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March 2008

digit

YOUR TECHNOLOGY NAVIGATOR

Inside The Graphics Card

Know Your Digital Camera

Gadgets That Know You

Agent001's Ultimate Guide To Gaming

Desktop Publishing Simplified

PuMP Up The vOLUME!

Tested: 46 Portable Media Players That Will Rock Your World

Secure Our Borders!

Sujay Nair Editorial Director

> "The benefits of securing our borders through technology would far outweigh the costs..."

WHILE YOU ENJOY this issue—filled with the latest in portable media players, and the other goodies that come with *Digit* each month, I would like you to spare a moment to consider the security of our country's borders.

The US has just erected a 'virtual' fence along a portion of its border with Mexico. The project cost $20 million to complete, and consists of sensor towers and advanced mobile communications. The plan is to extend this 'virtual' fence to other parts of the border as well.

This is the future of defence technology. Why doesn't India embark on a similar project to secure its eastern and western borders?
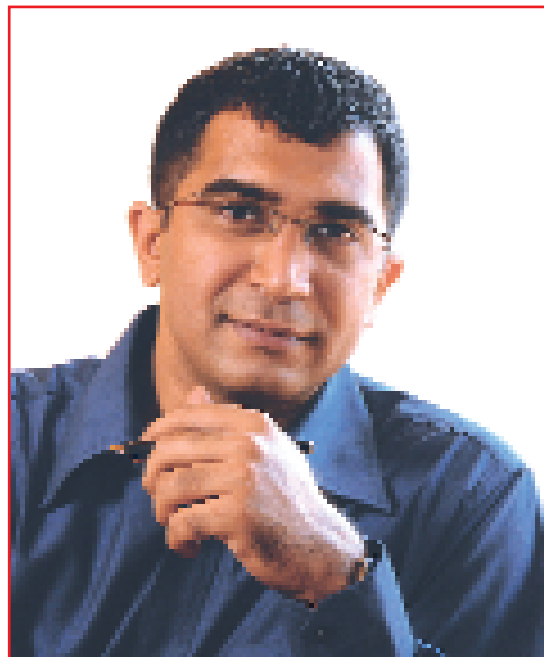
Because of its long and porous border, our country faces the problems of illegal immigration from the east and militant infiltration from the west. High-tech surveillance would certainly help solving these problems. Unmanned aerial vehicles and computer-controlled radar systems would go a long way in boosting security.

The question that might be asked is whether this technology can justify its costs. To answer that, India is already paying a heavy price for not being able to keep illegal immigration and infiltration in check. The benefits of securing our borders through technology would far outweigh the costs involved in such a project.

A team from India should visit the US installation and get a few tips from the American department of Homeland Security to understand how the high-tech system operates. Our government can then float a global tender to invite bids from major players—like Boeing in the US' case—to set up this virtual fence.

The reason I brought this up is because technology fundamentally changes almost every facet of a particular situation. Using technology lets you think outside the box, and then ask crucial questions on a particular issue that might never have been asked in the first place.

Remember, India is a prime target for terrorism, and to fight this global war on terror, it needs to beef up its technology arsenal first. Several strategists in the US are already welcoming that country's increased spend on security, going to the extent of predicting that a refurbished, high-tech Homeland Security could be the best thing to happen to Silicon Valley in years.

Will India be able to get its tech security act together? Being a global IT powerhouse, it is only a matter of time—according to my opinion—before policymakers chart out a tech roadmap to prepare our country against hostile alien attacks.

editor@thinkdigit.com

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YOUR TECHNOLOGY NAVIGATOR

Tell Us What You Feel About Digit

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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Want your product reviewed by *Digit*? Contact our Test Centre at **sanket.naik@thinkdigit.com**

Software On DVD/CD

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Disclaimer: For every *Digit* contest, there will be only one winner, unless specified otherwise. In the event of a dispute, the Editor's decision shall be final.

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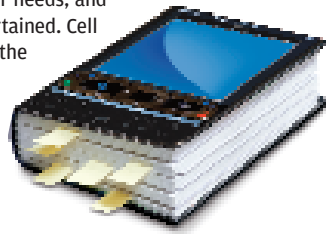
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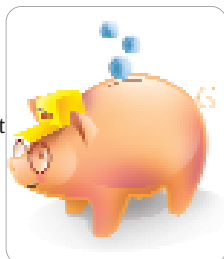
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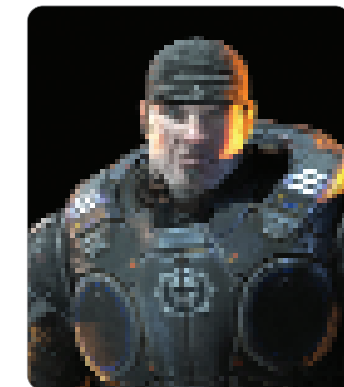
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DRYAD — digit DVD DUAL LAYER MARCH 2008 — Multimedia SPECIAL

CorelDRAW X4 · Corel PHOTO-PAINT X4 · ADOBE Photoshop Elements 6

Stellarium for Windows 0.9.1
Zortam Mp3 Media Studio 7.75
Adobe Photoshop Elements 6
Ulead PhotoImpact 13
Wings3D 0.99
Sound Forge 9
CorelDRAW Graphics Suite X4
...and more!

Free with Digit Replicated by Anant Electronics Pvt. Ltd. for Jasubhai Digital Media, member of 9.9 Media Group

Productivity

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

Productivity

Gaming

Infotainment

Tools

Online

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

Windows XP Service Pack 3 Release Candidate
Size: 436 MB

LightZone (Linux)
Size: 26 MB

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No more snail-mail! No need to visit post offices! All you have to do is log on to **www.thinkdigit.com/subscribe** and use your **Credit Card** to make sure you never miss another issue of your favourite magazine!

Web Special
Connecting The Masses

Here's everything you need to know about BitTorrent (Log on to **www.thinkdigit.com**)

Digit Reader Poll

This Month's Question   Vote at www.thinkdigit.com

What Web applications do you use most besides mail and chat?
- ☐ File Storage
- ☐ Multimedia streaming streaming (Video and audio)
- ☐ Massively Multiplayer Online Games
- ☐ Blogging, wikis, discussion forums

Last Month's Question
Your thoughts about Fast Track:

Total: 4,122

A little colour and better paper would go a long way **45%**

It's perfect, leave it the way it is! **20.5%**

Make it a Colour, Interactive PDF on the DVD **14%**

Replace it with a comprehensive multimedia tutorial on the DVD **17%**

Just end it, I hate it **3.5%**

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taste technology at **www.thinkdigit.com**

FEATURED REVIEW FROM THE DIGIT FORUM (www.thinkdigit.com/forum)

This month we feature a member review from the forum.

thinkdigit.com

Huawei C2900i CDMA cell phone reviewed

29-01-2008, 12:33 PM

utsav
HOD:- Hackers Department
Join Date: Sep 2006
Location: inside your processor
Posts: 1,041

One of the latest offerings among handsets of Tata Indicom is the Huawei C2900i. Its a very feature-rich, low-end phone, which packs in many features of mid-range phones too. Like high speed Internet on the phone, or PC connectivity for surfing on the PC.

Internet Connectivity
This phone has an inbuilt modem that is capable of speeds of upto 153.6 Kbps upload or download under a CDMA 1x network.

It's Rs 100 costlier than the C2900 which is the same phone without an Internet modem. So for Rs 100 more, the C2900i is worth it. This phone uses the Opera Mini browser for surfing the Internet and you can surf any site on it. The sad part is you cannot download anything on this phone, but while surfing on the PC there is no such limitation. It does not support JavaScript and audio / video playback. Browsing speeds and page rendering is simply awesome, but the Opera Mini browser has some bugs that cause the phone to restart if you are browsing heavy pages—full of images for a long time. But its very rare. The speed is much faster than GPRS as well as EDGE on some service providers. Tata indicom charges Rs 99 per month for Internet on your phone.

Signal Quality
Signal quality and call quality are good, compared to similar priced handsets. I had full signal strength all the time, even though the tower is 4 km away from my house

Phone Display
The display is 128x128, 64k colour CSTN display which is great, despite the low resolution and there is no problem reading even the smallest text size as the brightness of the screen is superb.

For more visit:
http://www.thinkdigit.com/forum/showthread.php?t=79253

Enter

TECH TALK

Nick Desai
CEO, Juice Wireless

Nick Desai, CEO, Juice Wireless recently visited India to launch JuiceCaster. Primarily targeted at mobile users, users can upload, download and share rich media content using JuiceCaster.

What makes JuiceCaster different from other online photo/video service providers?
JuiceCaster aims to provide seamless and synchronous connectivity over any platform. It is available as JuiceCaster Player and is embeddable on social networking avenues such as MySpace, Facebook, Hi5 and many others in addition to Web sites and blogs. JuiceCaster Mobile application (native) and JuiceCaster WAP are available for phones with WAP 2.0 browsers. Also, we've launched JuiceCaster D for desktop, which completes the seamless circle of sharing rich media content.

How is JuiceCaster going to be accessible to the common Indian man?
With camera phone prices gradually dropping, India already has a large number of mobile phone subscribers. It is indeed a potential market for us. We're in talks with various cellular operators in India for making the JuiceCaster Player for mobiles and its services available by the Q3 of 2008. Individuals carrying camera phones with active Internet data connectivity can capture images/videos to upload, and share them straight away with others *without* the need of a PC.

What comprises your target audience in India?
Initially, in India, JuiceCaster will be targeting the young, peppy, tech-crazy and those up-to-date with IT. Specifically, people between the age group of 18 to 35 years would be our target audience. As per our research, we'll also target people from other age groups, since they too are avid users involved in the social networking phenomenon.

IT'S OVER!
Toshiba Gives Up On HD-DVD

The greatest war for the next-generation video format has finally come to an end—Toshiba's pulled the plug on its war with Sony's Blu-Ray. According to latest reports, Toshiba has formally announced that it would not be continuing its HD-DVD business. This race was definitely fiercer than the earlier video battle over Betamax and VHS. This time, it was companies that were deciding what the consumer gets and not the other way round! With companies such as Sony and Toshiba pitted against each other, it was stiff competition all the way through. For Sony, it was a matter of prestige to win this battle, as it had already lost with Betamax to JVC in the VHS days.

On one side was the Blu-Ray consortium led by Sony, with Apple, Dell, HP, Sharp, Philips, Panasonic, Hitachi and eight other companies on Blu-Ray's board of directors. On the other hand, the HD-DVD front was led by Toshiba, followed by Sanyo, NEC and Memory Tech. This time, however, the battle was prolonged, and there was a host of factors that decided the outcome. The most significant decisive factor,

Illustration **Harsho Mohan Chattoraj**

however, was the gaming industry. Microsoft, the makers of the Xbox 360 has been a strong supporter of the HD-DVD standard. In contrast, Sony—the makers of the PlayStation 3—have understandably supported the Blu-Ray format. As a result, the soaring sales of gaming applications have yielded a significant rise in the sales of Blu-Ray discs. With half the battle won in the gaming industry, the remaining half of the battle was decided by Hollywood. Till recently, Universal and Paramount Studios were the only Hollywood studios to back HD-DVDs—the majority had backed Blu-Ray. The most significant of them was Time Warner, which switched totally from HD-DVD to Blu-Ray, leaving Sony with a virtual monopoly in the DVD format arena. So where does Toshiba go from here?

And what about Sony? The latest news says that Sony is in talks with Toshiba to sell its PS3 chip manufacturing plant for an amount to supposedly in excess of $ 858 million. Both Toshiba and Sony Corporation, have reportedly partnered with Sony Computer Electronic Entertainment Inc. (SCEI) for the production of high-performance semiconductors. The whole DVD fiasco doesn't seem to have ended on a bitter note after all...

Most technological developments and gadgets enter Indian shores after they have been tried and tested in Europe and the Americas. For example, the iPhone has not yet been launched in India—the average Indian consumer normally complains about this fact. However, this time round we should be thankful for the late entry of the high-definition DVD battle into India—actually it hasn't got here yet! Overall, Indian consumers

have not been significantly affected by all the hue and cry among the Blu-Ray and HD-DVD camps. The average Indian consumer, till now has been happy with the normal DVD format. With significant certainty, now emerging in the DVD arena, Indians can now decide purely by the deals they get!

COME...PLAY
PS3 To Lead In 2008

The gaming industry had witnessed phenomenal growth last year, with major players such as Nintendo, Sony and Microsoft posting massive sales figures. According to research firm iSuppli, the PS3 will pose the strongest growth figures among all video game consoles. The projected worldwide sales figures this year are 10 million units for PS3, 12.2 million units for the Wii, and 7.5 million units for the Xbox 360.

With strong sales, lower prices and broader appeal among audiences, the Wii is all poised to be the market leader with a global installation base of 30.2 million units. On the other hand, the Xbox 360 has struggled in Japan and Europe, where the Sony brand formerly dominated, and is on course to increase its user base to 25.7 million units by the end of 2008.

