spots are all taken by Intel processors, with fabulous frame rates. The Athlon64 6400+ doesn't quite make a mark here, and there is a difference of 67 fps between it and the E6850. Interestingly, the Athlon64 X2 BE2350 (the power efficient series) processors keep up well with rest of the Athlons—a proper balance of power efficiency and performance.

Far Cry
Again, very similar results—the quad-core processors are barely able to deliver better scores than their Core 2 Duo counterparts. Unless games are programmed to take advantage of multi-processor environments, we'll

see negligible performance gains. Except for the E4400, all other Intel processors gave us better fps scores than AMD's top-end processors. The Athlon64 5600+ fell just shy of the E4400 by one fps, and we think it offers the best value for money among the AMD bunch.

Doom 3

The results for *Doom 3* are quite similar to other two games—the quad-core processors from Intel fall short of expectations.

Intel's processors are clear winners in the gaming arena; no gaming PC should be without one. Interestingly, AMD's Athlon64 X2 5200+ does come close to Intel's new E4400, and offers similar value.

Doom 3 *(FPS) Higher the better*

Processor	Score
Intel E6850	264
Intel QX6850	262
Intel E6750	243
Intel E6600	220
Intel Q6600	220
Athlon64 X2 6400+	191
Intel E6400	182
Athlon64 X2 6000+	178
Athlon64 X2 5600+	175
Athlon64 X2 5400+	165
Intel E4400	160
Athlon64 X2 5200+	153
Athlon64 X2 4200+	137
Athlon64 X2 BE-2350	126
Sempron 3800+	84
Sempron 3600+	82

Ripping Time (Sec) *Lower the better*

Processor	Time
Intel E6850	69
Intel QX6850	70
Intel E6750	76
Intel E6700	77
Intel E6600	83
Intel Q6600	84
Athlon64 X2 6400+	90
Athlon64 X2 6000+	94
Athlon64 X2 5600+	98
Athlon64 X2 5400+	100
Intel E4400	103
Athlon64 X2 5200+	104
Athlon64 X2 5000+	108
Athlon64 X2 4200+	119
Sempron 3800+	120
Sempron 3600+	128
Athlon64 X2 BE-2350	128
Sempron 3500+	129

DivX Encoding

The graph you see is more the shortcoming of the DivX encoder than the processors'—the encoder hasn't incorporated code for multiple processors. We see better results with increasing clock speeds, and not multiple cores. Again, the quad-core processors trail their dual-core counter parts, albeit by a very small margin. All the top-end Intel processors outdo AMD by a significant margin. The duel between Athlon64 X2 5200+ and E4400 should be noted again—they're separated by a hair's breadth. The Athlon64 X2 BE 2350 and 2300 trail behind the Semprons—this again is because the encoder favours higher clock speeds, so the lower-clocked BEs take a hit.

How We Tested

Machine Configuration

All Intel LGA 775-based processors are tested on an ASUS P5K Deluxe motherboard, based on Intel's P35 Chipset. For AMD processors, we use an ASUS M2A-VM HDMI motherboard, based on AMD's 690 chipset. Corsair stays our choice for memory—we used 2 GB of 1066 MHz RAM at 4-4-4-12 settings (wherever possible). An XFX 8800 GTX graphics card was used on this rig, with NVIDIA's ForceWare version 158.22. On the software front, Windows XP with SP2 was freshly loaded on a Hitachi 7200 RPM, 250 GB SATA drive. Coolermaster Real Power Pro 550 watt powered the rig. The drive was defragmented before each new processor run. The motherboards used were updated with the latest available BIOS patches; driver releases for chipsets and other critical peripherals were updated as well.

Benchmarks

PCMark 05 and 3DMark 06: These benchmarks from FutureMark are widely used to gauge performance on a system- as well as sub-system-level. Though mostly related to graphics performance, each of these benchmarks has a really well-developed CPU test that taxes the processor to the maximum. We used the default settings and run only the CPU test. Each test was run thrice.
Far Cry and Doom 3: Both these games boast high graphic details, and are quite taxing on the processor, making them ideal processor benchmarks. We ran both of them at 640 x 480 and 800 x 600 to put more stress on the CPU.
Company of Heroes: This is the latest in the breed of RTS games and one that can bring the best of machines down to their knees with its ultra. Settings were kept at high, and since the game doesn't allow 640 x 480, we used 800 x 600 and 1024 x 768. The built-in benchmark gives the resulting fps.

DivX Encoding: We encoded a 100 MB VOB file to DivX using the DivX 6.2.5 video converter. This benchmark is run thrice for each processor, and the final score is an average of the three encoding times.
CINEBENCH 10.1: CINEBENCH 10.1 is a free benchmarking tool for Windows and Mac OS. It is based on the CINEMA 4D engine. CINEBENCH 10 tests processors for OpenGL processing, multithreading and multi-processing.
POV-Ray 3.6: The Persistence Of Vision raytracer, a tool that creates an image by mathematical calculation. The number-crunching involved is processor-intensive, making it a great processor benchmark. In the default installation, we used the "Chess2" and "landscape" scenes to be rendered at 1024 x 768 resolution without anti-aliasing.
ScienceMark 2.0: ScienceMark 2.0, as the name suggests, is a benchmark based on scientific calculations. This benchmark consists of multiple benchmarks that test the various aspects of a processor. We use the Molecular dynamics, Primordia, Cryptography, Stream and Memory benchmarks.
WinRAR 3.7: WinRAR 3.7 offers a built-in benchmark, operating on random data that is processed in the memory—this prevents hard disk performance from affecting the test results.
W Prime: A small freeware utility that calculates square-roots of large of numbers. This utility is multi-threaded, so takes good advantage of multi-core processors. We use the 32 M calculations option.
SiSoft Sandra 2007: This is the good old benchmarking tool with newer tests. We logged scores particularly related to the CPU, such as Dryhstone, Whetstone, Multimedia index (Integer and Float) and Cache performance for a 4 MB data block.

CineBench 10

The graph has two bars—the top bar represents CineBench's using all cores and the bottom bar is the performance achieved with just a single core. Intel's QX6850 rips apart the competition, as does the affordable Q6600. For the first time, the Athlon64 X2 6400+ makes it to the top league. Interestingly, X2 5200+ beats the Intel E4400 by a fair margin in both Single as well as multi-core environments.

CineBench (Units) *Higher the better*

Processor	Multi-core	Single
Intel QX6850	108	31
Intel Q6600	88	25
Intel E6850	59	31
Athlon64 X2 6400+	53	27
Intel E6750	53	28
Intel E6700	52	28
Athlon64 X2 6000+	50	26
Intel E6600	47	25
Athlon64 X2 5600+	47	24
Athlon64 X2 5400+	45	23
Athlon64 X2 5200	43	22
Athlon64 X2 5000+	41	21
Intel E4400+	39	20
Athlon64 X2 4200+	36	18
Athlon64 X2 BE-2350	34	17
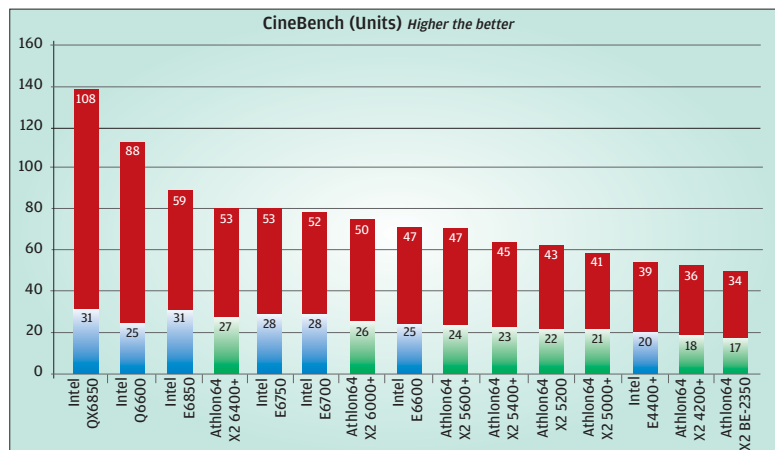
WPrime

This time we choose Wprime over Super-Pi—it scales better with multi-core processors and clock speed. The results are a mixed bag, with Intel's quad-cores taking the top slots—they are able to work with four threads each time, and hence complete the calculation faster. On the dual-core front, higher clock speeds determine the results—the AMD 6400+ and 6000+ follow, ahead of the E6850 and E6750.

WPrime Time (Sec) *Lower the better*

Processor	Time
Intel QX6850	14.96
Intel Q6600	18.62
Atholon64 X6400+	25.50
Athlon64 X2 6000+	28.70
Intel E6850	29.92
Athlon64 X2 5400+	30.68
Athlon64 X2 5600+	30.76
Athlon64 X2 5200+	31.95
Athlon64 X2 5000+	33.19
Intel E6750	1781
Athlon64 X2 4200+	39.07
Athlon64 X2 BE-2350	41.09
Intel E4400	44.95
Sempron 3800+	78.21
Sempron 3600+	85.95
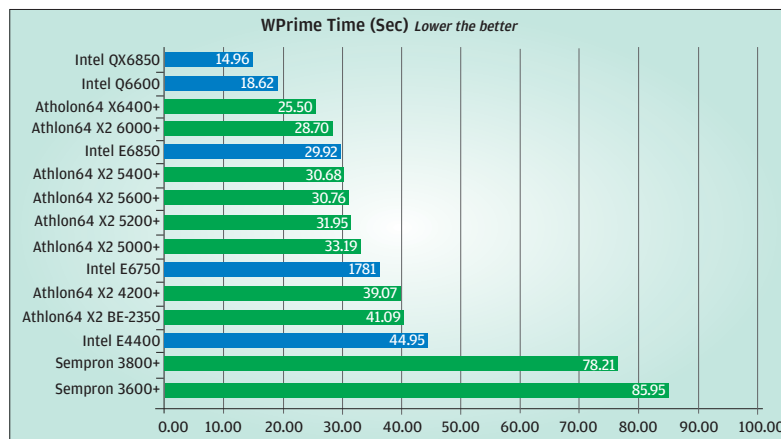
ScienceMark 2.0

Scientific calculations have always been AMD's strength and we've seen this happen in all processor comparisons. AMD's FPU completely dominates—the Athlon64 X2 6400+ comes out top, followed by the 6000+. Intel's QX6850 and E6850 are separated by a small margin for third place.

WinRAR 3.7

WinRAR's built-in benchmark gives a good indication of processors' capability at compressing files, and it also supports multi-threading. As

expected, the quad-cores have a clear lead. Except for the E4400, all other Intel processors are clearly ahead of their respective AMD counterparts.

BEST BUY digit
NOVEMBER 2007

Intel QX6850
The Fastest processor money can buy

3D Mark 06 And PC Mark 05

The quad-cores are at the head of the pack, followed by the top end dual-cores from Intel. AMD's 6400+ also comes very close to third position in the 3DMark benchmark. These benchmarks serve as a good indicator of how well applications optimised for multi-core processors scale when presented with the right environment. AMD's Athlon64 X2 5200+ manages to stay ahead of Intel's dual-core E4400, and that's commendable.

Verdict

Overall, the scene hasn't changed much—Intel clearly dominates most of the benchmarks, except for scientific calculations where AMD's traditionally strong FPU gives them a small lead. If you want the best CPU available, it's Intel's Core Quad QX6850 which retails for Rs 52,000. However, we're all looking for value within our budgets, so read on to find out which processors give you the best performance for your budget.

Decision Maker

In this graph, we've normalised both price and performance with respect to Intel's QX6850, which is the best processor you can buy.

Reading the graph is quite simple—in a particular price range, compare two adjacent graphs. For example, let's take the Athlon64 4200+ and the Sempron 3800+. For a two-unit rise in price, you can get up to thirteen more units of performance from the 4200+, making it a better buy than the 3800+. Similarly, you can compare other models to figure out which processor gives the best bang for the buck.

We've divided the graph into three price ranges. The best performer in each category is used as a point of reference.
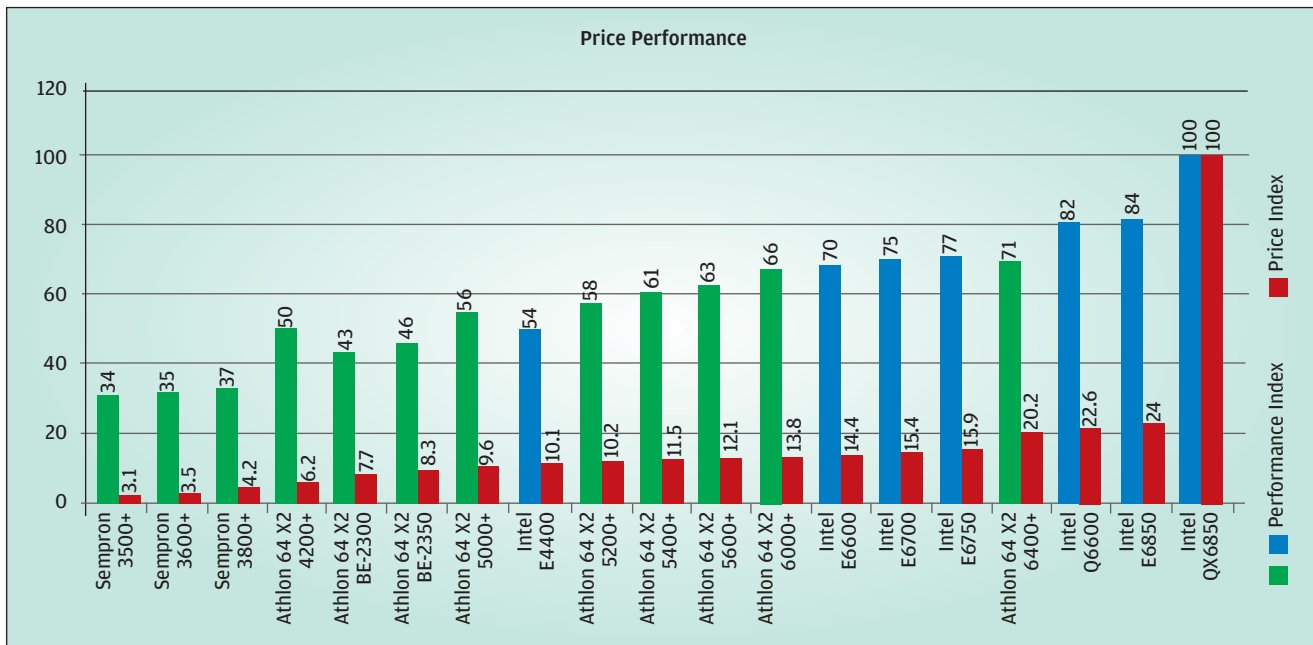
Price Performance

Under Rs 5,000

In the sub-5000 category, we find only AMD processors. It's quite clear that the Athlon64 X2 4200+ offers the best bang for the buck. Both the BE2350 and BE2300 offer relatively less performance, but with a TDP (Thermal Design Power) of 45W, they're aimed at power-conscious users.

Semprons, though good processors, should only be considered if you want the bare minimum configurations.

Between 5000–10,000

Under 5,000
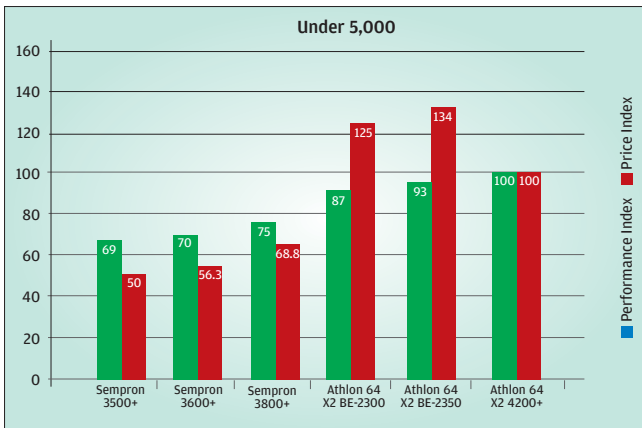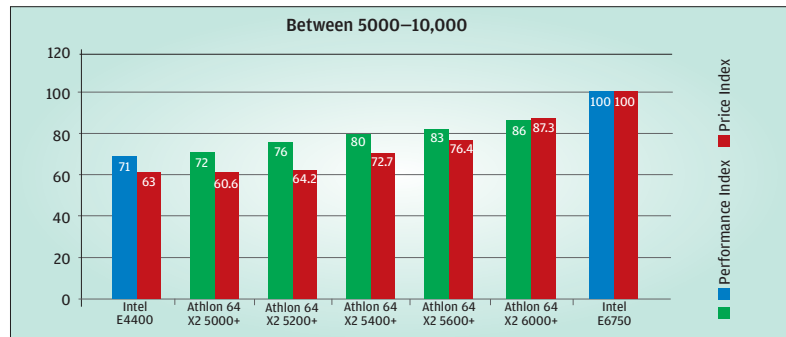
Rs 5,000-10,000

This is an important category—most of us end up buying processors in this range. The category is fairly large with a wide distribution, so we'll subdivide it into Rs 5,000-7,500 and Rs 7,500-10,000. In the Rs 5,000-7,500 category, AMD's Athlon64 X2 5000+ offers the maximum value, followed by the Athlon64 X2 5200+. In the Rs 7,500-10,000 bracket, Intel's E6750 offers good value for money and should be considered over all other processors in this category when building a gaming or entertainment system.

Above 10,000
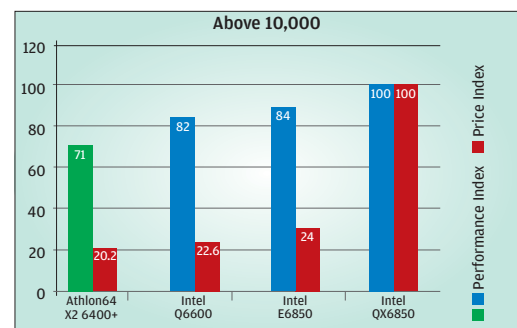
Over Rs 10,000

In this category, both the E6850 and Q6600 are equally good. The E6850 has a clear lead in single-threaded applications (which dominate our everyday lives), but on multi-threaded applications, the Q6600 trounces the E6850—it's the more future-proof option. The Athlon64 X2 6400+ does perform well, but on price / performance scale we won't recommend it. Intel's poster boy—the QX6850—is the ultimate number-cruncher money can buy today; if you have dough, go for it.

Of course, behind every good processor is a motherboard—read on to find the perfect match for your purchase.

Scoreboard

Intel

BRAND MODEL	Intel Intel QX6850	Intel Intel E6850	Intel Intel E6750	Intel Intel E6700	Intel Intel Q6600
* EOL (End of life)					
Price (Exclusive Of Taxes)	52,000	12,500	8,250	NA	11,750
Comments	+ Superb performance − Very expensive	+ Good performance − Relatively expensive	+ Good value for money − NA	EOL*	+ Excellent value for money − NA
Performance (Out Of 100)	81.69	68.64	62.73	61.53	67.32
Features					
Single/Dual/Quad Core	Quad Core	Dual Core	Dual Core	Dual Core	Quad Core
CPU Frequency	3 GHz	3 GHz	2.66 GHz	2.66 GHz	2.4 GHz
L2 Cache	8 MB	4 MB	4 MB	4 MB	8 MB
Performance					
ScienceMark 2.0					
Molecular Dynamics	1457.11	1469.17	1305.47	1306.88	1167.55
Primordia	1514.82	1539.89	1364.14	1350.68	1213.43
Cryptography	1421.4	1421.32	1269.72	1267.86	1141.2
Stream	1894.05	1876.05	1884.7	1578.56	1573.85
Memory Benchmark	1864.91	1853.42	1824.46	1663.35	1641.04
WinRar 3.3					
Resulting Rate	2029 KBps	1470 KBps	1422 KBps	1386 KBps	1817 KBps
SiSoft Sandra 2007					
Arithmetic Benchmark					
Dhrystone	55356	27,694	24608	24,625	44348
Whetstone	38682	19,299	17182	16,984	30896
Multimedia Benchmark					
Integer	330984	165430	147046	147199	264838
Float	180097	90,030	80036	80,074	144085
Cache Memory (4MB score)	81288	39,110	34892	34,781	65423
Wprime (32 Million)	14.96 sec	29.92 sec	33.6 sec	33.7 sec	18.62 sec
Cinebench 9.2					
CPU Benchmark					
Rendering 1 CPU	3089	3090	2750	2752	2481
Rendering 2 CPU	10819	5928	5271	5197	8779
Graphics Benchmark	6233	6178	5877	5927	5080
PovRay 3.16					
Chess2 (1024 x 768)	240.97 sec	240.69 sec	266.7 sec	269.72 sec	314.28 sec
Landscape (1024 x 768)	116.33 sec	116.66 sec	130.86 sec	131.56 sec	145.55 sec
DIVX Encode (sec)	70 sec	69 sec	76 sec	77 sec	84 sec
PCMark 05 (CPU Score)	9688	7715	6873	6863	7769
3DMark 06 (CPU Score)	4729	2692	2401	2385	3808
Games					
Far Cry					
640 x 480	141 fps	142 fps	129 fps	128 fps	118 fps
800 x 600	161 fps	160 fps	146 fps	142 fps	133 fps
Doom 3					
640 x 480	262 fps	264 fps	243 fps	235 fps	220 fps
800 x 600	263 fps	262 fps	239 fps	234 fps	219 fps
Company Of Heroes					
800 x 600	210 fps	215 fps	199 fps	194 fps	175 fps
1024 x 768	190 fps	194 fps	182 fps	179 fps	170 fps

EOL = End of Life Product: included for reference

	Intel E6600	Intel E6400	Intel E4400	Intel E6300	AMD Athlon 64 X2 6400+	AMD Athlon 64 X2 6000+
					AMD	
	Intel	Intel	Intel	Intel	AMD	AMD
	Intel E6600	Intel E6400	Intel E4400	Intel E6300	Athlon 64 X2 6400+	Athlon 64 X2 6000+
	NA	NA	5,500	NA	10,500	7,200
	EOL*	EOL*	+ Relatively inexpensive	EOL*	+ Good performance	+ Reasonable performance
			− Mediocre perfrormance		− Not so good for gaming	− NA
	56.76	49.37	44.40	44.52	57.85	54.16
	Dual Core	Dual Core	Dual Core	Dual Core	Dual Core	Dual Core
	2.4 GHz	2.13 GHz	2 GHz	1.87 GHz	3.2 GHz	3 GHz
	4 MB	2 MB	2 MB	2048 KB X 2	2 MB	2 MB
	1173.41	1044.3	974.45	914.32	1634.23	1528.46
	1221.25	1088.84	1024.52	957.17	1546.16	1506.18
	1142.73	1015.75	951.2	890.68	1629.79	1529
	1583.34	1585.04	1186.11	1578.94	1894.98	1778.85
	1654.85	1612.63	1273.71	1586.38	1810.05	1711.84
	1331 KBps	1209 KBps	985 KBps	1138 KBps	1257 KBps	1196 KBps
	22134	19681	18489	17234	23,225	21767
	15301	13608	12891	11887	19574	18303
	132519	117764	110384	102834	60,226	56491
	72168	64112	60110	55989	66,328	62096
	31472	5120	4308	5015	3360	3282
	37.39 sec	41.54 sec	44.95 sec	47.42 sec	25.5 sec	28.7 sec
	2484	2186	2043	1917	2707	2550
	4693	4134	3919	3648	5284	4991
	5412	4699	4441	4292	4887	4523
	299.67 sec	359.44 sec	364.8 sec	382.92 sec	241.9 sec	259.3 sec
	145.8 sec	163.97 sec	174.1 sec	187.41 sec	120.6 sec	128.9 sec
	83 sec	94 sec	103 sec	105 sec	90 sec	94 sec
	6166	5490	5140	4809	6543	6130
	2151	1905	1781	1673	2454	2301
	117 fps	102 fps	91 fps	93 fps	99 fps	93 fps
	132 fps	114 fps	100 fps	103 fps	112 fps	105 fps
	220 fps	182 fps	160 fps	165 fps	191 fps	178 fps
	219 fps	184 fps	161 fps	164 fps	190 fps	178 fps
	180 fps	142 fps	123 fps	125 fps	148 fps	134 fps
	173 fps	144 fps	126 fps	128 fps	149 fps	139 fps

Scoreboard	AMD			
BRAND **MODEL**	**AMD** **Athlon 64 X2 5600+**	**AMD** **Athlon 64 X2 5400+**	**AMD** **Athlon 64 X2 5200+**	**AMD** **Athlon 64 X2 5000+**
Price (Exclusive Of taxes)	6,300	6,000	5,300	5,000
Comments	+ Good value for money − Mediocre gaming performance	+ Good performance for the price − 1 MB cache	+ Better than E4400 − Average performance	+ Affordable − Mediocre performance
Performance (Out Of 100)	51.84	50.15	47.40	45.44
Features				
Single/Dual Core	Dual Core	Dual Core	Dual Core	Dual Core
CPU Frequency	**2.8 GHz**	**2.8 GHz**	**2.7 GHz**	**2.6 GHz**
L2 Cache	**2 MB**	**1 MB**	**1 MB**	**1 MB**
Performance				
ScienceMark 2.0				
Molecular Dynamics	1424.39	1423.98	1366.73	1323.86
Primordia	1357.15	1358.28	1298.17	1256.26
Cryptography	1428.52	1430.74	1372.19	1322.04
Stream	1772.58	1794.65	1675.27	1630.19
Memory Benchmark	1706.36	1763.31	1613.24	1565.53
WinRar 3.3				
Resulting Rate	1191 KBps	1156 KBps	1061 KBps	1013 KBps
SiSoft Sandra 2007				
Arithmetic Benchmark				
Dhrystone	20330	20332	19592	18845
Whetstone	17168	17208	16464	15869
Multimedia Benchmark				
Integer	52767	52780	50791	48909
Float	58044	58062	55903	53830
Cache Memory (4MB score)	3615	3670	3466	3355
Wprime (32 Million)	**30.76 sec**	**30.68 sec**	**31.95 sec**	**33.19 sec**
Cinebench 9.2				
CPU Benchmark				
Rendering 1 CPU	2387	2314	2212	2133
Rendering 2 CPU	4681	4486	4280	4140
Graphics Benchmark	4507	4317	4225	3896
PovRay 3.16				
Chess2 (1024 x 768)	282.36 sec	277.7 sec	293.31 sec	301.59 sec
Landscape (1024 x 768)	137.91 sec	170.2 sec	179.61 sec	193.64 sec
DIVX Encode (sec)	**98 sec**	**100 sec**	**104 sec**	**108 sec**
PCMark 05 (CPU Score)	**5723**	**5720**	**5491**	**5277**
3DMark 06 (CPU Score)	**2158**	**2145**	**2055**	**1979**
Games				
Far Cry				
640 x 480	90 fps	84 fps	80 fps	76 fps
800 x 600	102 fps	97 fps	90 fps	87 fps
Doom 3				
640x480	175 fps	165 fps	153 fps	147 fps
800 x 600	176 fps	164 fps	153 fps	148 fps
Company Of Heroes				
800 x 600	134 fps	122 fps	111 fps	102 fps
1024 x 768	134 fps	121 fps	111 fps	106 fps

	AMD	AMD	AMD	AMD	AMD	AMD
AMD	Athlon 64 X2 4200+	Athlon 64 X2 BE-2300	Athlon 64 X2 BE-2350	Sempron 3800+	Sempron 3600+	Sempron 3600+
	3,200	4,000	4,300	2,200	1,800	1,600
	+ Excellent value for money	+ Low wattage (45w)	+ Low wattage (45w)	+ Affordable price	+Affordable price	+ Cheapest processor
	− Relatively slow	− Mediocre performance/price	− Mediocre performance/price	− Single Core	− Low cache	− Low on performance
	40.60	35.42	37.86	30.25	28.50	27.97
	Dual Core	Dual Core	Dual Core	Single Core	Single Core	Single Core
	2.2 GHz	1.9 GHz	2.1 GHz	2.2 GHz	2 GHz	2 GHz
	1 MB	1 MB	1 MB	256 KB	256 KB	128 KB
	1120.58	964.05	1070.36	902.07	809.31	806
	1069.52	916.11	1013.81	827.51	752.03	780.84
	1124.32	967.72	1063.15	1076.24	982.44	983.57
	1541.23	1359.23	1442.11	1730.24	1685.95	1744.94
	1493.3	1374.53	1361.53	1658.06	1657.29	1796.75
	990 KBps	900 KBps	908 KBps	505 KBps	505 KBps	482 KBps
	15977	13783	15210	7969	7243	7249
	13501	11583	12808	6735	6109	6117
	41469	35710	39485	20693	18823	18825
	45624	39285	43437	22706	20641	20628
	3270	3260	3018	2999	2940	2955
	39.07 sec	45.34 sec	41.09 sec	78.21 sec	85.95 sec	85.6 sec
	1826	1574	1732	1765	1627	1559
	3575	3094	3392	NA	NA	NA
	3623	3282	3385	3774	3634	3483
	357.9 sec	416.95 sec	376.8 sec	356.33 sec	394.42 sec	388.64 sec
	214.8 sec	250.84 sec	230 sec	355.14 sec	362.91 sec	371.78 sec
	119 sec	137 sec	128 sec	120 sec	128 sec	129.65 sec
	4512	3875	4282	3216	2908	2858
	1698	1470	1611	856	785	774
	69 fps	61 fps	64 fps	64 fps	61 fps	59 fps
	79 fps	70 fps	74 fps	64 fps	62 fps	59 fps
	137 fps	121 fps	126 fps	88 fps	84 fps	78 fps
	138 fps	122 fps	126 fps	89 fps	85 fps	77 fps
	93 fps	78 fps	82 fps	64 fps	61 fps	55 fps
	95 fps	81 fps	85 fps	64 fps	63 fps	57 fps

THE CHASSIS

A couple of years ago, if you thought a *good* motherboard was a luxury, we'd have forgiven you. Today, because of the slew of motherboard vendors who have flooded our markets over the last year, it's not any more—in terms of neither availability nor cost. We're not talking about just a small brand office in a couple of metros, but actual market availability.

We've busted another myth this year as well—motherboards based on the latest chipsets aren't as expensive as you'd expect them to be anymore! Vendors in India have traditionally categorised the market into two sections—those who can afford good boards and those who can't. The former section of PC users have been wooed with expensive *premium* offerings, while the latter section have to be content with value boards that are wafer-thin on features. This time round, we've truly seen something for everyone, and it's you—the customers—who are to be thanked for this!

You've become more discerning and you know what you want—during one of our sojourns to Lamington Road (Mumbai's hardware hub) we were pleased to see customers actually asking for boards on the basis of chipsets and brands. In fact, they'd Googled up the specifications and features of the boards they were interested in, and weren't moved by the shopkeeper who was trying to placate them with other offerings.

INTEL P35-BASED MOTHERBOARDS

Intel's P35 chipset is their replacement for the older (and excellent) P965 chipset. Motherboards based on this chipset have native support for the 1333 MHz FSB that the new Core 2 Duo processors (E6x50) support. Additionally, they will also support the upcoming 45 nm Penryn. The memory controller supports DDR3, but Intel has left it to vendors to decide whether to provide DDR2 or DDR3 slots. The Southbridge—ICH9R—is also rumoured to be better; the P965's used the ICH8R.

Features

Of the 15 boards in this category, we chose to compare only 14 on the same platform. The ASUS P5K3 Premium is a luxury even among luxurious boards (a Bentley among Mercs, if you will). It's the first board we've seen embedded with 2 GB of DDR3 memory—there are no memory slots. There's enough copper on the board for it to be used as a very heavy albeit costly weapon! Priced at Rs 70,000, this is a sinful indulgence—not to mention the sad fact that you cannot upgrade to 4 GB of RAM whatever you do!

All the ASUS P35 boards had excellent layouts and were exceptionally well built, with good quality components. We had one major grouse—

the first two SATA ports are blocked (though not completely so as to prevent their use) by large graphics cards like our 8800GTX. ASUS provides dual Gigabit LAN ports and integrated Wi-Fi on their Deluxe and Premium boards. The ASUS Blitz series is part of their Republic of Gamers franchise, which means they are more overclocker-friendly than the other boards, have a lot of mostly flashy and sometimes useful LEDs, and cost, well, a lot (Rs 17,000 and above)! The Blitz motherboards also had water blocks on the Northbridge cooling solution for extreme tweakers who plan on using liquid cooling solutions. Furthermore, the Blitz boards have a special LCD screen to display the POST (Power-on Self-test) status—instead of the regular hexadecimal POST display, ASUS offers an LCD that converts the hexadecimal value to regular English—nifty, but you pay a premium for this feature.

Abit's IP-35 Pro Off Limits has a very useful CMOS reset switch on the back panel (something ASUS does with a button on their Blitz series). The IP-35 Pro is very overclocker-friendly—very well laid out and numerous BIOS options. It even has a HEX error code poster to make debugging easier. The IP-35 E is aimed at the general audience—and although it overclocks well, it misses out on some of the finer nuances (like the CMOS reset button).

Gigabyte's P35 DQ6 comes with a lot of copper in the form of an elaborate heat-pipe solution that we found downright ugly. Compared to the ASUS P5K Deluxe and Premium—which dissipate the same amount of heat and are aimed at the same audience (overclockers)—we don't see the need for such a massive cooling solution. It also boasts of Gigabyte's "6 Quad" features—though this is more marketing speak than anything significant. While a 12-phase power supply to the CPU sounds good, this is a novelty rather than a very useful feature, and a six- or eight-phase design will do just fine. We did like the high quality, solid state capacitors, which should improve durability significantly.

MSI's P35 Diamond is another good looker (though the ASUS boards definitely look better). The BIOS also has a very annoying setting for increasing voltages—you have to keep using the plus (+) and minus (-) keys to change them. BioStar's P35 doesn't allow the CAS latency to go lower than 5—this is a bane for overclockers,

BEST BUY digit
NOVEMBER 2007

ASUS P5K Premium
The ultimate premium board

Traditional SATA connects interfere with bigger graphics cards and cause clutter
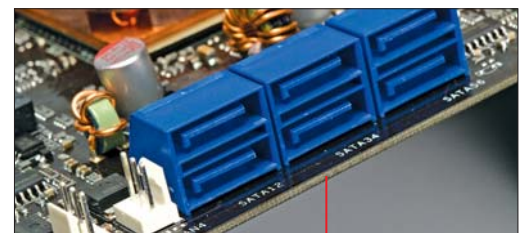
SATA ports that face outwards like this prevents cable clutter and won't foil larger graphics cards

and does affect performance during bench-marking. There's a flaw with the layout of this board—the 24-pin power connector is placed bang in the middle of the motherboard, and right between the CPU and graphics card—two very hot components; we have to wonder what BioStar was thinking!

In terms of overclocking features, all these boards allow you to play around, but ASUS' BIOS is very newbie-friendly—and you can safely over-volt your CPU with minuscule increments of 0.00625 volts!

ECS' P35 doesn't support memory frequencies above 800 MHz—a pity for those who happen to have fast memory—and hence limits overclocking. Additionally, the BIOS doesn't allow you to fix the multiplier and there's no option to enable or disable EIST (Enhanced Intel SpeedStep—a standard option on boards for Core 2 Duo processors).

MSI's P35 Neo is a nice value offering at Rs 6,600 after all the Rs 12,000-plus offerings from ASUS and Gigabyte. It's well laid out, though shy on some of the extra frills like E-SATA, POST displays and power buttons on the board, copper heatpipes etc.

Performance

We noticed that the DDR3 motherboards per-formed slightly better—this shows that the Intel Core 2 Duo is sensitive to bandwidth

Intel P35 Performance Comparisons

Board	Doom 3 (FPS)	3D Mark 2005	PC Mark 2005
Biostar TP35D2-A7	237.1	17342	8302
MSI P35 Platinum	237.2	17078	8199
Gigabyte GA-P35-DS3R	249	16579	8412
ASUS P5K Premium	247.2	1704	8582
Abit IP-35 Off limits	236.7	17105	8485
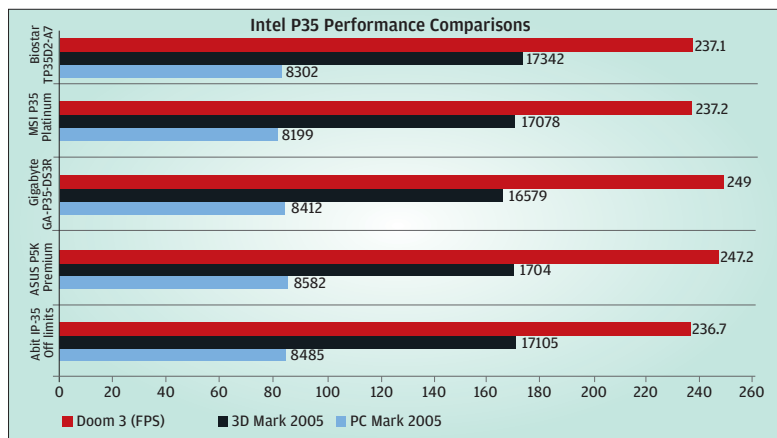
changes (800 MHz vs. 1066 MHz) in spite of the slower timings that plague DDR3.

ASUS' Blitz Formula, P5K Premium, and Gigabyte's GA-P35 DS3R were the best performers, followed closely by ASUS' P5K Deluxe and Abit's IP-35 Pro and MSI's P35 Platinum. We aren't really looking at the DDR3 based solutions as viable till the cost of DDR3 memory falls off its current lofty perch.

Incidentally, the Abit IP-35 Pro cheats a little by keeping the FSB at a default of 272 MHz, and you must manually get it down to 266 MHz (which should be the default speed)—this does

How We Tested

We categorised our motherboards based on the way customers like to buy them—on the basis of the all important chipset:

- Intel P35-based
- NVIDIA 680i / 650i-based
- Intel P965-based
- All boards with integrated graphics (for those who can't be bothered with an add-on graphics card)

We used the following test components:

	Intel	AMD
Processor	Core 2 duo X6800 @ 2.93 GHz	Athlon X2 6400+ @ 3.2 GHz
Memory	Corsair Dominator PC2 8500 @ 800 MHz (4-4-4-12) / Kingston PC3 8500 @ 1066 MHz (7-7-7-24)	Corsair Dominator PC2 8500 @ 800 MHz (4-4-4-12)
Graphics	NVIDIA 8800 GTX @ 575/1800 MHz	NVIDIA 8800 GTX @ 575/1800 MHz
HDD	Western Digital Raptor 10,000 rpm 74 GB x 2	Western Digital Raptor 10,000 rpm 74 GB x 2
OS	Windows XP Prof SP2	Windows XP Prof SP2
VGA Driver version	Forceware 158.22	Forceware 158.22

In addition, we installed the latest BIOS updates and drivers, downloaded from the manufacturers' sites.

Features

Besides all the regular features, we also took a special look at the layout of the motherboards, and rated them on general component layout—capacitors around the CPU region, placements of IDE and SATA connectors, power connectors, memory slot placement, the type of VGA slot retention mechanism and so on. Due to space restrictions in these pages, we've shown an average score of all these parameters.

We also looked very carefully at overclocking options that many motherboards today provide. With overclocking becoming very idiot-proof, anyone can play around with BIOS settings safely. Enthusiasts will also find a lot of valuable information as far as CPU and memory voltage parameters go.

We haven't talked about RAID support—all boards today support RAID 0, 1, 0+1, 5 and 10, so this data is redundant and unnecessary.

Performance Tests

Synthetic Tests

PC Mark 2005: This benchmark runs 48 discrete tests to test each performance-related subsystem—the processor, memory, video and storage. Finally, it throws out a final score—which is a weighted average of the individual results.