In the light of all conditions, the PS3, which lagged due to its price and lack of blockbuster games for most of last year, would double its installation base to 20.3 million users and by 2011 will be the industry leader.

In India, however, the Xbox 360 leads in terms of market share. However, with Blu-Ray getting the upper hand in terms of being the preferred DVD format, Sony has a lot to gain. What happens to Xbox 360 users who use HD-DVD drives with their gaming consoles is still to be seen. The users hit the most, are those who bought external HD-DVD drives for their Xbox 360s. How Microsoft compensates them, is a matter of concern and will be closely watched in the forthcoming days.

WHAT YOU MISSED
MS, Yahoo, And Them

The world is going abuzz with talks between the two east-coast companies—Yahoo from Sunnyvale, California and Microsoft from Redmond, Washington. Surprisingly, Google was

■ LG to roll out Android phone in early 2009 ■ Microsoft helps nab $900 M piracy ring through large-scale investigation in 22 countries ■   ■ Nintendo and Microsoft unveil indie games services to tap into individual game developers ■ Google to store patients' health records ■

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The Digital World

A Round-up Of Technology News From Across The Globe

GERMANY
Nokia's announcement to close down its unprofitable cell phone plant in Bochum sparks dispute with the government. Over 4,000 people protest outside plant premises

DENMARK
Going anti-piracy, courts order Danish ISP Tele2 to block customers' access to the popular P2P file-sharing site The Pirate Bay

RUSSIA
As per the computer security firm Sophos' survey, 8.3 per cent of the world's spam or one spam in every 12 junk mails makes Russia a "spam superpower" after the current leader, the US

ROMANIA
Nokia opens factory as part of their low-cost locations program for production of mobile phones and parts, for Europe, Africa and Middle East. About 1,200 people will be employed on an average salary of $318 (Rs 12,402) per month (before taxes) by the end of the year

CHINA
The first Cloud Computing Centre for software companies of the country was announced recently by IBM, along with Wuxi Tai Lake Industry Investment & Development Co. Ltd

SPAIN
Cops arrest more than 76 people nationwide, for Internet fraud. Some suspects were involved in auction fraud—they scarpered after collecting the cash for plasma TVs without delivering the goods

also active in the media, this time around playing spoiler by claiming that Microsoft would use the deal to gain too much of control over the Internet.

We have also heard reports about AOL talking to Yahoo! for a likely deal. We believe that's not coincidence, considering the fact that Google owns a 5 per cent stake in AOL. Rupert Murdoch's News Corp. also joined in the league, by recently holding talks with Yahoo!

The Chinese portal Alibaba, however, is an important factor in the whole deal. For those of you'll who haven't heard of it, Alibaba is a Hangzhou-based e-commerce / e-auction company, and a significant player in China's search engine and online marketing industry after Baidu. Yahoo! is a major stakeholder in Alibaba. Softbank, a Japanese telecommunications company, which bought out Vodafone Japan, also owns a 3.9 per cent stake in Yahoo US and 40 per cent of Yahoo Japan. In addition to this,

both Softbank and Yahoo, are common investors in Alibaba. Being a dominant player in China, this deal is being closely watched by Chinese authorities—concerned over foreign control of Chinese businesses, especially with Microsoft, considering its monopolistic policies and practices.

The deal between the two companies has not yet been signed, and it already has effects on China and Japan. But what are the possible impacts in India? As far as Indian surfers are concerned, Google ranks the highest, followed by Yahoo! at a distant second place, and then MSN. Unlike other countries where the competition is stiff, in India, Google really holds a significant lead over the other search engines. Could this translate into a reduction in PPC rates for online advertising? SEO professionals would surely be watching this closely. So, for India, things don't seem to be as significant anyway. Surely services are

only going to improve with the competition. They've got to!

The Great Indian Virus

India and technology seem to be in the news quite often these days. A few weeks back, it was low browsing speeds due to the cut in the Middle Eastern optical fibre (FALCON) belonging to FLAG Telecom, under the flagship of the Reliance ADA group. To add to these woes, a recent study on virus activity by a web security services company indicates that India has the highest incidence of virus attacks.

As per the study conducted by MessageLabs, "Virus activity increased across a number of countries in January, including India, which takes the number one spot with 1 in 30.5 emails". As compared to India, the Web attack was far less in

western countries with figures being one in every 191.5 emails in the US and one in every 158.4 e-mails in Canada. In New Zealand, Web security levels were pretty good—one out of 768 mails was virus infested, while for Australia, the figure was one for every 298.7 mails. The study goes on to reveal that the global spam ratio is 73 per cent. This translates to one in every 1.36 emails. This only further reiterates the need for us to be updated with the latest anti-virus, anti-spam, anti-spyware and other proactive tools to ensure safety. In taking such measures, not only are we safer as individuals, but rather reduce the risk to others, especially our friends and close associates.

Micro-buzz

After the series of anti-trust battles between Microsoft and the EU, it now seems

■ **Game consoles can model black holes, drug molecules** ■ **Software gets smart cars talking** ■ **MySpace opens to software developers** ■

Photograph **Ram Hari Koirala**

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 20th of this month.

Beat That!

Digit Caption
Look! Web access!

Last Month's Winner!
Abhishek Tiwari, New Delhi
"What was the shortcut to Connaught Place?"
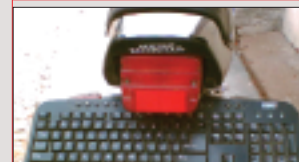
E-mail your caption with the subject "Beat That", and your postal address, to **beatthat@thinkdigit.com** and win

Fix Your Own PC
by Corey Sandler

Published by

WILEY-INDIA

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to be the turn of Intel, the world's largest chip manufacturer. Some days ago, the European Commission raided the Munich offices of Intel. To add to Intel's woes, the Commission also raided the retailers that sold Intel's products.

These raids come in the wake of charges that Intel has slashed prices below costs, and also offered huge rebates in an effort to drive AMD out of the market. The Commission is already investigating charges on German retailer Media Markt, surrounding its sale of computers. Media Markt sells Intel-powered PCs, but none that run on AMD processors. In response to these raids, Intel's spokesman Chuck Mulloy said "there has been a raid on our offices in Munich. As is our normal practice, we are cooperating with authorities."

In the days of Core 2 Duo and Phenom, and the combined market dominance by Intel and AMD in the microprocessor

business, venturing into this area is as risky as a kid attempting to eat the juiciest burger in front of the class bully. Microprocessor start-ups are a rare, if even extant, commodity these days. The available opportunities in the form of server business are pounced upon with all might by the niche group of companies such as Sun and IBM. In the last decade, a company by the name of Transmeta Corporation— which once had Linus Torvalds on its payrolls— had attempted to eat into the microprocessor pie, but seems to have fallen miserably.

Montalvo Perry, a former CEO of Transmeta Corporation, went on to found Montalvo Systems, to venture into the prime zone of ultra low-power microprocessors. Montalvo Systems is once again in the news for claiming to have developed a multi-core, energy-efficient CPU for notebooks and "ultra portables". The Santa Clara-based start-up—which

has a presence in Bangalore as well—focuses on processors with low power consumption. Although very secretive about their plans, there are speculations that Montalvo will make public announcements this year. Among its workforce, are former employees of Transmeta, NexGen, AMD and others. This name is surely going to be under the lens in the days to come, and most definitely by Intel!

ITALIAN JOB?
Thieves Ahoy!

These days, most account transactions happen online. In these e-banking days, phishing refers to e-mails that appear to be sent from a legitimate source in an effort to obtain sensitive information from a user. For example, the email appears to be sent to you by

your bank, asking you for your password, or any other sensitive information. According to the IBM X-Force 2007 Trend Statistics Report, of the top 20 companies targeted by phishing in 2007, the report says, 19 are in the banking industry. With widespread risk of online transactions, we are all at risk to the latest pestilence. The X-Force collected and analysed 410,000 new malware instances in 2007, which is approximately 30 per cent more than those analysed in 2006. So, what is the average user supposed to do in the midst of significant forgery and phishing online? As it is said through the days— old is gold. What started off as a revolutionary

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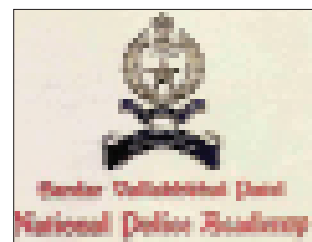
STAT ATTACK

X-force's graph on Vulnerablities
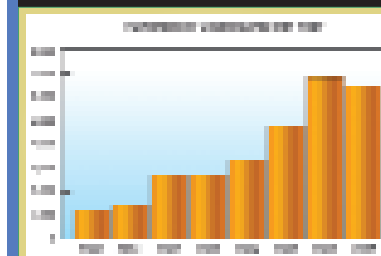
2.1% of people have had a virus in their handset, **11.6%** know someone who has had a virus and **86.3%** of people have never heard of anyone with a mobile phone virus—McAfee Survey

Nearly **40%** of all phone calls, fail to meet set industry standards, even in developed markets like the US and Western Europe

47% of men would give up sex for six months, for a 50-inch plasma TV, compared to just over a third of women

Roughly **68,000** servers on the Internet are returning malicious Domain Name System results according to Georgia Tech and Google survey

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move, to do away with slow pace of processing, bank transactions that are paperless or online should be verified with a hard copy as well.

According F-Secure Security Labs, the SVP National Police Academy in Hyderabad, had a Bank of America phishing site operating on one of their servers. After all, when it comes to money, there is no pride or tech-savvy talks—it's the money that matters. With the rise of social networking sites such as MySpace and Facebook, even this area of

the Web space is now a prime target for exploits. This justifies social networking sites giving cautious alerts to be aware of phishing activity.

OPEN THE WINDOWS
Windows 7 Gets Touchy

With Vista having borne tough comments from critics to the extent of being regarded as the biggest disappointment of

2007, Microsoft is all set to slate a 2009 launch of a successor. Named Windows 7, it will be more human-friendly with increased input options, as per Bill Gates, Chairman Microsoft. According to him, touch, speech and written text would be the significant development in the latest version of Windows. Gates claims that technical advancements in the areas of touch and speech would be incorporated into Windows 7. In a recent speech to Stanford University, Gates said, "It's a big step forward in terms of ink. It's a big step forward in terms of touch".

So what does that mean? In two years, Vista is no more? Was this all a tactic to get people to move out of XP and then force them to switch to another product? It started with gamers who were literally forced to upgrade to Vista because of the DirectX 10 compatibility issues springing up.

In fact, Microsoft is directly working with manufacturers, and in all probability computers would come fitted with touch screens and be able to accept inputs in the form of touch. Microsoft

has already hinted that Windows 7 would be "touchier", similar to Apple's iPhone. On the other hand, Microsoft plans to do away with DirectX 11. Apparently, with the hardware requirements of DirectX 10, and the customer resentment as a result of it, the software giant seems to have become proactive. We wonder whether our cell phones are becoming PCs or the other way round.

On the other hand, has Microsoft just added up features from their work on the Surface PC, the much hyped touch-enabled computer. With focus on touch, that is what it seems to be. Yet another bit of Microsoft hype... only the future will reveal the facts.

ALL IN THE HEAD
Gamers To Get Brain-controlled Headsets

With exponential progress, even the means for entertainment are going high-tech. The latest development for the gaming industry is from the US / Australian firm Emotiv. Scientists have developed a neuro-headset that interprets the interaction of neurons in the brain, which enables

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XPERIA X1

Buzzword of the MONTH

Claimed as yet another iPhone killer by Tech evangelists and bloggers, the Sony Ericsson XPERIA X1 has on incredibly high-resolution (800 × 480), 3-inch VGA touch screen display. With a unique arc-slider design, the X1 features a new desktop GUI called 'Experia panels', a nine-panel interface that's eye candy on the high-resolution display. These panels are finger-friendly marvels that permit access to applications running on the phone via the home screen. Navigation is possible either by touch, arc-sliding QWERTY Keypad, 4-way joypad and an "optical joystick".

The X1 also has loads of other features like quad-band GSM as well was UMTS/HSDPA/HSUPA network support, WiFi, aGPS, microSD (400 MB on phone memory by default) and of course, Windows Mobile 6. X1 aims for the Web convergence market since it runs the Microsoft Windows Mobile OS for blending multimedia with Web communication. All the hype around the X1 leaves Sony Ericsson fans in anticipation, and it is expected to hit markets over the second half of 2008. There's no way you can expect it to be cheap. Nevertheless, keep drooling!

■ College Coders Working With IBM's Project Zero ■ Nokia says it will incorporate Google search engine in cell phones ■ Net firms reject monitoring role ■ Doctors use Wii games for rehab therapy ■ Netscape officially dead; AOL says use Flock or Firefox ■ Google lunar challenge gets underway

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K-NFB READER

What's the K-NFB Reader?
knfbReader is a mobile phone software for the blind, developed by Ray Kurzweil (the father of text-to-speech) in association with National Federation for the Blind.