SiSoft Sandra 2007 Engineer: Sandra 2007 has specific benchmarks to test all the subsystems of a PC. It tests a CPU's floating point crunching ability under both arithmetic and multimedia applications. The application supports multiple cores and scales well in this regard. It also tests the read and write performance of the storage subsystem, and the memory's bandwidth.

3D Mark 2005: Our graphics benchmark of choice, mainly because it allows for greater variation in results than the newer 3D Mark 2006.

Real World Tests

Video encoding: This is a CPU-intensive test and tells us exactly how optimised the motherboard in question is.

File transfer test: We copy a single 4 GB file from one physical hard disk to another. This tells us a lot about Southbridge data path optimisations on each motherboard, and how fast data is moving around between hard disks.

Doom 3 And Splinter Cell Chaos Theory: *Doom 3* uses a very sensitive engine that even responds to changes in memory timings or a hard drive change! *Chaos Theory* is very scalable and very CPU- and shader-intensive. At a resolution of 640x480 with all details off, we're basically allowing the CPU to run wild while limiting the role of the graphics card. At 1600x1200—the maximum settings—any game becomes CPU-limited and any increase in frame-rate can be attributed to the graphics card and its respective data paths on the motherboard.

give it a slight edge, as the Core 2 Duo X6800 runs at 2992 MHz instead of 2933 MHz.

A surprise was in store when the MSI P35 Diamond and P35 Platinum came up with very good CPU performance in our video encoding test, in which a difference of one second is huge—especially when you consider the fact that all speeds and voltages were kept identical.

Verdict

We're impressed by the sheer performance provided by ASUS' P5K Premium. The fact that it's a superb looker and comes with an excellent bundle of connectors and add-ons just amplifies our decision to award a *Digit Best Buy Gold* to this excellent product.

Gigabyte's GA-P35-DS3R stuck close to the ASUS P5K3 Deluxe (a DDR3-based board) throughout the tests and we're awarding these two a joint *Digit Best Buy Silver*.

Other boards that impress on the performance front are the P5K Deluxe and Blitz Formula from ASUS, Abit's IP-35 Pro Off Limits and Gigabyte's GA-P35-DQ6.

If you're looking for an enthusiast solution that overclocks well and simplifies the process, select any of the ASUS boards we've mentioned.

If you want something a little cheaper, take a look at Abit's IP-35 Pro Off Limits, Gigabyte's GA-P35DS3R or MSI's P35 Platinum.

If you're looking for value we suggest either MSI's P35 Neo or Abit's IP-35 E Off Limits priced at Rs 6,600 and 8,500 respectively.

We suggest avoiding the cheaper offerings—unless you have an absolute shoestring budget and must have a P35 chipset based board.

NVIDIA 680I/680I LT/650I SLI AND 650I ULTRA-BASED MOTHERBOARDS

NVIDIA's 680i has been around for a while, but it was a path breaking chipset when launched, and thanks to some future-proofing on

NVIDIA's part, it still has the goods to take on the P35-based boards. The high-end 680i boards are the exclusive domain of the lightning fast Core 2 Duo processors from Intel, so you'll see no AMD based solutions here.

The 680i LT is a lower version of the 680i core logic, and manages to do without faster memory profiles—the 680i is optimised for 1200 MHz SLI-ready memory. These platforms support SLI and a full 16 PCI Express lanes to each graphics card.

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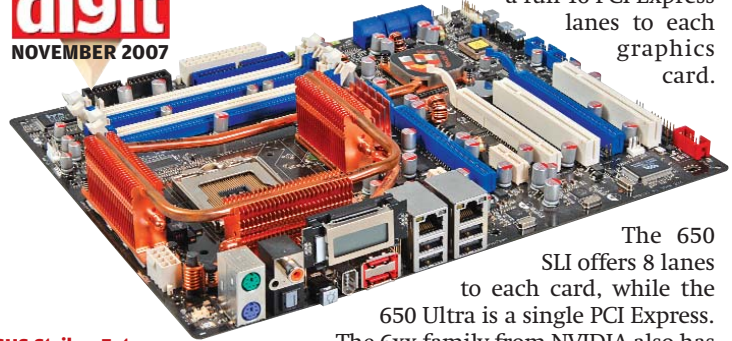
ASUS Striker Extreme
The SLI demon

The 650 SLI offers 8 lanes to each card, while the 650 Ultra is a single PCI Express. The 6xx family from NVIDIA also has one very important feature for overclockers—they allow for overclocking independent of memory dividers. This means you no longer have to bother with maintaining memory to FSB ratios while overclocking like you have to with Intel boards. This is a boon for those who have cheaper RAM but want to overclock their machines. On Intel boards, as the FSB speed is bumped up, your memory also has to match up to maintain a predefined ratio—typically 2 : 1 or 3 : 1. For example, for an FSB of 266 MHz your memory should be capable of running at 800 MHz (266 x 3) if the memory divider is set at 3.

Besides this, the 680i/LT allows overclockers to set memory reference voltages, as well as set reference voltages for the Northbridge and Southbridge as well as overvolt them (which most chipsets provide an option for).

Features

ASUS' P5N32-E SLI had perhaps one of the best

▽ ASUS P5K3 Premium: Is it worth the money?

Every once in a while, a product comes along that makes us go "Ooh, let's give this one a special box, shall we?" Why the ASUS P5K3 Premium? Well, for one, it's four times as expensive (Rs 70,000) as most of its other (already expensive) siblings! For another, it's got this ultra-large and cool-looking heat-pipe solution that immediately gets the drool out (before we saw the price tag of course)! And then we noticed there were no memory banks for RAM...wha...?

This board comes with 2 GB of DDR3 memory integrated—and fast memory at that (1333 MHz). The fact that the memory is integrated, and very obviously matched to the board means that it performs better than external DDR3 RAM running at the same speed. ASUS also guarantees that this integrated memory will overclock to 1,500 MHz. It's evident that the memory used is top-class, simply because we were able to set very tight timings (1333 MHz at 7-6-6-17 at 1.7 volts), which is pretty incredible considering our 1066 MHz

DDR3 ran at 7-7-7-24!

We got an overall PC Mark score of 8,535 and a memory score of 6,112, and at the above mentioned timings we got 6329—a very good showing. The only demerit is that you cannot upgrade memory, which remains at 2 GB. If ASUS had come out with a 4 GB variant the board would probably cost close to a lakh, if not more...
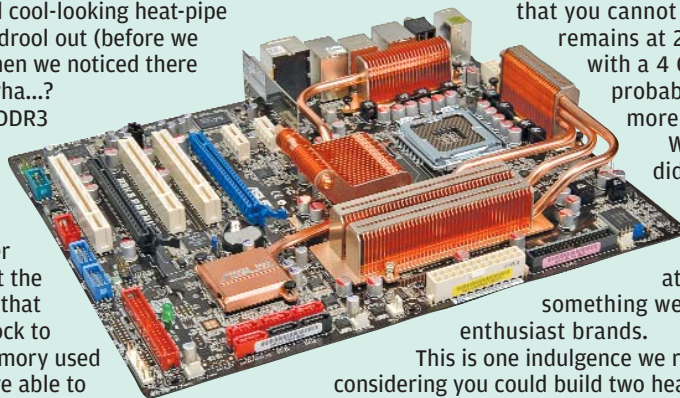
We honestly believe ASUS didn't really expect any takers for such an expensive board. Instead, it's more like a statement—"Look at what we can do!"—something we've come to expect from enthusiast brands.

This is one indulgence we recommend you miss—considering you could build two healthy PCs for the price of this board. If you're insanely rich (or just insane) then you'd probably discount this bit of advice.

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looking cooling solutions ever, and also was brilliantly laid out. With discrete heat-pipes and sinks for the Northbridge and Southbridge, this board looks better than the Striker, which has a lot more copper and deviates from a clean look.

We like copper heat-pipes and heatsinks, but in moderation, please! Just to prove a point, the P5N32-E SLI also ran cooler than all the other 680i and 680i LT boards. In fact, despite NVIDIA's 680i Northbridge's reputation for heat, this board didn't even break the proverbial sweat!

The PCBs of the 680i / 680i LT chipset-based boards are reference NVIDIA design—in fact, XFX and Galaxy use stock NVIDIA PCBs. This is why all the benefits of the reference 680i layout are seen along with its demerits. For one, the power connector pins on the XFX and Galaxy boards are placed between the memory slots—something we complained about when we reviewed the 680i as a platform last year.

Abit's Fatal1ty FP-IN9 SLI bears the "Approved by Jonathan 'Fatal1ty' Wendel" mark—but we couldn't find anything that stands out about this board—right from its layout to the choice of components (read capacitors) to the bundle. ASUS' P5N-E SLI uses the Jurassic SLI switch PCB to toggle between SLI and single card mode.

The Zebronics 650 SLI uses a reference NVIDIA PCB—which has a less cluttered layout than the heavily feature-laden 680i. Galaxy and XFX came up with 650 Ultra boards—the 650i LT and MB-N650-IUL9 respectively. These boards allow a variety of overclocking and tweaking options, and are suitable if you want to stick with a single graphics card.

NVIDIA 680i/650i chipset performance

Board	SiSoft 2007 Mem Bandwidth (Float)	Doom 3 (FPS)	3D Mark 2005	PC Mark 2005
XFX MB - N650-IUL9	5722	237.2	1682	8369
Abit Fatal1ty FP-IN9 SLI	5640	231.4	16981	8552
Galaxy 680i LT SLI	5769	242.1	16982	8354
ASUS P5N32-E SLI	5725	237.6	16934	8516
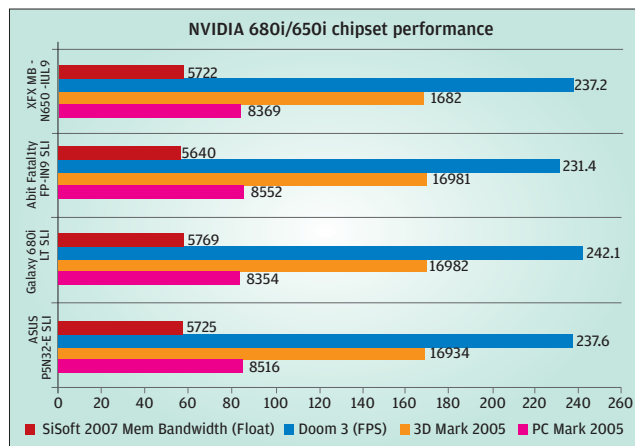
Performance
Although there's no must-have among the 680i/LT and 650 SLI boards in terms of pure performance, we see the ASUS Striker Extreme edging out all the others by a tiny margin. Abit's FP-IN9 SLI does very well in the video encoding test, and it's a whole four seconds faster than XFX's MB-N680-ILT9—very good CPU performance! The ASUS Striker Extreme does manage to utilise the Core 2 Duo better when it comes to real-world gaming—it was consistently 4 to 5 fps ahead of the other boards under both games.

Verdict
Let's face it—enthusiasts don't have many reasons to go for a 680i-based board, especially considering Intel's latest P35 and the just-released X38 chipset. The major reason for this isn't performance or features—the 680i is both an excellent performer and as future-proof as the P35 chipset, which is a year newer: it's the price (the P35 is much cheaper). The 680i/LT chipset was targeted at enthusiasts who want SLI or just an excellent overclocker that allows fine tuning of every component.

Scoreboard — NVIDIA 680i / 650i chipset based boards

Brand Model No.	ASUS P5N32-E SLI	ASUS Striker Extreme	Galaxy 680i LT SLI	XFX MB-N680-ILT9	Abit Fatal1ty FP-IN9 SLI	ASUS P5N-E SLI
Chipset	NVIDIA 680i	NVIDIA 680i	NVIDIA 680i LT	NVIDIA 680i LT	NVIDIA 650i SLI	NVIDIA 650i SLI
Socket	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775
Northbridge	680i	680i	680i LT	680i LT	650i SLI	650i SLI
Southbridge	MCP55	MCP55	MCP55	MCP55	nForce 430i	nForce 430i
Price (Rs)	13,800	21,400	9,200	11,000	8,000	8,280
+	Great cooling solution	Very fast, great bundle	Well priced	Reasonably priced	Good overclocker	Good layout, price
-	Electrolytic capacitors	Very expensive	Skimpy bundle	Skimpy bundle	Build Quality	Ancient SLI switch
Grand Total (Out Of 100)	73.03	74.34	69.65	69.16	69.17	71.20
Features (Out Of 50)	32.48	34.45	27.44	27.89	26.40	28.24
Performance (Out Of 40)	37.25	37.76	37.26	37.13	37.07	37.46
Price (Out Of 10)	3.30	2.13	4.96	4.15	5.70	5.51
Features						
Front Side Bus Speed	1333 MHz	1333 MHz	1333 MHz	1333 MHz	1333 MHz	1333 MHz
Memory Type / Max Freq. Supported	DDR2 / 1066 MHz	DDR2 / 1066 MHz	DDR2 / 1066 MHz	DDR2 / 1066 MHz	DDR2 / 800 MHz	DDR2 / 800 MHz
Memory Supported / No. Of slots	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4
No. Of SATA / PATA Ports	6 / 1	6 / 1	6 / 1	6 / 1	4 / 2	4 / 1
E-SATA Support / No. Of Ports	N / NA	N / NA	N / NA	N / NA	N / NA	Y / 1
Integrated Graphics (Y / N)	N	N	N	N	N	N
No. Of PCI / PCI x1 / PCI x4 Slots	2 / 2 / 1	2 / 2 / 1	2 / 2 / 0	2 / 2 / 0	2 / 2 / 0	2 / 1 / 0
Multi GPU Support (SLI / CrossFire / N)	SLI / x16 / x16	SLI / x16 / x16	SLI / x16 / x16	SLI / x16 / x16	SLI / x8 / x8	SLI / x8 / x8
Audio Controller / Channels / HD Compliant (Y / N)	ADI 1988B / 8 / Y	ADI 1988B / 8 / Y	Realtek ALC888 / 8 / Y	Realtek ALC888 / 8 / Y	Realtek ALC888/8/Y	Realtek ALC885 / 6 / Y
S/PDIF / Optical Port	Y / Y	Y / Y	N / Y	N / Y	N / Y	Y / N
No Of LAN Ports / Type (10/100 / Gigabit)	2 / G+G	2 / G+G	2 / G+G	2 / G+G	1 / G	1 / G
Integrated WiFi (Y / N)	N	N	N	N	N	N
No. Of Rear USB / FireWire Ports	4 / 1	4 / 1	4 / 1	4 / 1	4 / 1	4 / 1
All Solid State Capacitors (Y / N)	N	Y	N	N	N	N
Component Layout (Scale Of 10)	7.13	6.92	6.71	6.71	7.08	6.71
Overclocking Options						
CPU / FSB / Memory	Y / Y / Y	Y / Y / Y	Y / Y / Y	Y / Y / Y	Y / Y / Y	Y / Y / Y
Overvolting (CPU/Memory/FSB/PCIe/Northbridge)	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y
CPU Voltage Range (Volts)	Upto 1.9v	Upto 1.9v	1.2~1.6V	1.2~1.6V	1.325~1.7v	0.83125~1.6v
Memory Voltage Range (Volts)	1.8~2.6v	1.8~2.6v	1.8~2.5V	1.8 ~ 2.5V	1.8~2.5v	1.92~2.517v
Package Bundle						
No Of SATA / PATA Cables	6 / 1	6 / 1	3 / 1	3 / 1	3 / 1	3 / 1
Software Bundle	NA	GRAW, 3D Mark 2006	NA	NA	NA	NA
Other Accessories	SLI Connector	Cooling Fans, USB Bracket	4 Port USB Bracket	USB Bracket, SLI Connector	SLI Connector, SLI Retention, FireWire Bracket	SLI Connector
Performance						
PC Mark 2005						
CPU	7526	7558	7521	7538	7522	7522
Memory / Graphics	6099 / 12874	6220 / 12652	6109 / 12013	6111 / 11968	6076 / 12706	6197 / 12738
HDD	7266	7251	7290	7195	7512	7033
Overall	8516	8556	8354	8362	8552	8560
SiSoft Sandra 2007						
CPU Arithmetic (Dhrystone / Whetstone)	27093 / 18764	27084 / 18783	27012 / 18751	27012 / 18754	27169 / 18637	27158 / 18728
CPU Multimedia (Integer / Floating)	161513 / 87931	161655 / 88038	161404 / 87870	161465 / 87901	161260 / 87743	161360 / 87882
Drive Index (MBps) / Random Access Time (ms)	84 / 8 ms	86 / 8 ms	79 / 8 ms	79 / 8 ms	70 / 8 ms	72 / 8 ms
Memory Bandwidth Score (Integer / Floating)	5707 / 5725	5770 / 5789	5752 / 5769	5746 / 5771	5661 / 5640	5874 / 5859
3D Mark 2005						
3D Marks / CPU Score	16934 / 9691	17084 / 10192	16982 / 9989	16946 / 9942	16981 / 9510	17103 / 10214
Real World Tests						
Video Encoding (DivX 6.2) 100 MB File	71.97 sec	70.76 sec	70.84 sec	72.53 sec	68.54 sec	70.71 sec
File Transfer - 4 GB File	52.98 sec	51.8 sec	52.25 sec	53.1 sec	53.47 sec	52.35 sec
Doom 3 (640x480 / 1600x1200, 4xAA, 4xAF)	237.6 / 118.7 fps	248.2 / 119.1 fps	242.1 / 118.3 fps	243.1 / 119.2 fps	231.4 / 118.8 fps	244.4 / 118.6 fps
Splinter Cell Chaos Theory (640x480 / 1600x1200)	229.8 / 118.4 fps	236.2 / 117.9 fps	232.6 / 117.9 fps	233.1 / 117.9 fps	231.4 / 117.2 fps	234.6 / 118.5 fps

Zebronics ZEB-650i SLI	Galaxy 650I LT	XFX MB - N650 - IUL9
NVIDIA 650i SLI	NVIDIA 650i Ultra	NVIDIA 650i Ultra
LGA 775	LGA 775	LGA 775
650i SLI	650i Ultra	650i Ultra
nForce 430i	nForce 430i	nForce 430i
4,800	4,800	5,700
Well priced	Well priced	Good overclocker
Skimpy bundle	Skimpy bundle	Skimpy bundle
72.36	71.57	71.41
26.70	24.89	26.44
36.16	37.18	36.97
9.50	9.50	8.00
1333 MHz	1333 MHz	1333 MHz
DDR2 / 800 MHz	DDR2 / 800 MHz	DDR2 / 800 MHz
8 GB / 4	8 GB / 4	8 GB / 4
5 / 2	4 / 1	4 / 1
Y / 1	N / NA	N / NA
N	N	N
2 / 1 / 0	3 / 2 / 0	3 / 2 / 0
SLI / x8 / x8	NA / x16	NA / x16
Realtek ALC885/8/Y	Realtek ALC885/8/Y	Realtek ALC885/8/Y
Y / N	N / N	N / N
1 / G	1 / G	1 / G
N	N	N
4 / 1	4 / 1	4 / 1
N	N	N
6.67	6.79	6.79
Y / Y / Y	Y / Y / Y	Y / Y / Y
Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y
1.2~1.510v	0.83125~1.6v	0.83125~1.6v
1.8~2.01v	1.92~2.517v	1.92~2.517v
2 / 1	2 / 1	4 / 1
NA	NA	NA
SLI Connector	SLI Connector	SLI Connector, USB Bracket
7518	7527	7282
5686 / 11872	6078 / 12660	6082 / 12220
7438	7470	7510
8400	8525	8369
27043 / 18582	27071 / 18764	27182 / 18728
161185 / 87781	161557 / 87962	161206 / 87829
70 / 8 ms	70 / 8 ms	70 / 8 ms
5126 / 5132	5793 / 5783	5728 / 5722
16508 / 9230	16880 / 9686	16820 / 9692
71.4 sec	69.67 sec	69.24 sec
56.2 sec	53.1 sec	53.61 sec
229.5 / 116.4 fps	236.9 / 119.7 fps	237.2 / 118.5 fps
230.5 / 116.3 fps	231.5 / 117.8 fps	232.2 / 118.1 fps

If you want the best SLI solution that won't bottleneck two 8800 GTX / Ultra graphics cards and money isn't an issue, pick up the ASUS Striker Extreme for Rs 21,400. There is also a non-extreme version available, which is equally good and around Rs 2,500 cheaper.

If you want a really affordable SLI solution, look at Zebronics' ZEB-650i SLI—at Rs 4,800, you can pick up two 8600 GTs for the amount you'll save from the ASUS Striker Extreme!

If you want a 680i/LT motherboard for the plethora of overclocking options but don't want to spend above Rs 15,000, pick up ASUS' P5N32-E SLI or Galaxy's 680i LT SLI for Rs 13,800 and 9,200 respectively.

Our winners are the excellent 680i-bearing ASUS Striker Extreme (Gold) and ASUS P5N32-E SLI (Silver), for their mixture of raw performance and overclockability that will deliver the goods to these fraternities.

INTEL P965-BASED MOTHERBOARDS

An older chipset, the P965 still is an excellent product but it finds itself at the end of its life cycle, and therefore largely redundant with P35-based boards costing a few hundreds more. Do remember that the P965 unofficially supports the 1333 MHz FSB through BIOS updates, so will work with the upcoming Penryn processors. The fact that we have seen P965 boards running at an FSB of over 1600 MHz (overclocked) means that while the P965 platform may be older, toothless it's not!

Features

The very term *features* is synonymous with one board here—the ASUS P5B Premium Vista Edition, and about the only grouse we can come up with is its extremely long name! A near-perfect layout, detailed BIOS complete with superb overclocking options (second only to the ASUS Commando), and supreme build quality. But wait... there's also a remote control unit that allows you to control several functions including the ability to hibernate, power down and even play music. Then there's the additional tiny LCD screen unit (that looks like a PMP, by the way) that allows you to view important pop-ups such RSS feeds and will sync with Web sites when your PC is on. All this data can be viewed later even when your PC is off!

ASUS' Commando is another "Republic of Gamers" product complete with extra overclocking options, LED POST display and LED backlit power, restart and CMOS reset buttons on the PCB. The P5B Deluxe is a feature-rich offering that shares an identical layout (right down to the cooler) with the P5B Premium Vista Edition. The P5B-E is a lower version of the P5B Deluxe without a wireless access point and minus a few other frills.

MSI's P965 Platinum was the only other feature-rich board in this group—the MSI P965 Neo and Biostar Tforce P965 were the proverbial plain Janes—all the regular features you'd need in a motherboard without the additional pizzazz that the costlier boards show off.

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ASUS P5B Premium Vista Edition
Features galore

Performance

The sheer toppers in terms of overall performance were the ASUS Commando and the P5B Deluxe—no wonder these were the kings of the ring before the P35 based motherboards came out—and the performance increments are almost insignificant. In fact, all the ASUS boards gave better 3D Mark 2005 scores than the other boards in this category, proving that if you want a gaming platform based on the P965 chipset, you should consider ASUS. Memory bandwidth scores in SiSoft Sandra's test suite are also noticeably higher.

For some reason, both the MSI boards took a dip in the SiSoft Sandra CPU Multimedia tests. The difference isn't alarming and won't be really noticeable in day-to-day applications, but these boards aren't the best performers around.

Scoreboard
Intel P965 chipset based

Brand Model No.	ASUS P5B Premium Vista Edition	ASUS Commando	ASUS P5B Deluxe WiFi-AP	ASUS P5B-E	Biostar Tforce P965	MSI P965 Neo
* Intel Integrated Graphics solutions						
Chipset	Intel P965	Intel P965	Intel P965	Intel P965	Intel P965	Intel P965
Socket	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775
Northbridge	P965	P965	P965	P965	P965	P965
Southbridge	ICH8R	ICH8R	ICH8R	ICH8R	ICH8R	ICH8R
Price (Rs)	14,750	15,870	12,420	9,300	4,400	5,400
+	Very feature rich, fast	Great overclocker	Features, performance	Good layout	Awesome value	Good value
-	Expensive	Expensive	Slightly expensive	No solid capacitors	None in particular	Slightly slower
Grand Total (Out Of 100)	76.53	75.21	75.55	72.22	71.68	71.41
Features (Out Of 43/50*)	31.95	30.49	30.23	26.23	20.30	22.44
Performance (Out Of 45/37*)	41.54	41.90	41.70	41.17	41.18	40.66
Price (Out Of 12/13*)	3.04	2.83	3.61	4.83	10.20	8.31
Features						
Front Side Bus Speed	1066 MHz	1066 MHz	1066 MHz	1066 MHz	1066 MHz	1066 MHz
Memory Type / Max Freq. Supported	DDR2 / 1066 MHz	DDR2 / 1066 MHz	DDR2 / 1066 MHz	DDR2 / 1066 MHz	DDR2 / 800 MHz	DDR2 / 800 MHz
Memory Supported / No. Of slots	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4
No. Of SATA / PATA Ports	7 / 1	6 / 1	7 / 1	6 / 1	4 / 1	5 / 1
E-SATA Support / No Of Ports	Y / 1	N / NA	Y / 1	Y / 1	N / NA	N / NA
Integrated Graphics (Y / N)	N	N	N	N	N	N
No. Of PCI / PCI x1 / PCI x4 Slots	3 / 1 / 1	4 / 1 / 1	3 / 1 / 1	3 / 3 / 0	3 / 1 / 1	3 / 2 / 0
Multi GPU Support (SLI / CrossFire / N)	N / x16	N / x16	N / x16	N / x16	N / x16	N / x16
Audio Controller / Channels / HD Compliant (Y / N)	ADI AD1988B/8/Y	ADI 1988B/8/Y	ADI 1988B/8/Y	ADI 1988B/8/Y	Realtek ALC888/8/Y	Realtek ALC888/8/Y
S / PDIF / Optical Port	Y / Y	Y / Y	Y / Y	Y / Y	N / N	N/N
No Of LAN Ports / Type (10/100 / Gigabit)	2 / G	2 / G	2 / G	1 / G	1 / G	1 / G
Integrated WiFi (Y / N)	N	N	Y	N	N	N
No. Of Rear USB / FireWire Ports	4 / 1	4 / 1	4 / 1	4 / 1	4 / 1	4 / 1
All Solid State Capacitors (Y / N)	Y	Y	N	N	N	N
Component Layout (Scale Of 10)	7.00	7.21	7.00	7.00	6.04	6.54
Overclocking Options						
CPU / FSB / Memory	Y / Y / Y	Y / Y / Y	Y / Y / Y	Y / Y / Y	Y / Y / Y	Y / Y / Y
Overvolting (CPU/Memory/FSB/PCIe/Northbridge)	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y
CPU Voltage Range (Volts)	1.1~1.6v	1~1.9v	1~1.6v	1~1.6v	1.1~1.5v	+0.025 ~ 0.175v
Memory Voltage Range (Volts)	1.8~2.6v	1.8~3.4v	1.8~2.6v	1.8~2.6v	1.85~2.3v	1.9 ~ 2.2v
Package Bundle						
No Of SATA / PATA Cables	6 / 1	6 / 1	6 / 1	6 / 1	2 / 1	3 / 1
Software Bundle	NA	GRAW, 3D Mark 2006	NA	NA	NA	NA
Other Accessories	IR Remote unit, reciever, Array mic, firewire and USB brackets, LCD screen	Cooling Fan (x2), Array Mic	Cooling Fan (x2), Array Mic	NA	NA	NA
Performance						
PC Mark 2005						
CPU	7526	7592	7599	7272	7521	7268
Memory / Graphics	6028 / 11827	6182 / 12372	6012 / 11825	6028 / 11723	5820 / 11890	5752 / 12432
HDD	7120	7103	7173	7108	7194	6961
Overall	8390	8591	8592	8219	8302	8264
SiSoft Sandra 2007						
CPU Arithmetic (Dhrystone / Whetstone)	26932 / 18722	27422 / 18720	26434 / 18552	26493 / 18293	26873 / 18607	26820 / 18636
CPU Multimedia (Integer / Floating)	162893 / 88532	162921 / 88926	162932 / 88932	161823 / 88128	161199 / 87845	156368 / 87890
Drive Index (MBps) / Random Access Time (ms)	78 / 8 ms	78 / 8 ms	78 / 8 ms	78 / 8 ms	78 / 8 ms	78 / 8 ms
Memory Bandwidth Score (Integer / Floating)	5573 / 5542	5587 / 5582	5583 / 5526	5582 / 5538	5447 / 5465	5323 / 5329
3D Mark 2005						
3D Marks / CPU Score	17013 / 11032	17210 / 11161	17120 / 11193	16930 / 11029	16579 / 11128	16756 / 9934
Real World Tests						
Video Encoding (DivX 6.2) 100 MB File	69.91 sec	68.94 sec	69.37 sec	69.32 sec	70.5 sec	69.2 sec
File Transfer - 4 GB File	52.53 sec	52.83 sec	52.37 sec	53.1 sec	52.98 sec	53.7 sec
Doom 3 (640x480 / 1600x1200, 4xAA, 4xAF)	244.8 / 121.2 fps	245.2 / 122 fps	244.2 / 121.5 fps	239.4 / 120.2 fps	237.1 / 122.2 fps	231.2 / 118.9 fps
Splinter Cell Chaos Theory (640x480 / 1600x1200)	235.2 / 117.6 fps	235.3 / 117.6 fps	235.2 / 117.4 fps	232.8 / 116.9 fps	230.7 / 117.3 fps	232.6 / 118.2 fps
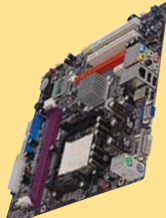
Intel Integrated Graphics solutions

	MSI P965 Platinum	Gigabyte GA-G33-DS3R	Gigabyte GA-G33M-S2H	MSI G33M	ECS P33T-A	MSI G965MDH	Abit Fatal1ty F-190HD
	Intel P965	Intel G33	Intel G33	Intel G33	Intel G31	Intel G965	ATI 690G
	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775
	P965	G33	G33	G33	G31	G965	Radeon x1250
	ICH8R	ICH9R	ICH9R	ICH9R	ICH7	ICH8R	SB600
	7,400	9,500	5,950	6,400	3,600	6,300	7,500
	Good performer	Very good layout	Good value for money	Good overclocking options	Extremely affordable	Decent performer	Well laid out
	No solid capacitors	Expensive	None in particular	Slighty pricey	Low on features	Older solution	Expensive solution
	75.78	68.78	64.09	63.59	57.95	63.12	60.33
	28.51	32.15	25.85	25.83	17.48	25.23	23.85
	41.20	33.84	33.78	33.62	33.10	33.68	32.94
	6.06	2.80	4.46	4.15	7.38	4.21	3.54
	1066 MHz	1333 MHz	1333 MHz	1333 MHz	1333 MHz	1066 MHz	1066 MHz
	DDR2 / 800 MHz	DDR2 / 800 MHz	DDR2 / 800 MHz	DDR2 / 800 MHz	DDR2 / 800 MHz	DDR2 / 800 MHz	DDR2 / 800 MHz
	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4
	6 / 1	6 / 1	3 / 1	3 / 1	4 / 1	6 / 1	4 / 1
	N / NA	Y (Bracket) / 2	Y / 1	Y / 2	N / NA	N / NA	N / NA
	N	Y, Intel GMA 3100	Y, Intel GMA 3100	Y, Intel GMA 3100	Y, Intel GMA 3100	Y, Intel GMA 3000	Y, Radeon x1250
	2 / 2 / 1	3 / 2 / 0	2 / 1 / 0	2 / 1 / 0	3 / 2 / 0	2 / 1 / 0	1 / 1 / 0
	N / x16	N / x16	N / x16	N / x16	N / x16	N / x16	N / x16
	Realtek ALC888/8/Y	Realtek ALC889A/8/Y	Realtek ALC889A/8/Y	Realtek ALC888/8/Y	Realtek ALC885/6/Y	Realtek ALC888/8/Y	Realtek ALC888/8/Y
	Y / Y	Y / Y	N / Y	N / N	N / N	N / N	N / Y
	1 / G	1 / G	1 / G	1 / G	1 / G	1 / G	1 / G
	N	N	N	N	N	N	N
	4 / 1	4 / 1	4 / 1	6 / 1	4 / 1	4 / 1	4 / 1
	N	Y	N	N	N	N	N
	7.29	6.75	6.46	6.58	6.25	7.13	5.67
	Y / Y / Y	Y / Y / Y	Y / Y / Y	Y / Y / N	Y / Y / N	Y / Y / Y	Y / Y / Y
	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / N / N	Y / Y / Y / N / Y	N / N / N / N / N	Y / Y / Y / N / Y	Y / Y / Y / Y / Y
	+0.025 ~ 0.175v	0.5 ~ 3.25v	1.0~ 1.75v	1.275 ~ 2.0625v	NA	+0.025 ~ 0.175v	1.325~1.5V
	1.9 ~ 2.5v	1.8~3.3v	1.8~2.5v	1.8 ~ 3.3v	NA	1.9 ~ 2.1v	1.8~2.5V
	4 / 1	3 / 1	2 / 1	1 / 1	2 / 1	3 / 1	3 / 1
	NA	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA	HDMI Connect (HDMI as DVI supported)
	7269	7534	7513	7414	7272	7463	7102
	5687 / 12562	5861 / 11908	5724 / 11932	5562 / 11844	5252 / 11324	5707 / 12539	6001 / 11729
	6882	7162	7120	7122	7012	6987	7102
	8237	8280	8233	8101	7681	8335	8029
	27025 / 18729	27029 / 18623	26928 / 18293	26126 / 18627	26232 / 17912	27019 / 18604	27019 / 18579
	158392 / 87265	161543 / 87958	161478 / 87637	169191 / 87267	166292 / 86128	161140 / 87192	161053 / 87715
	78 / 8 ms	78 / 8 ms	78 / 8 ms	78 / 8 ms	78 / 8 ms	78 / 8 ms	69 / 8 ms
	5478 / 5489	5595 / 5555	5584 / 5562	5456 / 5425	5235 / 5212	5113 / 5059	5061 / 5077
	16993 / 10800	16782 / 11245	16792 / 11326	16363 / 11389	16218 / 11292	16789 / 10318	16527 / 9528
	69.1 sec	70.3 sec	71.1 sec	70.92 sec	70.23 sec	70.1 sec	70.4 sec
	52.2 sec	56.36 sec	56.32 sec	55.43 sec	55.63 sec	53.2 sec	55.29 sec
	238.2 / 120.6 fps	234.2 / 121.7 fps	237.3 / 122.5 fps	235.3 / 120.1 fps	225.2 / 119.2 fps	231.5 / 118.1 fps	229.6 / 116.5 fps
	232.3 / 118.5 fps	229.4 / 117.2 fps	226.3 / 117.4 fps	228.2 / 116.5 fps	231.2 / 115.5 fps	233.4 / 118.1 fps	230.2 / 116.4 fps

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Scoreboard

Brand Model No.	ASUS M2A-VM	ASUS M2A-VM HDMI	Gigabyte GA-MA69G-S3H	MSI K9AGM2 (690G)	
Chipset	ATI 690V	ATI 690G	ATI 690G	ATI 690G	
Socket	AM2	AM2	AM2	AM2	
Northbridge	Radeon x1250	Radeon x1250	Radeon x1250	Radeon x1250	
Southbridge	SB600	SB600	SB600	SB600	
Price (Rs)	3,765	5,225	6,900	4,000	
+	Great Value	Good value	Well built, feature rich	Superb value for money	
-	None in particular	None in particular	None in particular	Only 2 DIMM's	
Grand Total (Out Of 100)	60.79	58.77	63.39	55.50	
Features (Out Of 50)	23.38	23.38	28.75	17.55	
Performance (Out Of 37)	30.36	30.31	30.79	31.31	
Price (Out Of 13)	7.05	5.08	3.85	6.64	
Features					
Front Side Bus Speed	1600 / 2000 MHz	1600 / 2000 MHz	1600 / 2000 MHz	1600 / 2000 MHz	
Memory Type / Max Freq. Supported	DDR2 / 800 MHz	DDR2 / 800 MHz	DDR2 / 800 MHz	DDR2 / 800 MHz	
Memory Supported / No. Of slots	8 GB / 4	8 GB / 4	8 GB / 4	4 GB / 2	
No. Of SATA / PATA Ports	4 / 1	4 / 1	4 / 1	4 / 1	
E-SATA Support / No. Of Ports	N / NA	N / NA	Y (Bracket) / 1	N / NA	
Integrated Graphics (Y / N)	Y, Radeon x1250	Y, Radeon x1250	Y, Radeon x1250	Y, Radeon x1250	
No. Of PCI / PCI x1 / PCI x4 Slots	2 / 1 / 0	2 / 1 / 0	2 / 3 / 1	2 / 1 / 0	
Multi GPU Support (SLI / CrossFire / N)	N / x16	N / x16	N / x16	N / x16	
Audio Controller / Channels / HD Compliant (Y / N)	Realtek ALC883 / 6 / Y	Realtek ALC883 / 6 / Y	Realtek ALC888 / 8 / Y	Realtek ALC888 / 8 / Y	
S/PDIF / Optical Port	N / N	N / N	N / Y	N / N	
No Of LAN Ports / Type (10/100 / Gigabit)	1 / G	1 / G	1 / G	1 / G	
Integrated WiFi (Y / N)	N	N	N	N	
No. Of Rear USB / FireWire Ports	4 / 1	4 / 1	4 / 1	4 / 1	
All Solid State Capacitors (Y / N)	N	N	N	N	
Component Layout (Scale Of 10)	6.63	6.63	6.75	6.83	
Overclocking Options					
CPU / FSB / Memory	Y / Y / Y	Y / Y / Y	Y / Y / Y	N / N / N	
Overvolting (CPU/Memory/FSB/PCIe /Northbridge)	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	N / N / N / N / N	
CPU Voltage Range (Volts)	0.8~1.55V	0.8~1.55V	0.75~1.6v	NA	
Memory Voltage Range (Volts)	1.8~2.1V	1.8~2.1V	1.8~2.4v	NA	
Package Bundle					
No Of SATA / PATA Cables	2 / 1	2 / 1	4 / 1	2 / 1	
Software Bundle	NA	NA	NA	NA	
Other Accessories	NA	NA	DVI To HDMI Connector	NA	
Performance					
PC Mark 2005					
CPU	6541	6525	7522	7624	
Memory / Graphics	7723 / 11554	7723 / 11621	7828 / 11061	7507 / 11777	
HDD	6908	6832	6923	6855	
Overall	7657	7603	7505	7624	
SiSoft Sandra 2007					
CPU Arithmetic (Dhrystone / Whetstone)	22746 / 19100	22727 / 19192	23279 / 19587	23184 / 19480	
CPU Multimedia (Integer / Floating)	59152 / 64886	59274 / 64829	60419 / 66410	60127 / 66137	
Drive Index (MBps) / Random Access Time (ms)	72 / 8 ms	72 / 8 ms	74 / 8 ms	78 / 8 ms	
Memory Bandwidth Score (Integer / Floating)	8121 / 8072	7992 / 7983	8150 / 8102	8040 / 8005	
3D Mark 2005					
3D Marks / CPU Score	16455 / 7504	16562 / 7524	16339 / 7600	16653 / 8357	
Real World Tests					
Video Encoding (DivX 6.2) 100 MB File	82.73 sec	82.26 sec	82.55 sec	82.25 sec	
File Transfer - 4 GB File	56.34 sec	56.56 sec	53.62 sec	52.74 sec	
Doom 3 (640x480 / 1600x1200, 4xAA, 4xAF)	189.6 / 117.3 fps	188.2 / 117.3 fps	189.1 / 117.8 fps	199.6 / 117.5 fps	
Splinter Cell Chaos Theory (640x480 / 1600x1200)	181 / 101.5 fps	181.2 / 100.3 fps	182.4 / 103.2 fps	183.6 / 103.4 fps	

AMD Integrated Graphics solutions
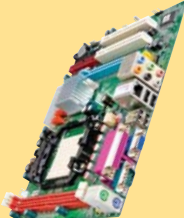
MSI K9AGM2 (690V)	ECS AMD690GM-M2	Jetway JM2A692-GDG	Abit AN-M2HD	Galaxy AN68M	Jetway M28GT3-SDG	Zebronics ZEB-N61M2
ATI 690G	ATI 690G	ATI 690G	NVIDIA 7050PV	NVIDIA 7025	NVIDIA 7025	NVIDIA 6100
AM2	AM2	AM2	AM2	AM2	AM2	AM2
Radeon x1250	Radeon x1250	Radeon x1250	GeForce 7050PV	GeForce 7025	GeForce 7025	GeForce 6100
SB600	SB600	SB600	nForce 630a	nForce 630a	nForce 630a	nForce 410
3,100	3,100	3,950	5,300	3,300	3,950	2,150
Very good deal	Well priced	Well priced	Good performer	Good value for money	Decent overclocking options	Good value for money
Only 2 DIMM's	Only 2 DIMM's	Less expansion options	Slightly costly	Only 2 DIMM's	Overpriced	Older solution
57.21	58.45	58.77	60.31	58.93	57.41	62.32
17.55	19.38	21.38	24.39	20.44	20.34	19.55
31.09	30.51	30.68	30.91	30.45	30.35	30.42
8.57	8.57	6.72	5.01	8.05	6.72	12.35
1600 / 2000 MHz	1600 / 2000 MHz	1600 / 2000 MHz	1600 / 2000 MHz	1600 / 2000 MHz	1600 / 2000 MHz	1600 / 2000 MHz
DDR2 / 800 MHz	DDR2 / 800 MHz	DDR2 / 800 MHz	DDR2 / 800 MHz	DDR2 / 800 MHz	DDR2 / 800 MHz	DDR2 / 800 MHz
4 GB / 2	4 GB / 2	8 GB / 4	8 GB / 4	4 GB / 2	8GB / 4	4 GB / 2
4 / 1	4 / 1	4 / 1	4 / 1	4 / 1	4 / 1	2 / 1
N / NA	N / NA	N / NA	N / NA	N / NA	N / NA	N / NA
Y, Radeon x1250	Y, Radeon x1250	Y, Radeon x1250	Y, GeForce 7050PV	Y, GeForce 7025	Y, GeForce 7025	Y, GeForce 6100
2 / 1 / 0	2 / 1 / 0	2 / 0 / 0	2 / 1 / 0	2 / 1 / 0	2 / 0 / 0	2 / 0 / 0
N / x16	N / x16	N / x16	N / x16	N / x16	N / x16	N / x16
Realtek ALC888 / 8 / Y	Realtek ALC861 / 8 / Y	Realtek ALC861 / 8 / Y	Realtek ALC861 / 8 / Y	Realtek ALC861 / 8 / Y	Realtek ALC861 / 8 / Y	Realtek ALC861 / 8 / Y
N / N	N / N	N / N	N / Y	N / N	N / N	N / N
1 / G	1 / G	1 / G	1 / G	1 / G	1 / G	1 / G
N	N	N	N	N	N	N
4 / 1	4 / 1	4 / 1	4 / 1	6 / 1	4 / 1	4 / 1
N	N	N	N	N	N	N
6.83	5.38	6.96	6.71	6.58	6.58	6.08
N / N / N	Y / Y / Y	Y / Y / Y	Y / Y / Y	Y / Y / Y	Y / Y / Y	Y / Y / Y
N / N / N / N / N	Y / Y / Y / N / N	Y / Y / N / N / N	Y / Y / N / N / N	Y / Y / N / N / N	Y / Y / N / N / N	Y / Y / Y / Y / Y
NA	+0.0125 ~ 0.05v	1.4~2.0v	1.4~2.0v	1.4~2.0v	1.4~2.0v	+0.025~0.375v
NA	+0.05v ~ 0.15v	1.75~2.55v	1.75~2.55v	1.75~2.55v	1.75~2.55v	+0.05 ~ 0.35v
2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	1 / 1	1 / 1
NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	DVI to HDMI converter, extension cable	NA	NA	NA
7621	6539	6571	6529	6334	6524	6579
7575 / 11541	6373 / 11634	7849 / 11624	7892 / 11898	7232 / 11216	7712 / 11237	6583 / 11254
6914	6890	6903	7041	7020	7122	7028
7500	7592	7635	7820	7023	7182	7694
23120 / 19572	23243 / 19616	23346 / 19724	23171 / 19477	23102 / 19248	22992 / 19192	23310 / 19715
60129 / 66162	60319 / 66350	60602 / 66676	60158 / 66137	60824 / 66032	60193 / 66272	60507 / 66577
78 / 8 ms	78 / 8 ms	78 / 8 ms	78 / 8 ms	78 / 8 ms	78 / 8 ms	72 / 8 ms
8025 / 7980	7427 / 7420	7562 / 7524	7762 / 7692	7663 / 7529	7632 / 7532	7412 / 7362
16235 / 8271	16573 / 7601	16482 / 7974	16317 / 7435	16389 / 7837	16243 / 7332	16618 / 8116
82.32 sec	82.35 sec	82.28 sec	82.25 sec	82.12 sec	82.34 sec	83.21 sec
52.3 sec	52.4 sec	55.04 sec	54.85 sec	54.24 sec	54.37 sec	55.23 sec
192.2 . 117.3 fps	189.2 / 117.2 fps	192.2 / 117.6 fps	193.2 / 117.2 fps	195.3 / 118.2 fps	191.1 / 116.2 fps	194.1 / 118.5 fps
181.9 / 102.7 fps	182.2 / 103.1 fps	181.2 / 101.3 fps	193.4 / 108.5 fps	191.2 / 101.4 fps	188.3 / 100.2 fps	181.3 / 99.2 fps

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Scoreboard — Intel P35 Chipset Based

Brand	Abit	Abit	ASUS	ASUS	ASUS	ASUS
Model No.	IP-35 Pro Off Limits	IP-35 E Off Limits	P5K3 Deluxe WiFi-AP	Blitz Extreme	P5K Premium	P5K Deluxe WiFi-AP
Chipset	Intel P35	Intel P35	Intel P35	Intel P35	Intel P35	Intel P35
Socket	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775
Northbridge	P35	P35	P35	P35	P35	P35
Southbridge	ICH9R	ICH9R	ICH9R	ICH9R	ICH9R	ICH9R
Price (Rs)	13,500	8,500	17,100	19,550	15,870	14,750
+	Great for enthusiasts	Decent value overclocker	Well laid out, feature rich	Very fast	Feature Rich	Feature Rich
-	Expensive	No solid capacitors	Expensive	DDR3 is costly	Expensive	Expensive
Grand Total (Out Of 100)	71.62	65.31	74.64	73.98	74.73	74.32
Features (Out Of 50)	31.48	23.63	35.05	34.65	34.55	34.50
Performance (Out Of 40)	36.84	36.43	36.98	37.04	37.36	36.80
Price (Out Of 10)	3.31	5.25	2.61	2.28	2.81	3.03
Features						
Front Side Bus Speed	1333 MHz	1333 MHz	1333 MHz	1333 MHz	1333 MHz	1333 MHz
Memory Type / Max Freq. Supported	DDR2 / 1066 MHz	DDR2 / 1066 MHz	DDR3 / 1333 MHz	DDR3 / 1333 MHz	DDR2 / 1066 MHz	DDR2 / 1066 MHz
Memory Supported / No. Of slots	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4
No. Of SATA / PATA Ports	6 / 1	4 / 1	6 / 1	6 / 1	6 / 1	6 / 1
E-SATA Support / No. Of Ports	Y / 2	N / 0	Y / 2	N / NA	Y / 2	Y / 2
Integrated Graphics (Y / N)	N	N	N	N	N	N
No. Of PCI / PCI x1 / PCI x4 Slots	3 / 1 / 1	3 / 2 / 0	3 / 2 / 0	2 / 3 / 0	3 / 2 / 1	3 / 2 / 1
Multi GPU Support (SLI / CrossFire / N)	CF / x16 / x4	N / x16	CF / x16 / x4	CF / x16 / x4	CF / x16 / x4	CF / x16 / x4
Audio Controller / Channels / HD Compliant (Y / N)	Realtek ALC888/8/Y	Realtek ALC888/8/Y	ADI AD1988B / 8 / Y	ADI AD1988B / 8 / Y	ADI AD1988B / 8 / Y	ADI AD1988B / 8 / Y
S/PDIF / Optical Port	N / Y (in & out)	N/Y	Y / Y	Y / Y	Y / Y	Y / Y
No Of LAN Ports / Type (10/100 / Gigabit)	2 / G+10 / 100	1 / G	2 / G+G	2 / G+G	2 / G+G	2 / G+G
Integrated WiFi (Y / N)	N	N	Y	N	Y	Y
No. Of Rear USB / FireWire Ports	4 / 1 (on addon card)	4 / N	6 / 1	6 / 1	6 / 1	6 / 1
All Solid State Capacitors (Y / N)	Y	N	Y	Y	Y	Y
Component Layout (Scale Of 10)	6.58	6.13	6.50	6.50	6.50	6.50
Overclocking Options						
CPU / FSB / Memory	Y / Y / Y	Y / Y / Y	Y / Y / Y	Y / Y / Y	Y / Y / Y	Y / Y / Y
Overvolting (CPU/Memory/FSB/PCIe/Northbridge)	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y
CPU Voltage Range (Volts)	1.3250 ~ 1.8950v	1.3250 ~ 1.8950v	1.2~1.7v	1.00~1.9v	1.2~1.7v	1.2~1.7v
Memory Voltage Range (Volts)	1.800 ~ 3.000v	1.800 ~ 3.000v	1.3~2.3v	1.5~3.0v	1.8~2.5v	1.8~2.5v
Package Bundle						
No Of SATA / PATA Cables	6 / 1	3 / 1	6 / 1	6 / 1	6 / 1	6 / 1
Software Bundle	NA	NA	NA	3D Mark 2006 + S.T.A.L.K.E.R game	NA	NA
Other Accessories	FireWire and USB bracket	NA	Cooling Fan (x2)	Liquid cooling kit pipes and connects, LCD Poster	Cooling Fan (x2)	Cooling Fan (x2)
Performance						
PC Mark 2005:						
CPU	7612	7261	7410	7523	7637	7546
Memory / Graphics	5824 / 12673	5829 / 12582	6000 / 12103	5957 / 12647	5995 / 12719	5901 / 12525
HDD	7316	7318	7101	7198	7171	7172
Overall	8485	8389	8460	8462	8582	8472
SiSoft Sandra 2007:						
CPU Arithmetic (Dhrystone / Whetstone)	27670 / 19183	27930 / 19128	27157 / 18679	27100 / 18796	27010 / 18806	27109 / 18825
CPU Multimedia (Integer / Floating)	164838 / 89455	162102 / 88192	162020 / 88290	161927 / 88168	162082 / 88161	163204 / 88351
Drive Index (MBps) / Random Access Time (ms)	79 / 8 ms	78 / 8 ms	79 / 8 ms	78 / 8 ms	78 / 8 ms	78 / 8 ms
Memory Bandwidth Score (Integer / Floating)	5710 / 5731	5682 / 5638	5739 / 5982	5666 / 5681	5676 / 5692	5683 / 5667
3D Mark 2005:						
3D Marks / CPU Score	17105 / 10725	17292 / 10812	17030 / 11572	16985 / 11368	17036 / 10936	17035 / 10818
Real World Tests						
Video Encoding (DivX 6.2) 100 MB File	68.53 sec	69.2 sec	70.24 sec	71.1 sec	68.21 sec	71.2 sec
File Transfer - 4 GB File	56.37 sec	58.2 sec	51.24 sec	52.12 sec	50.98 sec	51.93 sec
Doom 3 (640x480 / 1600x1200, 4xAA, 4xAF)	236.7 / 121.6 fps	233.2 / 119.2 fps	243.6 / 120.1 fps	244.9 / 122.4 fps	247.2 / 129.8 fps	243.5 / 121.5
Splinter Cell Chaos Theory (640x480 / 1600x1200)	234.4 / 118.1 fps	229.2 / 116.8 fps	232.1 / 116.3 fps	232.4 / 117.3 fps	236.2 / 117.9 fps	227.2 / 115 fps

	ASUS BLITZ Formula	Biostar TP35D2-A7	ECS P 35T-A	Gigabyte GA-P35 - DS3R	Gigabyte GA-P35 - DQ6	MSI P35-Neo	MSI P35-Diamond	MSI P35-Platinum
	Intel P35	Intel P35	Intel P35	Intel P35	Intel P35	Intel P35	Intel P35	Intel P35
	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775
	P35	P35	P35	P35	P35	P35	P35	P35
	ICH9R	ICH9R	ICH9R	ICH9R	ICH9R	ICH9R	ICH9R	ICH9R
	17,250	4,700	5,475	12,000	15,500	6,600	14,500	10,200
	Overclockers delight	Extreme value	Well priced	Good high-end option	Status symbol	Affordable P35 platform	Loads of features	Good performer
	Very expensive	Low on features	Low on features	Expensive	Bulky heatpipe solution	Doesn't overclock well	Expensive	None in particular
	74.24	69.48	69.51	74.56	73.04	67.03	70.80	71.30
	34.65	23.48	24.75	33.70	33.63	23.76	30.86	30.26
	37.00	36.50	36.60	37.14	36.53	36.50	36.86	36.66
	2.59	9.50	8.16	3.72	2.88	6.77	3.08	4.38
	1333 MHz	1333 MHz	1333 MHz	1333 MHz	1333 MHz	1333 MHz	1333 MHz	1333 MHz
	DDR2 / 1066 MHz	DDR2 / 800 MHz	DDR2 / 800 MHz	DDR2 / 1066 MHz	DDR2 / 1066 MHz	DDR2 / 1066 MHz	DDR3 / 1066 MHz	DDR2 / 800 MHz
	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4
	6 / 1	4 / 1	6 / 1	8 / 1	8 / 1	4 / 1	5 / 1	5 / 1
	N / NA	N / NA	Y / 1	Y (bracket) / 1	Y (bracket) / 1	N / NA	Y / 2	Y / 2
	N	N	N	N	N	N	N	N
	2 / 3 / 1	3 / 1 / 1	3 / 1 / 1	3 / 3 / 0	2 / 2 / 1	2 / 3 / 0	2 / 2 / 1	2 / 2 / 1
	CF / x16 / x4	N / x16	N / x16	N / x16	CF / x16 / x4	N / x16	CF / x16 / x4	CF / x16 / x4
	ADI AD1988B / 8 / Y	Realtek ALC888/8/Y	Realtek ALC888 /8/Y	Realtek ALC889 /8/Y	Realtek ALC889A/8/Y	Realtek ALC888 / 8 / Y	Realtek ALC888T/8/Y	Realtek ALC888/8/Y
	Y / Y	N / N	N / N	Y / Y	Y / Y	N / N	N / Y	N / Y
	2 / G+G	1 / G	1 / G	1 / G	1 / G	1 / G	1 / G	1 / G
	N	N	N	N	N	N	N	N
	6 / 1	6 / 1	6 / 1	4 / 1	4 / 1	4 / 1	6 / 1	6 / 1
	Y	N	N	Y	Y	N	Y	Y
	6.50	7.04	6.46	6.75	6.63	7.00	6.75	6.75
	Y / Y / Y	Y / Y / Y	Y / Y / Y	Y / Y / Y	Y / Y / Y	Y / Y / Y	Y / Y / Y	Y / Y / Y
	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y	Y / Y / Y / Y / Y
	1.00~1.9v	upto + 0.787	1.1~1.6v	0.5~ 3.25v	1.8~3.3v	1.525~2.3125	1.525~2.3125	1.525~2.3125
	1.8~3.4v	2 ~ 2.6v	1.85~2.4v	1.8~3.3v	1.8~3.3v	1.8~3.3	1.8~3.3	1.8~3.3
	6 / 1	2 / 1	1 / 1	6 / 1	6 / 1	1 / 1	3 / 1	3 / 1
	3D Mark 2006 + S.T.A.L.K.E.R game	NA	NA	NA	NA	NA	NA	NA
	Liquid cooling kit pipes and connects, LCD Poster	NA	NA	E-SATA Power Cables	E-SATA Power Cables	NA	56.6 Fax Modem, USB & FireWire Brackets	USB & FireWire Brackets
	7536	7521	7508	7522	7528	7512	7093	7012
	6008 / 11918	5820 / 11890	5843 / 12515	5905 / 12520	5933 / 11900	5762 / 12473	5868 / 12974	5728 / 12823
	7158	7194	7171	7170	7153	7160	7200	7152
	8417	8302	8518	8412	8358	8458	8238	8199
	27071 / 18772	26873 / 18607	27156 / 18566	27159 / 18843	27035 / 18542	27149 / 18796	25804 / 18712	25263 / 18383
	162632 / 88103	161199 / 87845	161350 / 87312	162646 / 87868	161287 / 87638	161937 / 87253	150760 / 87737	151283 / 87923
	79 / 8 ms	78 / 8 ms	78 / 8 ms	78 / 8 ms	78 / 8 ms	78 / 8 ms	78 / 8 ms	78 / 8 ms
	5682 / 5693	5447 / 5465	5419 / 5372	5753 / 5736	5682 / 5673	5285 / 5292	5537 / 5539	5427 / 5425
	16959 / 11085	16579 / 11128	17017 / 10242	17078 / 11281	16932 / 11187	16965 / 11044	17313 / 10785	17342 / 10562
	70.5 sec	70.5 sec	69.3 sec	69.3 sec	70.84 sec	70.2 sec	67.48 sec	67.22 sec
	50.46 sec	52.98 sec	54.25 sec	53.64 sec	56.32 sec	55.25 sec	52.82 sec	52.25 sec
	243.1 / 122.3 fps	237.1 / 122.2	245.7 / 123.8 fps	249 / 123.7 fps	240.7 / 122.8 fps	237.5 / 122.3 fps	239.9 / 128.9 fps	237.2 / 126.2 fps
	234.4 / 117.3 fps	230.7 / 117.3 fps	229.9 / 118.1 fps	240 / 118 fps	233.2 / 117.3 fps	228.6 / 117.3 fps	232.1 / 123.2 fps	234.2 / 123.4 fps

Verdict

When we think Gold, we think *outstanding product*. Going by this principle, it'd be easy to see why ASUS' P5B Premium Vista Edition gets top honours. At Rs 14,750, it's not for everyone, though. That's where our Silver winner comes in. At Rs 7400—the MSI P965 Platinum offers good features and build quality, and enough overclocking features to justify the price tag.

BEST BUY
digit
NOVEMBER 2007

Gigabyte GA-G33-DS3R
The best Intel onboard-graphics platform

We don't really recommend spending on a P965 board unless you *must* have the show-off features that the P5B Premium Vista Edition sports. Although this is an excellent chipset, it has been replaced in Intel's product line-up by the P35—a product that, while not markedly better, is definitely more future-proof.
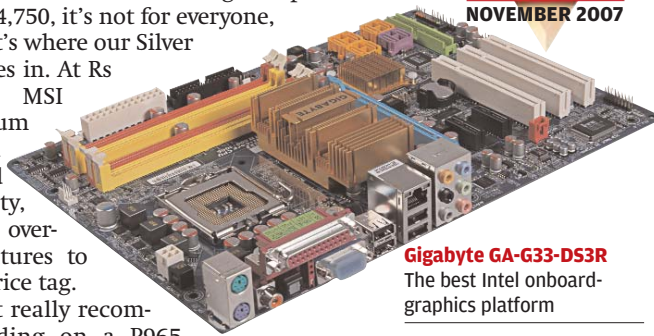
INTEGRATED GRAPHICS PLATFORMS

This category will be important for most—who needs a graphics card when you don't intend on gaming or doing a lot of HD movie-watching, right? We see boards for both Intel and AMD processors here. The players in this arena are more interested in the volume game, and such boards tend to be focused towards value for money rather than features, performance and overclocking—with a few exceptions, of course.

We've got boards based on Intel's latest G33 and G31 platforms, the older G965 platform and ATI's proven 690G. Newcomers were NVIDIA's GeForce 7050 and 7025—two very interesting platforms—and, of course, the older GeForce 6100 platform.

INTEL-BASED
Features

Gigabyte's GA-G33-DS3R is a very well-built and attractive looking board. Even better, we liked the compact (Micro ATX) design on the GA-G33M-S2H. This board also has an HDMI port. Gigabyte has also included Realtek's latest ALC889A codec-based sound solution—the successor the de facto ALC888 codec. It's easy to see the former being pitched as a high-end product with integrated graphics, while the latter—with its reduced BIOS options—gives lesser expandability and smaller size being a home-entertainment product (hence the HDMI).

ECS' P33T-A board was an anomaly. While all the G33 and G31 boards are mated to the ICH9 Southbridge, this motherboard had an older ICH7 Southbridge—the same one on the much older 975X platform—a very negative move.

Abit's Fatal1ty F-190HD is another HDMI port-sporting board based around (surprise, surprise) ATI's 690G platform—which is basically a combination of Radeon x1250 graphics and an SB600 Southbridge. We figure this board is part of an endangered species—what with ATI having been taken over by AMD—which is a pity, simply because choice breeds competition, and Intel and NVIDIA have run out of the latter as far as platforms for Intel processors go. This board, despite bearing the "Fatal1ty" moniker, fails to impress as a hardcore enthusiast product.

Performance

To be honest, there's very little variety in the performance of the Intel-based motherboards—with the exception of the ECS P33T-A, though to be honest, with a Southbridge that is two generations old we expected this board to lag behind—particularly in the storage based tests. Surprisingly, it lagged in the graphics and gaming tests!

Both the Gigabyte boards do prove their mettle here, and both the MSI boards keep them close company.

Verdict

If you want an Intel-based solution, consider the duo from Gigabyte—the GA-G33-DS3R, (Rs 9,500) if you want something fast and feature rich and the GA-G33M-S2H, (Rs 5,950) if you're looking for unbeatable value and HDMI thrown into the kitty. Both these boards are very different beasts despite being from the same stable—the former is an enthusiast solution with greater overclockability, solid state capacitors and an ATX form factor and the latter is more for the cinema buff. These two steal our Gold and Silver awards—the GA-G33-DS3R placing first and its cheaper sibling placing second.

AMD-BASED
Features

ASUS had two offerings—M2A-VM and M2A-VM HDMI. These are basically the same board with one difference—the presence of an HDMI port. Abit's AN-M2HD was a nice offering—micro ATX, a full 4 memory banks, HDMI, and a display solution that supports NVIDIA PureVideo.

Zebronics' ZEB-N61M2 was the old timer in this category—the GeForce 6100 is an older Northbridge, and the nForce 410 Southbridge has been around for some time as well.

Performance

The MSI K9AGM2 (690G) performs quite superbly, taking our X2 6400+ within striking distance of the newer X6800 (although a slight clock advantage is retained by the AMD part). In fact, one look at our CPU scores—especially under PC Mark 2005—will testify to the Gigabyte and MSI boards simply blowing away the other 690G based boards.

▼	Contact Sheet	Motherboards	
Brand	**Company**	**E-mail**	**Web Site**
Abit	Tirupati Enterprises	abhishek@tirupati.net	www.tirupati.net
ASUS	ASUS Technology Pvt. Ltd.	media_india@asus.com	http://in.asus.com
Biostar	Abacus Peripherals Pvt. Ltd.	ajain@abacusperipherals.com	www.abacusperipherals.com
ECS	SES Technologies Limited	poonam.sharma@sesindia.com	www.sesindia.com
Galaxy	Technology And Gadgets	sales@technologyandgadgets.com	www.technologyandgadgets.com
Gigabyte	Gigabyte Technology India Ltd	sales@gigabyte.in	www.gigabyte.com.tw
Jetway	Jetway Information Co. Ltd /	amitp@rptechindia.com	www.jetway.com.tw/jetway/
	Rashi Peripherals Pvt Ltd		www.rptechindia.com /
MSI	Micro-Star International	sanyam@msi-india.com	www.msi-india.com
XFX	Rashi Peripherals Pvt Ltd	amitp@rptechindia.com	www.rptechindia.com
Zebronics	(Zebronics) TopNotch Infotronix	enquiry@zebronics.info	www.zebronics.net

Although NVIDIA's 7050 / 7025-based boards trail behind, we won't be too critical—simply because these chipsets are really new, and we newer drivers should optimise things for better performance. The Abit AN-M2HD and the Galaxy AN68M boards were the only ones to cross the 190 fps mark.

Verdict

With everyone jumping on the Core 2 Duo bandwagon, it seems AMD is left out in the cold for now. However, we've seen a few solid platforms for AMD processors, and these do make viable solutions for those looking for a powerful multimedia or Home Entertainment PC. If you're looking for value, it's hard to ignore the Galaxy AN68M. A spanking new chipset that promises a lot, decent layout and expandability, HDMI connectivity (for home-cinema buffs)—all this at an unbelievable price of Rs 3,300! If you want something with a little more punch, we recommend the MSI K9AGM2 (690G)—priced a little higher at Rs 4,000. It's got support for 8 GB of memory on 4 DIMM's, and HDMI.

Gigabyte's GA GA-MA69G-S3H is our Gold winner for AMD's processors—a great combination of features and performance. The Zebronics ZEB-N61M2 steals silver mainly because of its unbeatable pricing—Rs 2,150.

BEST BUY digit
NOVEMBER 2007
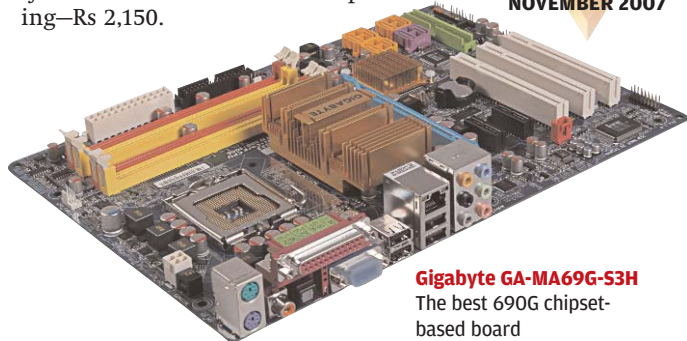
Gigabyte GA-MA69G-S3H
The best 690G chipset-based board

In Retrospect

Going by the steady increase in the number of players (and the number of products), our markets are teeming with options for various kinds of solutions. The enthusiast options—motherboards that come with *everything*—at a price.

Then there are those products aimed at prosumers—who are less discerning than enthusiasts. Home Cinema buffs will also find something from among our plethora of options.

Just when you think, "Hey—couldn't get much better, right?" something new comes out! Intel's new Penryn processors are about to enter the consumer space—and a whole new platform (Intel's X38) with support for an FSB speed of 1600 MHz among a host of other goodies!

NVIDIA has promised a successor to their 680i chipset, we don't even know whether it'll be called the 780i or something else, but we're as excited as the next guy! We've already seen the still shiny P35 become a reliable, powerful platform.

Then there's the AgenaFX / Agena from AMD—the desktop spin off from their workstation processor Barcelona. New processor equals new platform. So much for 2008!

2009 should see the advent of native six- and eight-core processors in the form of AMD's Sandtiger and Intel's Nehalem—both of which should make today's quad-cores look prehistoric. ⊠

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michael_browne@thinkdigit.com

Mash 'em up

We got tired of looking at different sites each day, so we brought all of them together

Bhaskar Sarma

Mash-ups seem to be the latest fad in the crazy world of Web 2.0—people don't want to go all over the Internet for their daily stuff; they want it in one place. Mash-ups are also increasingly used by businesses to manage data and information on their sites. If you thought a mash-up needed a large team to develop and maintain, you couldn't be farther from the truth. With a little patience and a clear head, you can build a mash-up in a jiffy.

You'll need a Web site of your own. You could also create a mash-up on your iGoogle page or use a site like Netvibes (**www.netvibes.com**). IBM has a QEDWiki for primarily business users, while Microsoft's Popfly lets you build a stunning mash-up on its SilverLight platform. We'll go with a Blogger page (**www.blogger.com**)—most people have a blog of their own now, and Blogger's new Customize feature has layout elements for a wide variety of sources like HTML / JavaScript, RSS feeds, pictures, videos and more. No more editing HTML—just drag and drop!

Getting Started

We start with a blank Blogger page (you should be logged in to Blogger). Choose a template with a wide sidebar—you don't want your apps to spill over the boundary of the page. The Customize link at the top right will take you to the Edit Layout page—click on `Add a Page Element` and you'll get a pop-up with options to add polls, pictures, HTML/JavaScript, feeds, logos, a video bar, and more. You can edit the HTML of the page —or do it the easier way.

Choose from Google Gadgets (**www.google.com/ig/directory?synd=open**)—they have an astonishing variety of gadgets tailored for almost everything. Inserting them into your page is simple enough—copy a line of HTML and paste it in Blogger's element holder for HTML / JavaScript. Many of these Gadgets—especially those with eye candy—need Flash to work; install the free Flash player from **www.adobe.com/products/flashplayer/** if you don't have it.

The First Gadget

Adding social networking sites—especially Facebook and Orkut—to your blog is now a breeze. If you're a Facebook junkie, this is for you—a search on the directory will bring up Facebook apps

that let you check your account from within your Blogger page. Select the gadget and click on `Add to your web-page`. You'll get a snapshot of your gadget, with some minor settings like size adjustments and colour schemes. Play around with them till you're satisfied. Other settings are specific to the gadget—in this case, you have options for what to keep in your Facebook gadget.

The settings for a typical Google Gadget

Once you've made your choice, click on `Get the Code` at the bottom. A line of HTML code appears, which you copy and paste into the HTML / JavaScript element holder. Simple.

More Gadgets

After putting in the first gadget, you should be raring to go. For the rest, here are our recommendations:

Orkut: Access to Orkut is quite easy from your page, especially a Google

Get Orkut on your page

site like Blogger. There are no sign-in hassles, and your Orkut profile with full-blown functionality is enabled with this nifty gadget.

IM: Access to IMs (Gtalk, Yahoo! Messenger, MSN Messenger, and more) is quite easy with gadgets available. The Yahoo! Messenger gadget is nothing special, but Google Talk was like the real thing. Tabbed conversations, smileys, the

Chaitanya Surpur
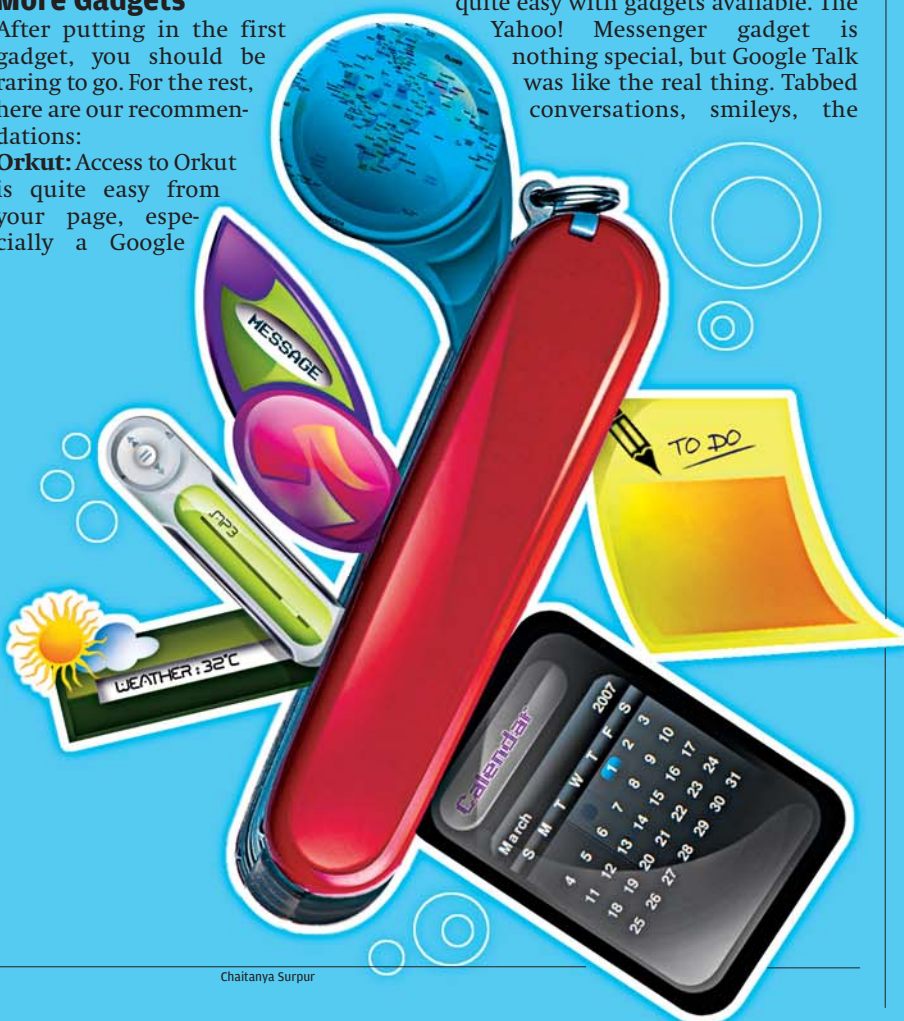
Chat from inside your Web site

ability to hold group chats, calling up contacts—you get all the goodies.
Visitor Map: Find out where your visitors come from, on a Google map. The map uses an API from Clicky (**www.getclicky.com**), a Web analytics service. To

Check your visitor's locations

use this gadget, register your site at Clicky, then go to the Google Gadgets page and get the HTML code. There is a slight bug here—till Clicky gets enough visitor statistics, the map shows the default image.

For lighting up the mood, we put in the English to Yoda speak converter (we love *Star Wars*, and we love the little Jedi master most). Type in any English sentence—"Work is a pain in the neck"—and a few seconds later, up pops up, in Yoda speak: "Pain in the neck work is. Yes, hmmm". (A swear word elicits a scolding.)
Google Maps: Inserting maps, even if you have no experience with code, is very easy with Google maps. To create a custom map, you need to go to Google Maps, select `My Maps`, click on `Create New Map` and start dragging placeholders and drawing lines and shapes on your map. When you're done, click on `Link To This Page` at the top right of the map, and get the HTML code.
Flickr Zeitgeist: This is a small widget to display your photos from Flickr, if you have any uploaded there. Visit

www.flickr.com/fun/ zeitgeist/ to get your HTML code.

Of course, you don't have to settle for what's already there…

Your Own Gadget
Making your own Google gadget is surprisingly easy—you just need to have an idea of what are you going to "gadgetise," and a few clicks later, you've got yourself a brand new gadget. As we've mentioned later, you won't immediately be allowed to put your gadget on your Blogger page, but it's a start.

Start with a site whose contents you want to see in the gadget—we chose **www.thinkdigit.com.** Open **www.dapper.net**, a site that allows you to take content off any page and transform it into a variety of formats like XML, RSS feeds, Google Gadgets, Netvibes Modules, etc. Choose Google gadgets.

When you put in **www.thinkdigit.com** in the address bar, Dapper opens a frame with the site in it. Navigate to the *Game On* section under *Digital Leisure*. Click on `Add to Basket` to add this section to your gadget.

Choose the fields using the Select arrow at the top. The fields that will go in your Dapp are highlighted in yellow. This is a bit tricky, as the yellow patches have a way of getting on unwanted content like ads or links. If you don't select
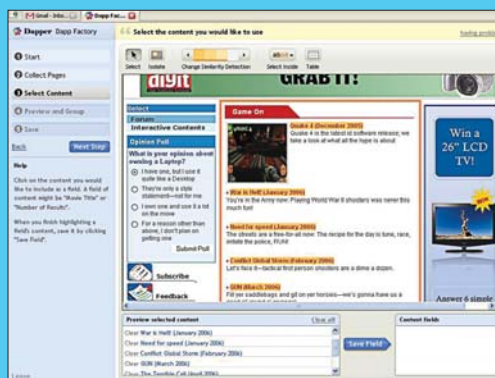
Select the content which you want

well, your Dapp(applications made with Dapper) will be worthless. Give a common name to your group of content—we selected "Game Reviews."
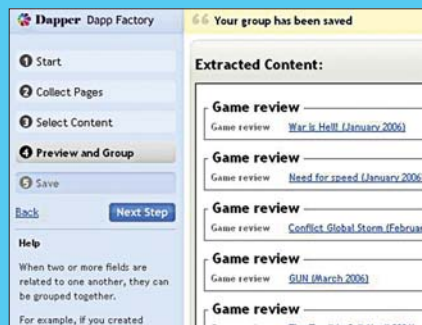
Your selected content, in a list

Click `Next` to view the content that has been selected. Here, we've got a list of the games that have been reviewed in the magazine. This list will now be updated when the site is.

Name your gadget, and get a preview

Your gadget, on your iGoogle page

The final step is saving your Dapp—name, describe and tag it, then click `Save`. If you're unsure of whether your Dapp works right, check the `This is a test Dapp` box—the Dapp will be deleted within 24 hours. Alternatively, if you don't want your Dapp published in Dapper's directory, check the `Make Private` option. After hitting `Save`, you'll get to make some final settings, and also preview your gadget. You can add it to your iGoogle page, or publish it in the iGoogle directory.

Only if (and this is a big if) your gadget gets listed in the Google directory will you be able to add it to your Blogger page. Google takes its own time, so it's best to remain content with adding the gadget to your iGoogle page.

Conclusion
There you go: a basic guide to making your own Web 2.0 mash-up, with a mini primer on Google Gadgets. Go ahead and surf the Google Gadgets directory—there are so many gadgets available, you can have one for every conceivable need.

Making a mash-up (most people define Web 2.0 their own way, so the definition of "Web 2.0 mash-up" varies) is fun, and also makes for a slick site, if tastefully done. ⊠

bhaskar_sarma@thinkdigit.com

HP Compaq 2510p
The Tough Ultraportable

Designed from a pure usability point-of-view, this little baby is built like a tank. The construction is rugged in general, and we liked the sturdiness of the hinges in particular. It's not as flashy-looking as its competitors, but it's sleek, and weighs just 1.29 kg. With an Intel dual-core processor and a decent amount of RAM, while running Windows Vista Business, this laptop packs in enough power to cater to business needs. The processor's and hard drive's focus is on increased battery life.

The 2510p sports a widescreen (WXGA). An ambient light sensor automatically adjusts the screen's brightness.

The keyboard is very comfortable to type on, but the touchpad is a little too smooth. There's also a highly responsive pointer-stick. The keyboard layout is good, and just above the function keys is a line of touch-sensitive cool-blue backlit buttons for functions such as Turning On/Off wireless, Volume control, etc. The 2510p features connectivity in the form of Bluetooth and Wi-Fi as well as Gigabit LAN—and even a legacy modem. It has a PC Card interface, SD memory slot, two USB ports and a FireWire port. You can buy the HP 2400/2500 Ultra-Light Docking Station to add more ports. There's also a D-Sub connector so you can hook it up to a projector.

Security is taken care of by the biometric fingerprint reader and a host of utilities that can encrypt your hard drive and restrict data access to only authorised users. Even theft or removing the hard drive will not expose your data to prying eyes.

There's not much to complain about with the 2510p; a webcam would have been a great value-add. A faster hard drive would have improved performance drastically, while reducing battery life marginally. And remember, this laptop is not made for gaming. With a one-year warranty and HP's great support system, the HP Compaq 2510p is a reasonably good buy.