How does knfbReader work?
It's a text-to-speech software that takes its input from the mobile phone's camera and then uses optical character recognition technology and text-to-speech capability to read out text. It displays each sentence and highlights each word while it's being read out at a user-adjustable speed. Thousands of pages can be saved in text format using memory sticks. Braille support is available on request.

Which phone models can sport knfbReader?
Currently, knfbReader is paired with and designed for the Nokia N82, Symbian Series 60, (3rd Edition) platform with 50 MB of flash storage.

Who's going to benefit from it?
This technology will benefit the visually impaired and those suffering from dyslexia—generally those who need assistance for reading text. It will make them more independent and boost their performance at professional and personal fronts.

Why will it make a difference?
This mobile reader program is expected to eliminate the need to carry multiple devices and ulitmately make the mobile phone a unified solution. The mobile reader can also function with GPS programs and access PDF files. Besides, accessibility to other mobile functions can be improved by using software such as MobileSpeak and Talks, developed specially for the visually impaired.

When will the knfbReader be available for purchase?
knfbReader was released on February 15, 2008. Get it at http://www.knfbreader.com/

gamers to interact with the virtual world using their thoughts and emotions.

Tan Le, President of Emotiv says, "It picks up electrical activity from the brain and sends wireless signals to a computer. It allows the user to manipulate a game or virtual environment naturally and intuitively." Although the concept of reading neural activity is not new, Emotiv claims that the Epoc headset is the first consumer device that can be used for gaming.

Emotiv is also in talks with IBM for developing the technology for use in "strategic enterprise business markets and virtual worlds". According to Paul Ledak, Vice President, IBM Digital Convergence, brain computer interfaces such as the Epoc headset are an important component of the future 3D Internet and the future of virtual communication.

Future 3D Internet! Sounds interesting! India has a perfect blend of the crème de la crème in the high rises of metros and new-to-gaming kind from mid-sized and small cities. While the Internet evolves towards 3D and games increasingly tech-heavy, the pricing and distribution of these gadgets in the Indian market is what we look forward to.

LIGHT SPEED

Optical Networks To Blaze Faster

Researchers at the U.S. Department of Energy's Ames Laboratory have come up with an ideal way to sort and distribute data transfer over optical fibres across the globe. The new technology, developed by a team led by physicist Rana Biswas, is called the Three-dimensional Photonic Crystal Add-drop Filter, and enables enhanced transmission over multiple wavelength channels (wavelengths of light) travelling along optical fibres. This is a significant milestone in the development of all-optical transport networks to eliminate electrical components from optical transmission links, resulting in virtually flawless data reception for end users of the Internet and other fibre-based telecommunication systems.

Biswas explains, "There are up to 160 wavelength channels travelling through an optical fibre at the same time. That means a lot of dialogue is going on simultaneously". Biswas, who is also an Iowa State University adjunct associate professor of physics and astronomy and electrical and computer engineering, explained that as information is transported over these multiple channels, it's necessary to periodically drop-off individual wavelength channels at different points on the fibre. At the same time, it's essential to be able to add data streams into the empty wavelength channels. "When the data being transported in multiple frequency channels over an optical fibre comes to a receiving station, you want to be able to pick off just one of those frequencies and send it to an individual end user," said Biswas. "That's where these 3-D photonic crystals come into play."

To further prove their finding, the researchers used a three-dimensional, microwave-scale photonic crystal constructed from layered alumina rods, containing a full bandgap—a wavelength range in which electromagnetic waves cannot transmit. Just as electronic bandgaps prevent electrons within a certain energy range from passing through a semiconductor, photonic crystals create photonic bandgaps that confine light of certain wavelengths. The idea of using photonic crystals for add-drop filters is not new. Since the mid 1990s, many groups worldwide have been working to develop the technology with two-dimensional photonic crystals.

"It works," Biswas said, "but there is loss of some intensity to the end user because 2D photonic crystals don't confine the light completely. For example, in a phone conversation, voices would dim out. But with 3D photonic crystal add-drop filters, the communication would be clear."

Although Biswas and his team have shown that 3D photonic crystals would make highly efficient add-drop filters, there are still problems to address. Getting the size of the photonic crystals down to 1.5 microns to work at the wavelengths used for Internet communications is a big challenge. The Ames Lab group now has some of these photonic crystals working in that range, but to make these controlled structures with one input, another output and a defect, required significant amount of work. A future direction is to simplify the design of the add-drop filter by reducing the layers in the photonic crystal—perhaps having all the action happen in one layer.

This comes as a ray of hope to the average Indian surfer, and more so the host of IT and ITES services companies based in India, where ISPs claiming to be broadband providers are not able to provide enough throughput to keep the customer content! ◼

Insight

Behind The
Picture

Ever wondered what makes graphics cards tick, and tick so well?

Michael Browne

From the movies we watch to medical sciences and imaging, educational simulations to defence applications, and even manufacturing processes (Computer Assisted Manufacturing) the impact that 3D rendering has had on the world is phenomenal. 3D accelerators (or graphics cards) have acted as catalysts for the growth of 3D modelling, rendering, and animation.

The year 1981 and the first PC video card from IBM seems ancient history. We've gone from single colour video cards to cards that can work with millions of colours. The real graphics war for desktop PCs didn't start till 1997 when 3dfx delivered *Voodoo* to the world with (then) powerful features like Mip-Mapping, Z-buffering and AntiAliasing. Rivals NVIDIA came up with their TNT and TNT2 cards following the Voodoo 2, and these were the first AGP-based cards. Though it may seem that things have stagnated from those initial gigantic steps, nothing could be further from the truth. Enter NVIDIAs GeForce 256 graphics card (August 31, 1999). It essentially had 4 pixel pipelines that could each handle a single, half precision (16 bit) pixel operation in a clock. Core and memory speeds were 120/166 MHz and with a peak output of 480 million pixels per second and 15 million triangles per second, the GeForce 256 was hard to beat. November 8, 2006, seven scant years later and the GeForce family's eighth generation of graphics cards were unveiled. Their latest 8800GT, which is a very value oriented card, churns out 16.8 billion triangles per second, a difference comparable to the difference between the sun and the moon. Regardless of the difference in specifications, there are certain characteristics common to all graphics cards which we're going to look at. We're also going to see how all this comes together. Let's look at the individual parts of a graphics card, and what they contribute to the whole.

Shrikrishna Patkar, Jiten Ghandhi

Heatsinks conceal the RAM chips

Heatsinks conceal the RAM chips

S-Video connector

BIOS chip

GPU core
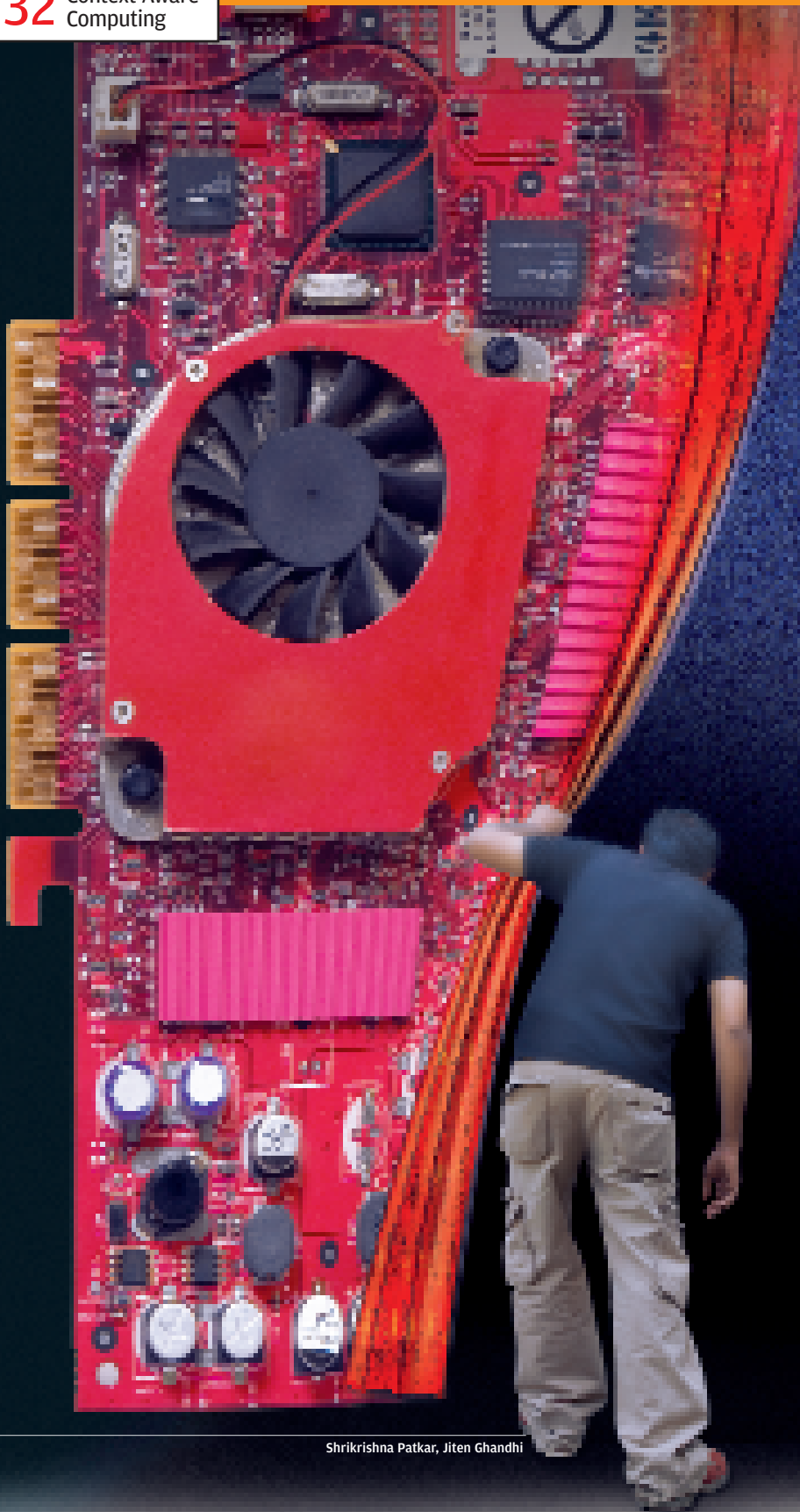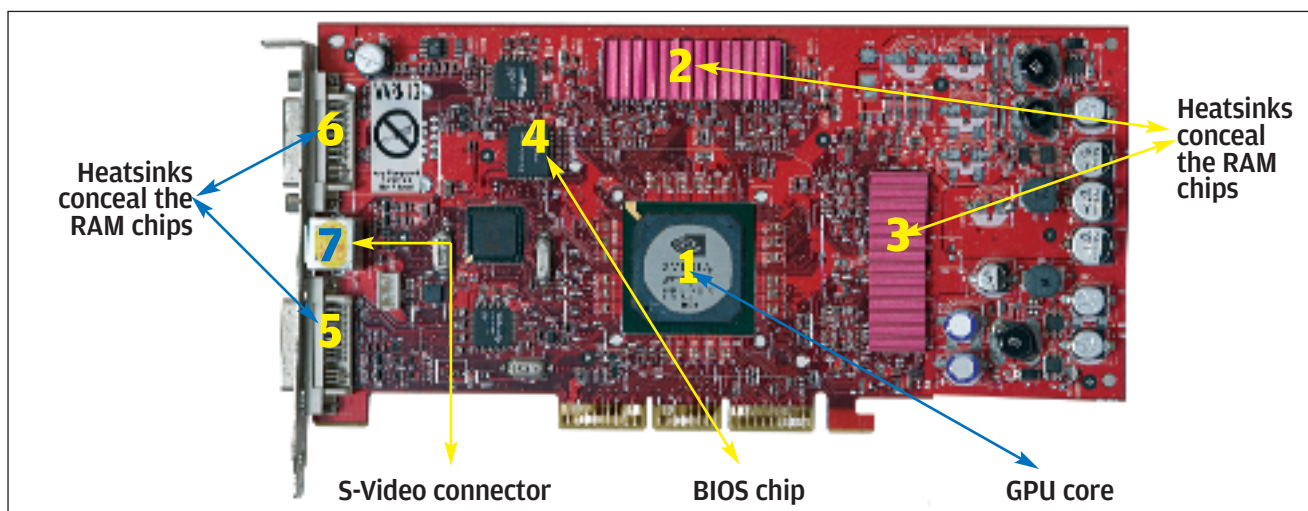
GPU Facts

At the heart of technology in a graphics card is the GPU or Graphics Processing Unit. Think of the GPU as a processor dedicated solely to graphics. Just as a CPU slots into a motherboard, a GPU is affixed on the PCB (Printed Circuit Board) of the graphics card. However, unlike a CPU, a GPU can never be removed from its PCB. Today's GPUs have the ability to number crunch enormous amounts of data and are much more powerful, even than the fastest quad core. NVIDIA's 8800GTX GPU, for example, has 128 stream processors inbuilt and each is capable of handling one thread of data. The constant need for speed has led manufacturers to up transistor counts while technology advances have ensured that the die size of today's GPU core has shrunk. ATI technologies has already made the shift to 55 nm while NVIDIA has gone to a 65 nm process, previously both vendors were using 90 nm and 80 nm fabrication processes. More transistors are being crammed on a smaller GPU die, and the 8800GTX broke all barriers by having 681 million transistors on its 90 nm die—the previous high was 276 million transistors, which was found on ATI's X1950XTX. The brand new 8800GT has crossed the 700 million transistor barrier, and at this rate we could see a billion transistors on a GPU die within a year.

So what increased with this increase in transistor count? For one, the number of Shader units rose steadily, from 4 pixel pipelines (PPs) on the GeForce FX series, to 16 PPs on the GeForce 6800, to 24 PPs on the GeForce 7800GTX, and finally 128 SPs (Stream Processors) on the 8800GTX. Similarly, the colour precision has gone from 16 bits on the GeForce 4 to full 32-bit precision on the 8800GTX, and double precision (64-bit) is on the way. Increases in performance and precision have gone hand in hand with increases in programmability with DX 8.1 giving way to DX 9, and then DX 9.0c (Shader Model 3), and finally DX 10.

The characteristic properties of a GPU mainly depend on two variables:

1. The core speed: this is the rated frequency (in MHz, GHz etc) of the processing unit. A general thumb rule is the faster the core, the faster the GPU. But performance doesn't only depend on the frequency. For example, the core on a GeForce 7900GTX runs at 650 MHz, while the core on a GeForce 8800GTX runs at 575 MHz, in spite of this the 8800GTX is more than twice as fast as the 7900GTX in terms of its processing performance.

2. Pixel and Vertex Shaders: A Vertex Shader basically takes a 3D image made up of vertices and lines and draws a 2D image out of it, which is displayed in the form of pixels on the screen. A Pixel Shader is a refinement of the Vertex Shader and allows the addition of textures to the 2D image on a per pixel basis. With the advent of DX10 both major vendors NVIDIA and ATI have done away with the concept of Pixel and Vertex Shaders completely choosing to design their architectures on a *Unified Shader* model. These Shader units are also called *Stream Processors*. The more the Shader units aboard a GPU the faster it will perform, since it can complete more operations (on pixel and vertex data) in a clock cycle.

So there are two ways to increase performance of a graphics core—increase the clock speed, or increase the count of Shader units. Current limitations of silicon yield mean that increasing clock speeds may not always be possible or even feasible. Increasing the Shader unit count is easier to achieve and the results are startling. Another reason for unifying Shaders would be the move towards making GPUs less graphics specific and more towards general purpose computing engines.

How Does The Core Work?

Any GPU is tasked with creating an image from a description of a scene, much like an artist. This scene contains a variety of data one of which is geometric primitives (vertices and lines) which are to be viewed in the scene. Also present is the data which contains lighting information for the scene, as well as information about the luminance qualities of the objects in the scene, (objects means the geometric primitive data), i.e. the way that each object reflects light. Finally, information of the viewers' perspective and orientation is also important. This process of image-synthesis has always been viewed as a pipeline process consisting of a number of stages to avoid confusion,

Stage 1: Input

The GPU is designed to work simple vertices and for this purpose every complex shape in a 3D scene is first broken down into triangles—the basic

There are two ways to increase performance of a graphics core— increase the clock speed, or increase the count of Shader units

building blocks of any 3D model irrespective of how complex. All shapes like rectangles, cubes and even curved surfaces are broken down into triangles. Here's where the software comes in. Developers will use either of the computer graphics library software (OpenGL or Direct3D) to feed each triangle into the graphics pipeline, but one vertex at a time. The GPU can assemble vertices into triangles as and when needed.

These days due to the infinite Shader programming possibilities available, developers are able to give advanced light-based properties to objects. For example, the way water in a pond interacts with light, the surface sub-scattering of light by translucent materials of varying densities, like skin and hair, and more.

Stage 2: Transformations
GPUs have their own localised coordinate system and they can use this to specify the position of each object in a 3D scene. For utilising their own coordinate system the GPU has to convert all the objects to a common tracking system. At this point the GPU cannot perform complex modifications to the objects for fear of warping the triangles, simple operations like scaling and rotation can be done. By representing each vertex in a *homogenous* coordinate the GPU can perform a single operation on triangles *en masse*. At this stage of the pipeline, the output is a stream of billions of triangles on the basis of the GPUs common coordinate system in which the orientation is the viewers' perspective.

Stage 3: Lighting
By now, each triangle is placed in a global coordinate system and the GPU can now calculate each triangle's colour on the basis of the lights in the scene. The lighting could be as simple as a single source (a light bulb in a room), or as complex as a street lit up by a row of streetlights. In the latter case, the GPU is tasked with summing up the effects of each light source and computing their overall effect on colours and luminosity of the triangles in the scene. Today's GPUs are also complex enough to colour surfaces on the basis of their physical surface properties—matte, gloss, etc. Advanced lighting techniques like specular highlighting, and diffusion and occluded lighting are also possible.

Stage 4: Getting Perspective
The next stage of the pipeline projects the (now) coloured triangles on to a virtual plane, as viewed from the users perspective. These coloured triangles and their respective coordinates are finally ready to be turned into pixels.

Stage 5: Rasterization
Rasterization is quite simply the process of converting a vertex representation to a pixel representation. Here, an image that is described as a vector graphics format is converted into a raster image consisting of dots and pixels. In this stage, each pixel can be treated separately, and the GPU handles all the pixels in parallel—one of the reasons that manufacturers upped the Shader unit count on GPUs to speed up this parallel processing.

Stage 6: Texturing
While pixels are already coloured by this stage sometimes additional textures may need to be added for added realism. This is a cosmetic process similar to the make up used by ramp models, in which the image is further draped in additional textures to add an additional layer of detail and believability. These textures are stored in the GPUs memory, where each pixel calculation can access them. This is where memory bandwidth and the quantity of memory plays a vital role which is why we see graphics cards with more memory generally performing better.

Stage 7: Hidden Surfaces
In all 3D scenes, some objects are clearer while some are obscured by others. Its not as simple as writing each pixel to memory. In that case the most recently written triangle would get written first, in which case (for example) a chair placed behind a table would be displayed while the table itself would be hidden behind. This stage involves sorting of triangles from a back to front view. This is where a GPUs *depth buffer* comes in. The depth buffer stores the distance of each pixel from the viewer and before writing a pixel to the screen the GPU does a check to see whether the pixel occupying that position is the closest to the user and if it is, it is sent to the monitor.

Memory
VRAM is present on the PCB of the graphics card and is as important to it as system RAM is to the CPU. Very basically VRAM feeds the GPU with raw data and passes on the results after the GPU has worked on the data. VRAM is also sometimes called 'frame buffer'. In the past three years or so the importance of VRAM has sharply inclined, mainly because whole visual revolution that is taking place where users want as realistic an experience as possible while playing 3D games. In fact games are the numero uno reason for advancements in graphics cards' performance over the years. From 32 MB of VRAM on the GeForce 256 DDR, to 768 MB of VRAM on the 8800GTX, the quantity of memory has increased more than 20 fold. This goes in tandem with the improvements to the core of the GPU.

Not only has the quantity of video memory gone up, but the type of memory has changed too. Current graphics cards use DDR3 memory, and although DDR4 memory is waiting in the wings, it hasn't seen much adoption yet.

The bus width of memory has also gone up, from the 64 bits of yore to 256-bit and even 384-bit bus width (GeForce 8800GTX). All this speed is required too, as today's games demand more than 50 times the resources than the games released eight years ago. The ultimate goal of manufacturers is to up the memory bandwidth figure of the graphics card. This is done to eliminate bottlenecks which occur in the memory, as 90 percent of the time the core has to wait for much slower memory to supply it with fresh data. Here's how you calculate the memory bandwidth of your video card (works for system memory too):

An 8800GTX has memory clocked at 1,800 MHz, and this memory is 384 bits wide, the formula for total bandwidth = `(clock speed`

The importance of VRAM has sharply inclined, mainly because whole visual resolution that is taking place—users want as realistic an experience as possible

`* memory bus width)/8 = (1,800 * 384)/8 = 86,400 megabytes per second` or 84.6 GB/s (Gigabytes per second)

Just to compare this figure to the fastest system memory based on PC8500 DDR2 RAM (1066 MHz) we have `Bandwidth = (1066*64)/8 = 8528 MB/s or 8.5 GB/s`

As you can see current generation cards offer ten times the bandwidth that the fastest memory offers and with DDR4 this bandwidth is set to cross 100 GB/s. This enormous amount of bandwidth is used to feed the data hungry GPU with enough raw data to keep it busy, which is no easy task considering that the GPU has an internal bandwidth of over 180 GB/s, and the latencies are minimal. Very simply, VRAM is a buffer for the GPU. Data that is fed to the GPU is fed via VRAM which holds such data till time the pipelines of the GPU need feeding again. While VRAM holds vertex data, perspective data and lighting information, it can never actually hold texture data which is held by the PCs main memory. The GPU accesses these textures from system memory directly through DMA (Direct Memory Access) and there is no CPU interference. The resultant output of the GPU is also buffered in part of the VRAM which is utilised as a 'frame buffer'.

RAMDAC
The RAMDAC or Random Access Memory Digital to Analog Converter is a component of a video card that is responsible for converting digital images into analog signals that can be displayed by an analog monitor like a CRT. The RAMDAC may be a separate card on the graphics cards PCB (for example like on the 8800GTX) or could be integrated on the GPU die. The RAMDACs ability to support greater refresh rates depends on its internal data transfer rate, (which depends on its speed, in MHz), and the precision of colour bits used. However the concept of flicker applies only to CRTs and with the advent of the DVI (Digital Video Interface) on most LCD monitors and graphics cards the RAMDACs days are numbered. All LCD and Plasma screens work entirely in the digital domain and do not require a RAMDAC. In case they have an analog input, the signal is simply converted to digital again after the RAMDAC has fed out an analog signal from the original digital signal. This double conversion is lossy to say the least.

Video BIOS
Like a motherboard's BIOS the VGA BIOS is a chip that contains the firmware (hardwired low-level instructions) that controls the graphics card's operation and allows the computer's other components and software to interface with the card. It contains essential information about the graphics card such its core and memory clock speeds, memory timings, voltages, and even thermal thresholds (for warnings and shutdowns). Most graphics cards these days come with re-flasheable BIOS' which may improve performance for affect stability favourably. If the BIOS is flashed incorrectly, the card can be permanently damaged.

Outputs
Connectivity might seem a tiny part of a graphics card, but without standards you wouldn't see any of that brilliance actually working. The following three connects are common to nearly every graphics card:

HD-515: Commonly known as a D-Sub, or VGA connector. It is an analog connect and has 15 pins and was designed for CRT displays. It has its issues—electrical noise (being an analog signal), image distortion, and sampling errors (due to downscaling).

DVI: A digital standard developed for LCD and Plasma panels. It uses the computers native resolution without any compression of any sort and avoids the demerits of the D-Sub connect.

S-Video: This interface was designed keeping in mind other devices which may need to interface with a display card such as DVD players, large screens, game consoles, video recorders, etc.

Interface
Let's face it—graphics cards wouldn't be the speed demons that they are today unless they could interface with PCs using high bandwidth ports. A GPU works in tandem with the CPU, Northbridge (or Memory Controller Hub), and system memory, and its only means of communication happens to be that little slot it's plugged into. The specifications of the same little slot have changed a lot too over the past few years—so much so that the latest specification is not backwards compatible. From IBMs 16-bit ISA interface with a speed of 8 MHz to the current PCI Express we've come a long way. Currently graphics cards utilise the PCI Express interface (also called PCIe or PCI-E). PCIe 1.1 has a maximum bandwidth of 8 GBps, consisting of 32 parallel lanes each capable of a maximum throughput of 250 MBps. PCI 2.0, which has just debuted in the latest ATI Radeon 3xxx series and NVIDIA 8xxx series, offers 16 GBps.