Specifications

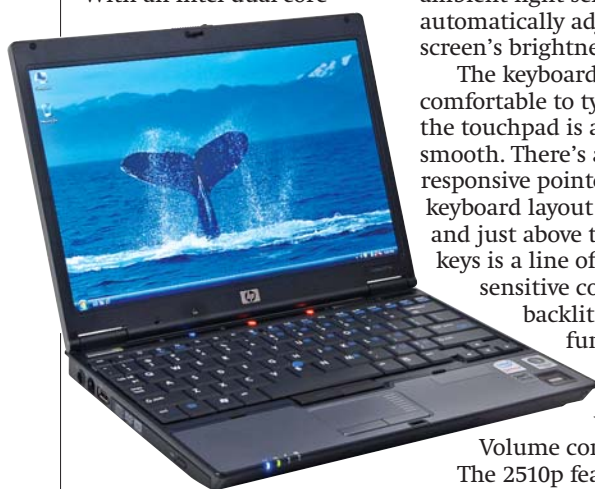Intel Core 2 Duo ULV processor U7600 @ 1.2 GHz; Mobile Intel GM965 chipset; 1 GB 667 MHz DDR2@533 MHz; 80 GB 1.8-inch 4200 rpm PATA hard drive; Intel GMA X3100 graphics with 384 MB shared; DVD-RAM drive; 12.1 inch WXGA anti-glare LCD; Ports: 2 USB, 1 IEEE 1394, Gigabit, RJ-11, D-Sub; Wireless: Intel 802.11a/b/g, Bluetooth 2.0; Dimensions: 282.3(W) x 212.8(D) x 24.7(H) mm; Weight: 1.29 Kg; Battery: 3-cell (28 WHr) high capacity Lithium-Ion

Contact: Hewlett-Packard India
Phone: +91-9819881983
E-mail: abhinaya.deshpande@hp.com
Web site: www.hp.com/in
Price: Rs 89,990 plus taxes

RATINGS	
Features	★★★★☆
Performance	★★★★½
Build Quality	★★★★½
Value for Money	★★★★☆
Overall	★★★★☆

Sandisk Sansa Shaker
Salt 'N' Pepper Cellar This Isn't!

The Shaker is a rather novel concept from Sansa, (and after their audiophile-grade Sansa E2xx series), both a disappointment and a delight. One look at it will delight, but after hearing it perform we were a little disappointed despite the fact that it's supposed to be a fun music player and not a *real* music player!

The Shaker is dressed in funky wear—bright blue and white and looks like a salt dispenser, complete with the holes on top (loudspeaker). It features two 3.5 mm jacks. There are two white bands running around the top and bottom of the player. Both twist left and right—the top one controls the volume, the lower skips tracks. There's a large, receded play/pause button built into the body. Build quality is top class, and a classy aluminium clasp allows it to be belted on.

Sound quality via the 3.5 mm jacks isn't its forte. Music sounds muted across the spectrum. Highs and lows weren't defined at all, while the vocals and mid-range were barely tolerable for someone really into music. If you aren't the discerning type, you could give it a try. The loudspeaker sounds much better though, and actually made tunes bearable.

When we think *Shaker* all we envision is the average urban kid whose mom and dad don't want to buy something with a breakable LCD screen. At Rs 1,899, the Shaker is good enough to introduce your fresh-in-their-teens kids to the world of PMPs; others might want to give it a pass.

Specifications

Capacity: 512 MB Flash memory, SD expandable slot; **Music formats:** AAC, MP3, WAV; Dual 3.5 mm audio jacks; Lanyard with aluminium ring

Contact: Rashi Peripherals Pvt Ltd
Phone: +91-22-67090909
E-mail: amitp@rptechindia.com
Web site: www.sandisk.com
Price: Rs 1,899

RATINGS	
Feature	★★★½
Performance	★★
Value for Money	★★★
Build Quality	★★★★½
Overall	★★★½

Leadtek WinFast DTV1800 H
Two Thumbs Up

The WinFast DTV1800 H is a hybrid PCI TV Tuner capable of receiving analogue as well as terrestrial digital (DVB-T) transmissions, which are currently available only in a few metros. The Conexant CX23880-39 + Zarlink 10353 chipset enables it to decode stereo audio. The audio cable connects internally to the PC-audio solutions, so no more looping cables collecting cobwebs at the back of your PC.

The front-end is provided by the excellent WinFast PVR2 that features Scheduling and TimeShifting, as well as recording in WMV, Transport Stream, as well as MPEG-1/2 (and no additional activation or purchase is required for its use). It remains perched quietly in the system tray and springs into action when launched using the icon or the full-function remote. The PVR2 even lets you use two TV-Tuners simultaneously, so you can either watch two TV channels, watch one and record the other, or watch TV and use the second TV-Tuner for surveillance.

It detects even the weakest of cable TV and FM radio channels. Video as well as audio quality is top-notch.

RATINGS

Performance	★★★★⯪
Features	★★★★⯪
Ease of use	★★★★⯪
Value for Money	★★★★☆
Overall	★★★★⯪

You can force the aspect ratio to either 4:3 or 16:9—a delight for wide-screen users.

To sum it up, the WinFast DTV1800 H gives you the best of both worlds, and we give it a double thumbs-up—no complaints.

Specifications

Chipset: Conexant 23880-39 + Zarlink 10353; Tuner: Xceive 3018 TV/FM Stereo; TV reception: Analogue, DVB-T; Video standards: PAL, NTSC, SECAM; Software: WinFast PVR2; Video capture formats: WMV, MPEG-1/2, Transport Stream; Remote control; Input ports: Coaxial, S-Video

Contact: **TopNotch Infotronix**
Phone: **+91-44-26616201**
E-mail: **enquiry@zebronics.info**
Web site: **www.leadtek.com**
Price: **Rs 3,900**

LG Black Label Series KE970 "Shine"
If only looks could matter

Not all manufacturers are innovators of style. Ever since it launched the Chocolate a year ago, LG has been on to something, and that something is its new classy mobile line-up, of which the Black Label Series KE970 (a.k.a. Shine) is what we got to lay our hands on.

Encased in a full-metallic body with a rich brush finish, the KE970 is as rugged as a tank. It is wider than most mobiles. The highlight here is its 2.2-inch LCD, which not only looks good while it is on, but doubles up as a mirror when not lit up!

The keys offer good tactile feedback. LG has introduced the rolling scroll button for the first time, but we found it rather inconvenient: it is very frustrating to keep scrolling through long lists and Web pages. Probably because of the scroller, the UI is vertical menu-based rather than icon-based—rather unintuitive.

The Shine has an excellent 2.0 MP camera with autofocus. It is certified by Schneider Kreuznach, the German company that certifies photo-optics. The camera does live up to its hype, and is one of the best we have seen thus far. You can choose from a host of different resolutions and there are five white balance settings, along with a few artistic effects. The camera is a bit sluggish, though.

The media player is decent. Bluetooth 1.2 with A2DP support—wirefree stereo music on a supported headset. There is support to view most common office formats, but the internal memory is just 50 MB, and you'll need to use the microSD slot to add more—irritatingly, it's not hot-swappable. Lost Mobile Track (LMT) function is inbuilt to allow you to trace the phone in case you lose it.

We found the call quality decent, the KE970 is weaker at signal reception than most phones we have seen. You can't make a call or even send a message when the phone is connected to the PC.

To sum it up, the LG Black Label KE970 is über-high on style, but there are certain issues that need to be addressed. The price tag of Rs 19,000 is a little too much—there are better deals out there.

Specifications

GSM 900/GSM 1800/GSM 1900; Display: 2.2-inch with mirror finish; 240 x 320; 256K colours; Camera: 2.0 MP, autofocus, flash; Memory: 50 MB internal, microSD; Connectivity: GPRS, EDGE, Bluetooth 1.2 with A2DP, USB; Weight: 118 g; Dimensions: 99.8 (H) x 50.6 (W) x 13.8 (D) mm; Accessories: Charger, USB cable, stereo handsfree, lanyard

RATINGS

Feature	★★★☆☆
Performance	★★★★⯪
Build Quality	★★★★⯪
Value for Money	★★★⯪☆
Overall	★★★⯪☆

Contact: **LG Electronics India P. Ltd**
Phone: **+91-9899302514**
E-mail: **viveksingh@lgindia.com**
Web site: **www.lgezbuy.com**
Price: **Rs 12,990**

Sennheiser PXC 450
Noise out, sound in!

The PXC 450 is the latest from Sennheiser's travel line of headphones. "Portable" and "circumaural" generally don't see eye to eye due to bulk and issues with anchoring them to your head. To remedy this, the PXC 450 has a very firm headband; thankfully, it's padded and well-designed enough to not squash your ears.

The patented active noise cancellation technology called NoiseGard 2.0 makes its presence felt. This uses a combination of improved circuitry (over the previous version of NoiseGard), and better microphones (that detect unwanted outside noise). Their noise elimination algorithms have also seen an overhaul. Using NoiseGard will require a single AAA battery. Remove the battery and the PXC 450 can function as a regular, wired headphone set.

There's a talk-through function inbuilt. According to Sennheiser, two microphones (one on each cup) pick up external sounds in the immediate vicinity such as someone trying to talk to you. We tested this feature, but it didn't work too well, and the reviewer had to take off the headphones to hear what the other person was saying. Nevertheless the PXC 450 isolates noise beautifully even with NoiseGard off.

Bass is quite a mixed bag: sometimes it's there and goes quite low, on other tracks it's not as pronounced as the mids and highs. We'd have liked for these phones to be a little kinder to vocals and mids—which, although forward (not overly so), lack finer detail. (At this point we're comparing them to audiophile-grade cans.)

Their quick response means the PXC 450 is equally suited for fast heavy metal music as to country or soft rock genres. They're rather easy to drive—so using them with your iPod while aboard a noisy local or bus is a possibility.

These cans need to be used for around a hundred hours before they actually sound good (burned in, if you will). We found a full 35 to 40 per cent difference in quality and bass reproduction, and highs became a little more noticeable. They're still improving after the 120 odd hours that we've spent with them, so don't go by the way a brand new pair sounds.

At Rs 29,900, the PXC 450 is far from affordable. Even if you can foot the bill, you will still need to accept that these aren't the audiophile-grade cans that the price suggests. That said, they're head and shoulder above most other headphones available in India, and definitely one of the best noise-cancelling sets we've come across (including the Bose Companion 5). Of course they're in a price league of their own!

Specifications
8 to 28000 Hz; 150 ohms; Sound Pressure Level (SPL): 108 dB; Cable: 1.4 m; Weight: 240g; Accessories: transport case, 6.3 mm stereo adapter

RATINGS	
Features	★★★★○
Performance	★★★○○
Value for Money	★★○○○
Comfort	★★★○○
Overall	★★★○○

Contact: **Sennheiser Electronics India Pvt Ltd**
Phone: **+91-124-4187815**
E-mail: **kapil.gulati@ sennheiserindia.com**
Web site: **www.sennheiserindia.com**
Price: **Rs 29,900**

Buffalo DriveStation TurboUSB 250GB (HD-HS250U2)
Turbocharged Transfers

The TurboUSB feature incorporated on the Buffalo HD-HS250U2 external hard drive promises a 37 per cent improvement in transfer speeds over regular PATA-based external USB drives.

The drive is well built with matte-black plastic edges. The bottom half of the silver coloured side panel and the top panel have pores to aid air circulation. Additionally, you can improve the drive's cooling by clipping the optional HD-HSU2 fan to the top of the drive.

The drive automatically powers itself down when it detects a disconnection from the host PC, or when the PC shuts down. It enters a state of hibernation when inactive for a preset amount of time. The bundled Secure Lock Ware allows AES 256/128 encryption of important data, preventing unauthorised access. Then, Memeo AutoBackup is a feature-rich and simple-to-use software—it allows you to back up to a shared network device, network folder, iPod, Memeo Internet drive, or Flash drive.

The tests were performed in both normal and TurboUSB mode. In the latter, the drive outper-formed the Digit Best Buy June 2007 Western Digital MyBook Essential (500 GB). Switching between Turbo and normal mode is easy using the TurboUSB utility.

The drive is definitely not the cheapest amongst the 250 GB drives available, though the performance in TurboUSB mode justifies the cost to an extent. Power management, along with the option for additional cooling, makes it a good purchase if you're looking for a dedicated external drive.

RATINGS	
Features	★★★★◗
Performance	★★★★◗
Build Quality	★★★○○
Value for Money	★★○○○
Overall	★★★○○

Specifications
7200 rpm SATA; USB 2.0; TurboUSB; Dimensions: 4.6 (W) x 16.3 (D) x 20(H) cm; Weight: 6.2 kg

Contact: **Buffalo Inc.**
Phone: **+91-11-41436751**
E-mail: **csbuffalo @adventelectronics.com**
Web site: **www.buffalotech.com**
Price: **Rs 7,800**

Brother MFC-5460CN
The Affordable Network MFD

Print, scan, fax, copy and get photo prints all at a great price—seem impossible? Well, the Brother MFC-5460CN seems to be what you are looking for—at least at first look. Like all Brother MFDs, this one sports a no-nonsense, office look, with rugged build. It is quite small. At the front is a two-line, backlit LCD indicator that reports a lot of data and also lets you access the control panel menu. The input paper tray can accommodate 100 pages—just enough for a small to medium office—and the 35-page ADF tray is foldable.

The printer sports a resolution of 6000 x 1200 dpi—fairly high. There are four colour cartridges, and access to these is made easy by means of a door at the front of the unit. The flatbed scanner can scan legal-size documents. The printer supports most popular memory formats and it even

has PictBridge.

Connectivity is via USB and a network interface, but you will need to weave the wires through the provided channel into the heart of the device. The advantage: no accidental disconnections; disadvantage: it's irritating, and wires may not last long due to all the twisting.

The inbuilt 33.6 kbps fax can store up to 400 pages and is capable of broadcasting to up to 150 locations. The phonebook memory is 100 numbers.

Printing is slow; the printer took half a minute to print a simple text document in normal mode, and it took over a minute to print the same in best mode. Print quality is decent and sharp. There *is* some amount of graininess in photo prints, but it's good enough for the average home user. The copier does an excellent job.

The software bundle

consists of the MFL-Pro Suite (a control centre of sorts), PaperPort SE with OCR (a definite plus), and even Presto! PageManager OCR for Mac users.

At its price, we can say this is a good buy, if you don't mind waiting a bit for the print.

Specifications
Printer resolution: 6000 x 1200 dpi; Printing technology: thermal inkjet; Number of cartridges: 4; Scanner resolution (optical): 2400 x 1200 dpi; Input paper tray capacity: 100 sheets; ADF capacity: 35 sheets; Memory slots: CF, MS, MS Pro, SD, MMC, xD Picture Card; I/O ports: USB, RJ-45; Fax memory: 400 pages; Auto-dial: 100; Broadcast locations: 150; Weight: 9 kg; Dimensions: 44 (W) x 39.5 (D) x 22.6 (H) cm

RATINGS	
Features	★★★★⯪
Performance	★★★★⯪
Ease of use	★★★★◯
Value for Money	★★★★◯
Overall	★★★★◯

Contact: **Brother International (India) Pvt Ltd**
Phone: **+91-22-40988900**
E-mail: **customercare@brother.in**
Web site: **www.brother.in**
Price: **Rs 13,500**

ViewSonic PJ258D
Ouch—smoking hot!

ViewSonic is just one of the many brands trying to push projectors into the home theatre market as good replacements for large TVs. The design of the PJ258D is great—it's compact and has a jet black glossy piano finish which makes it stand out—and which also makes it a fingerprint magnet.

Screen quality is pretty decent—quite sharp, and zooming only affects it a little. The display turns out very bright, and is very prominent even in a well lit room. Text is readable, but the best results are achieved during image and movie viewing—Thus making it good for multimedia purposes.

The remote control is small and moulded to fit the average hand well. The

buttons are soft and easy to use. IR ports have been positioned on the front as well as at the back, so you don't have to plan where you'll stand.

You can connect an iPod to the projector to watch your favourite movies on the big screen. The standard inputs are VGA, S-Video, Composite, and a standard analogue audio in. The USB port can be used to upgrade the firmware.

Heating, as with all projectors, still remains an issue. The fan spews out

hot air continuously from its side, but the ViewSonic PJ258D still gets awfully hot even after just 15 minutes of use. The stand for raising the projectors front is a little flimsy.

The manual is very basic and has information on the parts of the project and how it's supposed to be set up. A large pouch is supplied as well.

At a price of Rs 70,000, the ViewSonic PJ258D is reasonably priced and offers good performance. Also, it's cheaper than buying an LCD or Plasma TV with a comparable viewing area.

The iPod docking facility might attract a few users, but the heat it generates is definitely a concern if you plan on using it for many hours at a stretch.

Specifications
Size: 40-inch to 300-inch (diagonal), Pixel format: 1024 x 768, Dimensions: 11.3x7.5x3.5 inches, Lamp: 2000 hours (normal), Contrast ratio: 2000:1.

Contact: **Redington (India) Limited**
Phone: **+91-9380303950**
E-mail: **hemachandran.m@ redington.co.in**
Web site: **http://ap.viewsonic.com/in**
Price: **Rs 70,000**

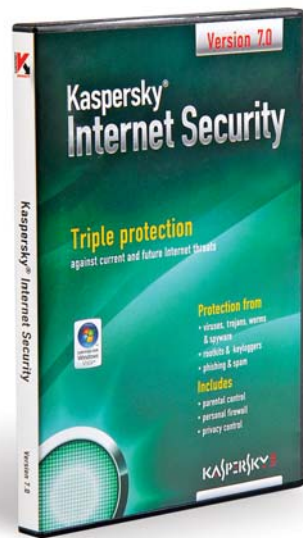| RATINGS	
Features	★★★★⯪
Performance	★★★★⯪
Build Quality	★★★★★
Value for Money	★★★◯◯
Overall	★★★★⯪

Kaspersky Internet Security 7.0
The Big Daddy Of Internet Security Suites

Kaspersky is another one of the many anti-virus makers that's gone the complete Internet security system way—not a bad thing. It's known to be a resource hog, so we checked if anything had improved with this edition.

The suite takes care of all your security worries—files, mail, system network security, etc. All the basic controls for the components can be accessed from the main two-pane layout window. Modifying settings means you go to another window which houses all the settings for the components, and there are plenty of them.

The core anti-virus feature is standard and allows you to scan files and folders along with boot sectors, Registry, memory, startup programs, etc. The Anti-spam has a nifty training feature that learns by looking at mails in your mailbox through a Wizard to provide more accurate spam protection. The firewall monitors for incoming and outgoing threats and notifies you immediately. Any attacks targeted at your computer can be set to have the attacker's machine blocked for a set period of time. The firewall also takes care of the blocking of ad banners and pop-ups from Web sites as well. The parental control is useful in not only stopping access to inappropriate sites, but also in setting limitations on time spent at the computer and on the Internet. User accounts on Windows can be set to Parent, Teenager, or Child and by default, all users are set to Child.

Strictness of all the features can be adjusted using a slider. At the same time, manual changes can be made. This is especially useful for spam filtering, parental control and the firewall. Heuristic scanning is available in most of the modules, but not enabled in all of them by default.

The help file doesn't carry any screenshots, but the explanation is adequate and easy to understand.

Kaspersky's Internet Security Suite is a pretty good choice for anyone looking for a complete security solution—it's right up there with the best security suites money can buy. There are no missing features, and everything is implemented well. New users might be a little confused by all the terms and huge list of options, though.

RATINGS

Features	★★★★⯪
Performance	★★★★☆
Ease of use	★★★★☆
Value for Money	★★★☆☆
Overall	★★★★☆

Web site: **www.kaspersky.com**
Price : **$59.95 (Rs 2,400) (One year)**

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on Digit
CopyToDVD 4
A non-deviated CD/DVD burning app

Nero has always been the favourite choice in CD/DVD burning software, and is used by almost everyone today. VSO Software's CopyToDVD 4 just might be able to change that. CopyToDVD 4 is elegant and straightforward in its approach. The Welcome window doesn't look all that great, but it does its job of guiding you through.

The most popular application is the CopyToDVD Manager, which is the Nero Burning ROM equivalent. The interface is simple, with two panes providing some help, and there's the main project window and the file browser window. The Wizard panes can be disabled. To make things more fun, a large collection of themes is provided, each of them tasteful and unique.

Burning audio CDs is no problem—the software handles almost all audio formats. Burning video DVDs or CDs is a different story, however. Conversion to DVD means you might need to get VSO's other software—ConvertXtoDVD. This isn't free. Non-advanced users will have to go through the trouble of converting videos to suitable formats using third-party applications before burning them to CDs or DVDs.

You can choose to schedule burning tasks, which can be useful in backing up data, say every day or every week.
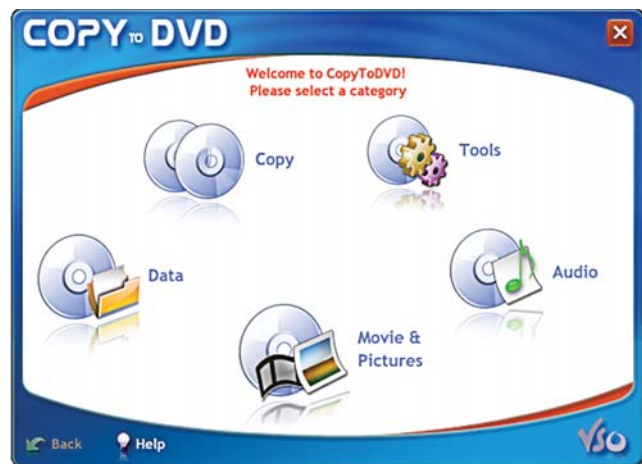
The software is light and bloat-free—20 MB memory consumption most of the time. There is no help file, only a link to the manual when you look for Help.

The price tag of Rs 1,200 is definitely attractive. This 10 MB software actually makes good sense when the latest Nero 8 is now nearing a gigabyte in size. CopyToDVD 4 does what most of us need, and not much more. It is great for people who keep backing up data very often—along with an occasional audio and video CD.

RATINGS

Features	★★★★⯪
Performance	★★★★☆
Ease of use	★★★★☆
Value for Money	★★★★⯪
Overall	★★★★☆

Web site: **VSO Software**
Phone: **+33-5-62160223**
E-mail: **annelise@vso-software.fr**
Web site: **www.vso-software.fr**
Price: **$29.99 (Rs 1,200)**

CAD-KAS PDF Editor 2.6
Tricky!

The need for a PDF Editor usually means you end up buying a copy of Adobe Acrobat. There are a few paid applications to do the same task. CAD-KAS's PDF Editor 2.4 is one such application among a few other emerging ones.

The interface is modular; it allows you to add and remove or even move panels around. It is a little cluttered, with the top end of the window taken up by the two toolbars and the tab bar, which are used to do the majority of the tasks—opening, editing, exporting, etc. Although looks aren't a priority in software such as this, six menu colour schemes have been included as a way to improve the cluttered UI.

One can change pretty much everything in an existing PDF file. Text, images, and even complete pages can be edited and moved about. New additions can be made easily in the same manner. Images in PDFs can be edited using the inbuilt image editor—which looks like MS Paint, but is a lot more advanced in features. A scanner can be used to add new pages. Bookmarks can be set, and existing ones deleted if required.

CAD-KAS PDF Editor allows you to save PDF files in different PDF versions, and also encrypt and protect them from being edited or even viewed if required. One of the missing features is the ability to export a Web page into the PDF format.

Exporting to Word files and text files is supported, though.

The way you use the software is a little different from what you're used to. You need to first select the tool and then select the text or image that you're trying to alter. Double-clicking doesn't enable any kind of editing mode. There is no live preview of all the tasks done—on images for example. Users will take a while to get used to all this. The help file has sketchy documentation with the most basic explanations, and contains just a few screenshots.

CAD-KAS PDF Editor skimps on some of the features Acrobat gives you, but it is way cheaper—just $79. Ignore the tiny missing features, and it's a great tool for anyone who needs to create documentation or distribute important documents.

RATINGS	
Features	★★★★◐
Performance	★★★◗
Ease of use	★★★◗
Value for Money	★★★★
Overall	★★★◗

Web site: **www.cadkas.com**
Price: **$79 (Rs 3,200)**

ACDSee 2 Pro
Lightroom's new competitor

ACDSee is an image viewer that's been well known since the days of IrfanView. ACDSee had quite a few followers for its superior features back then, but IrfanView was generally known more for being freeware. ACDSee 2 Pro has moved from being just an image viewer. This new version boasts of great photo handling features for the professional photographer.

The first thing ACDSee 2 Pro does is catalogue all your images when you first run it. The interface is surrounded by sidebars, leaving only a small area to actually view images and the thumbnails.

Photos are sorted by time and can be viewed through the Calendar view. The other useful filtering feature is the Organise sidebar, which allows you to display photos from only a particular camera. A quick preview appears when you hover the pointer over an image. You can enter image editing mode by double-clicking on any of the photos. ACDSee 2 Pro even loads videos; you can not only view them, but also convert them using the codecs on your machine.

Images and videos can even be burnt onto CD and DVD. Wizards are available to create video CDs as well. Other than that, you can even export your photos as HTML albums, PDF, or PowerPoint presentations.

Memory consumption was well under 30 MB while browsing images, and only spiked by a few (5 to 10) MB while opening images.

Other than its clumsy interface, ACDSee 2 Pro seems a nice software, until you get to know about the price tag—$129.99. It's still much cheaper than Adobe Lightroom, which is more than twice its price. It has quite a few features that can be compared to those of Lightroom, but it doesn't match its simplicity.

People looking for image viewers can stick to free ones like IrfanView, as ACDSee 2 Pro has gone far beyond that. Users who can't afford Lightroom might want to consider ACDSee 2 Pro.

RATINGS	
Features	★★★★◐
Performance	★★★◗
Ease of use	★★★
Value for Money	★★◗
Overall	★★★

Web site: **www.acdsee.com**
Price: **$129.99 (Rs 5,200)**

Tips & Tricks

SECRETS THAT KEEP YOU AHEAD IN THE RACE

WINDOWS VISTA

Adding Desktop Icons And Customising Them

The only icons on the desktop you will find after a clean install of Vista is that of the Recycle Bin. We love our desktops, and it's one of the quickest ways to access programs. To get icons of the other necessary programs in Vista like the Computer and Network, right-click on the desktop and select `Personalize`. Click on `Change desktop icons` in the left pane. Check the boxes for the icons that you require on the desktop. Click `OK`.
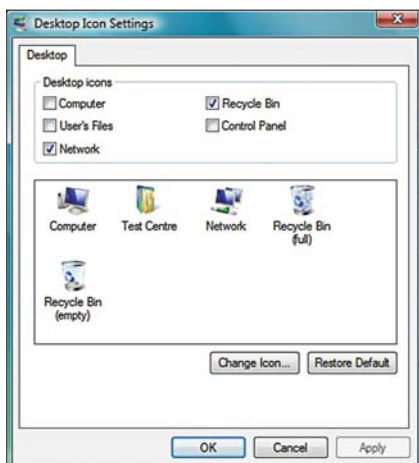
Necessary desktop icons can be set to be displayed on the desktop

The same window also allows you to set custom icons for each item. Click on the icon that needs to be changed and click the Change Icon button. Select the icon of your choice and click OK.

Disabling Folders And Links In The Start Menu

The Vista Start Menu has links to almost everything: Music, Games, Pictures, Documents, etc. You may not need all of these, or you may need to add some more shortcuts. To remove these links, right-click on the taskbar and click on `Properties`. Click on the `Start Menu` tab. Here you can choose to set the Start Menu to look like older Windows versions, you can choose to select the Classic Start menu by clicking the radio box. To remove the unnecessary items, click on `Customize` next to Start menu. To disable the links, check the radio box—Don't display this item for the items you want removed. Click `OK` when done.

Changing Power Button Characteristics

Vista has this useful option of allowing the user to choose the function that the Power button on your computer performs. Go to `Start > Control Panel` and (if you're using the Classic View) double-click on `Power Options > Choose what the power button does`. To do this from the standard Control Panel view, go to `System and Maintenance > Power Options > Choose what the power button does`. Once you've got here, you will find that the options are disabled by default, so click on `Change settings that are currently unavailable`. Click on the dropdown for the Power button settings. Choose from Sleep, Hibernate and Shut down. Click `Save Changes` when you're done.

Accessing The File Menu

One of the characteristics of Vista is that there might not be any File menu in some of the applications such as Windows Explorer for example. At any time to access this menu, press `[Alt]`. To permanently enable the menus, open Windows Explorer. Go to `Organize > Folder and Search Options`. Click on the `View` tab and check the box for `Always show menus`. Click OK.
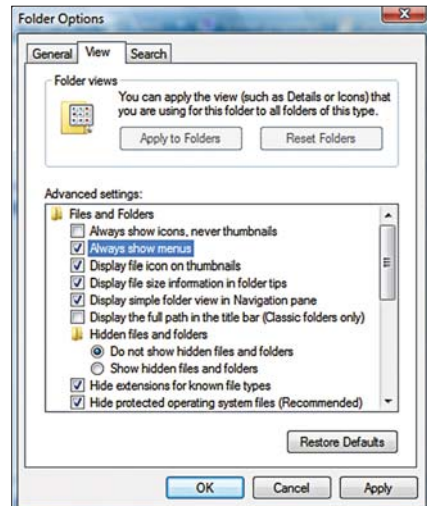
Pressing Alt shows the File menu which isn't displayed on Vista by default

Search The Internet Quickly

Microsoft has implemented the search bar within the Start Menu in Windows Vista. Its main purpose is to access files and programs quickly but it can be used to search the Internet as well. Click on the Start button or press the Windows key on your keyboard. Enter the keywords in the search field. Click on Search the Internet to use the default search engine (Live Search). In Windows Explorer, the search field normally searches the local drive. Pressing `[Shift] + [Enter]` after entering the keyword will open up a new browser window with results of the search in the default search engine.

Adding New Search Engines To The List

You just learnt how to use the Start Menu to search the Net. You can also change the default search engine Vista uses. To do this, start Internet Explorer. Click on the dropdown in the Search field and click Find More Providers. A page should load with a list of some search engines. Click on the search engine you want to use. A confirmation window will pop up. Click Add Provider. If you want to make it your default search engine, check the "Make this my default search provider" box. Click OK. Now all Internet searches done by you

will be handled by the new default search engine.

Automating Drive Defragging Sessions

Defragging is a must. Vista has an inbuilt scheduling feature that allows you to set when you want your drives to
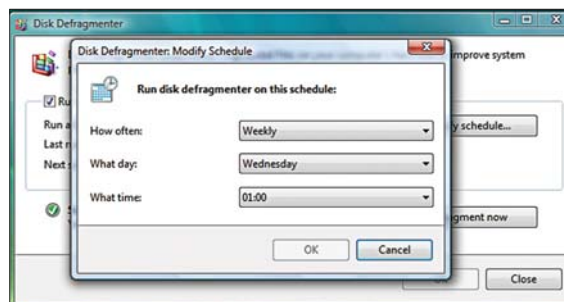

Users can now set when they want their system to be defragged

be defragged. Start Disk Defragmenter. Click on `Modify Schedule` and select when you want the defragging to take place. You can set the frequency, the day and time for the defragment process.

Turn Off Unnecessary Features

Vista comes bundled with a whole lot of features you don't always need. These can be turned off to save resources and speed up the computer a
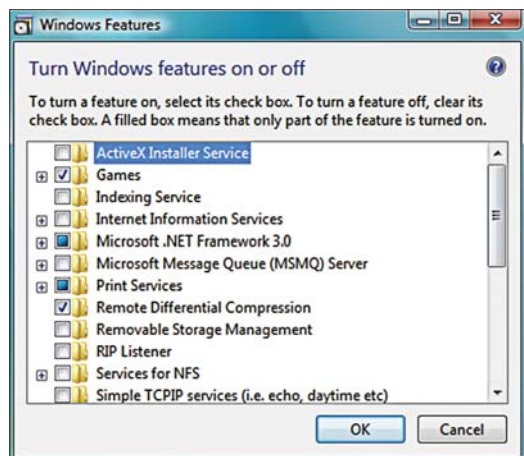
Disabling unnecessary Vista features can save space and resources

bit. Go to `Start > Control Panel > Programs > Turn Windows Features on or off`. A list of installed components will be displayed and the ones not required like Tablet PC Optional Components and Fax and Scan can be removed. Uncheck the boxes for these components and click `OK`.

An Advanced Right-click Menu

The right-click is the quickest way to access and work with files. The Vista right-click menu has a few more

options that are hidden away. To be able to use these, hold down [Shift] when right-clicking. If you do this to a folder, you can launch a command prompt at that location. You will now be able to copy the path of a file or a folder using that menu much quicker than usual.

Removing Vista And Its Boot Loader

If you have Vista and XP in dual-boot and want to get rid of Vista, its boot loader is an obstacle. To get rid of Vista, insert your Windows XP CD and boot from it. Remember to set your first boot device as your CD/DVD drive. Press a key when it tells you to during boot up. When prompted, press [R] to load the Recovery console. Confirm your Windows installation by entering the number. Enter your Administrator password at the prompt. On the prompt, type `fixmbr` and then type `fixboot`.

Reboot and you should be able to boot into Windows XP. Make sure you have backed up all critical files. Then format the partition on which Vista was installed to clear out Vista.

Another way to do this is to insert your Windows Vista CD and boot into Windows XP as usual. Go to `Start > Run`, type `X:\boot\bootsec.exe /nt52 ALL /force`. (Replace X with your CD/DVD drive letter). Reboot and format the Vista partition.

Using Parental Control

Not only can parental control in Vista safeguard your children from inappropriate content, it can also regulate the way they use the computer. Go to `Start > Control Panel > User Accounts and Family Safety` and click on `Set up parental controls`.

You can create a new account for your children by clicking on `Create a new user account` or just choose an existing account. Here, click `On, enforce current settings`. Other setting that you will find here are time limits, and program, Internet and game access restrictions.

Recently Opened Items

As in Windows XP, Vista has a small list that shows all files that were opened recently. By default, the value is set to 15. This number can be changed through a registry tweak. Start registry editor (`Start > Run > regedit`). Browse to `HKEY_CURRENT_USER\ Software\Microsoft\Windows\Curr entVersion\Policies\Explorer`. Here, right-click in the right pane and create a new 32-bit DWORD called `MaxRecentDocs`. Double-click on the entry and give it a Decimal type value of how many ever entries you want in the recently opened file list. Reboot when you're done and the changes will be applied.

If you do not want to have a list of recently opened files at all, the easier way is to right-click on the taskbar and click on Properties. Click on the Start Menu tab

Useful Shortcuts

Bring gadgets sidebar into focus	[Windows] + [Spacebar]
Cycle between gadgets	[Windows] + [G]
Launch nth Quicklaunch application	[Windows] + [Application number in Quicklaunch]
Cycle between 3D objects	[Windows] + [Tab]
Cycle through programs in taskbar	[Windows] + [T]
Quickly viewing file details in Explorer	[Ctrl] + [Mouse scroll]
Show all subfolders under a folder	[Num Lock] + [*]

and uncheck the "Store and display a list of recently opened files" box.

Tweaking Indexing

If you set Vista to index all files on your drive, this can take quite a while. Chances are, you will not be searching for INI files in the `C:\Windows\system32` anytime soon. You can speed up the process by selecting only the most important locations to be indexed. Get to the Indexing Options by going to `Start > Control Panel > System` and `Maintenance > Indexing Options`. Now, go to `Modify > Show all locations`. Here you can select which folders you want indexed. Clicking on Advanced in the Indexing Options window will let you set filters for file types as well.

ADOBE FLASH CS3

The latest version of Adobe Flash is part of the CS3 badge. It's got a new look and we're bringing you a whole bunch of tweaks for Flash novices.

Customize Your Toolbars

Toolbars are the quickest way to access tools, but Flash has so many tools that it's not possible to have all of them

Illustrations **Harsho Mohan Chattoraj**

visible together. Adobe's products are notorious for having tools with sub-tools hidden in them. These can be accessed by holding down the left-click on a particular tool in the toolbar. These tools usually have a small tag on the
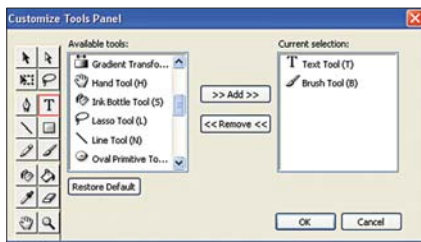
Flash CS3 toolbars can be modified to suite your style of working

right-bottom of the icon as an indicator.

Adobe Flash CS3 allows you to add custom sub-tools to any existing tool. Just click on `Edit > Edit Tools Panel` and select the tool that you want to add the sub-tool to. Choose one from the list of available tools and click Add and then click OK when done. You can also remove sub-tools that may have come by default with Flash CS3 if you want to.

Onion Mode
The Onion mode in Flash is kind of like using the transparent sheet paper used by animators before computers came along. It allows you to get a reference of previous frames so as to be able to plot changes in the frames accurately. The Onion mode can be enabled by clicking on the Onion Skin button at the bottom of the timeline window. If you just want the outlines of the objects to be shown, then click on the Onion Skin Outlines button which is to the right of the Onion Skin button.

Tweak Compression Settings
While working on Flash, you can import objects that weren't designed in Flash, such as images or videos. This can add to file sizes in Flash animations though. You can access compression settings by going to `File > Publish Settings > Flash`. You can modify the JPEG quality and the audio quality here. Other ways of getting smaller Flash file sizes is to set fairly low frame rates if your animation has no fast motions.
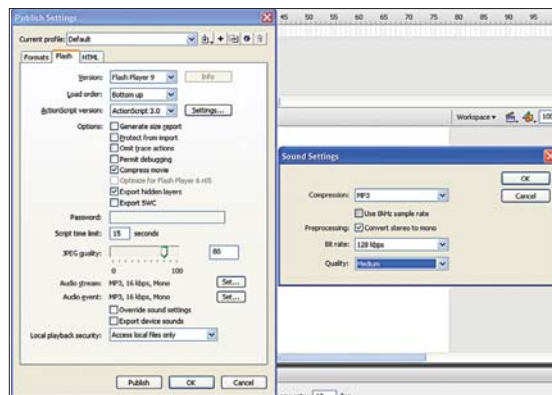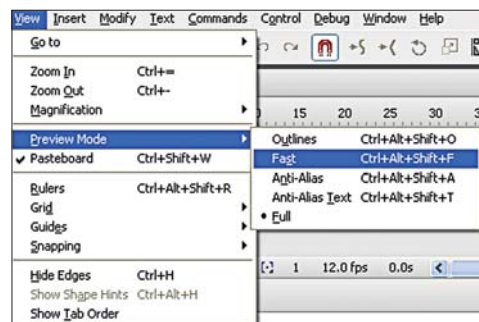

Compression settings for audio and images can be modified as per the needs

Better Performance
The preview feature will tell you how the project is coming along. Depending on the number of objects and layers, the performance of the preview can suffer and you might get really low frame rates. Flash gives you

Quality can be sacrificed for better performance during previews

the option to choose the quality of the preview too. Go to `View > Preview Mode` and choose from one of the modes listed there.

Quick Hide Toolbars
Like every other advanced graphics designing tool, Flash CS3 too has toolbars which eat up a lot of valuable workspace. Depending on the resolution of your monitor, you might end up with very little working space.

To get more space you can disable the toolbars by pressing `[ F4 ]`. Pressing `[ F4 ]` again will bring back the toolbars. The CS3 family of products also have toolbars that can be made more compact by clicking on the arrows at the title of each toolbar.

The Pen Tool
You might think that any freehand drawings done using the Pencil or Brush tool can't be edited easily. Flash is much more flexible than that. Clicking the pen tool displays the path for the freehand drawing and you can in fact add, remove and move control points in it. When you use the Eraser, new control points are automatically created to form a new modified shape.

Animations And Keyframes
Animations in 3D or 2D are made up of a sequence of keyframes, each with objects in them. Flash, like other animation packages, works in the same manner, and creating animations means you need to create keyframes wherever there's some kind of significant change made. To create a keyframe, right-click in the time line and click on `Insert keyframe`.