The Shape Of Things To Come
DX 10 wasn't the big affair it was said to be and we're not going to say "see we told you so!" Both manufacturers NVIDIA and ATI have realised the follies of developing a graphics card for a standard that has yet to be properly implemented, and the fact that hardly anyone uses Windows Vista as a gaming platform doesn't help. NVIDIA has just released the first card of their new 9xxx series—yes, the GeForce 9600GT has finally arrived. Based on a 65nm manufacturing process it's a mid-range offering meant to take over the reins from the capable 8600GT. Rumours abound of the presence of a mighty 9800GTX, but the company themselves are tight lipped about specifications. One thing we know is these cards support DX 10 which is nothing new. ATI has already released a host of products namely the 3xxx series comprising of the high-end Radeon 3870 and the slightly lower Radeon 3850, with the mid-range Radeon 3650. But the specifications of these newcomer's are hardly revolutionary as the 8800GTX was a couple of years ago. It seems we've reached another plateau, and the real meat may arrive after DX 10 matures as a platform and application support picks up. Till then we're sitting pretty, literally. ◼

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Quick Facts

	GeForce 256	GeForce FX 5900	GeForce 7900GTX	GeForce 8800GTX	Radeon X1950XTX	Radeon HD2900XT
Year Of Launch	1999	2004	2006	2006	2006	2007
GPU Name	NV 10	NV 35	G71	G80	R580+	R600
Core Transistor Count	23 million	135 million	278 million	681 million	384 million	700 million
No Of Shader Units	4/0	8/4	24/8	128	48/8	320
Core/Memory speed	120/300 MHz	425/1100 MHz	650/1600 MHz	575/1800 MHz	650 / 2000 MHz	740 / 1650 MHz
Amount Of Memory (MB)	32	256	512	768	512	512
Memory Bus Width	128 bits	256 bits	256 bits	384 bits	256 bits	512 bits

An Unprotected Vista PC

February 2008

Nimish Chandiramani

After reading a million white papers on how Vista implements security and, coming to the conclusion that it isn't the virus-magnet the Windows-hating world would have me believe (on paper, at least), I decided to see if that holds good in the real world—well, my version of reality, if nothing else. Out went the anti-virus; I left the settings for Windows Defender and Firewall at their defaults—firstly, because that's what you get when Vista is installed, and secondly, because I have a strict only-one-stupidly-brave-thing-at-a-time policy.

Day 5:

My daily activities progress as usual, with one significant change: I spend a lot of time monitoring my running tasks and services, and I open Defender at least twice a day—the last time I ever opened it was to see what it was, just after I installed Vista. I've turned on UAC (User Account Control) again, just so I know what's going on in the system.

All systems stable for now, but I'm biting my nails more, and I suspect some stress-related hair-loss. This needs to pass. Soon.

Day 12:

It's passed. Working like this has been uneventful so far—my start-up list hasn't changed, performance remains the same and UAC hasn't flagged anything suspicious. The nail-biting has stopped, and my hair stays on with new resolve. I'm almost starting to believe this might actually work! I've even turned off UAC again—when it's not protecting me, it's just annoying.

Day 15:

This is starting to get boring. Here I am surfing the Internet, an open invitation to any Dark Force that might want to destroy my PC, and nothing. Don't they love me anymore? Is Vista really that secure? Or am I just not living dangerously enough?

Day 16:

Aha! My sister's PC (Windows XP) seems to have been infected with some sort of worm. And my shared folders are writable, too! Now let's see what this thing's made of. Any minute now...

Day 18:

That's odd. My PC's still bafflingly untainted. I'm not giving up this easily, though. I have procured a Flash drive which I'm told is infected with an Autorun virus. That ought to do some damage.

Unlike XP, Vista doesn't blindly execute autorun.inf—so when I attach the drive, I still get a dialog box that asks me whether I want to open the drive or run "explore.exe". Sharp knife that I am, I choose to open the drive and delete the autorun file. It's amazing how a feature as simple as this can thwart a virus.

Day 30:

Still clean. Of course, I haven't actively hunted for malware to subject my PC to—nobody should—and I have no doubt that I could infect this thing if I really tried. But that wasn't why I did it—I wanted to see if I could go about my daily business without an anti-virus, and it turns out that I can. The two times that I could have faced infection are perfectly realistic scenarios—it could happen to anyone. I know there are viruses out there, but the probability of a random infection like the ones I sometimes faced with XP seems to have gone down considerably. Until further notice, my PC is going to be anti-virus-free.

Then again, with my luck, I'll get infected tomorrow...

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Drool Maal

Apple Macbook Air

It's a laptop that's thinner than any you've ever seen! Get this—1.93 cm at its *thickest*, and 0.4 cm at its thinnest point. Weight? 1.36 kg. It's not like they removed all the excess fat by removing vital components either. It still has a Core 2 Duo, an 80 GB hard drive, a 13.3-inch screen and 2 GB RAM along with all the extras that you find on every other laptop. Prices start from £1,199 (Rs 93,000) and go well over £2,000 (Rs 1,55,000)

Garmin Nuvifone

The Nuvifone's got the whole iPhone design going, with a large 3.5-inch touchscreen, MP3 / MPEG-4 / AAC playback and camera, and yes, GPS. Garmin even has an online service that works with the phone that'll notify you of traffic problems, weather and local events— perfect when you're lost in bad weather and need to rush to the closest fast food joint. It's expected to be out in the third quarter of this year

Vision Research Phantom v12

6315. No, it's nothing to do with the resolution—it's the frame rate that the Phantom records at—with a resolution of 1280 x 800! Drop the resolution, and they say it can go even faster—a ridiculous million frames per second! It comes with 8 GB of high-speed DRAM, and there are 16 and 32 GB versions too. Price on request, which really means that twenty people in the world can afford it

General Dynamics Itronix Duo-Touch II

The Duo Touch II is a Core 2 Duo powered tablet PC that's been beefed up to take a battering. It's been made to deliver a perfect computing experience for the people working in hostile environments. Connectivity options are plenty with everything from Bluetooth to WiFi to GPRS and EDGE. It comes with Windows XP Tablet Edition installed, or you can opt for Windows Vista. There's a standard 40 or 80 GB drive you can choose from or even a 16 or 32 GB solid state drive. You can use your fingers on the 8.4-inch touchscreen to control the Duo Touch II or use a stylus. What's even better is that it weighs under 2 Kg, so you don't have to be a body builder to carry it around

Bower and Wilkins 800D

This sound setup which looks like they put a bowling ball on top of a speaker, is one of the most exotic speakers from the big names Bower and Wilkins themselves. The 800D weighs around 125 kg, and has been made using silver and gold components to pre-serve quality. Diamond tweeters are used for the high frequency range. For such exotica, you pay £13,000 (Rs 10,00,000)

Belkin TuneStudio

The TuneStudio has a 4-channel mixer that can be used to play, mix and record tracks to and from iPods. All recording is all done at 16-bit and 44 kHz, and there's normalisation built into the mixer to keep volumes within acceptable limits. One of the major plus points of TuneStudio has to be its appealing looks and funky design—with loads of knobs, LEDs and dials all over the place

My Mobile,
My Guide

Shrikrishna Patkar, Jiten Ghandhi

Think your PDAs and cell phones are essentials? They're about to become indispensible

Nimish Chandiramani

You're bored. Quite understandable—it happens to everyone. Worse still, you're in a city that you don't call home. What do you do? If you've got GPRS, you could whip out your mobile phone and consult the almighty Google—"leisure activities [your current location]", you'd type, and browse through the results. It would do well to be sitting down, because these things take time— picking a worthy site among all that rubbish can be tedious. Still, the information exists, which is what matters in the end.

But what if your phone would do that for you, without your intervention? What if it detected that you're not in your home city and would eventually feel the need to see the sights? What if it told you that you'd just crossed the city's best pub, and almost missed out on the experience? Call it Context Aware Computing or Ubiquitous Computing or whatever name that catches your fancy, the fact remains that with some connectivity and a lot of information, such scenarios won't remain the product of an over-active imagination.

Context?

In geek speak, *context awareness* is the ability of a system (a nice, generic term for a piece of hardware that runs software) to be able to recognise its environment—location, temperature, altitude, that sort of thing—and act accordingly. A GPS device is one of the simplest context-aware computer—it's aware of your position, and based on that, is able to tell you what time the sun will rise or set where you are.

Context-aware Computing is just another piece in a much larger (and more Utopian) jigsaw puzzle called Ubiquitous Computing. The term was coined back in 1988 by Mark Weiser, who was the chief scientist at Xerox's PARC (Palo Alto Research Centre). The idea is that all technology around us—down to the humble light-bulb—will connect to, and interact with each other, and adapt to suit your needs. Biometric chips in your clothes will tell your air conditioner that you're too cold, and the AC will turn up the temperature to make you feel better, for example. You could cook up a million scenarios like this, and they'll all be plausible in a world with ubiquitous computing, and therein lies the catch—it'll likely be many years before this could happen.

Context-aware computing is the realist's answer to ubiquitous computing—it doesn't approach the dream, but is far better than current reality...

Starting Small

Think Hitchhikers' Guide to The Galaxy—not the book, but the book *in* the book (wrap your heads around that one)—the single source for all the information you need as you travel the galaxy—from how to deal with an irate Vogon to the recipe for a Pan Galactic Gargle Blaster. We've got something like it already in development—it's called the Wikipedia.

Now consider that right next to many places of interest on Google Earth, you'll see a little Wikipedia icon, which shows you the Wikipedia entry on that place when you click on it. Not so on Google Maps, and WikiMapia would fit the bill if it weren't full of landmarks created by people saying "Look, I live here!"

Finally, consider that GPS-enabled cell phones are readily available in the market, and are getting cheaper with every new model. Throw in the high-speed mobile connectivity we yearn so much for—you see where this is going, don't you? The GPS in your phone will tell Google Earth (or Google Maps) what position to centre on, and you can then read the Wikipedia entries on important places in your area (not as helpful if you're not out sightseeing, but anything that gets rid of annoying guides prattling on can only be good). Bring the Wikipedia overlay into Google Maps, and this will happen *now*—on the iPhone and the N95, for instance, in countries where respectable mobile Internet speeds are not too much to ask for.

It's started.

Being Polite

Remember when the cell phone first entered our lives? How we'd cringe every time a phone blared out an ugly ring or a cheap imitation of a song? Cellular etiquette is as important, and as shamelessly ignored as it was back then, but there is hope in sight. Researchers at Intel are working on software for your cell phone that'll make it more aware of your surroundings, and even decide whether to interrupt with a phone call or take a voicemail message instead.

The software will analyse your speech—not the words themselves, but the tone, pitch, volume, and the time for which you go on—and the speech of the people around you, and determine what sort of situation you're in. For example, a conversation between you and your friend will have a casual tone, and since you're friends who don't mind interrupting each other, the conversation will have a lot of overlapping speech. If you've told the software that it's all right to interrupt casual conversations, you'll feel that familiar buzzing when you get a call. If, on the other hand, you're in a meeting, the phone will detect the formal, subdued tones, and tell the caller to leave a voicemail message instead. At the very least, it could automatically switch to Vibrate. The software will also be able to detect your mood based on how you speak, and act accordingly—not interrupt you when you're ticked, for instance.

At this stage, social interactions are still being analysed to help the software make decisions better—it isn't particularly accurate with mood detection (and we doubt it'll go beyond a point), and hasn't been tested on a cell phone. Indeed, even the most powerful phone today can't stand up to the punishment of getting all that data from a
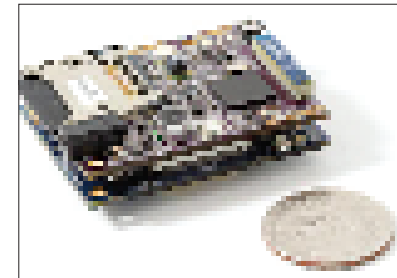
Intel used this unobtrusive sensor to collect data about the wearer's social interactions in their trials
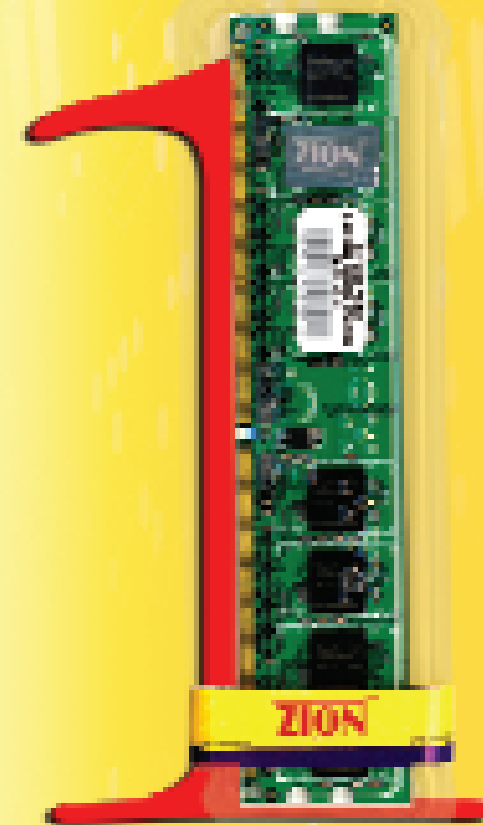
conversation in real time—all they're capable of is detecting when a person is speaking, and the length of that speech.

It's also unlikely that the software will know when to interrupt you and when not to—some initial setting up will be required, though it'll be a small price to pay for a system that'll make up for your lack of cellular etiquette, even though it'll take years to come.

And then, there's the matter that started us along these lines in the first place...

I'm Bored!

How'd you like a cell phone that told you what you could do with all that idle time? Or if you're walking around in a new city without a clue? PARC is working on a program called Magitti, that uses what it knows about you to recommend activities that you can enjoy in your vicinity.