Making Better Use Of The Timeline Window
The timeline plays an important part in helping you keep track of everything going on in an animation. It allows you to jump to different positions and make changes to the animation. It looks rather simple but there are different faces to it. Click on the right top icon of the timeline window. Here, you can change the position of the window and the size of its contents. The most useful feature is evident when you choose the Preview mode. The timeline window now shows a frame-by-frame preview instead of just keyframes.
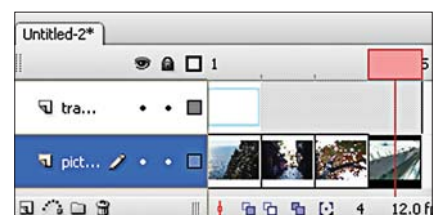
The timeline window is more versatile than one thinks

30 Minutes Expert

Bryce 5.5

Creating 3D imagery wasn't easy, we thought—until we discovered a software called Bryce

Jayesh Limaye

Rendering 3D images is a wonderful and addictive passion as well as an attractive career option. But some people—for example, graphic artists—are actually afraid of 3D rendering software, and their fears are well-founded many a time; seldom will you find a software that's easy to learn and master. Here, we'll introduce you to one software that is!

Bryce 5.5 is a 3D illustration and rendering software available for free download (122 MB) from **www.daz3d.com**. (You'll also find it on our August 2007 DVD.) You'll need to create an account at the site to procure your free serial code.

The beauty of Bryce is the ease with which you can create breathtakingly realistic 3D landscapes and animations using a drag-and-drop interface on a "real-time canvas" (meaning you can alter the position and shape, and even replace objects in the scene any time you want). All this in an intuitive manner, in a matter of minutes. You design a scene in 3D within Bryce, then Bryce takes the 3D information and figures how it would look in 2D (with shading and all) so when you render it, it looks like a painting with a 3D effect.

Let's look at how handy this tool really is.

Yes, you can actually create this in Bryce—with considerable ease!

Easy-to-use GUI Toolbars
You'll see three types of toolbars: one for creating objects, one for editing them, and one for editing the environment ("Sky & Fog"). There is also a camera control section that allows you to change the camera angle or your view of the scene (refer image below). The mountain in the image—with the objects around it—changes your camera view to top, then front, left, right, back, and underneath. Clicking on the small ring at the upper right corner gives you a "flyaround" preview of your creation,

meaning you can look at the whole scene at once. You can either move the camera angle on any of the three axes by clicking and dragging on the flat arrows, or you can move all three at once with the trackball—though this is a bit harder in terms of ease of control. Just below the trackball are the render options, with the render button at the centre. The rest of the options allow you to do such things as turning textures on and off while rendering, doing a quick preview render, resuming rendering, and clearing a render.

At the very top of the screenshot alongside (Camera controls and Nano Preview) is the Nano Preview window, which gives you a preview, in quick thumbnail size render form, of your creation. This saves time because full-screen rendering takes much longer. You can save camera angles by clicking on the little buttons to the left of the window. The top button gives you the default camera angle.

The section where you control the camera angle—and more

The Create Toolbar
The Create Toolbar is the one which you will be using the most while using this software. The first three of these icons represent infinite planes; the blue one is water, the white one is clouds, and the last is a ground plane.

Next is the mountain, which allows you to create random mountains, and there's a tool that allows you to edit almost everything about the mountain. Similarly, there is the random rock, symmetrical lattice, and a multitude of objects (in blue) that can be placed in the manipulation field (the 3D canvas). The last group of objects (in yellow) are the light sources; these let you place spotlights, radial light sources, parallel lights, etc. and decide their directions to illuminate the

The "Create" section using which you can place different objects in the scene

scene. Clicking on the icons places them in the manipulation field.

As you probably know, proper lighting can make all the difference between just another illustration and a masterpiece.

The Edit Toolbar
This toolbar allows you to edit the objects you just created. The tool on the far left is the material editor, which opens up a window where you can choose from or create custom textures for your objects. Next is the stretch tool, which allows, as the name suggests, to stretch objects on the three axes. This can also be used to mirror objects. The rotation tool and the move tool are obvious. The align tool that comes next lets you line up all your objects in refer-

The "Edit" section where you can edit the objects placed in the scene

ence to one thing or another. Next is the randomise tool, which sends your objects scurrying in random directions... Last comes the terrain editor tool, which brings up different edit windows for rocks, mountains, light sources, and more. You can also edit objects in the manipulation window using the mouse.
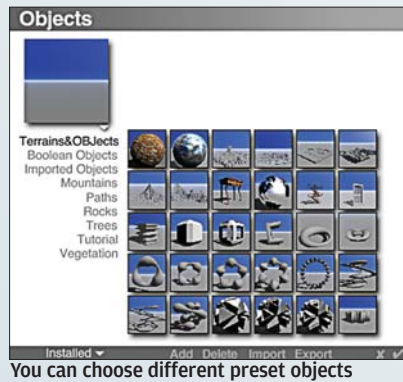
The Sky & Fog Toolbar

The great outdoors... create the environment of your choice

This toolbar allows you to create custom skies and atmospheres for your scene. Each of the controls has a slider using which image attributes can be controlled. The control on the far left selects the sky mode and sky colour. The second control selects shadows and ambient colour. The third modifies haze amount and colour, and the fourth modifies fog and fog colour. Experiment with the others...

The next tool is the cloud frequency, which is used to randomly place clouds in the scene. By clicking and dragging your mouse over this field, you can alter the position of the sun. Clicking on the small sphere at the top left of this sphere will toggle

the sun to night mode; clicking on the small rectangle at the bottom left of the sphere will let you choose the colour of the sun.

Quick Menus For Presets

You can choose different preset objects

Each of the toolbars we've talked about has quick menus that can be accessed by clicking on the small triangle at the right (of Create, Edit, as well as Sky & Fog). You can access preset objects in here, or you can save your custom creations for later use. This makes sets of theme scenes easier to create. For example, say you've created a decent model of a car. Instead of saving the scene and repositioning it for every subsequent picture with the car, you could just save the object group under the user section of the quick create window, and place it in your scene in a jiffy.
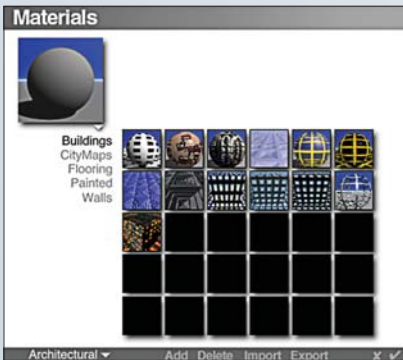
Choose a preset material for the scene

Next is the much-used quick menu for the Edit toolbar, which again lets you choose from a selection of preset textures and materials. Again, you can also save user-created presets here.

Finally, the quick menu for the Sky & Fog toolbar lets you create and save custom skies. You may not feel the need to make your own skies, but we recommend that you do, because all the preset skies leave the scene shrouded in black—since the clouds block out the sun! If you create it from scratch, you can let the sun shine through.

You can choose presets of environments here

The Animation Tool

Bryce comes with a complete animation tool. The animation is controlled by means of a small toolbar at the bottom right of the window. Select `File > Animation Setup`, and specify the duration of the animation as well as the frames per second. To animate a scene, first create the first one (using the composite image you've created) with the slider at the 00.00 position. Now make the animation toolbar completely visible by clicking on the `Time / Selection Palette Toggle` (the small sphere at the extreme bottom right of the window). Then click the little Plus beside the icon that looks like a key. Next move the slider forward to a desired time in the animation (the measurement is in seconds). Then change the location, shape, and texture of objects in the first scene.

When you press `Play`, the objects will get animated. The results are similar to a 3D morph. (You can also curve the objects' paths.) That's how you make animations in shape and position, but if you want to animate the material of the object, there is the material editor.

The Materials Lab: Lots of options to play with!

Select `Objects > Edit Material` to open the Materials Lab. Here, you can change aspects of the object's texture such as ambience, specularity, bumpiness, transparency, reflection, refraction, and more, and wrap textures around them. You will notice the familiar animation control at the bottom of the window, and it can be used in the same way as before. You

can change the texture according to the time slider and click the Plus icon beside the key icon to add a key event. When you render this animation, the texture will change scene by scene according to what you've done in the animation.

Work better with Bryce
Texture Presets

Since textures are the basic building blocks of materials, it would have been great to have a preset menu for textures, like you have for materials. Well, it *is* there, but hidden. To access it, instead of simply clicking to get the texture list pop-up, hold down the [Shift] key while clicking on the texture name or the button beneath it. Now you can view the graphical texture presets dialog, which not only allows you easily select textures, but also lets you import and export textures.

Precise Placement Of The
Sun and/or Moon

If you would like to place the sun and/or the moon at a precise location in the picture, you can do it this way: first select the Sky&Fog Palette, hold down [Ctrl] + [Alt], and double-click on the sky sphere. This is to switch to the sun/moon placement mode. Hold down [Ctrl] + [Alt] and click into the scene to place the sun at the cursor position. To place the moon at the cursor position, hold down [Ctrl] + [Alt] + [Shift].

Negative Lights (Virtual
Black Holes)

In Bryce, light can have a negative value in the Light Editor. So while the upper limit for this is 999 (very bright light), the lower limit is -999. In the latter case, the source will suck the surroundings, creating an eerie, unreal effect. As you might have guessed, the shadows casted in this case will be bright. Give it a try—amazement guaranteed!

It's Good Fun

Bryce 5.5 is a great 3D illustration and rendering program, we think, and is equally useful for the beginner as well as the expert graphics artist. While it does not offer advanced CAD-style 3D creation or figurative animation capabilities, it is an effective tool for achieving attractive 3D scenery and well-lit environments.

Go ahead, create a stunning landscape, put it up as your wallpaper, but don't submit it to wallpaper sites. It's yours! ∎

jayesh_limaye@thinkdigit.com

Undo Levels

The Undo tool is useful to fix any errors that may have occurred while working in Flash. Undo does take some amount of system resources by keeping track of all of the steps on the way. Fortunately, you can set the limit on how many undos one can execute. Go to `Edit > Preferences`. Change the values for the number of levels allowed and click OK.

Using Custom Workspaces

Every individual has his or her own way of working and arranging tools. Every kind of workspace layout is suitable for a particular kind of work. Use the workspace tool to save any workspace layout that you've made. Click on `Window > Workspace > Save current` to save a workspace. To access the workspace at any time, click on `Window > Workspace` and then select your custom workspace.

Importing Files In Library

Importing images and other media into the library in Flash is a good practice. It's easier to manage and access files rather than directly importing single files into the stage. Click on `File > Import > Import to library`. Now you can simply drag and drop elements to your project and at the same time you get a small preview of the same.

Flash CS3 can also directly open up Flash projects on sites instead of downloading the files on your local machine first and then opening them. Click on `File > Open from Site`.
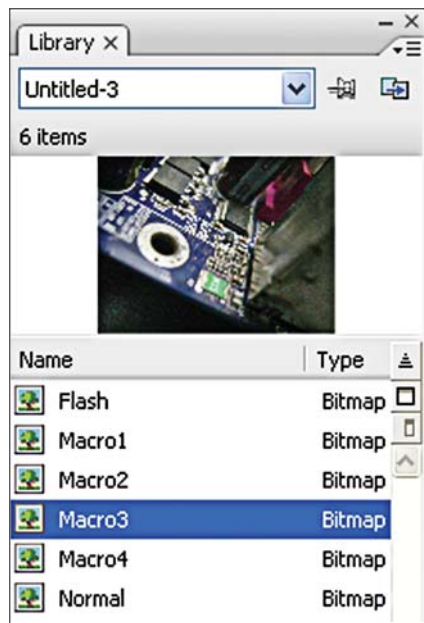
Choose the site on which you have the project hosted. Enter the password. Sites can be added by clicking on `File > Edit Sites`.

Flash is the latest in the Adobe family of products. Integration between all the products has been built into it as well. When you try and import a Photoshop file (PSD), for example, you will be displayed all the layers in the file and you get to choose which ones you want to import. You can import each of the layers as separate keyframes or layers.

Exporting Animations To Movies

Flash isn't used for just Web content. Flash is actually used by a lot of other media like in TV advertising. Keeping that in mind, the developers of Flash have allowed the user to export animations as standard video formats. When your animation is ready, click on `File > Export > Export Movie`. Choose the format and enter a filename and location. Click `Save`. Depending on the format, you will be asked to set compression settings and the codecs to be used.

Disabling The Launch Screen

The Welcome or Launch screen is the one that pops up as soon as you start Flash CS3. It's useful in loading up different kinds of projects and templates for platforms such as mobile devices. Instead of having to select your recently saved project every single time, you can have your last open file load up by itself. Go to `Edit > Preferences`. Click on the `On launch` dropdown

objects and the image will be applied in place of color. You can also use this feature to have images as fill colors while creating new objects as well.

Video Encoding In Flash CS3

Adobe Flash CS3 comes along with a video encoding utility which is useful in converting videos from almost every format into Flash. Click on `Adobe Flash CS3 Video Encoder` from the Start Menu to start it. Click on Add to add the videos for conversion. Click on
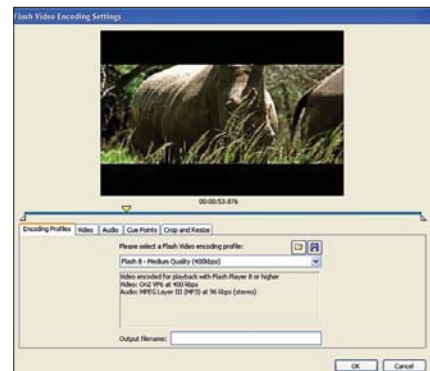
Flash CS3 comes with a standalone video encoder

the `Settings` button to set parameters for the conversion. You can quickly choose from one of the readymade presets available by selecting one from the dropdown menu. Use the sliders to set the region you want to encode and set video and audio compression settings using the `Video` and `Audio` tabs. Click `OK` when done. Click `Start Queue` to start the conversion process.

If you are planning to use a video in the Flash project, you can also import a video into Flash CS3 itself by clicking on File > Import > Import Video. Here you are asked to enter the location of the file and where it would eventually be deployed—web server, Flash Media Server, etc. Clicking Next shows up a window similar to that of the Flash CS3 Video Encoder after which you're asked to select the template for the player.

Using The History Window

The History feature, like in Photoshop, keeps track of all the actions you've executed in Flash. At anytime you wish, you can jump back to any step by clicking on that

The history window gives a list of steps

The library is one click access to all the required resources

The annoying Launch screen can be disabled if required

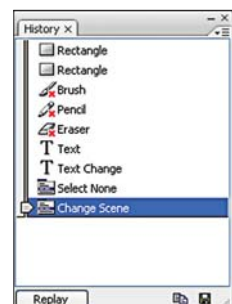menu and choose `Last Documents Open`. If you want no files open, choose No Document. Click OK to save.

Using Images Instead Of Colour As Fill

Instead of having plain colours for objects, you can make use of images instead. Click on the `Color` window to the right, choose the `Color` tab. Click the `Type` dropdown and choose `Bitmap`. Click the `Import` button and select the image you want to use. Now use any of the painting tools—`Brush` or the `Paint Bucket Tool` to color

step. The history window might not always be visible but you can enable it by clicking on the Window menu and then on `Other Panels > History`.

Layers To Organise Elements

Using layers while designing is useful in grouping elements and making changes to them without any confusion. To add new layers in Flash CS3, right click on the timeline window and click Insert Layer.

Optimising Shapes

Every object in Flash has a number of control points which give it a distinct shape. Sometimes there can be too many redundant points especially in cases where you have used an eraser to erase certain portions of an object. An optimising feature is built into Flash CS3 which can be accessed by first clicking on an object using the Selection tool. Click on `Modify > Shape > Optimize`. Set a level of smoothing and click OK. If you find the object is losing any serious characteristic shape, then undo the move. It's also a good habit to use the Smooth and Straighten tools from the Main toolbar. They can be used to bring down the number of nodes or make the objects smoother.

Spell Checking

The spell checking feature can help those embarrassing slipups from making their way on to the Internet. Run the spell checking feature by clicking on `Text > Check Spelling`. You can setup the spell checking feature much better and also
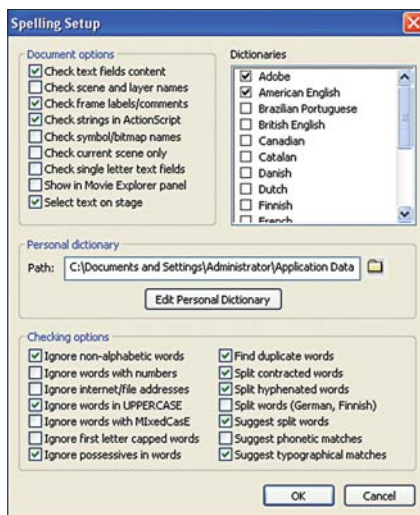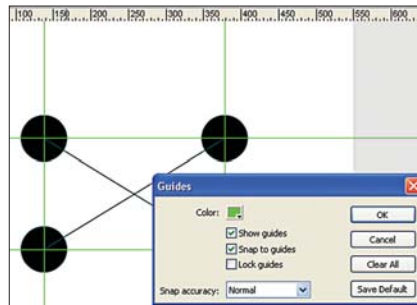

Flash's Spell check is very customisable

specify more dictionaries of other languages and custom dictionaries of your own by clicking on the Text menu and then on Spelling Setup.

Precision Designing

The Snapping, Ruler and Guides feature are there to help create designs accurately with ease. Snapping can be set on by clicking on `View >`

Guides can make aligning and accurate placing of objects very easy

`Snapping`. Click on `Edit Snapping` in that sub-menu how you would like the mouse pointer to snap to. The Ruler feature is required to be able to set guides which are similar to grids but which can be modified and created as per your needs.

To create a new guide, click on `View > Rulers`. Once the ruler has been

Quick Shortcuts

Play	[Enter]
Rewind	[Ctrl] + [Alt] + [R]
Move ahead by 1 frame	[.]
Move back by 1 frame	[,]
Insert frame	[F5]
Create blank keyframe	[F6]
Convert to Keyframes	[F7]
Clear keyframes	[Shift] + [F6]
Tools	
Brush	[B]
Pencil	[Y]
Pen	[P]
Paint Bucket Tool	[K]
Eraser	[E]
Insert Symbol	[Ctrl] + [F8]
Move object forward	[Ctrl] + [Up arrow]
Move object backward	[Ctrl] + [Down arrow]
Send object to front	[Ctrl] + [Shift + [Up arrow]
Send object to bottom	[Ctrl] + [Shift] + [Down arrow]
View	
Zoom in	[Ctrl] + [+]
Zoom out	[Ctrl] + [-]
Set 100% zoom	[Ctrl] + [1]
Show all	[Ctrl] + [3]
Show grid	[Ctrl] + [']
Show guide	[Ctrl] + [;]
Enable/Disable Ruler	[Ctrl] + [Alt] + [Shift] + [R]

enabled, left click on one of the rulers and drag it out where you want a guide line to be set. Do the same steps with the two rulers with as many guide lines as you wish to create. If you wish to remove a guide line, then click on the guide line and drag it out of the window. Make sure you have the snapping feature set to Guides. Now when you move your mouse pointer near a guide it should latch on to them automatically.

Motion And Shape Tweening

The problem with animating one frame after another is that it's very slow to create and it's not perfect so the resulting animation isn't as smooth as expected. There are two features called motion tween and shape tween to counter this problem.

The shape and motion tween feature allow the user to set a starting and ending position or shape for an object. All the frames in between are generated by Flash CS3. To do this, first create the keyframes and place or modify the shape of the objects. Then, click on `Insert > Timeline > Create Motion Tween` or `Create Shape Tween` if you modified the shape.

MEDIA PLAYER CLASSIC

Media Player Classic might look like the old Microsoft Windows Media Player 6, but is in fact one of the most used media players around. At around a megabyte in size, the player is much more compact than VLC or any of the others. Let's look at some of the most important and useful features that also make MPC the player of choice for many. We'll be using the last stable release—6.4.9.0. You can find it in on one of our CDs or download it for free from **http://sourceforge.net/projects/guliverkli/**.

Make It Default

We've already told you why Media Player Classic is so good. If you want to have Media Player Classic as your
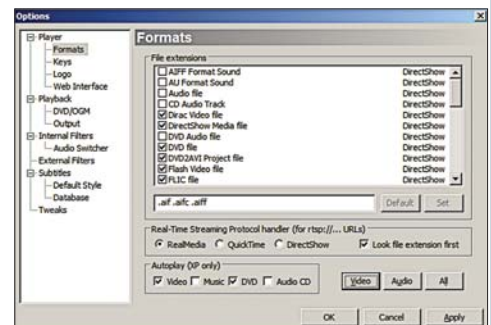

MPC can be made to play back a few selected formats

default video player, then click on `View > Options`. Click `Formats` and from the list, choose the formats you want Media Player Classic to play for you. If you want all videos to be played in MPC, click the `Video` button to the bottom right. Click OK.

Fixing Audio Delay

Sometimes we come across videos with some delay in audio playback. With High Definition focussed codec's like H.264, the lower end machines are unable to cope, and a lot of audio delay might be noticed. To compensate this delay, click on `View > Options`. Click on `Internal Filters > Audio Switcher`. Enter a value for `Audio`
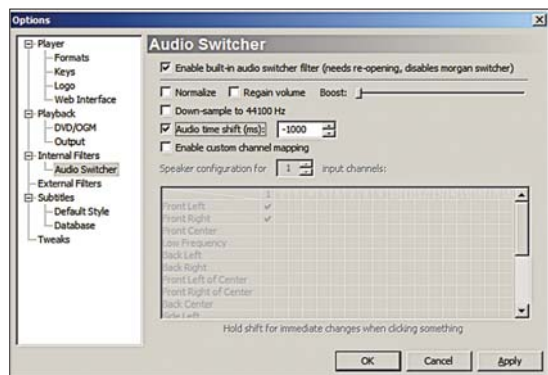
Fixing audio playback delay doesn't need you to have media authoring tools

`Shift` in ms (milliseconds). Enter a positive value to have the audio delayed or a negative value to have the video delayed. Click OK.

Boosting Audio

If the audio in a video isn't loud enough even after increasing all the Windows volume control sliders to the max, you can have Media Player Classic boost it even further. Click on `View > Options`. Click on `Internal Filters > Audio Switcher`. Drag the boost slider to increase the volume. Be aware that these changes can create very drastic changes in the volume so be cautious while setting the amount of amplification. Playing back any media with normal amount of amplication might result in very loud audio.

Control From A Web Interface

Media Player Classic has inbuilt components that allow you to use a remote control or even remote access it through a Web browser. For Web-based remote access go to `View > Options > Player > Web Interface`. Click on `Listen on port` to enable it. You can change the port as well if you want something easier to remember. Now from a remote PC or even if you have a mobile phone with access to your PC,
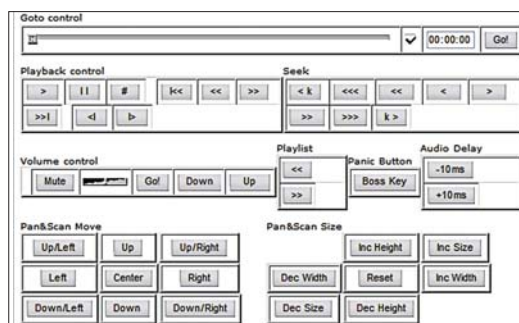
MPC can be remotely accessed even through a mobile phone

access `http://YOUR.MACHINE .IP:13579` (or whatever port you set) through a web browser. A couple of alternate Web interface links can also be used that are present on that page.

If you access MPC using a remote, under `Options` click on `Keys` and check the box for WinLIRC and uICE—you may require a compliant remote control though.

Saving Screenshots

Ever had a moment on video that you would love to capture but never knew how— `[Print Screen]` almost always results in a black screen. MPC allows you to capture single screenshots by clicking on `File > Save Image`. Select from BMP or JPG, enter a file name and click Save. If you want thumbnails from the entire video clip, click `File > Save Thumbnails`. Enter a filename and the number of rows and columns you want. Click Save. An image sheet with the thumbnails and information on the video file will be saved.

Modes

When you aren't watching a video in full screen mode, you can have it running as a window on one corner of your screen. Pressing `[2]` disables the playback progress bar. The best thing to do if you want a video playing back while you're doing something else—say browsing or chatting is to press `[1]`. This disables all the title and menus bars and only shows the video. Move the window to the position of your choice and press `[Ctrl] + [T]`. This puts the MPC window on top of all other applications. If the window is too big in size, press `[Alt] + [1] / [2] / [3] / [4]` for different preset sizes. You can also set a custom size by clicking and dragging the edges of the window. Pressing `[3]` brings back the default MPC layout and `[Ctrl] + [T]` again will disable the On Top mode.

Playlist

When you're viewing more than one video, you would want to be to queue up videos. Press `[Ctrl] + [7]` to enable the playlist or click on `View > Playlist`. Drag and drop videos from your folders into this window. While watching a video, pressing `[Page Up]` loads the next video in the playlist. `[Page Down]` does the opposite.

Subtitles

Media Player Classic has supported subtitles for quite a while now. However, there are a few changes to the renderer that need to be done before you can actually view them. Click on `View > Options`. Choose DirectShow VMR7 or VMR9 (renderless). Click OK and restart Media Player Classic. Now open the movie you want to watch. Click on File > Load
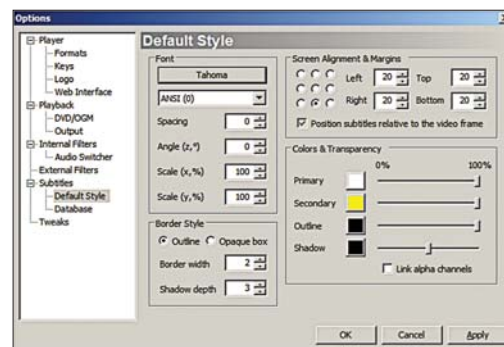
Subtitles can be downloaded and viewed through Media Player Classic

Subtitle and point it to the subtitle file you have downloaded. Start the movie and the subtitles will be displayed.

You can customise the way the subtitles are rendered. Go to `View > Options > Subtitles > Default Style`. Here you can set the subtitles settings such as the position, font, colour, transparency, etc.

Quick Shortcuts

Play/Pause	Spacebar
Stop	.
Volume Up	Up arrow
Volume Down	Down arrow
Full Screen	Alt + Enter
Mute	Ctrl + M
Boss key	B
Zoom In	Numpad 9 (Page Up)
Zoom Out	Numpad 1 (End)
Increase Width	Numpad 6
Decrease Width	Numpad 4
Increase Height	Numpad 8
Decrease Height	Numpad 2
Center view	Ctrl + Numpad 5

Q&A

Your Questions, Our Answers

Yes, I Know, I Know!

Q I often get the low disk notification message on one of my drives. Since I am all too aware that the drive is full, it's a major irritant!

Durgesh Sharma

A Open the Registry Editor. Go to the key `HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Poli`

Illustrations **Harsho Mohan Chattoraj**

`cies\Explorer` and look at the `DWORD` value `NoLowDiskSpaceChecks`. (Create it if it doesn't exist.) Set its value to `1`. Exit the Registry Editor and reboot for the change to take effect.

Coding The Load

Q When I try to install Windows XP on my PC with Windows 98, I get the following error:

```
NTLDR is missing
Press any key to restart
```
Shamit Rahi

A This problem can occur if a current Windows ME or 9x installation was cloned from a hard drive with a geometry different from that of your current drive. This results in a mismatch of written values, which is ignored in Windows 9x and ME; Windows XP/200x/Vista have an issue with this, though. Still, this can be corrected:

▶ Restart the computer using a Windows 98 startup disk.

▶ Make a backup copy of the Msdos.sys file in the root directory of your system drive. To do this, type in the following commands at a command prompt:
```
attrib -h -r -s c:\msdos.sys
rename msdos.sys *.bak
```
▶ At a command prompt, type `sys c:` to rewrite the Windows 98 startup code with accurate information.

▶ Restart into Windows 98, and then try to install or upgrade to XP.

Brand Recall!

Q The PC I bought has Internet Explorer and Windows Media Player with the title bar displaying the name of my system integrator. I want to get rid of this.

Shalini Desai

A Launch the Registry Editor and go to the key `HKEY_CURRENT_USER\Software\Microsoft\Internet Explorer\Main` (for Internet Explorer). Modify or create the String Value called `Window Title`, and give it a value equal to what you want it to be—say, your name. If you just remove it, it'll default to "Microsoft Internet Explorer", getting rid of the name of your system integrator.

For WMP, go to `HKEY_CURRENT_USER\Software\Policies\Microsoft`. Click on the key `WindowsMediaPlayer`. Modify the String `Value TitleBar` (or remove it to get back to the default setting).

The Famous Disappearing Act

Q My XP Taskbar has disappeared. Help!

Vishwas Rele

A This can happen if the Windows settings for a user account get corrupted, so you'll need to start your computer in Safe Mode. Select the Administrator and enter the administrator password. Click Yes to close the message that states that Windows is running in Safe mode. Right-click My Computer and select Manage. In the list called Computer Management (Local), expand Local Users and Groups. Right-click the Users folder, then select New User. Type in the username and password where needed, then confirm the password. Untick the User must change password at next logon checkbox. Click Create, then Close, and then quit the Computer Management window. Restart Windows normally and log on as the new user. The taskbar should reappear.

Switch Glitch

Q My computer shows my partitions as follows: C: Seagate primary; D: Samsung primary; E: and F: Seagate extended; G:, H: and I: Samsung extended; J: CD-ROM. I have set up the Seagate as the primary master and the Samsung as the primary slave. I have installed Windows 98 on C: and XP on E:. When I removed my second hard disk, I couldn't boot into XP, as the E drive swapped with D. What should I do?

Chinmay Godbole

Anti-Bogus-Anti

Q My computer is infected with WinAntivirus Pro 2007 and PestCapture, which I had installed thinking they were anti-virus and anti-spyware programs. I later learnt about them being bogus... how do I remove them?

N Venugopal

A Download these programs to your desktop and install them: SmitRem from **http://noahdfear.geekstogo.com**, SmitFraudFix from **http://siri.geekstogo.com/SmitfraudFix .php**, RogueRemover from **www.majorgeeks.com/ RogueRemover _d5360.html**, HijackThis from **www.merijn.org/files/hijackthis. zip**, and CCleaner from **www.ccleaner.com**.

That done, reboot into Safe Mode. Open the SmitRem folder and double-click `RunThis.bat` to start the SmitRem removal procedure. Next, open SmitFraudFix and choose to search (option 1) and clean (option 2) and run a full system scan to remove anything it finds. Then, run RogueRemover. While still in Safe Mode, run CCleaner. Analyse and clean the files it finds, then click on the Issues button and Scan and Fix any Registry issues CCleaner discovers. Run both the Registry Scanner and the File Analyzer until nothing more is found.

Run Hijackthis and Remove any leftover issues. Do not delete anything with Hijackthis unless you are absolutely sure what the file is and what it does. For items in the Hijackthis log like the following, which will not get deleted manually, use KillBox (**killbox.clickhereformoreinfo. com**) to browse to the location of the file and delete it or delete it on reboot. Items that are impossible to remove unless using Killbox usually show up in the "20" section of Hijackthis, for example:

```
O20—Winlogon     Notify:     msupdate—
C:\WINDOWS\SYSTEM32\msupdate32.dll
O20—Winlogon     Notify:     winrir32—
C:\WINDOWS\SYSTEM32\winrir32.dll
O20—Winlogon     Notify:     dvd4free—
C:\WINDOWS\SYSTEM32\dvd4free.dll
```

Reboot into normal mode. Scan your computer using online virus checkers such as those at **www.kaspersky.com/ virusscanner** and **http://security.norton.com/sscv6/default.asp? productid=sarc&langid=ie&venid=sym**. Also download, install and thoroughly scan your system using a spyware removal tool such as Spybot Search & Destroy from **http://spybot.clickhereformoreinfo.com**.

As a matter of general practice, always install and use an anti-virus program, update it regularly, and never disable it (even when certain programs ask you to do so), especially when you are online.

A This happens because the settings in the boot.ini file are no longer correct, now that you have removed the Samsung drive. What you can do is edit boot.ini. To do this in Windows 98, at a command prompt, type in `CD\` and press [Enter]. Now type `Edit boot.ini` and press [Enter]. This will open the boot.ini file, which will display partition information. Here, you need to locate the Windows XP partition string. It looks like this:

```
multi(0)disk(0)rdisk(0)parti-
tion(1)\windows="Microsoft Windows XP
Professional" /fastdetect.
```

Take the digit next to the partition tag; subtract 1 from it, and save the file. You should now be able to boot into XP.

My Computer Boasts Of No Floppy

Q I run Windows 2000 Professional. Recently, my floppy drive stopped showing up in My Computer. All the other drives display correctly. Under Floppy disk controllers, in the Computer Management console, it says that the drive is working properly. What is the problem?

Vaibhav Shinde

A The BIOS doesn't seem to detect your floppy drive. Check the CMOS settings and see if the floppy drive is visible. Ensure that the CMOS is set to "Halt on all errors" and also check that the BIOS' "Report the floppy drive to the OS" setting is enabled. Another reason could be drive letter conflicts caused by software such as RAMdisk. The TweakUI PowerToy, available from `www.microsoft.com /windowsxp/down-loads/powertoys/xppowertoys.mspx`, can also cause drive letters to be hidden in Windows Explorer and My Computer. If you have it installed, go to the Control Panel and double-click on TweakUI. In the My Computer tab, select the checkboxes of the drives shown as hidden. Click Close and restart.

Beating The Heat

Q I have a Celeron 1.2 GHz, a Mercury 815e motherboard, an 80 GB hard drive, and 256 MB of SD RAM. The problem is that my heat sink gets really hot (I can feel really hot air blowing towards my hand when I place it next to the heat sink), and as a result, the PC hangs or restarts. The CPU fan is working fine, but the BIOS setting doesn't show its rpm. I have another case fan, and the BIOS reports its speed. Is there a problem with my motherboard?

Piyush Lore

A You first need to make sure the CPU fan is working properly. Open your cabinet and make sure the fan rotates easily. Make sure the heat sink and fan blades are free from dust. Use a paint brush to clean these. If necessary, remove the fan and heat sink, clean them thoroughly, re-apply thermal paste and fix them back on to the CPU. To make sure it's a heating problem, you can try running the CPU with the same heat sink and fan on another motherboard. Another factor due to which the BIOS may not be reporting the rpm of the CPU fan correctly could be the CPU fan cable not being connected to the proper connector on the motherboard. Check for this. If all is in order and you still have an issue, you will have to opt for an external CPU fan kit, which will cost between Rs 200 and 300.

Use GoogleTalk To Chat With Yahoo! And MSN Buddies

Tired of having to use two messengers to chat with all your friends? Here's how you can convert GoogleTalk into one unified chat client

Jayesh Limaye

With loads of online buddies from all over the planet, all of us have been forced to use either multiple instant messengers or unified clients like Pidgin (formerly GAIM) to keep in touch with everyone. With MSN and Yahoo! joining hands, some of our woes were reduced. However, with the introduction of GoogleTalk, and its subsequent jump in popularity, we find ourselves back to square one. What's more, you can chat using GoogleTalk right from your browser, when you access your GMail account.

Recently, GoogleTalk opened up their chat protocol to Jabber networks, which now makes it possible for GoogleTalk users to chat with their buddies on AIM, MSN, Yahoo and ICQ. Here is how it can be achieved.

The resources required for this are Psi—a free Jabber client, which can be downloaded from **http://psi-im.org**, and GoogleTalk, which can be downloaded from **http://talk.google.com**. Install these two chat clients and proceed to the next step.

Launch Psi and in the "Add Account" window (which will launch if you are using Psi for the first time), enter Google Talk as the Name and do not check the box next to Register new account. Click Add. Alternatively if you have already been using Psi, you can right-click on the Psi icon in the System Tray, go to Psi and select Account Setup. The Account Properties window will show up and here you should enter your full Gmail address including `"@gmail.com"` into the Jabber ID field. Tick the "Automatically connect on Startup" and "Automatically reconnect if disconnected" boxes.

Select Account Setup in Psi

Add your Google Talk account

Google Talk Account setup properties

Click on the Connection tab. Check Use SSL encryption (to server). The Port field will automatically change to 5223, which is normal. Check the `"Ignore SSL warnings"`, `"Allow Plaintext Login"`, `"Send Keep-alive packets (for NAT timeouts)"` and `"Manually Specify Server Host/Port:"` boxes. Enter `"talk.google.com"` in the Host field and leave the port as `5223`. If you have trouble connecting, use port `443` instead.

To get online, just right-click on your account name in the main window, go to `Status > Online`. Now right-click on the account name again and click Service Discovery. You now need to find a Jabber transport server that will help communicate between GoogleTalk and non-GoogleTalk chat applications. A good place to start this search is The XMPP Federation at **https://www.xmpp.net/ servers** and Open Jabber Servers at **http://www.jabber.org/user/publicservers. shtml**. We used the server **jwchat.org** (or you can use **talkonaut.com**), since it had transport servers for AIM, ICQ, Yahoo as well as MSN. Enter this name into the Address field (initially containing the name gmail.com) and click on Browse. You will see a list of transport servers

Connection properties
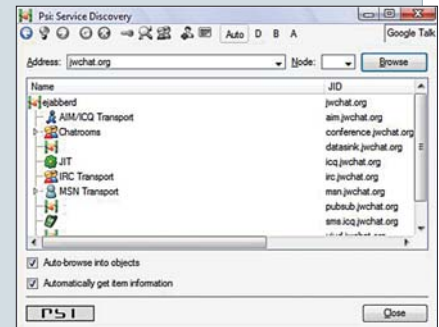
Subscribe to RemoteCalendars

Register other IM services as well

being populated in the box below.

To set up your IM account, right-click on one of these servers and select Register. Enter your user name and password for the service selected and click Register. Psi will ask you to confirm all of your newly transported contacts in your Google Talk account. After this is done, they'll all be automatically available through your Google Talk account. You will even be able to add buddies from that service, right from your GoogleTalk client. To confirm this, open GoogleTalk and you will find all the contacts from the other service inside GoogleTalk buddies list. To add a friend from another service, just make sure that you follow the format `screenname@transport_ server_name.dns_name`—if the Yahoo ID of your buddy is `testacc@ yahoo.com`, and `jwchat.org` is the transport server, you should add the contact from within GoogleTalk as `testacc@yahoo.jwchat.org`.

There have been reported cases of unreliability of quite a few transport servers, but we found that two mentioned above are quite stable. You should also know that when you use a transport client, you trust your information to a third party server, which you may not like if you are very particular about your privacy.◻
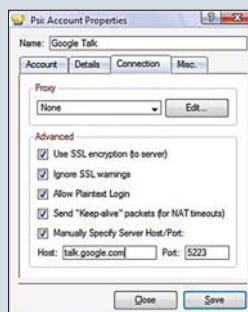
jayesh_limaye@thinkdigit.com
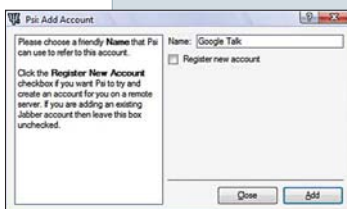
A Sound Solution

Q I have a Pinnacle PCTV Rave TV-Tuner, and my computer has Windows XP Pro SP2. I want to record TV programs in WMV, DivX, as well as the MPEG-2 formats, but the software provided with the card does not support it. I have tried to use third-party PVR programs such as InterVideo WinDVR, but it does not capture sound.