What you'll see on your screen when you fire up Magitti is simple enough—a list of things to do in the area. When you first use it, this list won't be prioritised according to your likes, but as the software learns more about you, it'll be able to tell which recommendations are more likely to pique your interest—much like recommendation systems on sites like Amazon. For example, if you're a museum buff, historical landmarks will find themselves at the top of your list. It'll also be able to tailor its recommendations based on the time of the day—you can't go museum-ing late at night, so local pubs might be brought to the top
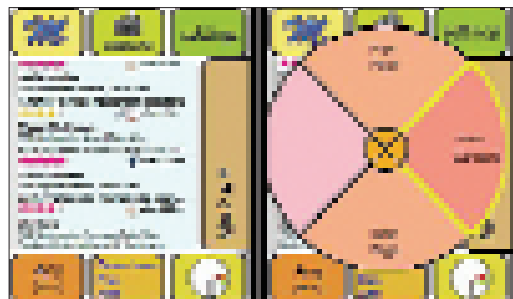
Magitti's user interface on a Windows Mobile-based phone

of the recommendation list. Magitti will use GPS to infer what choices you make, and find out more about your destination using an online database (which may eventually turn out to be the Wikipedia, for all we know).

In addition to learning from your choices, Magitti will also analyse the data on your cell phone—text messages, for instance—and like Google AdSense, make recommendations. If a friend messages you to meet for an inexpensive Chinese dinner, for example, Magitti will prioritise such places when you ask for recommendations. Extrapolating a bit, we anticipate Magitti-like software that will integrate with your Orkut, Facebook or other profile, and prioritise activities that your friends are recommending. The software will go through trials in Japan in the next few months, and we'll be watching eagerly.

Magitti may be able to learn from your choices, but what if it could know you by sensing your behaviour?

We anticipate Magitti-like software that will integrate with your Orkut, Facebook or other profile, and prioritise activities that your friends are recommending

Beyond The Cell Phone

While the cell phone is the prime candidate for any experiment with context awareness, it isn't alone. At CeBIT 2007, we saw NEC's Dew concept camera that you can wear around your neck while it monitors your mood using the tone of your voice. If it detects happiness, it takes a picture, saving your happy moment forever (or till its memory runs out).

Closer to the shelves, we see the Sony CyberShot T200, which has a "Smile detection mode", which, well, detects smiles. Switch the camera to that mode, place it wherever you want, and it'll take a photo every time a smiling face is in its frame.

Sensors And Sensibility

The iPhone, the Sony Ericsson W910i, the Nokia 5500 Sport and a host of soon-to-be-released phones sport accelerometers that enable various features depending on the device's movement. The iPhone and iPod Touch use it to rotate movies when you tilt the phone, the Sony Ericsson phones use shakes to shuffle tracks, and the 5500 uses it to measure the distance you've travelled and in a game where you tilt the phone to get a ball out of a maze

The iPhone also has an ambient light sensor that adjust the screen's brightness based on the brightness of its environment, and an infrared sensor that can tell when you're pressing the phone to your face. But why must we know this?

Nathan Eagle and Sandy Pentland of MIT's Media Laboratory lament that while new mobile phones are loaded with more sensors, they're rarely used for anything beyond trivial gimmicks. Collecting the data from these sensors could yield a whole lot of information about the user, and will enable software like Magitti work even more like magic. The data from an accelerometer in your phone, for example, can be used to tell whether you lead an active or sedentary lifestyle. It can also be used to tell whether you're walking, running, cycling or riding in a vehicle. Combined with GPS and Intel's "polite phone" software, your phone can collect data about where you go, what social situations you're in, who you talk to for how long, and so on. Eagle and Petland have even developed an algorithm that can predict your future actions based on the data your phone collects about you!

Give all that data (and the predictions) to software like Magitti, and you've got yourself a device that knows you so incredibly well that the mind boggles.

Brakes

Every great fantasy is thwarted by reality. In this case, it's the hardware—nearly all these concepts demand a lot more processing power than current phones can deliver, and even if we see such a powerhouse within the next year, processing all this data in real-time is bound to be murder on battery technology that's already showing wrinkles.

For now, we must content ourselves with GPS and (ugh) Wikimapia.

nimish.chandiramani@thinkdigit.com

Fake Your Vista Experience Rating
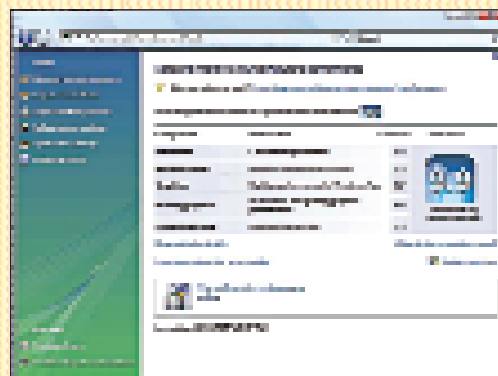
Rearrange The Elements Of Your Desktop Settings

Solution To Last Month's Challenge

The method of making the cosmetic modifications to the Desktop Settings is by editing the `Shell32.dll` file, present in the SYSTEM32 directory (usually `C:\Windows\System32`). This file can be edited by Resource Hacker. Make sure that you backup the Shell32.dll file, because if something should go wrong, you may not be able to boot into Windows and will have to repair or reinstall it. Also make sure you exit any unwanted applications before you continue.
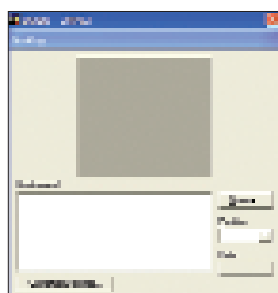
The original layout of the Desktop Properties window

Step 1: Download Resource Hacker from **http://www.soft32.com/download/63-59509/ResHack.zip** . Just extract it and open the `ResHacker.exe` file.

Step 2: Go to `File > Open > C:\Windows\System32\shell32.dll`

Step 3: Go to `Dialog > 29952 > 1033`

Step 4: In the right hand pane replace the text with the following.

```
29952 DIALOG 0, 0, 252, 218
STYLE DS_MODALFRAME | DS_NOIDLEMSG |
WS_POPUP | WS_CAPTION
CAPTION "Desktop"
LANGUAGE LANG_ENGLISH,
SUBLANG_ENGLISH_US
FONT 8, "MS Shell Dlg"
{
    CONTROL "Bac&kground:", 30056,
STATIC, SS_LEFT | WS_CHILD |
WS_VISIBLE | WS_GROUP, 35, 1, 50, 8
    CONTROL "List Of backgrounds",
30048, "SysListView32", LVS_REPORT |
LVS_SINGLESEL | LVS_SHOWSELALWAYS |
LVS_NOCOLUMNHEADER |
LVS_NOSORTHEADER | WS_CHILD |
WS_VISIBLE | WS_BORDER | WS_GROUP |
WS_TABSTOP, 131, 3, 119, 212
    CONTROL "&Browse...", 30049,
BUTTON, BS_PUSHBUTTON | WS_CHILD |
WS_VISIBLE | WS_GROUP | WS_TABSTOP,
35, 122, 50, 14
    CONTROL "&Position:", 30055,
STATIC, SS_LEFT | WS_CHILD |
WS_VISIBLE | WS_GROUP, 37, 148, 50,
8
    CONTROL "", 30051, COMBOBOX,
CBS_DROPDOWNLIST | WS_CHILD |
WS_VISIBLE | WS_VSCROLL |
WS_TABSTOP, 37, 158, 50, 38
    CONTROL "&Color:", 30057, STATIC,
SS_LEFT | WS_CHILD | WS_VISIBLE |
WS_GROUP, 37, 177, 50, 8
    CONTROL "", 30054, BUTTON,
BS_OWNERDRAW | WS_CHILD | WS_VISIBLE
| WS_TABSTOP, 37, 187, 50, 13
    CONTROL "", 30053,
"BackgroundPreview2", 0x50020000, 4,
12, 125, 107
    CONTROL "Customize &Desktop...",
30050, BUTTON, BS_PUSHBUTTON |
WS_CHILD | WS_VISIBLE | WS_GROUP |
WS_TABSTOP, 18, 200, 90, 14
}
```

Alternatively, you can just use the mouse to drag, place and resize the elements in the preview window to make the changes.

Step 5: Now click on `Compile Script`

Step 6: Save and replace the file. You may be prompted to insert the Windows XP CD; ignore it. Close the Resource Hacker.

Step 7: Restart Windows. Open the Desktop Properties and you will see that the changes that you had made have taken effect. ◼
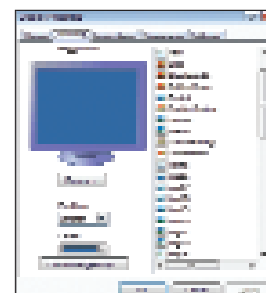
The Display Properties window after modifications

Enhance

Know Your Camera

There's more to photography than setting your camera to "auto"— photography is an art—in fact it is the brush used by the artist—you

Rossi Fernandes

Photography is much more than setting that brand new camera of yours to "Auto" and going about clicking photos of anything or everything you lay your eyes on. Anyone can do that! Photography is an art—more so the camera is the brush when put in the right hands—yours. You don't have to own a high-end camera to get those jaw-dropping snaps. Digital cameras are tools that need to be explored thoroughly before you can capture those *Vogue* shots.

While fiddling with the camera, as most newbies do, get familiar with all the menus. Start off by using different settings, and taking random shots after varying each setting. Rome wasn't built in a day, and you will not become the greatest photographer over-night. But remember, when those friends of yours drool over that awesome snap you captured while on that trek or that memorable trip, it's worth every effort! You'll be surprised by some of the results you get from doing this and how better you can get.

Before you actually get out there and buy one, let's brush up on what kind of camera you should go for if you don't own one yet. You can always refer to our Digital Camera test in the October 2007 issue.

The simplest cameras are the point-and-shoot cameras, which make up for the largest chunk of cameras sold. SLRs are generally best for enthusiasts and professionals. When you're selecting a point-and-shoot (P&S) camera, try and have as many manual controls and settings. That way, you have lots of settings to play around with, rather than the camera doing it for you. After all, you and your friends are going to cherish the photos, not the camera!

Ashwini Baviskar

Manual focus, manual settings for aperture size and shutter speed are some features you should definitely look out for.

Introduction

There's a fair share of terminologies you need to get familiar with, in order to get involved in digital cameras and photography. You will get a fair dose of it here. The aperture is the gap through which light enters the camera, and plays a major role on how much light is allowed. The aperture size is decided by the f number. The smaller the f number, the greater is the aperture size and vice-versa. Generally, a small aperture yields crisp images. The shutter speed, also, goes hand-in-hand with the aperture size to allow an optimum amount of light to enter the camera. The faster the shutter speed, the lesser the light that enters the camera and crisper are the resultant images. Some cameras even allow you to set a fixed aperture size or shutter speed while the camera adapts the other settings.

A higher ISO Rating adds a considerable amount of graininess to the photo

Exposure Metering Modes

Your digital camera senses light intensity in a scene and chooses the appropriate settings for it. In most cameras, there are multiple modes by which the camera can detect the surrounding light. This light measuring can be done through a single tiny spot in the centre or the entire screen. Sometimes, if only the centre of a scene is a bright colour—say someone's white shirt, then the camera might be fooled into thinking that the entire scene is well lit-up—the image, as a result might turn out pretty dark. In such cases, switching the exposure mode to screen mode can help, so that the entire view is evaluated for the surrounding lighting conditions and a more realistic and natural photo is captured.

White Balance

Each lighting source—a bulb, tubelight or the sun, for example—has a colour temperature. White Balance is a neglected option in the camera (yeah... the term sounds familiar!) and most people unknowingly continue using Auto White Balance. AWB chooses a white balance, which it thinks suites the scene. The camera gets it wrong a lot of times and photos then end up with an odd colour tint. You can get awesome results by simply selecting the appropriate white balance for the type of lighting you are in. Selecting from among the pre-defined profiles given with your camera, changes a lot of other

unrelated settings. Therefore, take some time out to go through the menus and set a suitable white balance before taking a shot... err... in the dark! D-SLR users on the other hand have the freedom to change the white balance of a photo after it has been shot—thanks to RAW—data which you can read about later in this story.

Focus Modes

Cameras today come with focus modes meant to improve on the autofocus features seen in all P&S cameras. Some cameras come with multi-spot focussing features, which focus on multiple spots or jump spots in a scene. This way, the user loses control over what's constantly in focus. You should, therefore, ensure the use of the centre focus or the spot focus, which focuses on a small spot at the centre of the scene. This ensures that whatever you're pointing the camera at, comes out perfectly in focus. If you want to focus on something that's not at the centre, then point the camera at the subject and half press the trigger button then point the camera anywhere you wish. When ready, complete the click to take the shot. If your P&S camera has a manual focus, then you get increased flexibility and your shoots yield amazingly professional results.

ISO Rating

The ISO ratings in a camera are related to the sensitivity of the sensor. They're considered similar to the film speed on film cameras. Changing the ISO ratings is useful for low light situations or to get the best quality images. Dropping the ISO number to the least possible value, say, ISO 100 or ISO 80 will get the best quality out of a sensor. However, this requires a well lit up scene and is best for studio light setups or broad daylight. On the other hand, for darker places, increasing the ISO number will help but images will turn out grainy. For best results in such cases, a good balance between the ISO ratings, aperture size and shutter speed is required.

Flash Settings

Cameras have some control over the intensity of the flash used. The Fill in flash mode is a moderately powerful flash that is used to add some lighting in darker areas. This is useful when your subjects have a shadow cast on their face and the filling light can illuminate such areas. The other option for the flash that you might find is the Slow Sync mode. This mode is especially useful in poorly lit up areas, where the flash is required. The Slow Sync feature allows some detail to be added to the shot where a normal flash would result in sharp shadows and everything beyond the target to be completely

▽ What is RAW and why the fuss?

A RAW image is an untreated or uncompressed file that is usually found on D-SLR's and many choose to call it the D-SLR's equivalent of a negative film. Changes, if required, can be done through software that can handle RAW images like Photoshop for example. The unfortunate part is that P&S cameras don't support RAW files. In general, these are much larger than JPEGs. RAW is of utmost most significance for the professionals.

darkened out. The drawback in this is that you need to use a tripod or hold the camera really still while using this feature. Now you know why pros move around with those tripods!

SCENARIOS
Outdoor Photography

Outdoor locations are probably one of the easiest options to capture great snaps. There's plenty of light and with cloudy skies, it gets even better. If there's ample sunlight, then you need to crank up all the settings. The same goes with indoor shoots with decent lighting. Drop the aperture to the minimum—F8 or as high an f-number as your camera can go. Turn the ISO level to as low as possible and the shutter speed to the bare minimum. While you're doing all this, keep an eye on the EV-rating number on the screen. Think of it as a reference value for getting the perfect exposure. Preferably, it should be 0, but if you see your images getting underexposed, you'll find the number dropping below 0. In such cases, you'll need to compensate by either increasing the aperture size or turning down the shutter speed down a little, say 1/125th from 1/1000th.

There are a few other things you need to keep in mind—avoid shooting directly towards the sun. An obvious problem is that the exposure level will go completely off scale. By all means, you'll mostly end up with a very bright afternoon sun and everything else underexposed. That would mean day and night all in the same photograph!

Indoor Photography

Shooting indoors can get a little trickier. During the day, there is a fair amount of ambient light and it's a good idea to take photos near windows. Do refrain from using the flash at all costs—it ruins photo—you lose natural colours, and the photos get unnecessarily increased contrast with sharp shadows. There's also the issue of backgrounds going dark with only the closer objects getting illuminated. If possible, purchase a powerful flash that can be attached to your camera. This is very rare in P&S cameras.

The other issue is that without a flash, you will have to set the camera to use largest aperture size, the highest ISO number and a manageable shutter speed. A longer shutter speed will sadly result in very blurry photos which we all dread the most. If you're shooting static objects and not people, then a tripod is a good investment.

Wrong white balance settings can give very odd colours

Action Shots

Action photography could be shots taken during a cricket or football match or maybe photos of vehicles zooming by. In such cases, it's necessary to keep the shutter open briefly but not too short because we want to capture the tiny bit of motion blur. If you're trying to shoot a car passing by, then try and follow the car very accurately by moving your hand sideways. Be sure to focus the car properly so the car itself appears sharp but the surroundings come out with some amount of motion blur as a result of your hand movement. Lower aperture sizes help too.

Low Light And Night Shots

Low light photography is tricky, and it's a must to own a tripod. No amount of change to aperture size and ISO levels is going to prevent you from having to use long shutter speeds. Shots of city skylines can be taken by mounting the camera on a tripod, or by using a table or stool as a stable base. As mentioned earlier, to get decent shots in the dark without the use of tripods, you must get a powerful flash that can illuminate larger areas.

Macro Shooting

Macro shots involve close-ups. Firstly, set your camera to the macro mode and then get as close as possible to your subject. Nevertheless, don't get too close or your camera would lose focus of the subject. While taking macro shots, you can get that authentic look with some depth of field blurring. This has to be done by increasing your aperture size e.g., f 2.8 or so. Using manual focus if available, you can focus onto one specific region of the object and have the rest blurred. Zoom is generally a bad idea.

Portrait Photos

A larger aperture size blends better with portrait photos by giving great soft focus shots. In portrait shots, we generally want the subject to appear fairly sharp and the background to be blurred out. Set your aperture to as low as your camera can go. Your subject should be positioned a little away from the background. Too close and the background could get blurred.

There are many more things that can be done with digital cameras—such as HDR Photography and Panoramic images—you can find them in our Tips & Tricks in the October 2007 issue of *Digit*. Once familiar with the settings, you should be able to set your camera as per the ambience and lighting available to you. ⊠

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▼ Camera Care

Digital Cameras may be less mechanical and complicated, but they still ought to be handled with the same care. It's a good idea to buy a compact pouch or case for the camera. Also, get a carry bag for your camera where you can dump all your batteries, cables and charger when you go out on vacations. A UV filter is a good way to prevent your lens from getting scratched and dirty. If you do get any dust on it, use a cloth as a last resort—try blowing some air on it instead. To avoid any accidental physical damage, make use of the supplied hand-strap or neck-strap and wear it at all times. The screen on a digital camera is similar to your mobile phone, and requires some cleaning from time to time. Use a micro-fibre cloth to clean it. Avoid using any chemical-based solution for cleaning.

ASUS EeePC
Tiny But Functional

After some delays the EeePC was officially launched here in India.

The EeePC is a laptop with a 7-inch screen that's powered by a mobile Intel Celeron 900 MHz processor, 512 MB of memory, Xandros—a Linux distribution—as the OS. The interface has been customised with the most essential applications neatly sorted into categories. This makes the EeePC extremely easy to use, even for people who have never used a computer before.

The keyboard layout is compact and the keys and touchpad are smaller than conventional laptops. Those used to normal laptops and desktops will find the ASUS EeePC slightly painful to use. The build quality of the keyboard and the screen hinge is a lot better than we expected. The inbuilt WiFi (802.11b/g) and 10/100Mbps LAN port take care of connectivity.

So what's not to like? There's no optical drive, so installing applications is going to be a bit of a problem. You can't upgrade the inbuilt memory either. As for hard drives, we got the 4 GB version, but 2, 8 and 16 GB versions are available as well. Windows versions of the EeePC will be launched soon. The laptop is silent, but heats up after a while.

ASUS might promote the EeePC as a children's PC, something like the OLPC, but we're thinking ultra-portable! Since regular laptops with 80 GB drives and standard screens are available for around Rs 22,000, and ultra compact laptops cost over Rs 75,000, the ASUS EeePC might fill a void here. At Rs 18,000, it's a steal for something that weighs under a kg—as long as you don't plan on playing games or watching HD movies on it.

Specifications
Intel Celeron-M 900MHz, 512MB DDR2, 4GB flash drive, 7-inch screen (800x480), 10/100Mbps Ethernet, 802.11b/g WLAN,

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

Contact: **ASUS Technology Pvt. Ltd.**
Phone: **022-67668800**
E-mail: **media_india@asus.com**
Web site: **http://in.asus.com/**
Price: **Rs 18,000**

eSys Sub 10K Fighter PC
One PC Per Child Anyone?

The eSys Sub 10K Fighter PC is a minimal desktop PC that is aimed at people with the most basic of needs. The configuration of the PC isn't hot—no dual-core processors or even an entry level graphics card on it. The processor is a 939-pin AMD Sempron 3000+ on a VIA K8M800-based motherboard that has everything integrated.

The performance is as low as we expected—3DMark 2005 churned out a score of 1618—pathetic. Even a basic PCI-E graphics card would have helped—and the motherboard only has an AGP slot for expansion. HD (1080p) videos were unwatchable, and the lack of a dual-core processor means that video encoding performance also takes a big hit—almost double the time of what an entry level dual core processor would take.

The cabinet is fairly small, but sturdy. Still, it's quite obvious that quality wasn't the highest priority when this PC was built. If looks aren't important to you, you will be fine with the cabinet, but the monitor will still embarrass you.

One could use the "what do you expect for that price" analogy, but the bottom line is that it could use a little design love.

The low price tag of Rs 9,990 makes everything an acceptable compromise, especially for those who do nothing but chat, e-mail and surf all day, or for schools and educational institutions.

Specifications
AMD Sempron 3000+, 512MB DDR400 RAM, Onboard VIA S3G Unichrome Pro IGP, 120GB Seagate Baracuda HDD, 15" CRT monitor.

Contact: **Esys Information Technologies Ltd**
Phone: **+91-9313890776**
E-mail: **ankurjain@esysmail.com**
Web site: **www.esys.in**
Price: **Rs 9,990**

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

LG KU990 Viewty
LG Touch?

Every company has a touch screen operated phone and the KU990 is a 3-inch, 3G touch screen phone from LG. The metal plate and the glossy front with chrome borders give the phone a stylish-yet-sturdy look.

You will soon realise that the main menu interface looks and feels a lot like the HTC / iPod Touch and iPhone. You can use either a finger or stylus to slide through menus. There's no place to store the stylus on the phone though.

There aren't too many buttons on the phone, primarily because of its touch screen functionality. There is a jog dial on the back of the phone around the camera lens which can be used to scroll through items or change sound volumes. However, this is inconvenient to use, and scrolling through menus using it is especially difficult. Scrolling using the touch-screen is a little cumbersome as well—those with shaky hands might accidently launch an application off and on. There's a full keyboard on the touch-screen, and it works well with either your fingers or the stylus—our only complaint is the awkwardly-placed spacebar.

There is a 5 MP camera with a flash, and a standard VGA camera for video calls. The 100 MB internal memory is paltry, but can be supported by the Micro SD card slot. The earpiece is perfect, but the microphone quality is strictly average—expect some minor crackling. The speakerphone is fine, but gives out a high shrieking sound at times. The earphones that are bundled with the phone... err... just get the job done.

Great looks, a fun UI and ease of use make this a good phone. The touch-screen could have been better, and the jog dial is just bad. At a price of Rs 21,900, it's a good style statement.

Specifications
3-inch screen (240x400), 5 MP Camera, 100 MB memory, MicroSD slot, Dimensions: 103.5 x 54.4 x 14.8 mm, GPRS, EDGE, 3G HSDPA, Bluetooth.

Contact: **LGEIL Pvt. Ltd**
Phone: **91-120-2560900**
E-mail: **viveksingh@lgindia.com**
Web site: **www.lgindia.com**
Price: **Rs 21,900**

RATINGS	
Features	★★★★☆
Performance	★★★★☆
Build quality	★★★★☆
Value for Money	★★★☆☆
Overall	★★★★☆

Samsung NV8
NV10's Little Brother Is Here

The Samsung NV8 is the younger sibling of the NV10 that we tested in October 2007. This is an 8 MP camera with 3x optical zoom, and looks and feels exactly like the NV10.

The interface on the camera is simple to use, and is controlled by the touch sensitive buttons on either side of the screen. They're easy to use, but take a little getting used to. The camera has a rough matte finish with a 2.5-inch screen.

Image quality is also very similar to the NV10. The clarity and crispness is there, and higher ISO levels give out a little grain in the image. The colours aren't very vibrant, and have a washed look to them—especially in outdoor lighting.

Indoor shooting is a different story altogether, and the NV8 seems to be better indoors than outdoors. You can get macro shots from up to 4 cm away with good results. The video quality is good, and the same macro feature works for videos as well. Video resolutions are 640x480 and 320x240, and are saved as AVIs using MPEG4 codecs. The audio bitrate is 64 kbps, though the quality is nothing special.

Face detection and image stabilisation are present as features, but image stabilization only kick in when you turn the mode knob to ASR (Advanced Shake Reduction). If you use ASR for videos, a small area of the capture is cropped.

This camera is pretty much the NV10 with a lower MP rating. This average performing camera is priced at Rs 13,990, and to be frank, there are better cameras available in the same price range.

Specifications
8.1 Megapixel (3264 x 2448px), 2.5" screen, ISO Rating: 100–3200, Shutter speed range: 1/1500th sec–15secs, Dimensions: 96.5 x 60 x 18.6mm, Weight: 151.7gm.

Contact: **Samsung India Electronics Pvt. Ltd.**
Phone: **011-41511234**
E-mail: **jitender.c@samsung.com**
Web site: **www.samsung.com/in**
Price: **Rs 13,990**

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

Steelseries Ikari Optical Mouse and Steelseries 5L
Steal-series It's Not!

Steelseries, like Razer, are known as dedicated professional gaming hardware manufacturers. One of their latest contributions is the Ikari Optical Mouse and the 5L mousepad.

The mouse uses an optical sensor that has a resolution of 400 to 1600dpi. The mouse tracks well, and is a little better than the Logitech MX518. It has four huge feet that allow it to slide around easily on any surface.

The wide shape of the mouse suites those of you with larger hands, and you'll be able to rest your entire palm on the mouse. The finish of the mouse is similar to the MX518—a glossy plastic centre and an anti-bacterial matte finish on either side. It's lighter than the MX518, but more reactive in-game.