Ajay Tiwari

A The Pinnacle PCTV Rave TV Tuner encodes TV audio right on the board, and there is no loop-through cable that goes to the line-in of the sound board, as is usually the case with most TV-Tuners. That's why the audio does not work with InterVideo WinDVR, since it does not feature an option to use internal TV audio. There are some programs such as ChrisTV from **www.chris-tv.com** and BeyondTV from **www.snapstream.com** that support such TV-Tuners (with on-board audio chips) and also allow you to capture in the WMV, DivX, and MPEG-2 formats.

Anti vs. Anti!

Q I had installed McAfee AntiVirus from your CD for a trial run, then uninstalled it and returned to my older Norton AntiVirus. The problem is that Windows Security Center says I have the above two antivirus programs running.

Paramjeet Singh

A Right-click on My Computer and click Manage. Expand Services and Applications and click on Services. Find the Windows Management Instrumentation service, right-click it, and choose Stop. Open My Computer, then go to (assuming Windows is installed on C) `C:\Windows\System32\WBEM\Repository`. Delete it. Return to the Windows services screen; find Windows Management Instrumentation, right-click on it, and choose Start. Restarting this service will rebuild the repository folder information. Restart your computer. Windows Security Center should be fine.

Video's Not On The Cards

Q I have an NVIDIA GeForce FX 5200 graphics card. The problem is that the display goes blank after entering Windows, even when I have installed the official WHQL drivers. When I booted using my onboard graphics, I got a message that read something like "the display device driver was unable to complete a drawing operation. Please check for a driver update." I downloaded the latest drivers from NVIDIA, but the problem persists. My PC configuration is an AMD Athlon XP 2100+ CPU and 512 MB DDR RAM on an ASUS A7N266VM motherboard and I have Windows XP Professional SP2.

Vinay Chaudhary

A A device driver conflict seems to be at play. Here's what you can do: Boot your system while using the onboard video card, then uninstall all the video card drivers. If possible, use System Restore to get back to a time when the computer was working fine, and then uninstall the display drivers. Now, reboot and get to the BIOS. Go to the Advanced Options, and look for the PCI display menu. Under VGA BIOS, change the adapter to AGP VGA. Save the settings, shut down the computer, and install the new video card. Reboot and install the display drivers. Your issue should be resolved. Alternatively, start the machine in Safe Mode; right-click on My Computer and select Properties > Hardware > Device Manager and expand the Display adapters option. Right-click on each entry under display adapters, and select Uninstall. It is imperative that you install only the latest drivers for the motherboard, and also to ensure that your BIOS is up to date. Check at the motherboard manufacturer's Web site for this.

The Un-dead!

Q I uninstalled a program, but the Add/Remove Programs applet still shows the entry for it. So how do I get rid of it?

Akhilesh Srivastav

GHOST IN THE MACHINE ??????

A Open the Registry Editor and navigate to `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall`. You can find the entries related to the uninstalled program in the right pane. Just delete them.

Installing An Installer!

Q I have Windows XP. I get the Windows Update Error 0x80070420 while trying to update Windows.

Irfan Sheikh

A First, Check to see if you have Windows Installer 3.1 installed: go to `Control Panel > Add/Remove` Programs, search the list of programs for Windows Installer 3.1. If you find it there, uninstall it, then reboot and install the program; if it's not there, you're fine; just install it. The program (Windows Installer 3.1) is at **http://www.microsoft.com/downloads/details.aspx?familyid=889482fc-5f56-4a38-b838-de776fd4138c&displaylang=en**. Reboot and then try and do the Windows Update. ⊠

Sweet Memories

Agent001 recounts his recent memory shopping spree

Motherboards and Processors this month! There's another component that works as hard as your processor most of the time—and is even more important as a limiting factor a.k.a. bottleneck to performance. Yes, I'm talking about good old Random Access Memory.

There's only one real memory standard today and that's DDR2. DDR is officially dead, and nobody is using it for new PCs, not even value PCs. DDR2 had initial teething issues with performance—mainly due to higher latencies, but all those have been ironed out, and the sheer bandwidth DDR2 offers over DDR is significant. DDR is still available in the market—but it's mostly older stock, since manufacturers have stopped making it. As a result, DDR memory is very expensive now—and those who need it for older systems will face the simple market reality of demand and supply. I found DDR memory at prices roughly twice that of DDR2 in Lamington Road, and the prices fluctuated from dealer to dealer—although many dealers flatly stated they didn't stock DDR any more.

DDR2 is available in mainly two speed options—DDR2 667 and DDR2 800 MHz frequencies. The higher frequencies (1000 and 1066 MHz) are very expensive, and do not justify the premium. What I came across in shops was mostly value RAM. This is basically RAM based on cheaper memory chips, the characteristic being slower speeds and higher latencies. Enthusiast memory will have higher speeds at lower latencies but typically requires higher voltages to operate (1.8V is the default for DDR2), which means your board should support moderate overvolting.

Generally, higher-performance (read enthusiast) memory—which performs better with demanding applications—typically has heat spreaders on the memory strip. I must caution all our readers: some manufactures are resorting to the cheap tactic of putting attractive aluminium heatsinks on el cheapo value memory, and vendors call this "high performance" memory, and you'll subsequently be charged 500 to a thousand bucks more for nothing more than eye-candy! Look at the latency figures to base a purchase decision on, and not attractive heatsinks. If you're buying DDR2 667 MHz, look for latency figures of 4-4-4-12. For DDR2 800, timings should be 5-5-5-15 at the most; anything more and your memory is going to be slow irrespective of the frequency. For DDR 400, 3-3-3-8 should suffice. (Lower timings are better.)

I nowadays recommend 2 GB of memory. Two reasons: your PC will speed up in general, and Vista—which is a memory hog. And you don't want to bottleneck a good processor and decent graphics card, do you? RAM is the expressway in your PC and handles data traffic—more is always good, although as of now you won't see any significant gains with more than 3 GB, and 2 GB is the sweet spot for Windows XP.

I was searching for a 2 GB kit for a friend who's upgrading from a 1 GB kit. The most common brands for DDR2 memory available are Transcend and Kingston. 1 GB of Kingston DDR2 667 MHz memory costs Rs 1,450, and Transcend is some 100 bucks more. Both manufacturers offer "lifetime" warranties, which equates to five years in the case of both vendors. This is a three-year replacement warranty plus a two year repair warranty. A 2 GB kit will cost you around 2,750 bucks (Transcend has a 2 x 1 GB kit). The slightly lower price for a 2 GB kit means you're getting more value for money for buying more memory! Corsair value RAM is also available at Rs 1,700 per GB—dual channel kits are just shy of the 3,500-rupee mark. Dynet is one of the locally-available brands, and is available for as little as Rs 1,300 per GB. Digital, another local brand retails at Rs 1,250 per GB—terrific value for money, but I'd rather pay 300 bucks more for blissful peace of mind.

DDR2 800 MHz is a little more expensive, but worth it if you're going for faster components. 1 GB of DDR2 800 RAM will cost you around 2,000 bucks—both Transcend and Kingston are available for nearly the same price. What's worth a mention is, the price fluctuates as well—for example, 1 GB of Transcend DDR667 was Rs 1,650 last week, this week it was 1,450. It could go up next week!

DDR3 is available, too, but prices are so restrictive at the moment that you're better off with faster DDR2. I don't expect DDR3 to make big inroads into DDR2, at least for another year. Only one big vendor had stocks of DDR3 from Corsair, and the 2 GB dual-channel kit (two sticks of 1600 MHz memory) was priced at Rs 23,000. A serious premium which I think is totally uncalled for.

I ended up buying a 2 GB Transcend kit (DDR2 667) for 2,750 bucks—a superb deal for my friend who had paid 3,500 bucks last year for his 1 GB kit! ⊠

Want more of Agent 001? Turn over to read his answers to your buying questions

Illustration **Chaitanya Surpur**

Widening Horizons

Q I want to watch HD movies, and I have a maximum budget of Rs 15,000 for a monitor. What do you suggest? What resolution? What does "diagonal dot pitch" mean?

Viral

I'd suggest you opt for a 22-inch LCD monitor, which will be very suitable for widescreen applications such as HD movies. A typical 22-incher has a native resolution of 1680 x 1050 pixels (an aspect ratio of 16:10).

Dot pitch represents the distance in millimetres between two adjacent phosphor dots in the case of a CRT or pixel cells in the case of an LCD. The smaller this value the better, because there will be more dots in a given area—leading to a crisper image. For a 19-inch monitor a dot pitch of .26 mm is usually the norm, although this figure goes up for larger monitors.

A Burning Question

Q Please suggest a DVD-Writer for me. I currently have a Sony DRU-710A. I bought it back in January 2005; now, after extensive use, it seems to have gone kaput—it fails to read and write properly.

Abhirup Chaudhuri

All DVD-Writers are pretty much similarly-priced—I don't think a couple of hundred bucks will be a big deal for anyone. I'd suggest Lite-On's latest 20x DVD burner—the LH-20A1P—which should be priced at about Rs 1,750. If you want a Sony burner, the Sony DRU-830a is available, priced at Rs 1,650.

A Laptop—Specs Laid Down

Q I'd like to purchase a laptop for personal use. I want a good graphics solution and a 14.1-inch screen. I am also looking at 2 GB of memory. What are my options?

S Mitra

I'd suggest the Dell Inspiron 1420 series. It has a 14.1-inch screen and offers a Core 2 Duo processor and 2 GB of memory. Also optional is the GeForce 8400GS graphics solution, which is decent. The best part is, you can configure the laptop to your specific needs—of course, this scales with price. The starting price is around Rs 40,000.

Nokia For Signal Quality?

Q I want to buy a cell phone for between Rs 13 and 14K. What's most important is signal quality and connectivity with a laptop (Internet via GPRS). Media playback and camera is not of primary importance, but of course, it wouldn't hurt! I'd prefer a Nokia. I could go with another brand, but it should have more features than Nokia.

Anurag

In case you're absolutely set on Nokia, I'd recommend the N70ME—about Rs 11,000. The N73ME is a lot more future-proof as far as GPRS connectivity goes, and will cost approximately Rs 15,000. Note that these are street prices, and that the N73 (the non-music edition) will be around 1,500 bucks cheaper.

One Upgrade Forces Another...

Q I bought a new GeForce PCI-E 8600 GTS graphics card, but later realised that my motherboard does not support PCI-E. I now want to buy a new motherboard that supports PCI-E, DDR2, and Core 2 Duo. I have a budget of Rs 18,000 for processor, motherboard, and a GB of RAM. So what would be a good buy?

Harshit Syal

Take a look at Abit's IP35, I'd say. This board should be priced at Rs 8,500. It's based on Intel's latest P35 chipset, and will support the upcoming Penryn family of processors. For the processor, I'd say a Core 2 Duo E6550 (2.33 GHz)—around Rs 7,500. For the RAM, I'd suggest 2 GB in lieu of 1 GB—the performance boost is worth the price. 2 GB of DDR2 800 MHz memory would cost you Rs 4,500, while DDR2 667 MHz would be a thousand rupees cheaper.

It's Touch Vs. Tap

Q What would be a good PDA for Rs 20,000? I've homed in on two candidates. One is the Dopod HTC Touch, and the other is the O2 XDA Atom Exec. Which one would I should buy, with my preference being finger touch rather than a stylus?

Rohan Mathew Chungathil

The Dopod HTC Touch allows you to finger-swipe, similar to the iPhone. However, it's definitely not finger-operable for typing, jotting down notes, etc. In fact, no PDA is. Besides the touch feature, I found the O2 XDA Atom very feature-rich—more so than the Touch, which is definitely more gimmicky. In terms of operation, they're both pretty much the same. If you're keen on the finger swipe feature, then go with the Touch, else stick with the XDA Atom.

Get With The Times!

Q I am buying a PC with the following configuration: Intel Core 2 Duo X6800, Intel original motherboard D975 XBX 2, 2 GB DDR 2 667, ASUS EN8600GT.

My budget is Rs 65,000–70,000. What cooling system and PSU should I opt for? Please also say if I'm getting the best of my budget, or if some changes should be made to the configuration. This will be used for gaming on Windows XP SP2.

Jyotirmoy

You're buying old hardware. I wouldn't recommend the 975X chipset to anyone, so we've excluded that chipset from our motherboard test. For a budget of 65,000—70,000, I'd recommend getting a motherboard on the lines of an ASUS P5K Deluxe, which will cost around Rs 14,000. Instead of the X6800, opt for the E6850, which is slightly faster and runs cooler and, not to mention, is much cheaper. The money you save on the processor can be used for a better graphics card, say an 8800GTS 640 MB—look for brands such as Leadtek and XFX. I should also say that 2 GB of RAM is good enough for gaming. ⊠

External Portable Hard Drives
WD Passport Portable (Black)
⊞ Excellent performance, good value
⊟ None in particular

Contact Champion Computers Pvt Ltd
Phone 011-26214751
Web site www.championindia.com
Price Rs 6,500

Internal SATA Hard Drives
WD Caviar SE16 WD3200AAKS
⊞ Value for money, performance
⊟ None in particular

Contact Champion Computers Pvt Ltd
Phone 011-26214751
Web site www.championindia.com
Price Rs 4,500

Internal DVD-Writers
Lite-On LH-20A1P
⊞ Fast performance, 20x writing to DVD+R and DVD-R
⊟ None in particular

Contact Mediatech India Distribution Pvt Ltd
Phone 022-26361111
E-mail digit@ mediatechindia.com
Price Rs 1,700

Internal SATA Hard Drives
WD Caviar SE16 WD5000AAKS
⊞ Fast transfer speeds
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Digital Cameras (High-End)
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⊟ Lacking in macro performance

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E-mail info@canon.co.in
Price Rs 13,995

Digital Cameras (High-End)
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⊞ Good features and performance
⊟ Average macro performance

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Graphics Cards (High-End)
Galaxy GF8800Ultra
⊞ Sheer performance
⊟ Heats up

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Graphics Cards (Mid-range)
ASUS EN8600GT
⊞ Well priced, fast
⊟ None in particular

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Web site http://in.asus.com
Price Rs 8,800

The A-List

The best products tested so far in different hardware and software categories

Wi-Fi Access Points
Linksys WAP54G
⊞ Great performance
⊟ None in particular

Contact Ingram Micro India Pvt Ltd
Phone 9323112279
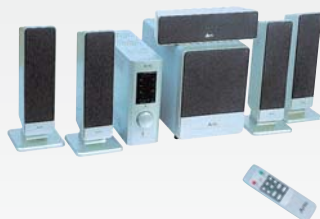**E-mail** sunil.z@ingrammicro.co.in
Price Rs 3,816

5.1 Speaker Sets
Artis S6600R/FM
⊞ Good performance, radio
⊟ None in particular

Contact Kunhar Peripherals Pvt Ltd
Phone 022-66345758
E-mail mail@kunhar.com
Price Rs 8,500

MP3 Players up to Rs 4,000
MobiBlu DAH-2100
⊞ Good performer
⊟ Tiny screen for video

Contact J.J.Mehta & Sons
Phone 022-24306356
E-mail info@jjmehta.com
Price Rs 4,000

MP3 Players up to Rs 10,000
Sandisk Sansa e250
⊞ Good performance, feature-rich
⊟ Tacky scroll wheel

Contact Rashi Peripherals Pvt Ltd
Phone 022-67090909
E-mail navinderc@ rptechindia.com
Price Rs 8,150

Processors
Intel QX6850 Core 2 Extreme
⊞ Extreme performance
⊟ Expensive

Contact Intel Tech India Pvt Ltd
Phone 9833823474
E-mail saranya.rustagi@intel.com
Price Rs 52,000

Projectors
Acer PD726W
⊞ Great overall performance
⊟ No remote sensor at rear

Contact Acer India Pvt Ltd
Phone 9880544226
E-mail alankar_s@acer.co.in
Price Rs 1,35,000

LCD Monitors (19-inch)
AOC 197S
⊞ Good looks and performance
⊟ Gloss finish catches smudges

Contact AOC India
Phone 1800-425-4318
E-mail info@in.aocmonitor.com
Price Rs 12,000

LCD Monitors (17-inch)
AOC 177V
⊞ Good performance
⊟ None in particular

Contact AOC India
Phone 1800 425 4318
E-mail info@in.aocmonitor.com
Price Rs 9,800

Desktop PCs
Sahara 20CK16

⊞ Great performer
⊟ Slightly bulky

Contact Sahara Computers &
  Electronics Ltd
Phone 0120 - 4397777
E-mail info@saharacomputers.co.in
Price Rs 40,000

AMD AM2 Motherboards
Gigabyte GA-MA69G-S3H

⊞ Well built, feature rich
⊟ None in particular

Contact Gigabyte Tech India Ltd
Phone 022-30616666
E-mail sales@gigabyte.in
Price Rs 6,900

Intel P35-based Motherboards
ASUS P5K Premium

⊞ Excellent enthusiast solution
⊟ Expensive

Contact ASUS Technology Pvt Ltd
Phone 022-67668800
E-mail media_india@asus.com
Price Rs 15,870

Intel Integrated Graphics Motherboards
Gigabyte GA-G33-DS3R

⊞ Very good layout
⊟ Expensive

Contact Gigabyte Tech India Ltd
Phone 022-30616666
E-mail sales@gigabyte.in
Price Rs 9,500

Home Inkjet MFDs
Canon PIXMA MP160
⊞ Good performance
⊟ No memory card reader

Contact Canon India Pvt Ltd
Phone 1800-345-33-66
E-mail info@canon.co.in
Price Rs 5,995

Mono Laser MFDs
Brother MFC-7420
⊞ Great cost per page, fax
⊟ No Ethernet Port

Contact Brother International India
  Pvt Ltd
Phone 1800 222 422
E-mail customercare@brother.in
Price Rs 18,000

PCI TV-Tuners
Leadtek Winfast PVR2000
⊞ Excellent video quality and
  software
⊟ Expensive

Contact Topnotch Infotronix (India)
  Pvt Ltd
Phone 044-42042565
E-mail naqui@zebronics.net
Price Rs 5,500

Mono Laser Printers
HP LaserJet 1020
⊞ Good combination of speed,
  print quality, and warranty
⊟ A bit slow in comparison to
  others

Contact Hewlett-Packard India
  Sales Pvt Ltd
Phone 0124-2566111
E-mail kakuni.mahto@hp.com
Price Rs 6,999

Multimedia Phones
Rs 12,501 to Rs 20,000
Sony Ericsson CyberShot K790i
⊞ Great all round
⊟ Cam slider flimsy
Contact Sony Ericsson Mobile
  Comm. India Pvt Ltd
Web site www.sonyericsson.com
Price Rs 12,500/-

Up to 12,500
Nokia 6300
⊞ Great screen, build
⊟ Hard joystick

Contact Nokia India
Web site www.nokia.com
Price Rs 11,489

PDA Phones Above Rs.25K
Nokia Communicator E90
⊞ Extremely powerful
⊟ Heavy, bulky

Contact Nokia India
Web site: www.nokia.com
Price Rs 40,499

Up to 12,500
Samsung SGH-E840
⊞ Great build, slider
⊟ Keypad tactility

Contact Samsung Telecomm.
  India
Web site in.samsungmobile.com
Price Rs 11,499

Office Inkjet MFDs
HP Photosmart C4188 All-in-One
⊞ Good print quality
⊟ No fax

Contact HP India Sales Pvt.
  Ltd.
Phone 0124-2566111
E-mail kakuni.mahto@hp.com
Price Rs 7,999

PC Webcams
Logitech QuickCam IM
⊞ Strong performer
⊟ Manual focus

Contact Compuage Infocom Ltd
Phone 022 - 65297356
E-mail india_getcreative
  @ctl.creative.com
Price Rs 1,995

Mice
Logitech MX Revolution
⊞ Has a flywheel
⊟ Expensive

Contact Logitech Electronic
  India Pvt Ltd
Phone 022-26571160
E-mail response@logitech.com
Price Rs 8,000

Performance Laptops
HP DV6226tx
⊞ Funky Looker, features
⊟ Needs better graphics

Contact Hewlett-Packard India
Phone 0124-2838700
E-mail tapoti-t.tipnis@hp.com
Price Rs 56,990

Smart SoHo

Learning To Share

Your Internet connection, that is...

Robert Sovereign-Smith

Whatever the nature of your business, whether you have a three person team or 30,000, if you've got computers in your office, you're going to need a proxy server. Now larger businesses need something that can handle much more traffic, and we've earlier recommended Squid on a Linux server for them. However, smaller businesses (between 2 and 30 computers) might not have the free hardware or expertise to install and maintain Squid.

Most often, SoHo businesses need something Windows-based—a tool that's easily installed and just as easy to maintain. This is because most SoHo businesses cannot spare a computer, so the proxy server machine is quite simply just another computer on the network that the person with the Internet connection uses. Now Windows can also share a connection over the Network, but it does nothing else. The Windows Internet Connection Sharing Wizard will do nothing more than give all network computers access to your Net pipe, which will result in slow surfing speeds for everyone.

Proxy server software do not just share Net connections; they also cache files to save bandwidth, act as a firewall, put restrictions on content, and much more. So how does one go about choosing a good proxy server? The first step is to look for the following features:

▶ **The ability to run as a service:** You don't want everyone in your office getting disconnected from the Net just because someone accidentally closed the proxy server window.
▶ **Caching:** A proxy server that doesn't cache is just useless; caching helps save bandwidth and speed up the browsing experience.

▶ **User lists:** In order to make sure that no unauthorised people are using your Internet connection, you need to be able to give access to only specified users, with authentication.
▶ **Logging:** You need to keep an eye on what people in your company are using the Net for; to make sure they aren't misusing privileges.
▶ **Bandwidth controls and monitors:** These will help ensure that people don't overuse

Adding users to Proxy+

The Access List lets you control your proxy server

bandwidth, and that will keep your bills in check. Some software will also let you set maximum speeds per client, or cut-off points to stop Net access when a user reaches A prescribed bandwidth limit.

Of course, software that offer all of the above or more will cost a bundle, or will they?

PROXYPLUS (PROXY+)

Proxy+ is proxy software that has both free and paid versions. The free version allows for three users (two concurrent) to use the proxy. The two-concurrent-user restriction means only two people can be using the proxy at the same time. The licensing price for five users is $99 (about Rs 3,950), for 10 users is $199 (Rs 7,900), and for unlimited users is $299 (Rs 11,950). You can get the latest version from www.proxyplus.net.

Installing

This is as simple as can be. Just download the software and double-click it. The last step in the setup process is important, and you should tick the "Install as a Windows service" to run the proxy in the background as a service.

Configuring

Proxy+ can be configured by using a browser and navigating to http://localhost:4400 from the same computer or http://<Your_IP>:4400 from another computer on the LAN.

Once you get to the Proxy+ Admin page, you can start setting up your proxy server. Everything is explained, and help is available in detail from `Start > Programs > Proxy+ > Guide`, or online at www.proxyplus.net/doc/en/proxyguide.htm.

In order to allow your networked computers to use Proxy+, you need to inform them to change the settings in their Web browsers. In Internet Explorer, you'll need to go to `Tools > Internet Options > Connections`. Here, if you have an account name in "Dial-Up settings", select `Never dial a connection`.
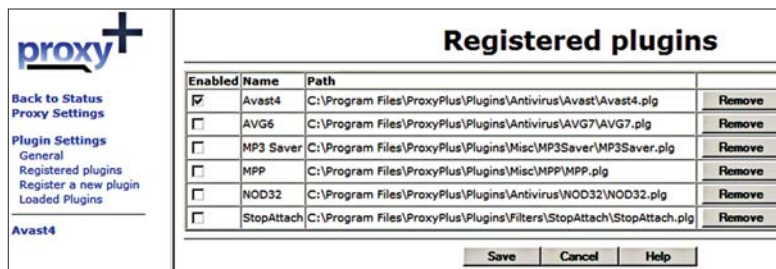
Anti-virus plugins for Proxy+

Then press `LAN Settings...` . Uncheck `Automatically detect settings` and `Use automatic configuration script`. Select `Use a proxy server` and fill the IP address of the PC running Proxy+ in the `Address` field, and set the `Port` to 4480. Instructions for other browsers are at the page mentioned.

IMPORTANT CONFIG SETTINGS

Almost everything you see when configuring is self explanatory, but we will list significant settings here to ensure you set up your proxy right:

Using Proxy+, you can choose to only dial a connection when someone on the network tries to access a site or use a protocol

Add users

At the Proxy+ Admin page, click on Accounts at the left and then on Users. Type in the name of at least one user, say `Admin`, add a password, and click `Add`. This will make sure that you have at least one user for the next step. You can come back later and add all the users you wish.

Change Admin Access

By default, Proxy+ configurations can be changed by anyone who navigates to http://<Your_IP>:4400 from any computer on your LAN. This is open to exploit, so you should change this ASAP. After making a user and setting a password, click on `Administrator` and then `General` at the left. Check the `WWW Admin requires authentication` box, select the user from the drop-down, and click `Save`. This will force anyone who browses to http://<Your_IP>:4400 to enter a username and password to go any further.

Restarting

Proxy+ requires a restart after all major settings changes. This is because the software reads settings when it starts up—so don't be alarmed when you make changes and don't see the results immediately. In order to restart Proxy+, just go to `Administrator > Restart`, and click `Restart`. In a few seconds the page will be refreshed and your new settings will take effect.

Changing Ports

By default, Admin access is at port 4400; browsers need to set port 4480 to use the proxy, and if you set more proxies such as FTP gateways, the port is 4421, etc. All this can be changed, and you can choose custom ports, say 1337 (geek for "elite") for admin and normal proxy ports, such as 8080, or others like 12345, etc., for the services. Just go to `Proxies > General`, and you will see all the settings listed on the right. Change these values to what you desire, and remember to click `Save` and also restart Proxy+ for the changes to take effect.

Dialup

If you are on dialup, or even broadband dialup (PPPoE), you don't want to leave it connected all the time. Using Proxy+, you can choose to only dial a connection when someone on the network tries to access a site or use a protocol. You can even choose which protocols activate dialling. Just go to `Dialing > General` and select your connection—Proxy+ will identify and list all available connections you have here automatically—and click `Save`. To choose the protocols that activate auto-dialling, go to `Dialing > Auto Dial`, check the boxes for the protocols that can initiate an Internet connection, and click `Save`. We recommend you set this to only HTTP and FTP.

Setting Mail Accounts

This is a very useful feature in Proxy+, and it enables you to set the proxy server to download mails from POP3-enabled accounts. This results in a much faster experience for users, because when they download their e-mail into their

mail clients, they're actually downloading it from the proxy server instead of from the Internet. The same applies to sending e-mails.

In order to set Proxy+ to handle mail, go to `Mail > General` and set the outgoing SMTP server first. Choose `Internet Mail Server` if your server is an online one. Usually, just choosing your ISP's SMTP server is recommended. Next go to `Mail > POP3 General` and check the `POP3 Downloader enabled` box. Now you can go to `Mail > POP3 Download`, add the Internet mail account for any of the local users you have. Add in the e-mail account, username, password, and select whether you want messages to be left on the server or downloaded. Click `Save`.

After you're done adding all the accounts, you can restart Proxy+ to make the changes active. To configure your mail client, just set the POP and SMTP servers to the IP address of the computer that Proxy+ is running on. You also need to use the authentication (username and password) that is stored in Proxy+ for your username. So, if Proxy+ is installed on a machine with the IP 192.168.0.1, your name is Prakash Sharma, your e-mail address is `p.sharma@yourdomain.com`, your Proxy+ username is `psharma` and password is `pwd`, your mail client settings would be:

Account Name: `Prakash  Sharma` (or anything you want)

Using the Access List, you can set Allow and Deny based on the time of day
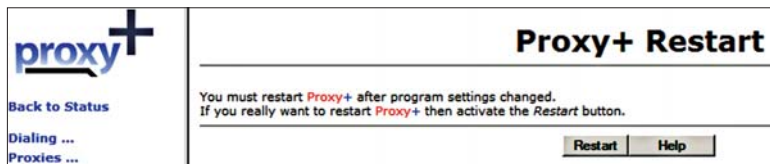
Remember to restart Proxy+ for major changes to take effect

E-mail Address: `p.sharma@your domain.com`
Incoming Server: `192.168.0.1`
Outgoing Server: `192.168.0.1` (providing you have set your SMTP server in Proxy+, otherwise just use your regular SMTP server)
Username: `psharma` (the Proxy+ username)
Password: `pwd` (Proxy+ password, not your e-mail account password)

Access Lists

If you decide that not everyone requires access to the proxy server, you can deny access based on IP addresses—for example, you might not want anyone in the accounts department to get Net

access, to prevent exposure to viruses. Using the Access List, you can also set `Allow` and `Deny` based on the time of day—so, for example, you can allow Net access only during working hours (say, 9 AM and 7 PM), or even deny access to everyone during lunch hours (known as goofing off time). You can also set rules on a per-IP basis.

First, you need to go to `Access List > General` and tick the "Enable Access List" checkbox. Click save and then move on to `Access List > Objects`. You need to read carefully if you want to be able to allow or deny access to computers or set time restrictions. Although what follows may look like scripting, it's not. It's just a logical way of telling the proxy what to do.

First we'll look at Objects. Here you will see a dropdown box called `New object type`. If you want the proxy to deny the IP 192.168.0.99 access, you need to first define that IP. This is exactly what you will do at Objects.

The three types of objects that are most commonly used are `ClientHostName`, `ClientIP` and `Time`. If the IP 192.168.0.99 belongs to a computer called `Prakash`, this is the `ClientHostName`. Now to define this, you will add an identifier under `New object name`. For the computer `Prakash`, you might want to set the object name to say, `PC99`, or anything descriptive that will help you identify the object. Under `Parameter`, you need to add `Prakash` and select `ClientHostName` from the `New object type` drop-down. When you click `Add`, you will see that it is saved in the format `PC99 = ClientHostName; Prakash`.

Let's say you now want to add an IP—say, 192.168.0.125—as an Object. You need to select `ClientIP` from the `New object type` drop down, enter `192.168.0.125` as the parameter, and anything descriptive that you will remember as the New object name—`IP125`, for example. This will add the line `IP125 = ClientIP; 192.168.0.125`.

You can define time similarly—for example, choosing the time between 11:00 AM and 1:00 PM, and calling it `Lunch` would give you the following line in the Defined Objects list: `Lunch = Time; 11:00-13:00`.

Once you have defined Objects, you can choose what the Access List does to them. There are four commands the List understands: `Allow`, `Deny`, `Pass` and `Rewrite`. The first two are self-explanatory. `Pass` is a rule that allows a con-

Setting the SMTP server in Proxy+

necting IP or user "pass" a username and password prompt without seeing the login screen. For example, if people connect to www.yourdomain.com/secret, which has a username and password requirement to keep people who don't work in the company out, you can safely do away with the login requirement from PCs within your company.

Rewrite allows you to change the HTTP request that the user's IP requested. Say your company domain name is **www.something.net**, but people are just too lazy—typing in **something** and pressing [Ctrl] + [Enter], and ending up at **www.something.com**. This is an unnecessary waste of bandwidth and time, and you can set the proxy server to automatically rewrite the HTTP request to forward to **www.something.net** when it is asked for **www.something.com**. This will also work when the URL asked for is **http://www.something.com/a/b/something_else/something.php?module=blah**, changing **something.com** to something.net in any URL.

The first two Rules are all we'll ever use most of the time though, so let's look at how you can use these rules to Allow or Deny access. If you want to deny access to the IP 192.168.0.99, you will first have created the object IP99 = ClientIP; 192.168.0.99. Then, under Access List > Rules, you can add the rule deny IP99. The "!" character can be used as a NOT argument, so you can also set the previous rule (deny IP99) by typing allow !IP99, which tells the proxy server to allow all IPs except for IP99. We'd recommend you not use this too often, unless necessary, because you might get conflicting rules. As an example of a more complicated rule, let's say you want to deny three employees (IPs 192.168.0.80, 192.168.0.81 and 192.168.0.101) access during Lunch hours (11:59 AM and 1:00 PM): First create the objects...

```
IP80 = ClientIP; 192.168.0.80
IP81 = ClientIP; 192.168.0.81
IP101 = ClientIP; 192.168.0.101
Lunch = Time; 11:59-13:00
```

...then add the following line to the Access List Rules box:

```
deny IP80 IP81 IP101 Lunch.
```

These examples should help you set up any rules that you need to. If you get confused, remember to look at the help file.

Plugins

The most important plugins available for Proxy+ are those that allow it to work with various anti-virus software to scan e-mails. You can access these by clicking on the Back to Status link, and then clicking on Plugins. Check the Use Plugins box, then click on Plugin Settings. You can see which plugins are available by clicking Registered Plugins. Here you'll find Avast4, AVG6, MP3 Saver, NOD32, and more. You can also add more.

Finally Setup

Once you're done with all this, your proxy should be ready to use. There are many more settings we've omitted for lack of space, so you should definitely take the time to read the help files thoroughly to learn how to use it better. Make sure you try the free version of Proxy+ before you decide to buy it. Regardless of whether you choose to use this software or one of the others mentioned in the box *Alternatives*, the basics of using a proxy server remain unchanged, so all the above should apply to them as well—only terms and nomenclature of features will differ. Now go save bandwidth and time and install a proxy server for your company! ⊠

robert_smith@thinkdigit.com

Get Noticed, Get Clicked

There are no shortcuts to currying favour with search engines, it seems

Abey John

With more than 135 million Web sites out there, you've got your job cut out to get your Web site in front of surfers. Search engines have long been recognised as a good source of visitor traffic, and over the years, Search Engine Optimisation (or SEO as its popularly called) has developed into an active, dynamic industry in its own right.

A Little History
If you still think stuffing keywords into the meta tags of your Web pages are what will push you up the rankings in the SERPs (Search Engine Results Pages), this is a wake-up call. You've been sleeping and "keyword stuffing" is about as dead as it can get. The Net has moved on, and how! The practice of keyword stuffing originated in the '90s when Webmasters found that search engines gave special weightage to the META tag of HTML pages (right-click on a Web page and view its source, and inspect the `<meta>` HTML tag near the top). This was in the days when bandwidth and hardware were still at a premium. Canny Webmasters began stuffing keywords into their meta tags, which pushed them up in the SERP rankings. Search engines quickly caught on, compensating for the skew in the results, and ever since it has been a game of tag between the search engines and the SEO industry. SEO consultants discover a way to gain an edge in the rankings; the search engines move in and plug the hole.

What Search Engines Do
These days, most search engines look at multiple factors in determining a Web site's ranking in the search results. Some are known, most are unknown. The search algorithm is the secret sauce that drives the accuracy of the search results, and is therefore one of the most closely-guarded secrets. Each search engine has a different set of factors to determine rankings. Google, it is rumoured, uses more than 200 data points! The others (Yahoo! and Windows Live are the main ones which matter these days) are not far behind.

One of the known factors that play a role in determining the rankings in Google is PageRank. This is a score that Google assigns to a Web site on a scale of 1 to 10. A higher PageRank gives you higher weightage. PageRank itself is determined using "...more than 500 million variables and 2 billion terms." (**http://www.google.com/corporate/tech.html**). And like PageRank, there are other hundreds of other factors that go into determining the ranking in the SERP.

Black Hat Vs. White Hat
Even with these many factors to juggle around with, some Webmasters resort to using deceptive practices in an attempt to fool the search engines and push up their ranking. This using of deception—and techniques that attempt to fool the search algorithm—is known as Black Hat SEO, and search engines have special filters that monitor for known Black Hat techniques. If you are looking for long-term recognition and are building a quality Web site, Black Hat SEO is just not the way to go! Search engines penalise sites that knowingly or unknowingly use Black Hat techniques, and this can include suspension or even complete removal from the search engine's listings.

Case in point: the German Web sites of BMW and RICOH were removed temporarily from the search listings for using deceptive techniques. They were only restored after they addressed the issue.

Shrikrishna Patkar, Sandeep Patil

Deceptive techniques can be broadly classified into two types: those that try to fool the search engines, and those that try to fool human searchers. For example, the title of a page may read "Free Software Download." This will be displayed in the search results if the Black Hat SEO for this page is successful. However, when the user clicks on the link, it takes them to a page where they are served more ads to click on—and with absolutely nothing to download. Search engines are aware of such techniques and compensate for them. They have become increasingly efficient—though not perfect—at detecting Black Hat SEO. As time progresses, the cost of Black Hat SEO is going to far outweigh the cost of following legitimate practices in making your Web site search-engine-friendly.

White Hat SEO, on the other hand, employs—or at least tries to use—only non-deceptive techniques. The qualification "tries to" stems from the fact that there is a certain amount of grey area in what Webmasters and SEO consultants consider legitimate optimisation and what the search engines agree on. Early on this year, there was a spate of sites that sprang up offering paid reviews from bloggers. This seemed a good idea, especially for little-known sites who wanted to piggyback on the popularity of an established blogger. That's until Google declared paid reviews (and their links) might get penalised or

...search engines not only monitor the search results page, but also monitor user behaviour for a given search term.

removed from search listings.

Black Hat works on the assumption that they will eventually be caught by the search engines and are ready to move on. There is a law of diminishing returns in operation, as search engines get increasingly efficient in proactively detecting Black Hat sites. Eventually, we expect to see the practice minimised to only those die-hard tech criminals with enough resources (time, money, and determination) to use Black Hat as a part of a larger scam operation.

White Hat works with the sole objective of creating a sustainable ranking in the search engine results. Again, this is not bullet-proof: search engines are constantly refining their algorithms to keep up with the latest developments that impact what users want to search for. These days, search engines not only monitor the search results page, but also monitor user behaviour for a given search term. That is, if site A was ranked number 1 on the SERP but users regularly clicked on site B, the number 2 link, then site B would move to the number 1 position. Add to this the fact that search is getting more and more personalised. Google, according to what can be inferred from patent filings, will customise the SERPs based on geographic location, similarity of search patterns with other users, membership on certain Web sites or forums that are discoverable by the Googlebot (the search engine spider software that crawls and indexes Web pages), and other factors that would, in aggregate, group you with a specific set of users who have similar interests.

For example, if you start using Google Finance, Google will start serving financial information in the SERPs. If you are, say, a regular participant at *Digit's* forum (**http://www.thinkdigit. com/forum/**) and you run a search, Google will look at similar searches from other users in the *Digit* forum and try to guess what will interest you. Of course, this is a simplified example. Your actual profile will be much more complex, and grouping you with users with similar tastes will involve much more. This is, of course, very good for the user: relevance improves.

But this kind of complexity is a nightmare for SEO practitioners. You can be forgiven for thinking that even White Hat SEO is more voodoo than an art or a science. Fortunately, there are some published guidelines, and over the years, the SEO industry has matured enough to be aware of some basic best practices that can help you in achieving the rankings that you feel you deserve.

SEO Basics

Determining a specific SEO strategy for your Web site will depend on a number of factors that are beyond our scope here. These include things like at what stage your Web site is—whether it's a start-up or an established site, what your industry is, your target audience, as well as what type of content you have on your site. If you are an e-commerce site, you might need to follow certain optimisation techniques like exposing your product catalogue and making it easy for the search spiders to index the product pages. Here, we look at the basics that will give you a general idea of what you need to do stay on the good side of the search engines. Even if you are not interested in SEO, you
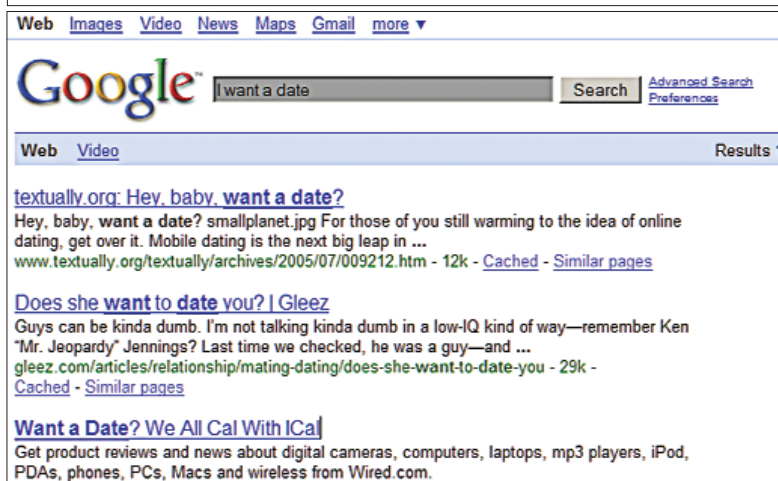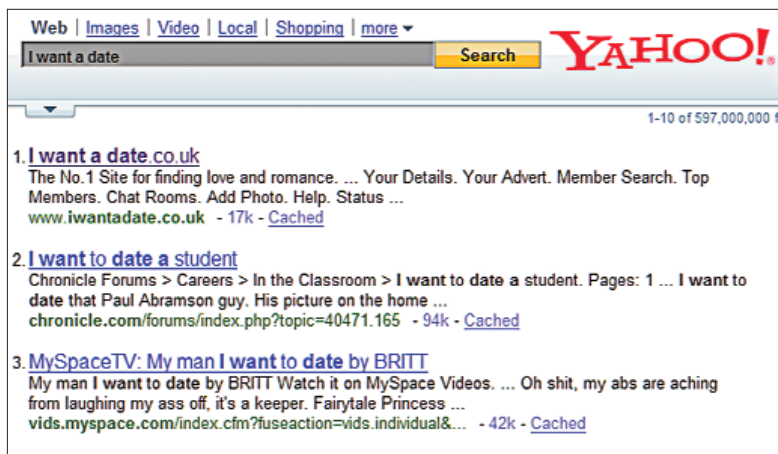
Google does not bring up IWantADate.co.uk for "I want a date" (which is what you might enter if you do!)–though that is the *most obvious* first result. Yahoo! brings it up right on top, so Google probably implements "aging delay" with more strictness

might still want to pay attention to these guidelines which, at the very minimum, will ensure that you don't accidentally get blacklisted.

While all these techniques are applicable to some degree to the Big Three (Google, Yahoo!, and Windows Live), the emphasis given by each will vary. To a large extent we have kept Google in mind, considering that they hold the largest market share.

Content Relevance

Content is still king. Nothing increases your search engine rankings like relevant, on-topic, in-context content. All the other factors you need to pay attention to will carry no weight if you do not have relevant content. Even if you have a poorly-designed site, but with content that is useful to your visitors, search engines can be very forgiving and push you up the rankings, especially if a lot of other Web sites link to your site referring to it as an authority in the specific subject area.

Linking

Link Popularity is one of the main criteria in judging the relevance of a site. This is based on the assumption that if you have good, high-quality, authoritative content, more people will link to you. This might give some the idea that many dummy sites linking to your site can artificially inflate your rankings. Not any more. Search engines have wised up to this technique—known as link farming—and will actually penalise you if they detect that you're using link farms. What counts are organic links, that is, links to your sites by other sites that are in context.

Search engines not only count the links to your site but also look at the surrounding words to identify the context in which the link is placed. For example, if you are running a motor-bike forum and you are linked to from a tech blog, a plain link to your Web site in the links section will carry less weight than if you were mentioned in a blog post. Of course, the exception is if a number of bloggers link to your forum, and a large percentage of them are passionate bikers with posts on biking. Secondly, the "anchor text" for the link also plays a part in determining the value of the link. "Check *this* out" will have less weightage than "Check out *Rajesh's Motorcycle Forum*". The link anchor text "this" is less descriptive and of insignificant context when compared to "Rajesh's Motorcycle Forum", and hence will have lesser value.

Of course, you have no control over how a blogger or another Web site will link to you, but you can at least do some groundwork (run a search for `link:yourdomain_dot_domain _extension` in Google) and politely request the Webmasters or bloggers you can reach if they would be so kind as to edit the anchor text.

While link farming is dead, there is still some life left in "reciprocal linking." This is where you agree with another Web site to show their links on your Web site in exchange for linking to your site. Note, however, that this should be done intelligently, or you might run foul of the search engines and get blacklisted. Stick to sites and blogs that are in topic and context with your site. Linking

Nothing increases your search engine rankings like relevant, on-topic, in-context content.

from a site on, say, Ayurvedic medicine will have no value, and links from many such non-relevant sites may end up getting treated as link spam, attracting penalties and even blacklisting.

One other technique is to participate in other forums, write articles for other Web sites, and/or leave comments on blogs. You may use these to provide links to your site, but ensure that the links are in context and provide value to the conversation. If you simply pop into a comment thread and say "Hey, check out my motorcycle forum" and leave a link, you will quickly get flagged for comment spam. Look for articles or blogs on motorcycles (our example) and leave an intelligent comment linking to a thread in your forum where they discussed the same issue—or something similar.

Links (and therefore the site it is linked to) gain value in other ways too:
▶ the older they are,
▶ if they are located higher up on a page than towards the bottom,
▶ if its part of the content (higher value) as against it being in a collection of other links like in a business directory listing (lower value), and
▶ if the link is from an authority site on the subject.

While all these links are something you have no direct control over, what you can ensure is that you have relevant on-topic content that creates the environment that will influence others to link to your content.

## W3C Compliance And Site Structure

The one cardinal rule that all search engines insist on is that your Web site be primarily designed for humans and not search engines. The easiest way to do this is to bring your site into W3C (World Wide Web Consortium) compliance. The W3C is the standards body that defines development standards for Web technologies, and making your site W3C-compliant will give you a boost in the rankings with at least one of the search engines (Yahoo!). There are many validation tools that you can use to find out how compliant (or non-compliant) your Web site is. A basic "validator" for individual Web pages is available at **http://validator.w3.org**.

Bringing your site into W3C compliance is hard. The upside, though, is that when used in combination with CSS (Cascading Style Sheets), you can get a much cleaner and better-performing site. In addition, from an SEO perspective, the actual content will move up higher in the page code and hence be treated as more valuable by the search engines.

From a pure SEO perspective, compliance is not the holy grail to climbing up the SERP. The objective behind attempting to become compliant is that it ensures that the copy is marked up so that it is "clear" to search engines. Achieving compliance also ensures better compatibility with mobile devices, with less chances of the the code not working in mobile browsers. In any case, the point is to minimise errors rather than seek to achieve full compliance overnight.

Often, search engines do not crawl very deep into your site; you can remedy this by submitting your site and the deeper pages in your site directly. Go to **http://google.com/ Webmasters/tools** for Google, **http://siteexplorer.search.yahoo.com** for Yahoo!, and to **http://search.msn.com.sg/docs/submit.aspx** for Windows Live. Also, create a site map based on the XML Site Map standard—which is supported by the Big Three and others. There are many free tools that can quickly generate an XML sitemap of your site (search for "XML Sitemap Generator"). Create a folder called `"public_ html"` in the root folder of your Web site, put the sitemap xml file there, and submit the URL of the xml file to the search engines. This way, the spider will crawl the entire site and index all the pages. One added benefit is that when your site does come up as the first result in SERPs, it will automatically show the internal links under the main result heading, making it easier for users to quickly reach your internal pages faster.
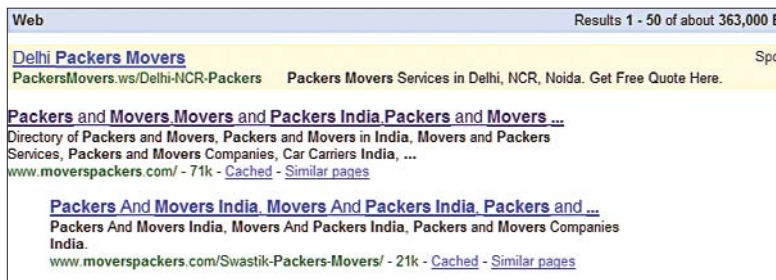
Results for "packers movers india". The result pages are chock full of permutations of those keywords! While this may seem to work, you could be penalised

Formatting And Keyword Density
While we did imply at the outset that META tags are no longer relevant, it still carries a little weight. The meta tag of a page indicates some basic information about your page. For example...

```
<meta     name="Description"     con-
tent="Website   for   Indian   Motorcycle
Fans." />
<meta              name="Keywords"
content="india,motorcycles,hero honda,
bajaj, bullet, royal enfield " />
```

...is an example of a good meta tag. The keywords can, of course, be expanded, but ideally should be kept to the bare minimum and only include those important words that appear in the content. In addition, ensure that the Title tag of your page corresponds to the title of the content of the page. This informs the search engine that your Web page is what it claims to be.

You can also use different fonts and formatting for specific keywords. Search engines will give different weightage for words that are bolded or underlined, and will give different weightage for bolded or underlined links. Needless to say, this has to be in context. You can't bold all the text! The search engine will take this as the standard formatting for the page.

The formatting you apply should be primarily designed to inform the human reader of different levels of emphasis that you wish to apply. Also, for images, include anchor text (alt text) that gives a description for the image rather than just the image name.

In addition to applying formatting that can help increase the weightage of your pages, you should also keep keyword density in mind. The keyword density is the ratio of the total number of keywords to the total number of words. There is no magic number for this; it keeps changing constantly and may be different for different industries. One way is to run a search with the keywords and look at the density in the top 10 sites in the SERP and determine a density somewhat midway between the highest and lowest values. You might want to do the same for the keywords themselves—see what the competition is using!

Now for the bad news. While optimum keyword density may not be given a great deal of weight by the search engine, too high a figure for keyword density can attract penalties—search engines may rightly or wrongly suspect you of keyword stuffing.

Keep your keywords focused. If you are a packer and mover in India, keep your words limited to "packer mover india"; Google, in any case, clumps words with similar meanings together. You might consider using related keywords like "point-to-point shipping", "door delivery", etc.

Site And Page Age
This is a simple but important metric. The longer the site has been running and the longer the page has been up, search engines give it a better ranking on the assumption that you are not a fly-by-night operator and have really something useful to say. The same can be said for links. The longer someone links to your page, the more it gains in value.

The search engines apply, to varying degrees, an aging delay on new Web sites. This is based on the assumption that sites are trying to game the search algorithm, and they are progressively removed over a period of time. From an optimisation perspective there is nothing you can do about it but wait. So if your pages do not start appearing in the search results straightaway and you are a fairly new site, you know why!

Going To The Professionals
The SEO industry being what it is, there are as many con artists as there are genuine practitioners of the craft. In most cases, by simply focusing on delivering great content and by following the basic rules to prevent you from get blacklisted—along with some light PR linking activity in relevant blogs and forums—will enable your site to gradually rise up the rankings. However, if you need results, and fast, you should turn to an SEO Professional. A true SEO consultant can deliver superior results to what you could achieve on your own. However, given the prevalence of so many con artists who make your contract contingent on specific benchmarks, you need to define the search keywords that you wish to rank in, specify the ranking range that you want to appear in (if they promise to deliver number 1 ranking, politely thank them and slam the door in their face), and specify the time period that this must happen in. Only after you define at least these three metrics should you even consider inking a deal. ⊠

readersletters@jasubhai.com

"We believe that basics and foundation are mandatory for success. These cannot be achieved through crash courses. Crash courses pander to people's insecurities, and we believe that better candidates would not be attracted to them. We give relative weightage of 50:50 to qualifications held and the skills possessed by an applicant—both are equally necessary. Formal education provides the foundation for the concepts that can be built upon in the corporate world.

"Standardised tests give us a uniform benchmark for us to assess all candidates. Variations in the curricula of different universities will thus be compensated for.

"From a candidate with experience, we expect solid basic concepts, understanding of the workspace, working in a team and lateral thinking. We also expect the person to understand the requirements of the client and work with customer delight in mind. We look for people with good adaptability and learning abilities, and believe that good performance at work can erase the deficiencies of academic performance.

"Today, the requirement to demonstrate skills is already gaining importance, and will continue to do so."

Sivaramakrishnan Kalyanaraman
Vice President—HR
Intelligroup, Inc.

BOOKWORM OR

Do skillsets possessed merit over qualifications? We asked IT industry bigwigs and found out the current trend

Shamit Khemka,
CEO,
Synapse Communications
Pvt. Ltd.

"Any educational degree which is obtained from an accredited institute has weight, and given preference not only in the government sector, but in the private sector as well. Many private institutes have mushroomed recently, some of which follow the basic principle of earning money rather than adding desired value to the candidates.

"If a candidate has formal qualifications, it tells us that he / she has grown up to that level, which works a launching pad to take him further. That is why at the time of recruiting, the requirements clearly state that formal education is required to go ahead.

"Standardised tests, according to me, would work better if candidates have already taken the first flight—formal education.

"For a regular position, we go through a formal assessment through interviews, written test, HR interviews, reference checks, etc. On-the-spot hiring is limited to campus recruitment only.

"At Synapse, we value knowledge and skills, but a formal education is an essential requirement. Once candidates are hired, what really matters is their performance, and academic scores take a back seat.

"Formal education can give you a launching pad, but it's your grit and performance that will enable you to take-off."

Chaitanya Surpur

Joe Lazar
Director-HR
Analog Devices India

"It is important to insist on formal qualifications and certifications, because employers are competing with global talent, so you need to hire the best. This could be very specific more to a Product Design company than IT services company.

"You need both formal education and suitable skills to progress. Standard- or industry-specific tests checks for skills that are needed for specific employment where as college / university tests are needed to test academic skills.

"At Analog Devices, formal education and basic skills are equally important. Basic skill sets are the foundation on which every assignment is built. Formal education gives you the tools and techniques to perform your job better, and is also important for you to excel in your domain.

"In our case, good performance, skills and academic record all go hand in hand. In very rare instances, candidates with poor academic record have shown great performance.

"I foresee that in the years to come, it will still be important that demonstrations of skills will be equally important as academic achievements."

VETERAN?

Sumeet Sabharwal
Managing Director
NaviSite Inc.

"Formal education still remains a strong criterion for getting through the application-screening stage. At NaviSite, we focus less on qualifications once the candidate has been through the conventional pre-screening process. The minimum requirement to pass the pre-screening process is graduation. The qualifications held by candidate represent two things—maturity and commitment by doing a degree course.

"Conducting standardised tests would help—depending upon who conducts them, how they are conducted, what degree or level of knowledge is expected, and whether it's done by a trusted body. We'd be pleased if they're conduct at a level that is something similar to the Common Aptitude Tests (CAT).

"We give 30 per cent weight to qualifications held and 70 per cent to basic skills like analytical capabilities and logical reasoning for programming. Competency has to be proven by going through the technical test exercises that precedes the aptitude and personality exercises."

Shrikant Kulkarni
Sr. Vice President-HR
KPIT Cummins
Infosystems Ltd

"Formal education is necessary for anyone who aspires to enter the IT industry. At KPIT Cummins, formal qualifications are the basic criteria to enter in the primary round for recruitment, and also an important benchmarking tool for filtering the applicants.

We give 30 per cent weight to the formal degree held by the candidate, and the remaining 70 per cent to skills possessed. This 70 per cent is further classified for different aspects like communication skills, knowledge of domain and industry, aptitude, and so on.

"After passing the technical interview, aptitude and personality tests, candidates are graded on a scale of 1 to 5 on the basis of their overall performance and we look for those who are above average.

"For specific requirements, we give programs or assignments to check whether candidates can show us satisfactory results. Here too, above average performers are selected.

"All the skills acquired by a person during the academic period are tested on the job, and those who prove themselves go further. At the end of the day, however, it's the performance of the individual that tells the real story."

As told to Samir Makwana (samir_makwana@thinkdigit.com)

Digital
Leisure
Technology Beyond Work

Touched by Tech

At Sea No More

Entrepreneurs are taking substantial steps towards using technology to help those who till the soil and harvest the sea. The information is there; it needs to be delivered

Prakash Ballakoor

India is—sit back and think about it—a booming economy, an IT hub, a business outsourcing hub, and has an extremely high mobile subscriber growth rate... and is also a country where farmers kill themselves out of monetary debt and poor fishermen mark their graves at sea.

The economist will tell you that waiver of debt or providing subsidies is not the way out for the farmer. The weatherman will tell you that forecasting is not enough to warn the fisherman at sea. So what can be done to help farmers and fishermen, two classes with shared problems? Technology can help: it need not only be for the middle class. It is about supplying the right information at the right time, making the unpredictable more predictable.

It's About Information

If our farmers need to harvest the benefits of a booming economy, they need information: accessible and affordable, timely and customised, usable, searchable, and up-to-date. Large sections of society—mostly rural folk—do not have access to the huge knowledge base built by scientific development. The content is not in the local language, and not deliverable in a form of immediate use to them. For example, a monthly farming magazine cannot report the likelihood of a pest infestation in the weeks to come.

A Portal To The Rescue

Understanding this need for the exchange of information from and to rural communities, a multi-lingual, multimedia-based agriculture portal called aAQUA (**www.aaqua.org**) was launched late 2003 by the Developmental Informatics Lab of IIT Bombay in collaboration with the Krishi Vigyan Kendra (KVK) (Agricultural Sciences Outreach Centre) at Baramati (Maharashtra) and Vigyan Ashram at Pabal (Pune district). There are several KVKs across the country.

aAQUA, short for Almost All your Questions Answered, attempts to help the farmer who does not have access to expert advice. Addressed here are farmers' queries based on location, season, weather, and crop, and other such information that farmers or their agents and representatives provide.

How It Works

The farmer (many a time illiterate or semi-literate) puts forth his question regarding his crop or livestock with the help of a local computer operator at an Internet café, commonly referred to as an Internet kiosk, as or through a literate farmer who has an Internet connection at home. There are relevant forums on the portal he can access for this purpose. The portal supports Hindi,

Marathi, and English as of now. Experts from Krishi Vigyan Kendra—Farm Science Centre, which provides training skills on scientific farming practices for farmers and the rural youth in Baramati, then answer the questions.

The portal also maintains a repository of question and answers. Upon registration, one gets details such as the weather forecast for the location. If a farmer cannot post a question online or e-mail it (to **aaqua@persistent.co.in**), he can SMS it. Industrial (agriculture-based), financial, and legal advice is dispensed. aAqua experts say that once they receive a question, they are time-bound to reply within 48 hours.

The Extras

Other than providing expert answers, aAQUA provides an online digital library called Crop Doctor, which displays images related to crop disease. Farmers can identify relevant photographs and look for control measures. A library of seasonal crop recommendations by experts from KVKs can be found under the Crop Recommendations. Even updated prices of agricultural commodities in different markets of Maharashtra, collected by the Agricultural Produce Marketing Committees (APMC), can be located under a section called *Bhav Puchhiye*.

A multilingual meaning-based search engine called Agro Explorer allows the user to search for content in a local language (though the site currently supports English, Hindi, and Marathi), and view the document in that language irrespective of the language of the original document. aAQUA's architecture is designed in such a way that it allows users to navigate and search through all aAQUA forums even when connectivity is disrupted. The information repository on the local computer gets updated whenever Internet connectivity is established.

In the past year, the aAQUA portal has seen 5,760 posts and about 6 lakh views. From incpetion, questions have been received from 290 of India's 600 districts.

In Their Footsteps

Following aAQUA's success, a new social venture firm came up, based out of IIT Bombay's Business Incubator. The team behind it comprises Anil Bahuman, Dr Krithi Ramam-

ritham, Dr Kadarbhai, Dr Yogesh Kulkarni and Dr Bishnu Pradhan. This social venture, called Agrocom, goes a step further: unlike in aAQUA, a farmer need not visit an Internet kiosk for a weather update.

Agrocom realised that though aAQUA has been a success, there were more issues that needed to be addressed. For information from aAQUA, farmers needed to walk miles to get to
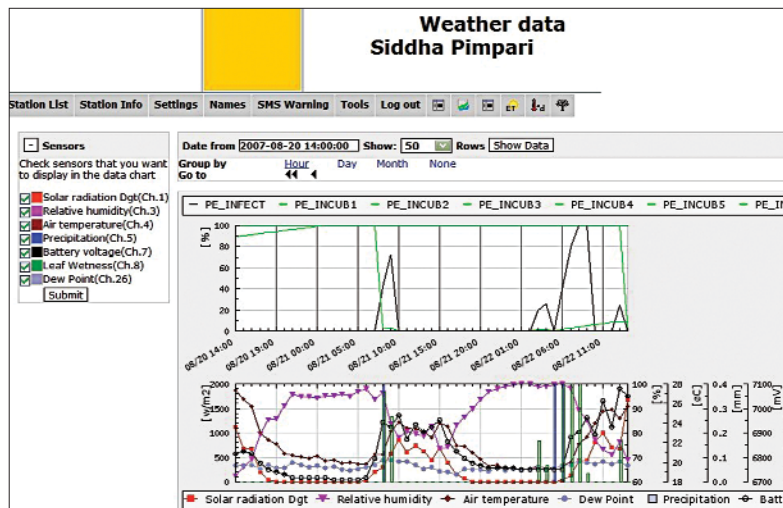

An e-mail report from Agrocom contains charts indicating various weather parameters ranging from dewpoint to relative humidity

an Internet kiosk; and what with villages being plagued by power outages or low voltages, making it difficult to install and run PCs. Agrocom addresses these issues by sending out timely weather reports and disease and pest warnings—to farmers and farming organisations that have subscribed to the service—using SMS text. When more detailed information is needed, Agrocom uses e-mail.

The Returns

Agrocom has realised about Rs 9 crore in savings for farmers in the past 11 months of operation. The cost per month for a weather forecast is Rs 100, and for a disease alert, it's about Rs 250. For e-mail-based weather forecasts for an organisation, the charges are Rs 800 per month per village. More than 300 farmers have subscribed to the SMS service.

Nilanjan Ghosh
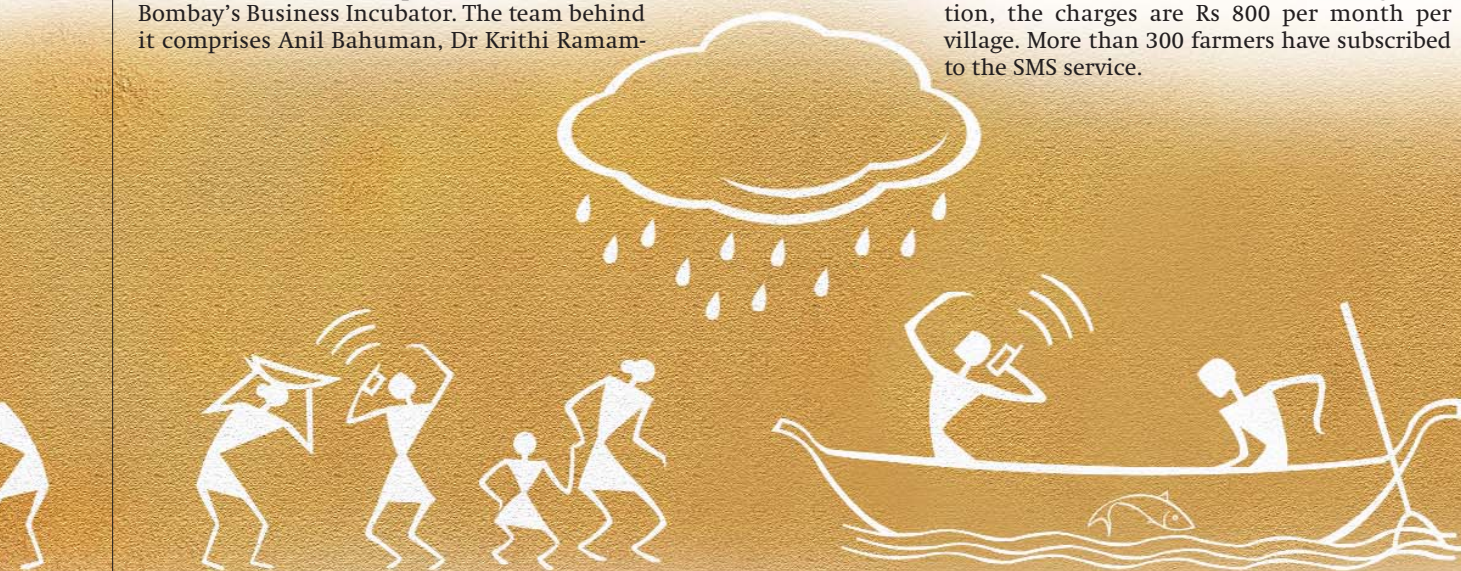
Information through e-mail is more elaborate—it includes reports of humidity, solar radiation, air temperature, precipitation, leaf wetness, and dew point.

Farmers use disease forecasts to plan a preventive spray schedule. This drastically reduces crop damage due to insects and diseases. This is also good for the environment, as it means fewer pesticide residues in the crop. And now, given the growing consumer awareness of pesticide residues and the premium that consumers are willing to pay for farm produce with low-level residues, farmers can demand better prices in the domestic as well as export markets.

Agrocom also offers bulk purchase of SMS credits, which are then distributed to farming organisations and KVKs. Agro universities and KVKs buy these services so that they can interact with the farmers and forward relevant information, they depend on government grants for this.

Agrocom also supports infrastructure-building projects, providing consultancy and support to farming organisations that want to install automated weather stations for purposes of farm-level disease forecasting, weather record validation for weather insurance, and weather forecasts for decision support. Agrocom's predictions have been shown to have an accuracy level of 80 to 90 per cent, based on random surveys.

Mobile At Sea

The M. S. Swaminathan Research Foundation (MSSRF), a Chennai-based research body that works on agricultural and rural development as a part of community service, has been providing weather information to a fishing village called Veerampattinam, and a neighbouring village, Nallavadu, since 1992—and has been saving fishermen's lives. But since the announcement is through a public address system at 3 AM (when fishermen venture out) there is no way to communicate sudden changes in weather when the fishermen are out at sea. MSSRF therefore developed a simple solution to address the issue: use the cell phone.

QUALCOMM, a pioneer in CDMA communication technology, and actively involved in vari-

"Once we complete the trial phase, we will work with our ecosystem partners to identify the business opportunities and financials"

Parag Kar
Senior Director
Government Affairs
QUALCOMM India

ous social projects the world over, partnered with MSSRF and developed a user-friendly mobile application, called Fisher Friend. It has a user-friendly interface and provides vital, real-time information to fishing communities—anytime, anywhere—at the press of a button.

The application, developed by Indore-based Astute Systems Technology, on the BREW (Binary Runtime Environment for Wireless) platform—QUALCOMM's open solution for wireless applications development and device configuration—allows users to access information through an interactive menu. It allows fishermen to know if it is the right time to venture out to sea; it provides vital updates like the location of fishing shoals, risks, and fish trade information in the local language (Tamil at present). The information channels the energy of fishermen in the right direction, optimising time and fuel.

Satellite images are the basis for the information regarding weather and fish concentration; it is accumulated in a centrally-located server at MSSRF. This information is then analysed by MSSRF, and sophisticated technical information like sea wave heights is processed to make it usable. The processed data is sent to Astute to be encoded for the BREW platform. The project is now in the trial phase, and involves 10 fishermen using Tata Teleservices in Veerampattinam. Created in Tamil, the appication will be first rolled out in places where Tamil is understood.

The service is available in the 10 to 15 kilometre range within domestic waters, which covers about 80 per cent of fishermen's requirements. Extending this limit is not possible because regulations do not currently permit mobile communication in international waters.

Parag Kar, senior director, Government Affairs, QUALCOMM India and SAARC, says, "Pricing for the service at the moment has not been decided. Feedback from the fishermen is being collected to enhance the application in terms of user-friendliness and how far it is reflective of the needs of the fishing community. We have finished with phase zero (of four) and we are in phase one, which will be completed by the end of 2007." Going by media reports, the application is likely to be perfected by November of this year, and will be deployed on about 100 phones across the coast. It is also reported that QUALCOMM is working on incorporating GPS capabilities into the phones so the exact location of the phone can be tracked, and so that rescue becomes easier in the case of a disaster.

Why Not?

The technology is all there, but only a few rural entrepreneurs take it to a stage where those as yet unempowerd by that technology can use it. We must not forget that technology is not for and by the middle class alone. If we can have IT parks, we can have services such as those we've discussed rolled out all over the country... and that would benefit not just the farmer and the fisherman; we would all benefit in return—individually and as a nation. Certain ideas—such as "the illiterate cannot use technology"—must be wiped out. After all, tech enhances life, wherever, whoever. ⊠

prakash_ballakoor@thinkdigit.com

Fishermen included in the trial phase of QUALLCOM's service using the Fisher Friend application while out at sea

WORLD IN CONFLICT

The Final Conflict

Is old-school back?

We can hear you saying, "No! Not another world war title, enough already!" Actually, I missed the beta and I'm glad I have my hands on the final version. It's been one of the games many have been waiting for all year. The single-player storyline goes along the lines of how the Soviet Union tries to take over American cities and US forces try their best to hold them back and take back whatever little they can.

The controls here are completely different from those in most RTS games. You move the camera like you would move a player. Whereas WASD would be used for attacks or making units, here you use those keys to move in different directions, and the mouse scroll to move up and down. The training session has an obstacle course for you in which you move your camera view through hoops. It takes a while to get comfortable with the change, but they really get you into the action.

Single-player gameplay is simple, and has the typical primary and secondary styled missions that are pretty easy even at normal difficulty. The allied troops are there helping you from getting your ass handed over almost all the time. The game has none of that collect 10 gold and 5 wood to manufacture new shiny pony nonsense

here. What you get instead is non-stop chaos in which you're continuously either attacking or being attacked.

The cool-down time for most of the special weapons and reinforcements has been kept lower than that in other RTSes, because you won't be creating any units as it is. Units come in the form of reinforcements that you order from time to time when you have the credits. Select two of these and three of those and point where you'd like them. Moments later, they're home-delivered. If you aren't careful with your spending, though, you might find yourself fending off half the Red army with two tanks.

The maps are huge but the vehicles are quick. There isn't a variety of units to choose from; they have been kept rather basic, and you spend your time focusing on tactics. Most of the fun is to be had by doing special attacks such as carpet bombing, napalm strikes, and nukes.

These elements all add up nicely to some really intense gameplay. There's even

more fun to be had in multiplayer, where you can have as many as 16 players at once—with voice chat as well!

The graphics are some of the best I've seen in RTSes. The unique camera controls allow you to get really close to the action—and you'll see dust on jeeps' windshields and footstep trails of infantry in the sand.

The maps are filled with beautiful swaying trees, brilliant shaders for the rivers and seas, flashing clean metal structures, and perfectly-tarred city highways which all make for a well set environment to... destroy.

Our GeForce 8800 GTX didn't break a sweat at maximum settings at 1440 x 900. There aren't any noticeable bugs, either. Animations are very well done, and you can see this especially in the in-game rendered cutscenes. The sounds are great and so are the voice actors.

World in Conflict is like *Company of Heroes (COH)* minus the crazy-blood-thirsty-soldier-blindly-running-across-a-minefield-screaming-kind of passion and madness. A big chunk of *COH* and *Command & Conquer* players will like this one. This is definitely one of the best *RTS-like* games around today, alongside *Company of Heroes.*

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di9itGAMING PC

XFX GeForce 8800 GTX,
Intel Core 2 Duo E6600, 4 GB DDR2 RAM,
Windows Vista Ultimate x64, WD 250 GB

Half-Life 2: Episode Two and Portal

Bottom line: HL2E2 could have been better. Portal rocks though

Finally! After 16 months of waiting, *Episode Two* of the *Half-Life 2* saga has been released. It's not that good, unfortunately. We're hoping that the lapses we detail below are because the developers were working on *Portal*, for there's no other explanation we can think of.

Ever since Valve decided to release future instalments of *HL2* in an episodic format, the innovations haven't exactly awed us. *Episode One* was interesting, but nothing compared to the buzz that surrounded *HL2*. Now along comes *Episode Two*, and it just feels like rehashed content. The solution to the various puzzles seem too obvious, and I could always immediately see my way out of the current situation. *Episode Two* will give you a maximum 10 hours of gameplay, which is another irritant with the episodic format—I'm officially changing my stance from a supporter of the episodes to the point where I'd rather wait five years for HL3 and get my days/weeks of enjoyment, instead of this 10-hour teaser.

What's New?

In order of appearance, here goes:

The Hunter: A badass machine you'll often meet. It's fast, powerful, eight feet tall, shoots weird cannons, and basically spits venom. Throw something heavy at one and watch it get bowled over. The pulse rifle's alternate fire is a one-shot kill, and the hunters become the hunted if Freeman is doing his Schumacher impression behind the wheel of a beaten-up jalopy (see hunter, point car at hunter, hunter go squish!).

The Antlion Worker: The damn thing throws venom over long distances, while jumping and climbing like, well, an Antlion. It's immune to water too, unlike regular Antlions that drown in a puddle. Again, using the gravity gun to fling boulders or gas cylinders (if available) at Workers proved to be very effective.

The Magnusson Device: In *Episode Two*, you'll face a dozen or more Striders. Sound really hard? Not when Freeman carries a Magnusson Device, it's not! Use the gravity gun to shoot this sticky bomb at a Strider, then just pull out any weapon and shoot the bomb. Kaboom! Strider-stew. If it weren't for the Hunters that accompany each Strider, these monsters would be as easy to kill as a stray zombie.

Apart from the few new features, Freeman leaves City 17 for the first time and heads to White Forest. Scenery-wise, everything you do in *Episode Two* is outdoors or in caves. We won't ruin the ending, or too much of the plotline for those who still want to play it, but be prepared for another pot-boiler at the end—typical!

Valve has also released *Orange Box*—which contains *HL2*, *HL2E1*, *HL2E2*, *Portal* and *Team Fortress 2*—for a mere $49.95 (less than Rs 2,000). If you haven't played *Half-Life 2* or *Episode One* before, get the *Orange Box* now. *Episode Two* on its own is nothing great though. Portal, however, is a different matter altogether...

Rating:
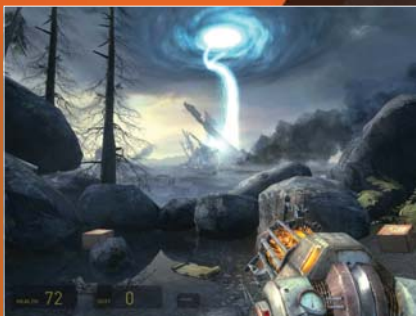**HL2E2—5/10; Portal: 9.5/10**
Developer: **Valve Software**
Publisher: **Available at**
http://orange.half-life2.com/
Price: **US$ 49.95**

Vortigons bring her back to life

That Portal has to go!

Scientists. You can't live with 'em, can't kill 'em

Stupid Hunter trying to kill my girlfriend

PORTAL™

Here's an FPS that's so refreshing, we'll tell you upfront that we gave it a 9.5/10—almost perfect, if only it were longer. The game will give you about three to four hours of immense fun.

Portal capitalises on the puzzle-solving that made *HL2* what it is, then adds a whole lot more. What might this "more" be, you ask? If you thought physics was confusing, and life in 3D complicated, Portal takes you to the fourth dimension, allowing you to travel between two "portals" that you can create pretty much anywhere. One instant you're jumping down into a portal on the floor, only to emerge from the other end you'd placed on a wall. To complicate things, momentum is conserved when you pass through the portal, which means you come out the other end at the same speed, but in a completely different direction. Thanks to my nonexistent spatial skills, there were times I became so disoriented, I began swivelling my mouse around frantically, trying to understand where I'd ended up and which way was which.

You start off as a test subject (an expendable one, obviously), being guided by an AI computer called GlaDOS, who's teaching you how to use the portal gun. As you near the end of the test after successfully completing all the levels, GLaDOS tries to incinerate you. You escape of course, with GLaDOS promising you *cake* if you come back.

The game has a hilarious script written for GLaDOS, and a few times I found myself losing a level because I couldn't see through the tears squeezed out due to my hysterical laughter. The developers poke fun at everything, including Black Mesa (the research centre responsible for all hell breaking loose on Earth in *Half-Life*), not to mention the much-promised cake—if you keep your eyes peeled, you'll find tonnes of similarly funny Easter eggs.

In the end, you meet and combat GLaDOS, and have to kill her before she returns the favour. Listen to her dialogues carefully and try not to laugh yourself to death. We expect to see this portal gun in *HL2 Episode Three*, or even a more complete and much longer *Portal* game. After you finish, some Advanced Maps are unlocked, which contain more challenging puzzles.

Enough. This game is a must-play, the end-titles song a must-hear (we've provided the lyrics on the right). Make sure you get it ASAP.

robert_smith@thinkdigit.com

Getting through the puzzles

GLaDOS tries to kill me

The cake is a lie...

That's me looking at myself

GLaDOS says she loves me. Then I kill her

Digit GAMING PC

XFX GeForce 8800 GTX, Intel Core 2 Duo E6600, 4 GB DDR2 RAM, Windows Vista Ultimate x64

Staying Alive

This was a triumph.
I'm making a note here:
HUGE SUCCESS.
It's hard to overstate
my satisfaction.
Aperture Science
We do what we must
because we can.
For the good of all of us.
Except the ones who are dead.

But there's no sense crying
over every mistake.
You just keep on trying
till you run out of cake.
And the science gets done.
And you make a neat gun.
For the people who are
still alive.

I'm not even angry.
I'm being so sincere right now.
Even though you broke my heart.
And killed me.
And tore me to pieces.
And threw every piece into a fire.
As they burned it hurt because
I was so happy for you!
Now these points of data
make a beautiful line.
And we're out of beta.
We're releasing on time.
So I'm GLaD. I got burned.
Think of all the things we learned
For the people who are
still alive.

Go ahead and leave me.
I think I prefer to stay inside.
Maybe you'll find someone else
to help you.
Maybe Black Mesa...
THAT WAS A JOKE. (ha ha) FAT CHANCE.
Anyway, this cake is great.
It's so delicious and moist.
Look at me still talking
when there's Science to do.
When I look out there,
it makes me GLaD I'm not you.
I've experiments to run.
There is research to be done.
On the people who are
still alive.

PS: And believe me I am
still alive.
PPS: I'm doing Science and I'm
still alive.
PPPS: I feel FANTASTIC and I'm
still alive.

FINAL THOUGHT:
While you're dying I'll be
still alive.

FINAL THOUGHT PS:
And when you're dead I will be
still alive

STILL ALIVE

Still Alive

Lost Planet:
EXTREME CONDITION

What do you get if you cross John Carpenter's *The Thing* with *Starship Troopers* and, in typical Japanese fashion, throw in a couple of hundred giant battle mechs? Originally released on the Xbox 360, *Lost Planet* finally winds up in the hands of PC gamers, becoming the first DX10-compliant game to be released.

With an absolutely laughable plot that serves no purpose other than getting you from beginning to end, *Lost Planet* manages to pack in gameplay that more than makes up for the planet-sized hole in the story. There's arguably nothing more fun than shattering the frozen corpses of huge alien bugs into teeny ice crystals. What works against the game is, ironically, the presence of the pilotable giant mechs, dubbed Vital Suits.

Lumbering hulks armed with massive weapons, the VSes pretty much turn combat into a one-sided killfest. All that atmosphere envelops you as you trudge through waist-deep snow, or get chased through an expansive ice plateau by a giant worm. And what was actually enjoyable on the Xbox 360 becomes too easy and overly repetitive on the PC, simply because you can aim better with the mouse (unless you use an Xbox 360 controller), leading to a situation where you're just mindlessly blasting enemies to get to the juicy boss battle.

Even though *Lost Planet* is the first DX10 title currently out, it is still a port of a DX9 console game, and it shows. The game does look much better than the Xbox 360 version at high settings in DX10—with improved lighting, shadowing and particle systems—but unless you look really hard, you won't spot major differences between the DX9 and DX10 versions. Those who do play it on an Intel Core 2 Duo and an 8800 GTS or higher, however, will be treated to a lot more eye-candy, including better kick-up from grenades, the extremely dense smoke / fire effects and some of the richest motion blur and HDR effects seen in a PC shooter.

However, it's not all fun and games, thanks to the fact that *Lost Planet* enforces a strict Shader Model 3.0 requirement on the GPU without actually needing it. And then, the PC multiplayer is borked for the most part, and provided you actually connect to a proper server on the PC or via Xbox LIVE, you'd soon get bored thanks to the dull variations on archetypal gametypes or the VS-hogging killjoys you'll find online. And if you hate the Steam platform, stay away from this game, since it relies on Steam just as much as Valve's games do—so you can't really buy the game and play it offline immediately.
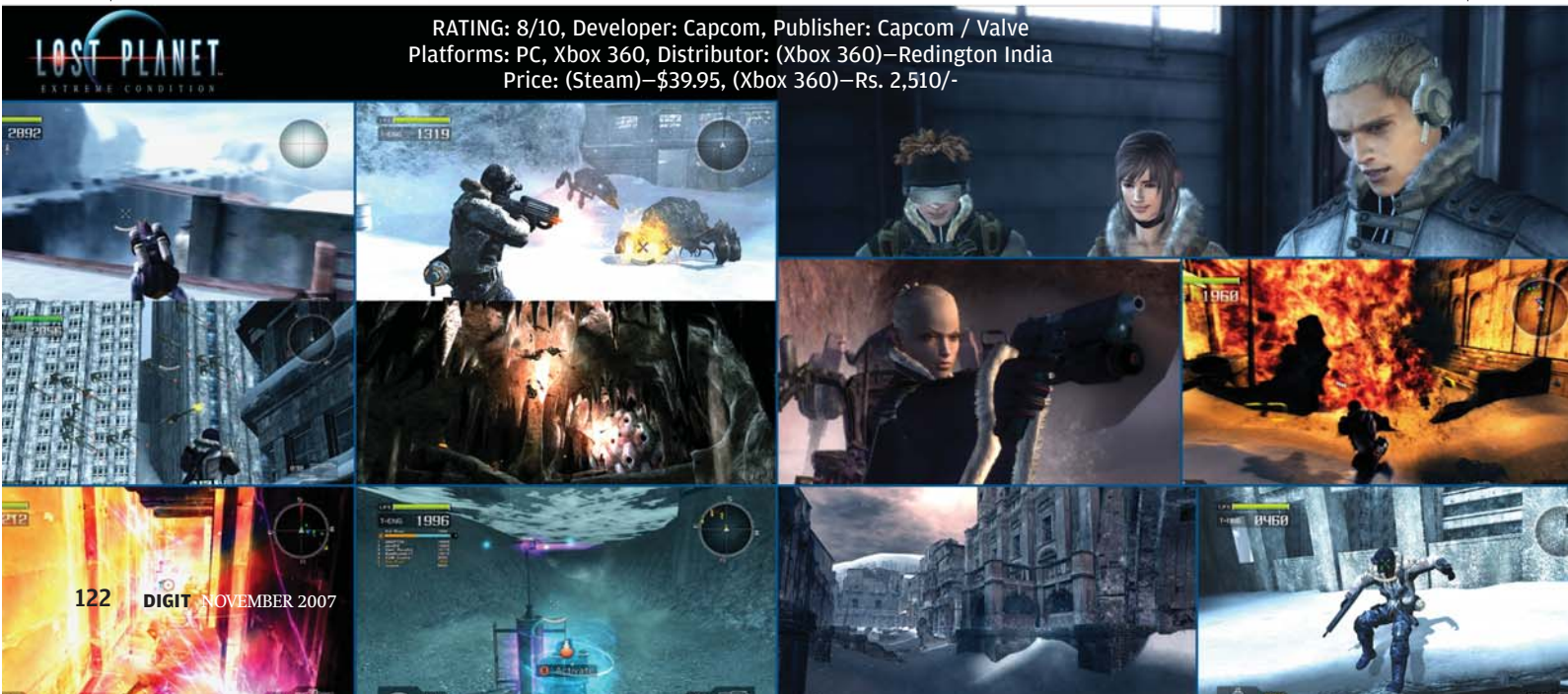
In the end, if you already own an Xbox 360 or plan to get one, it's best to stick to this game on the console. On the PC, it just becomes a really fun yet average shooter that has little to no replay value. While no-one who gets the chance to play *Lost Planet* will regret it, those who are planning to sell body parts over the next three months considering the thousand and one new titles being released, might want to take a rain check on this one.

readersletters@jasubhai.com
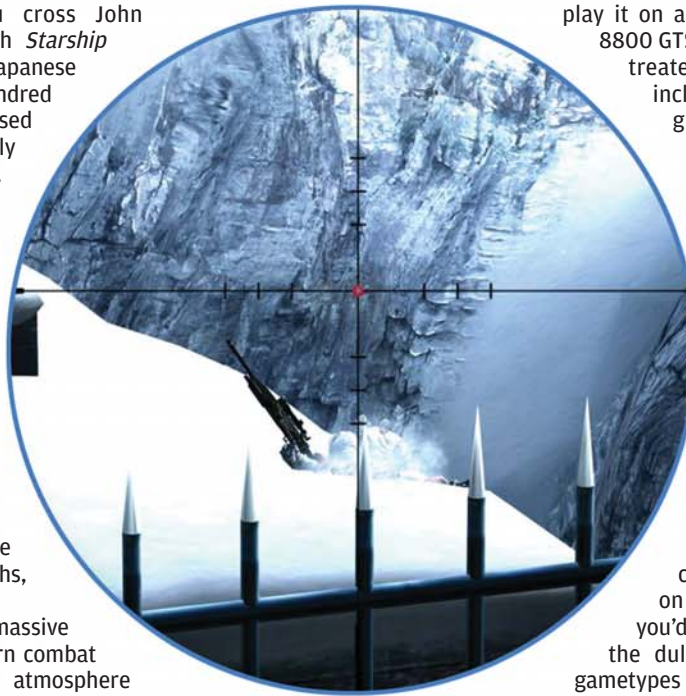
RATING: 8/10, Developer: Capcom, Publisher: Capcom / Valve
Platforms: PC, Xbox 360, Distributor: (Xbox 360)—Redington India
Price: (Steam)—$39.95, (Xbox 360)—Rs. 2,510/-

Escape

LEAKY FILTER
Porn, Down Under

Kids today... It has been proven that children will do anything they can to upset the well-intentioned plans of their elders. And if that means hacking into porn filters and posting a DIY on YouTube for other oppressed teenagers—didn't the Bard say everything was fair and all that?

The Australian government, apparently worried over the proliferation of online smut and resulting corrupting of morals, dumped A$84 million (about Rs 250 crore) into a state-of-the-art porn filter. They then collectively sat back, hoping to look over benignly as the hormone-affected population browsed National Geographic and Popular Science. But young Tom Wood—all of 16 years old—stuck a mighty blow in favour of free speech (or

insolent defiance, depending on your political leanings) by proving in 30 minutes that the filter was nothing but a fancy piece of eye-candy. He was immediately hailed as a genius and saviour, while embarrassed officials scrambled to plug in the holes—without much success. The only comment from the authorities was that good parenting was much better than any technology. Needn't have wasted millions to find that out, eh?

All the above happened in August. Considering that this was a pet project of Aussie premier John Howard, you would have expected that they would remove all the loopholes after all that publicity. Turns out, the thing is as leaky as ever—when the original hacker took it out for a spin, it still let in stuff

that wasn't supposed to be in. And so other kids could take advantage of this, he posted a detailed video on YouTube mentioning the steps necessary for a free inflow of porn on computers with the filters enabled. At the time of writing, the technicians were still scratching their heads. We're sticking our neck out on this—they'll continue scratching for a long time!

SIGNUP BLUES
U Joinin', Dude?

If you happen to read a recent presentation of the US Navy, don't be surprised if your first thought is, "Are they conducting a cultural orientation course for an invading force?" Well, we thought the same way, until we looked harder and found out it was a presentation for

Whatever Happened To...
Multi-angle Movies

Back when the DVD first came out (feels like so long, doesn't it?), movie studios didn't really know what to do with all that space—a typical 2-hour movie barely filled up two VCDs (1.4 GB); what were they supposed to do with 4.7 GB of space? One of the more brilliant ideas was the multi-angle movie—don't like the camera angle the director's chosen to show? Change it! You could watch races and matches from whatever angle you chose!

Nice plan, but Hollywood had their priorities—they kicked up the video resolution, added subtitles in multiple languages and lavished us with higher-quality 5.1 channel audio. When it came to the final touch—viz. the multi-angle movies—they backed out. Shooting scenes from multiple angles meant higher production costs, and it interfered with the "directors' artistic vision"—you are supposed to watch movies the way they want you to.

In fact, the only movie producers to embrace the idea of multi-angle movies were in the porn industry—for... ahem... obvious reasons. In fact, you can purchase multi-angle porn DVDs even today, though not in India, of course. In any case, the format hasn't really died per se—nearly all DVD players support it, but good luck finding a family-friendly movie with this option.

The iPix exists!

recruiters (the Gunnery Sgt Hartman of Full Metal Jacket type) on identifying with the MySpace generation—at which the Navy points out, "This is not about just a generation gap, but dealing with a somewhat alien life force."

The presentation talks about pampered American kids in the age group of 17-24 (called millenials in military jargon) and then goes on to decipher their ilk. They have a few good things to say—kids are closer to family and friends, more socially responsible and passionate about their lives. However, it finds loads of flaws in their make-up—according to the Navy, the target age group has been mollycoddled so much so that GenNext has come to expect praise for just turning up for work.

This generation had grown up with technology and have no concept of the Cold War or the Berlin Wall, which means Sarge better nix his plans of giving pep talks on the need to sign up and defeat the Red scourge. Neither would jingoism and

xenophobia work, as MySpace means these kids have buddies in Godless China who are as close—if not closer—as the dude next door.

The Navy glumly concludes glumly that living in an atmosphere where a Web site taking a little more time to load is worthless, it has a hard job ahead of it—made harder by the idea that joining college means four more irresponsible years that would be missed in the forces.

There is also a little quiz on, among other things, who Shiloh is (Brangelina's baby, but you already knew that), or *what an emoticon looks like!*. The new age jargon of IM and SMS is also helpfully demystified so that recruiters could connect with their audience.

Now if only they had included information on how to make friends on MySpace, this project would be a success. Otherwise the US Navy would be stuck with robo-sailors—not to mention mercenaries.
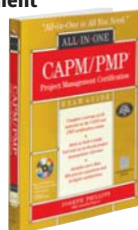
IROCK

Rocky Music

Regan Ritter, of Fort Worth, Texas, was approaching 14. Like millions of people, she wanted a Video iPod for her birthday, so mom and daughter went to a store to get themselves a shiny new 'Pod worth $350. But when the teenager opened the pack she found only rocks inside—no, not translucent rocks with orange and green streaks which you put on the coffee table, but ordinary, roadside pebbles which you might sometimes pick up and smash the neighbour's windows with.

Regan was understandably stricken, but her mom had fortunately preserved the receipt and there was hope yet. They went back to the store with the box of rocks, hoping for a replacement. Fortunately, the employees at the store believed the story and agreed to give store credit (policy, you

Wild Wild Web

Blood Money

A contract killer with a heart of gold gets a hit order. He alerts the victim and gives him a chance to save his life. The only catch—the would-be victim would have to pay up. Sounds like a movie script, right? Well, this was the proposal a 72-year-old pensioner in New Jersey got when he opened his inbox—the amount mentioned was $8,000, with half to be paid immediately. He was also warned not to speak to anybody about this; his friends were likely to be involved in the plot and he would get his goose cooked.

Harry Whitworth promptly smelt a scam and immediately called the cops. After ascertaining that he wasn't involved with the mob or other unsavoury characters, the Feds included his name as a part of the US-wide operation. The cops hope to catch the scum behind the scam, though they have not much leads. Knowing how these scams spread though, we will be watching our inboxes.

Listing Sin

Information about peep shows, brothels, and massage parlours has always proliferated through word of mouth, but with the Internet, this information is a few clicks away—if you know where to look. A very good place is Craigslist—it's well-known, free, and anonymous. But Craigslist draws the attention of cops, especially if you list live sex shows near a church and a school. Now in the Windy City, a bored officer of the Chicago police was looking at listings when he came upon explicit ones that advertised live sex shows. You could, for $240, watch couples having sex. Pay some more, and you could take part. And so, the coppers raided the house of ill fame and took the performers and the manager into custody. We're guessing the first thing the manager does when he gets out is sue Craigslist…

Bluff
YOUR WAY THROUGH

Cryptography

All about cracking codes and secret messages, "cryptography" has a glamorous Bond-like ring to it, though the actual science that goes into it is highly mathematical. That said, most of us wonder what exactly public key cryptography means.

SSL: Secure Socket Layer is a cryptographic protocol used in e-mails, IM and other data transfers over the Internet. SSL and its related protocol, TLS (Transport Layer Security), are grouped in the topmost (Application) layer of TCP/IP.

Public Key Cryptography: The most widely used type of cryptography, PKC uses a public key that is widely distributed, and a secret private key. The sender encrypts a message with the receiver's public key, which can only be decrypted using the receiver's private key. The keys are generated using algorithms like RSA.

RSA: A widely-used algorithm used in PKC. It uses two large prime numbers to generate public and private keys. The keys generated by RSA have been *very* resistant to attack.

Hash functions: These take a variable-length input and generate a fixed-length output. As used in cryptography, they are designed so that it's impossible to get the input data even by knowing the output and the function. Hash functions like MD5 and SHA-1 are used in digital certificates for verifying data identity and/or integrity.

Digital certificate: These are used in online transactions to verify identities. They are typically issued by a trusted third-party Certificate Authority and have information that can identify the owner.

Usage: *RSA* is a bit slow, though it's the best *public key cryptography* algorithm. But for foolproof security, use a *hash function* like *MD5* in your *digital certificate*, and when you send the document to us enable *SSL* in your browser's security settings.

know—no refunds) for another iPod, which unfortunately, was out of stock. A neighbouring store said they had enough stock, so the duo legged it to that one. Once bitten, they wanted to have a look at the iPod before taking it home. Due to another store policy, they had to buy the iPod and then open the pack. The iPod bought, the teen excitedly opened the pack and…… found it filled with rocks. Again.

Fed up to the skin of the teeth, the Ritters demanded their money back. But once cash is in, it does not come out of the system. The staff suggested they pick up something else for $350. The daughter, her heart set on a Video iPod, desolately collected knick-knacks totalling that amount, while mom stood aside swearing tort action.

Apple, as usual, declined comments while the store chain's PR department issued clarifications couched in homilies such as ensuring the customer's satisfaction and blah blah.

We are guessing a US-wide, possibly global, conspiracy headquartered from a certain city in Washington state to infiltrate iPod supply lines…

HOSTILE TERRITORY
Hate Thy Enemies

What's the *sine qua non* of social networking sites? Making friends, talking to new people, and so much more… But the operative word here is *friends*. You don't generally behave like a jerk; that people do at usual sites is beside the point. What if you're tired of keeping up an artificial façade of sweetness during those days of the month when you go around smashing furniture and snapping at everyone in sight?

Everybody feels like that at some point or the other, of course. So if you ache for some good ol' bile, do yourself and others a favour by heading over to Hatebook (www.hatebook. org) and vent that ire. It's therapeutic, as shrinks have repeatedly told us, and there is that thing about keeping friends close and enemies closer.

Hatebook, if you haven't already guessed, is a parody of Facebook. The look and feel is the same, except the colour scheme is a fiery red for Facebook's placid blue. After registering, you are welcomed with a "hello, sucker" message, which sets the tone of things to follow. Your profile is made up of fields like Music that sucks, Brands I hate, Movies that bother, Books I hate… you get the idea. People who visit you are Idiots, while you write Junk Mail to anybody and post on their Blackboard. You can add people you hate and bad-mouth them; the only limit is how wide your vocabulary is. In fact, being nice to people is frowned upon here; you have only enemies to add, though you could be friends with your enemy's enemy and join forces in pouring scorn on the poor blighter… We hate to admit

■ Japanese woman pays $1,700 to Webmaster of suicide Web site to kill her ■ The Pirate Bay acquires domain of int'l anti-piracy group

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this, but we felt pretty good after we put completed our hate profile. While we are not recommending dumping Facebook and Orkut, Hatebook is always an option for those crappy days of the month when you are apt to burst a vein.

SHARE AND DIE

RIAA Trouble

The RIAA recently saw a major victory in its attempts to clamp down on music pirates: a court fined 30-year-old Jammie Thomas $222,000 (*Rs 8.8 crore*) for illegally uploading 24 songs. At *$9,250* a song, Ms Thomas will have to pay a gorgeous penny—if appeals to the verdict fall through.

The ruling has undoubtedly warmed the hearts of copyright Nazis, leaving file sharers fuming. But we aren't talking about the implications or the legalities here; we're only going to point out how a bad lawyer can chuck you from the frying pan into the fire.

Dietary Fibre

Jayesh, the quietest, most deserving member of our team, this month got what he deserved: a trip to Taiwan. Quite the *desi* at heart, here's all he had to say: "It looks like a quiet Nariman Point—a few tall buildings here and there." (N. P. is where one sees buildings tall by Indian standards.) Now all the while he was there, Rossi was complaining so loud about *his* deserving to go, Ed shut him up by slapping a cricket bat upon his head. Later, filled with remorse, he wept: "I'm sorry, Rossi, for having caused you potential death! Go to Taiwan, go, go, go! Here's $2.50 from my own pocket!" (*Ajwani.*)

And thus it came to pass: two trips across the oceans (or land, at any rate) in a month. Now here's the ghastly part: J and R both now have a contempt for Indian food. Whereas J has taken a liking to tubifex worms, R's cuisine of choice involves lizard garnished with bat wing. (Actually, it was predictable: Jayesh is always in office by 9, and the early bird catches the *worm*—see?) Interestingly, as a result of the unavailability of aforementioned ingredients, they are both to be seen walking in a pair on the street, eyeing fat street dogs. We're hoping it's a passing phase.

Meanwhile, news is out that we're moving to a place called just "CBD," where Bhaskar, Michael, Ram, and Samir stay. They're all happy, naturally, but Ram is actually elated because he can now have a proper siesta every day, as opposed to curling up under his desk pretending he isn't there.

Digit does not guarantee the accuracy of any of the information presented above. No libel claims, please—worms are rich in fibre.

DIGIT DIARY

After the RIAA's investigators had hauled Ms Thomas in front of the jury, her lawyer mounted arguments which even a self-proclaimed computer-illiterate jury member found laughable. The prosecution showed that the IP address used to upload the music files to KaZaa matched Thomas' computer, and her attorney speculated that a hacker with a laptop outside her apartment could be responsible. A credible argument, if only Thomas had used a wireless router to do the uploading. Expert evidence debunked the hand of Wi-Fi, and the attorney was left looking like a sad fool. The second mistake Ms Thomas made was when she handed over a different hard disk to the investigators when asked for the one containing the offending files. A *third* mistake was that her username at KaZaa tallied with her e-mail, MySpace, and online shopping logins. By this point, the jury members were insulted by the shenanigans of the defence counsel, who obviously thought them a bunch of hillbillies. And when that happens, you'll catch hell.

Only two pieces of advice to the sad Ms Thomas—get a smarter lawyer next time. And a new username. ⊠

Blog WATCH

Serious issues this month. What's the connection between social networking and large portals? Then, the OLPC project still runs strong in blogging circles... and then, what's *gotten* into the head of the Chinese government?

Steve Rubel: *How the Portals Will Win the Social Networking Wars*
http://www.micropersuasion.com/2007/10/how-the-portals.html (http://tinyurl.com/2ze3l7)
Social networking is certainly rising and there seems to be no end in sight to the phenomenon. However, what I do know is that people will jump around from one Myfaceborkutspace to another and not all of them will win. This is particularly going to be true as social networking evolves from a destination into a feature of every site. What does this have to do with the portals?

...No matter which social network(s) you participate in, you're going to turn to your trusted communication system to manage it all. This will include any or all of the following: a) web-based e-mail, b) instant messaging, c) RSS and d) telephony tools like Grand Central. And who dominates those?

Seth Godin: *This changes everything*
http://sethgodin.typepad.com/seths_blog/2007/10/this-changes-ev.html (http://tinyurl.com/ysmefh)
Never mind the buy 1 give 1 (a great idea). Don't wait until November when you can directly buy laptops for kids right here: One Laptop Per Child -- XO Giving. I just bought five. (Hit the Donate button).

When you give a kid a net connection, access to wikipedia and to the rest of the world, things change fast. Things you wouldn't necessarily predict. Like a ten year old who can diagnose his dad's illness. Or a farmer that can ask his daughter to find out where to get a new part for the tractor. Or...

The bravery: When Nicholas Negroponte and his team started this project, they had nothing but obstacles. The status quo of software and hardware and skeptics stood firmly in his way. And he took a lot of grief for the effort. Even when you're doing nothing but good, fear of change is going to cause a lot of people to object.

Duncan Riley: *China Declares War On Western Search Sites*
www.techcrunch.com/2007/10/18/cyberwar-china-declares-war-on-western-search-sites/ (http://tinyurl.com/yuavds)
If the Chinese Government were serious about censorship alone, we would have reports of page not found, not redirects to Baidu. It is clearly using its censorship regime to the economic benefit of a Chinese owned (but NASDAQ listed) company. Although the US Government is a poor WTO member, given that China is a recent member, the US Government should lodge a complaint with the WTO. China expects free and open access to Western nations but is now not only blocking, but also redirecting domestic traffic away from Western internet sites that compete with local firms.

■ **Brewery owner in New Zealand promises lifetime supply of free beer as reward for returning stolen laptop**

Master Of The Universe!

1 The four ghosts in Pac Man are Blinky, Pinky, Inky, and...
(a) Winky
(b) Stinky
(c) Roy
(d) Clyde

2 In which part of the world is the AZERTY keyboard most used the most?
(a) France (b) Germany
(c) Spain (d) Russia

3 Starting from which version of Windows did the Automatic Update service begin?
(a) Windows 95 (b) Windows NT
(c) Windows 98 (d) Windows ME

4 Which actress co-invented spread-spectrum wireless technology?
(a) Hedy Lamarr
(b) Brooke Adams
(c) Nancy Allen
(d) Elvia Allman

5 What is the word used to describe fake blogs created only to show ad links?

Got an interesting question? Send it in with the answer to **TQ@thinkdigit.com** Mark "TQ" in the subject area.

(a) Strog (b) Plog
(c) Splog (d) Grog

6 What do "Nimrod," "Perpetua," and "Terminal" have in common?
(a) They are the new versions of MSN Messenger Microsoft is working on
(b) They are the names of Google's main database servers
(c) They are fonts
(d) They are the names of the first Web pages ever

7 Which of the following CEOs appeared on the cover of Time Magazine in 1995, titled "Master of the Universe"?
(a) Jon Schwartzark of Sun Microsystems
(b) Tim Wordsworth of IBM
(c) Bill Gates of Microsoft
(d) Daniel Borel of Logitech

8 What are the leaked memos now called the "Halloween documents"?
(a) Internal Microsoft documents on Linux and open source in general
(b) E-mails and cards sent to

relatives during Halloween
(c) Internal NASA documents that revealed their Mars plan
(d) Internal Google documents that revealed actual plans for world domination

9 Which is the only Indian portal to be available in four regional languages?
(a) Indiatimes.com
(b) Sify.com
(c) Yahoo.co.in
(d) Rediff.com

M ost cell phone companies don't use cellular technology any more, yet nobody uses the term "wireless phone." Calling today's wireless phones "cellular" is like calling your MP3 player a tape recorder!

Did You Know?

Answers

|	
9. (d) Rediff.com	5. (c) Splog
8. (a) Internal Microsoft documents	4. (a) Hedy Lamarr
7. (c) Bill Gates	3. (c) Windows 98
6. (c) They are fonts	2. (a) France
	1. (d) Clyde

Crossword

ACROSS
8. Convert ordinary language into code(7)
9. American multinational-leader in networking(5)
10. Electronic device that restricts current flow to mainly one direction(5)
11. Device into which data can be placed, held and later retrieved(7)
12. The best selling latest game on Xbox 360(4)
13. Software that periodically pops up advertisements on a user's computer(6)
16. Bounded or limited in magnitude(6)
17. -----space-moves the screen cursor to the left(4)
20. Software copied illegally(7)
22. Date and time relative to which a computer's clock and timestamp values are determined(5)
24. Google Mail (abbr)(1,4)
25. Web 'crawler' for Alta Vista search engine(7)

DOWN
1. 'R" in ROM(4)
2. To move through a document either up and down or sideways(6)
3. ----café - where online services are available(5)
4. New Technology File System(abbr)(4)
5. Adobe's software program that converts documents in PDF format(7)
6. ASCII character ESC key(6)
7. Small, compact portable computer(8)
12. The first page on a World Wide Web site(8)
14. A period or decimal point(3)
15. To load and configure a piece of software on a
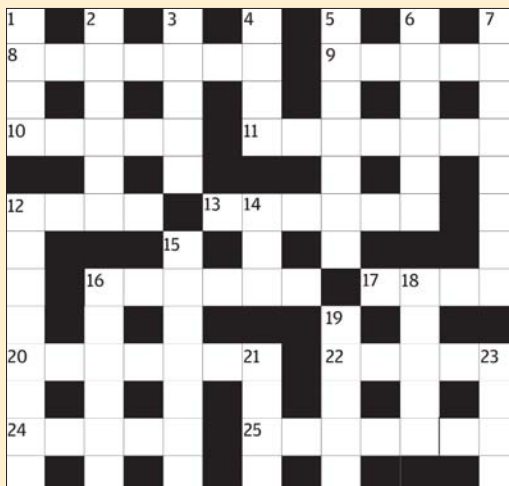
computer(7)
16. A pre-established layout for data(6)
18. To exit a function or application without saving any data(5)
19. Duplicator that copies graphic matter by the action of light(5)
21. 'D' in DTP(4)
23. ----drive-data storage medium(4)
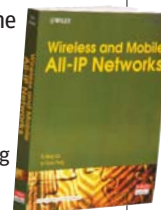
Crossword by **Nitta Jaggi**

October's Winner:
Yashodhara K, Karnataka

Send in your entries to **TQ@thinkdigit.com** on or by **20th of this month.** One lucky participant will win **Wireless and Mobile All-IP Networks**
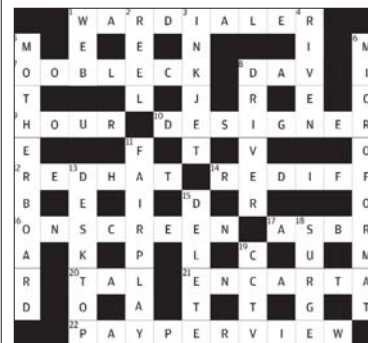
By Yi-Bing Lin & Ai-Chun Pang
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Win!

Last Month's Solution

October 2007

It's Infotaining

Your magazine is the best IT mag I have seen yet. I first picked up a copy of *Digit* at a friend's bash. I enjoyed it so much that I sneaked it out for myself. I enjoyed reading it so much... imagine my shock when I found out my dad too had subscribed to *Digit*! my happiness knew no bounds. From that day, I sneak the mag out from my dad's office. (I even got a rubbing once, but I still keep sneaking the mags out).

Your tips and tricks help me a lot—those on Adobe Photoshop helped me get the highest marks in class! Your reviews even helped me choose the best MP3 player for my age (14). But what I feel is the best in your mag are the game reviews and Agent 001.

I still have a few suggestions: Could you bring out a *Fast Track* on PowerPoint—I am real weak at it (surprisingly!). Then, could you publish a *Digit Encyclopaedia* again? It would be a nice idea to publish each letter separately in a month's mag. In addition, I'd like you to bring out reviews on RAM.

Congratulations to you and the team for bringing out the fantastic *Sixth Sense* for your anniversary. I wish you luck!

Arun

Hi Arun,
Glad to know that you love our magazine so much. As for your requests, well, our October issue did have a *Fast Track to PowerPoint* so that's done! In our November issue—this one! Agent 001 looks at RAM, so that makes it two down...

Digit Encyclopaedia: well, check out our *Fast Track* for this issue—well, this is a different take on it: it's got almost everything covered that ever happened in computing.

Do keep mailing us your feedback and requests!

— Executive Editor

Something For Everyone?

I have been reading your magazine for quite some time. I have noticed that with every month's issue, in your magazine, there are lesser and lesser items in the included CD/DVD for developers, and more and more for gamers and others. While I can understand the commercial interest for inclusion of games in the CD/DVD, I can't understand your total negligence of a vast number of the developer community who as avidly wait for the arrival of your magazine on the newsstands.

For more than two and a half years I have never seen your magazine including any *Fast Track* booklet on Adobe Flash, PHP & MySQL database Web application development tutorials, ASP, C# or the like. Also, there is very little coverage on Linux. I'm sure there are n number of just home users who would like to know more about Linux—for example, like how to install XMMS on Linux, How to set up a LAN with Linux (set up a SAMBA or NFS server), how to configure a 56 kbps modem and establish an Internet connection, how to set up and use a printer, configure a sound card, set up a wireless LAN, how to use Bluetooth / infrared / USB-enabled devices like a mobile phone to get connected to a Linux PC/laptop to transfer data/images/songs, etc!

Moreover, I would request you to start a service, if possible, to send a quick reply at the user's e-mail address against their problems which they send for your Q&A section. Sometimes, one needs to wait for two or three months to get a reply to a PC / Laptop related problem through your Q & A, which actually requires immediate solutions.

Partha
Shillong

Hi Partha,
That's a long list of Linux how-tos, and we can certainly do some of them! The thing is, we're increasing the number of hands-on articles, and we do have plenty of ideas—but changing a format for a magazine does not happen overnight.

About questions being answered immediately—that would take a full-time team of five! Yes, that's the way it is—we simply get too many questions. But I hope you notice that we publish the most educative Q&As, those that will help several readers, not just the one who asked the question.

Finally, I'd like to say that we are not a developer-centric magazine, and we simply cannot please everyone. If you say you need this, a gamer will write in and ask us for more game reviews... mine is a tough job indeed!

Hoping for your continued patronage.

— Executive Editor

You Are The Best: Q.E.D.!

I am a reader from the day you started this magazine. It had a different then then. Your story is one of "Survival of the fittest.": I had subscribed to other, similar magazines as well but ended with only you!

I am in Syndicate Bank as an I.T. officer. Till date I have purchased three desktops and now a laptop. I read your magazine daily—all the pages—within a period of 10–12 days. I use most of the software you give on the CD and DVD.

We almost get suffocated by the richness and variety of the material—software, games, movies, etc., etc.... This month's movie *Zeitgeist* is superb.

I never went to an institution to learn IT, but self-learnt it through books and magazines; a major share goes to *Digit*. Thank you!

Arun Meshram
Nagpur

Like I've said earlier in this space, Mr Meshram, it is letters like yours that keep us going. I'm glad you like our content, but I'm even gladder that our magazine has helped you learn about computers and IT without your needing to learn it formally!

— Executive Editor

Something For Everyone II

I am a civil engineer and a great fan of your mag. I have been reading each issue ever since I bought the first one in May 2005. This is the first time I am writing—in a letter full of requests.

One thing I would like to say is that although you are a tech mag, civil engineers and architects also use many types of software. You have unknowingly left an important lot alone. I would like you to dedicate a few pages of your mag to people who are helping India grow rapidly (only the tech part, I mean). If I am not clear, then I mean, include some interviews of people or a company like Arup (one of the biggest engineering groups). I

had read about it in one of your competitor's mag. They have provided an article on this in 2005.

Second thing: I would like to see a *Fast Track to Linux*—right from installing any version of Linux like Fedora Core to installing software on it. Also, a *Fast Track* to character animation using any free 3D modelling software like Blender or Realsoft 3D or Lightwave 3D etc.

The cover design is always great, the artwork like drawings,etc need to be praised. The CD and DVD contents are very satisfying, and let me tell you, I have not purchased any software recently because I now use the freeware you give on your media and I don't feel purchasing any pirated stuff now.
Viplaw

Your requests merit very different answers, Viplaw. First, about a *Fast Track* to 3D animation—using various software—and such, they are indeed in the pipeline. We're trying to cover as many popular topics as possible. But regarding articles that would cater to, say, civil engineers, it is purely a matter of demand—and we'll have to see what works for us. I'm not dismissing it, but we will have to take the time to look into it.

Thanks for writing in.
— Executive Editor

DVDs And DirectX
I am an avid reader of computer magazines and have been buying *Digit* issues on and off. Till date I have never faced a problem with the CDs/DVDs supplied with the issue, but as they say, "There's always a first time," and October's issue of *Digit* was my first introduction with a malfunctioning DVD. I bought this issue from a vendor in Chittaranjan Park, New Delhi. May I request you to please send me a replacement for the DVD of the issue.

The magazine is informative, but in general, the topics that you cover tend to be recurring—which is a bit dissapointing. For example, graphics cards is a topic which one gets to see in the computer magazines often. The introduction of DirectX 10 has not brought about a huge change in the gaming world. This may be a one-sided view, but I do feel that this topic could have been delayed.

It would be great if you could add the full version of games as you done with this issue. I came acrosss SKOAR!, which does that, and the only problem is that all the good games are in

multiplayer format. In India the Internet is still costly! If one can add good single-player games, I am sure it will add to your readership base.
**Sudipta Chakravorty
New Delhi**

Dear Sudipta,
I'm glad you've written in, but our customer care desk does take care of defective DVD problems—which, as you're aware, are bound to happen. In any case, I'll personally ensure your DVD is replaced.

Regarding DX10, well, some people might say quite the opposite—that that's where gaming is moving to, and that we therefore shouldn't be stuck on DX9! Finally, regarding full versions of single-player games, I must tell you that sadly, getting licenses for these is a very expensive affair—we'd have to bump up the magazine price hugely to compensate.
— Executive Editor

Take Thirteen
I am a regular reader of Digit. I read the article "Take Ten" in the October 2007 issue of Digit. The article was quite informative although the author missed out on some of the best free cross-platform games like Wolfenstein: *Enemy Territory*, *Urban Terror 4.0*, and *America's Army*. Please have a look at this excellent thread regarding these free games: http://forums.erodov.com/showthread.php?t=450

I hope this information is passed onto the author of the article.
Raman

Hi Raman,
Well, we had only ten games to play with (pun not intended), so some games would have to be missed out... in any case, I've passed on your link to the writer. I've also published this here for our readers' benefit.
— Executive Editor

The Fast Track To *Fast Track*
I would like to own a copy of each of your editions of *Fast Track* published till date. If it's possible, do inform me regarding the procedure
Bhavya Jain

Hi Bhavya,
You can get all the Fast Track issues in PDF format every year off our DVD. The next one is due December 2007. Don't miss it!
— Executive Editor

"Inevistable"?
I am an ardent reader of your magazine, and am surprised that I rarely read letters from readers acknowledging your brilliant editorials. I am being very frank when I say that the article I look forward to reading the most is your editorial. I must compliment you on them, as every time I find them awe-inspiring and thought provoking.

I'd like to share with you my thoughts on the Linux vs. Microsoft war. The Mint distro you provided on last month's CD is what set off a chain of thoughts in my mind. As I used Mint, I was very pleasantly surprised by its rock-solid stability, beautiful interface and out of the box usability, It struck me that Linux was improving at an extremely fast rate. I say improving and not progressing because progress can be good or bad, but in the case of Linux, every distro is undoubtedly better than the other.

Now switching over to Microsoft for a bit, we all have to accept that Vista was very much below everyone's expectations. Perhaps we all expected too much, perhaps not. But the ground reality is the fact that it has been a whole nine months since the launch of Vista, and look around, no it's not catching up. Vista took Microsoft over five years to develop, and they released an OS that did not have enough features to make most people see reason enough to upgrade. On the other hand, we have so many new distros of Linux being launched every month and each and everyone with brand new, must have features. Linux is clearly poised to take the lead.

But why just poised? Why isn't it? There is one very simple, very obvious reason. Software. If you want to play you favourite game without hiccups, "stick to Windows" is what even seasoned Linux gurus will tell you. Same for your favourite anti-virus, spyware scanner or even your drivers. But things are indeed changing. Slowly, Companies are finding it harder and harder to ignore the growing Linux user base.

At the end of the day, you and me both know that eventually everyone is going to upgrade to Vista. But the big question is, will they do the same when Microsoft releases it's next OS? Or will they double-click on the little install icon in Ubuntu?
Omi

LETTER OF THE MONTH

No News Is Good News!

A wise man once said: "Boredom indicates a temporary disconnect with the universe." And well, since we're trying to disconnect you with the universe anyway on this page, why not do it the direct way and bore you outright by telling about yet another leaked Internet video?

Warning: Some of the "information" below is made up. Reader discretion is advised, and so is a salt shaker at hand.

So on we go: the list of women—young, old, and in-between—who have tried to imitate Marilyn Monroe is quite endless: be it on stage, in music videos, porn flicks, etc. Why, even sweet little grannies have been known to claim that just by dying their white hair a little and putting on $599.95 dentures, they look like the original upskirt woman. (Salt! Salt!)

Kylie Minogue, after her long struggle with breast cancer, is back in the studios; she's started recording for her upcoming album, called just "X".

Now here's the boring point of our story: two songs she wrote and recorded with a Scottish DJ who goes by the outrageously inane name of Mylo were already on the Net—and one of them was available from Mylo's MySpace page. Silly of Mylo, but it gels with his name.

A single called *2 hearts*, which was supposed to be her comeback song—Minogue's first single since 2004—was leaked, too. This one had Minogue doing a pole dance. (Use the salt shaker.) The Austrylian Record Industry Associ-eye-tion (no, really; the RIAA does have competition down there), in a feeble attempt at order, removed copies hosted anywhere in Austrylia. Go ahead, mail them at ARIA@some.aussies. are.dumb that there exists such a thing as a BitTorrent network.

$0: Human; P2P: Divine

When will the Internet community get mature? As in, when will they say "cease and desist!" to activities like the sharing of files (much in the manner of how young boys collect stamps) and actually use their proof-of-adult credit cards?

UK rock band Radiohead decided to find out. It was a fusion of many things: good music (we presume), the desire to get going with Internet culture (they spell the album name three ways on the cover, including "IN RAIN_BOWS"), the noble emotion of not charging $20 or so for a CD, and more. Here's what they did: they released the album on their site—www.radiohead.com— and you could fill in any amount you wanted in the "pay" box.

About a third of the first million downloaders did the square thing and paid nothing. Some misguided fans paid more than $20. The average? An impressive $8.

(a) What those who paid more than $20 thinking, is our open question to our readers. Another open question: (b) 2.4 lakh people got the album off BitTorrent on the day of release; why?

Lessons In Life After Linda?

We mentioned last month that Sir Paul McCartney doesn't use ATMs or e-mail. But that doesn't seem to stop people from listening to and playing his songs, and even imitating him. Now the mail-free Macca has signed a deal with NowPlayIt.com, a downloadable video training service, to hold budding bass players through his tutorials.

The anti-Net Knight has already recorded his first tutorial for his song *Ever Present Past*, from his recent album *Memory Almost Full*.

Other artists who have contributed tutorials to the site include Blur, Athlete, Placebo, and KT Tunstall. (Like you've heard of them.) The tutorials themselves consists of 30-minute lessons—from the songwriting process to playing drum patterns, everything is explained in £4 videos.

So is this to aid the cause of his divorce compensation? £60 million is a reasonable figure, we must say. But then we have no idea, really, how much the man has in his right royal bank account, and besides, it could well be the simple desire to share sought-after knowledge. Whatever the case, one can now officially say one learnt it from Paul!