Other than the 3 standard buttons, there is a button on top that switches the dpi. We did have some problems with the buttons—the left click kept getting stuck. The dpi toggles between two settings that need to be set using the drivers. There's not much of a choice though—400/800, 400/1600 and 800/1600 dpi are the only profiles you can choose from. Switching between DPIs takes a second or two, so it's not something you can do during a game.

We used the Steelseries 5L along with the Akari Optical and it performed very well. The surface is very smooth and it works well with any mouse. The only issues with it are that it does get dirty pretty fast, and the edges around it are a little sharp. It's also a hard pad so it's not something you can roll up and carry with you. At Rs 2,849, only those who consider themselves professional gamers, or those with money to blow will buy it. For plain performance, we give it a rating of 4/5.

The Steelseries Akari Optical is an expensive mouse as well—Rs 4,249. The tracking is excellent, but the benefits of using such a mouse might not justify the price you pay for it.

Specifications
Sensor resolution: 1600dpi, Polling rate: 1000Hz, 5 buttons, 2m braided cord

RATINGS	
Features	★★★★○
Performance	★★★★⯪
Value for Money	★★★○○
Build quality	★★★★○
Overall	★★★★○

Contact: **SteelSeries ApS / Vstreet Netserve Pvt. Ltd.**
Phone: **+91-79-40020127**
E-mail: **sales@v-street.net**
Web site: **www.v-street.net**
Price: **Rs 4,249**

Odyssey Internet Multimedia Keyboard-Mouse
Nothing Special

The Odyssey Internet Multimedia Keyboard Mouse is a wired optical mouse and a multimedia keyboard combo.

The keyboard has a standard layout, and the keys don't offer good feedback. It has multimedia keys to control your browser and other multimedia applications, though funnily, the volume controls are placed near the directional arrow keys. The keyboard comes with a detachable palm rest, but attaching the palm rest takes some doing, while removing it is just downright painful.

The mouse is a PS2 mouse, so tracking is nowhere as smooth as high-end gaming mice, or even USB ones. The mouse is sturdy though, and has a glowing blue scroll wheel that has a good feel, but not enough feedback when scrolling.

The shape of the mouse is actually pretty comfortable to use, and bumping the refresh rate to 200 cycles a second improves the performance a tad.

At Rs 400, this keyboard-mouse combo is dirt cheap. Unfortunately, that's all it has going for it. Bottom line? An acceptable keyboard but a terrible mouse.

RATINGS	
Features	★★★⯪○○
Performance	★★○○○
Build quality	★★★○○
Value for Money	★★★★⯪
Overall	★★★⯪○

Contact: **Compuage Infocom Ltd.**
Phone: **+91-9212100193**
E-mail: **info@compuageindia.com**
Web site: **www.compuageindia.com**
Price: **Rs 400**

Zenith Admirale
The Value Laptop For Office

Zenith has launched three affordable laptops for entry-level consumers and students: Admirale, Director and Presidio. The cost cutting is evident from the start—this Santa Rosa laptop has a low-powered Intel T2310 processor running at 1460 MHz. The 2 GB of RAM is a pleasant surprise in an entry-level laptop. The lustrous grey body looks good and is rugged; even the hinges seem strong and the single latch on the lid allows you to open it with one hand.

The 14.1-inch display is one of the dimmest TFTs we have seen. Forget outdoors, you may have difficulty viewing it indoors if the room is brightly lit.

The keypad is spacious and comfortable, and the keys offer good feedback. The touchpad is good too, and we have no complaints. Movie playback is good, and the speakers produce clear sound, though not particularly loud. The dim TFT subtracts from the movie experience obviously. TV-out and D-Sub ports will let you show your presentations on bigger screens.

It's obvious that the laptop is aimed at the office segment, and it does well in this regard. The batteries lasted for 2 hours 43 minutes in our battery drain test, which is pretty good. It should last a lot longer if office applications are all that you will use.

Windows Vista Starter Edition is the OS loaded, and it runs well thanks to the 2 GB of RAM. If needed, you can easily upgrade to a more powerful version of Vista. An integrated Web cam would have been a worthwhile and inexpensive value-add, and could have found use for office applications such as video conferencing.

At just Rs 27,990, this laptop strikes the right balance between price, performance and portability, and we recommend it for office work. If you look hard enough, though, you could find better bargains.

RATINGS	
Features	★★★○○
Performance	★★★★⯪
Build quality	★★★★○
Value for Money	★★★★○
Overall	★★★⯪○

Specifications
Intel T2310 Dual Core processor-1460 MHz, 533 MHz FSB; 2 GB 667 MHz DDR2 RAM @533 MHz; 120 GB hard drive; DVD Writer; 14.1-inch WXGA monitor, Resolution: 1280x800; Connectivity: Gigabit LAN, 56 Kbps Modem, WiFi 802.11g; SD memory slot; Bundled OS: Windows Vista Starter Edition

Contact: **Zenith Computers Ltd**
Phone: **022-28377300**
E-mail: **info@zenith-india.com**
Web site: **www.zenith-india.com**
Price: **Rs 27,990**

Transcend T.photo 710
The Photo Frame Just Went Digital

Transcend's T.photo 710 is a 1 GB photo frame that looks like any other photo frame, but there's more to it.

The T.photo 710 is a fairly stylish looking frame, with a design that's not too modern or too classic. The 7-inch TFT display is surrounded by a transparent border with an accented outline. It must be said that the frame itself is quite large. You can hang it on a wall or place it on a table or shelf.

There is 1 GB of onboard memory, and you can also use SD, MMC, Memory Stick, CompactFlash or even USB Flash drives, so there's no real limit to how much media you can use on it. You can also connect your PC to the photo frame and directly dump your media on to it like you would with any other drive. It's not just photos that you can use the T.photo 710 for—it can also be your music player. It has inbuilt speakers for that, as well as a headphone jack, should you want to connect headphones or your speakers to it.

The interface is colourful, and using the frame is simple as today's PMPs. The remote control works fine up to a distance of 10-12ft. The transition from one image to the other isn't as reactive as you'd want it to be espe-cially when you're using manual controls on the remote to browse through large JPEG images taken on your camera for example. The quality of the screen also is pretty good with wide viewing angles.

There's one issue with the photo frame though—there's a thick power cable that ruins its elegance—a battery powered, thinner frame and a larger screen. At Rs 6,000, the price seems just right, considering you have a remote controlled photo frame that's also your music player and your alarm clock.

RATINGS	
Features	★★★★○
Performance	★★★★⯪
Build quality	★★★★○
Value for Money	★★★★⯪
Overall	★★★★○

Specifications
7-inch TFT screen, 1GB internal memory, D/SDHC/MMC/MS/CF Cards/USB Flash drives supported

Contact: **Supertron Electronics Ltd.**
Phone: **23881397/23881924**
E-mail: **info@supertronindia.com**
Web site: **www.supertronindia.com**
Price: **Rs 6,000**

ASUS EN8800GT 1GB
An 8800GT With The Ultimate Top-up Plan!

The ASUS 8800GT is like any other 8800GT, except this one has been filled to the brim with a whopping 1 GB of memory. This isn't the only 1GB card to come to our labs—the Palit 8500GT was another one, but didn't quite outperform the other 8500GT-based cards. Could it be a similar fate for this card?

First things first—the 1GB card doesn't come with the standard NVIDIA cooler: it's been replaced by a much more robust and chunky cooler and an equally good fan. There's no cooling for the memory, though. Overall, it's very quiet and runs just fine with temperatures hovering around the 50º C mark.

Even with FSAA turned up to 4x and Antistrophic filtering to 8x, we were able to very respectable frame rates in *Company of Heroes*, *F.E.A.R.* and *Doom 3*, but the frame rate was only fractionally more than the standard 512 MB 8800GTs.
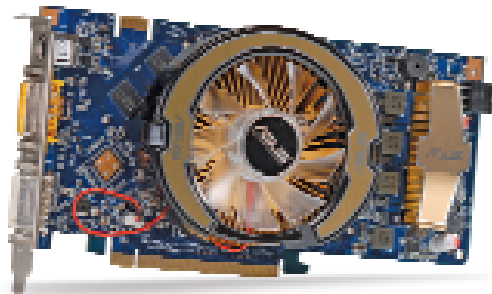
The ASUS 8800GT 1GB comes with no bundled games, and at a price of Rs 18,900. It's evident that there are no clear benefits from using the much large frame buffer. If you have set a higher budget for a card, then this 8800GT 1GB could be worth it—if you can get it for around Rs 15,000 in the market. Anything over that, and you're better off saving for a 512 MB 8800GTS.
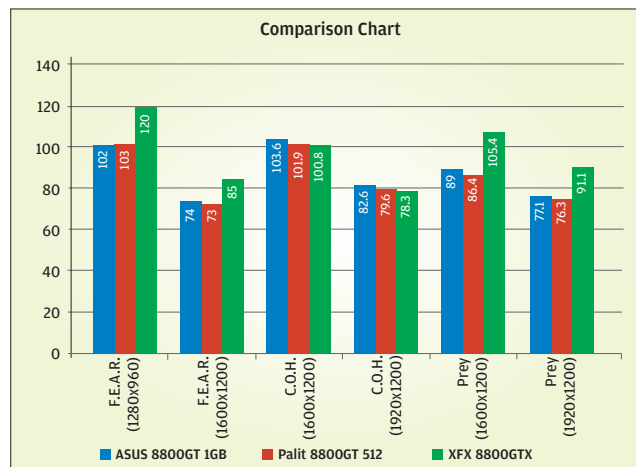
Specifications
GeForce 8800GT, 1GB DDR3, PCI-E 1 and 2 supported, DirectX 10 complaint, Shader Model 4.0 supported

Contact: **ASUS Technology Pvt. Ltd.**
Phone: **022-67668800**
E-mail: **Media_india@asus.com**
Web site: **http://in.asus.com/**
Price: **Rs 18,900**

RATINGS	
Performance	★★★★
Features	★★★★
Bundle	★★½
Value for Money	★★★½
Overall	★★★½

Comparison Chart

	ASUS 8800GT 1GB	Palit 8800GT 512	XFX 8800GTX
F.E.A.R. (1280x960)	102	103	120
F.E.A.R. (1600x1200)	74	73	85
C.O.H. (1600x1200)	103.6	101.9	100.8
C.O.H. (1920x1200)	82.6	79.6	78.3
Prey (1600x1200)	89	86.4	105.4
Prey (1920x1200)	77.1	76.3	91.1

AMD DTX form factor
The Environment's New Green Buddy

Not everyone wants to play games, and the performance you can get out of today's PC is a lot more than required for basic office applications and movie playback, for example. AMD believes it's time for cheap and quiet low-power PCs to make their mark and they've been pushing hard for it.

The DTX system uses a dual-core Athlon X2 BE-2350. The machine that we tested came with 1 GB of RAM and an onboard graphics solution. The entire PC was housed in a compact case with all the bells and whistles. No PS2 ports on this machine, so you will have to use a USB keyboard and mouse.

To keep it quiet, the CPU fan has been surrounded by a thick foam packing. The size of the motherboard itself is a tad smaller than the standard Micro-ATX. Even the hard drive is mounted vertically next to the memory card reader and optical disc drives. Things do tend to get hot because of the cramped layout, though.

In encoding tests and general synthetic tests on SiSoft Sandra, results were average. The advantage of using a dual-core processor was obvious as well—it ate through the 1080p HD clips that we threw at it. This setup isn't cut out as a gaming PC at all—*Doom 3* struggling at just 20fps at 800 x 600 and medium settings. The performance in *Far Cry* was a little better at 40fps at minimum settings, but gaming really isn't going to be its forte.

As power efficient, quiet and cheap machine, it has everything going for it especially when there's support from a large number of hardware manufacturers. There's also a growing demand and trend in compact form factors as people start moving their PCs into their living rooms. If AMD is to market this product as an entry level PC or an HTPC, it has everything necessary to be a possible hit if they keep the price around the Rs 10,000 mark.

Samsung SCX-4500
The Black beauty

Samsung's SCX-4500 is a multi-function device (MFD) that doesn't look like one. The paper cassette has a miniscule 100-sheet capacity; this eliminates the of SCX-4500 as a shared office resource. The detachable output tray can hardly hold any pages. There are very few buttons on the top, and all of them are touch sensitive. The LED display offers limited information, and general errors such as paper empty, paper jams are indicated via red glowing icons.

Installing the toner cartridge is simple—a catch below the scanner deck opens the cartridge bay and the slim cartridge fits in with hardly any effort—good for non-technical consumers. Samsung's ScanThru application takes care of setting the printer on the PC side. It also has additional features for built-in OCR, colour correction, etc.

Performance-wise, the SCX-4500 delivered 14 pages in a minute. Our taxing combi-document was printed in 16 seconds—not the fastest, but not slow at all. Print quality is typical Samsung—dark, sharp and crisp. Text is immaculately reproduced, ditto with reversed text. The printer unit reproduced all hues in the grey scale spectrum—quite good from a laser printer. The copier unit also performs admirably—the speed is fast, but quality isn't among the best we've seen. The quality of the copy largely depends on the source—coloured pages are copied perfectly, but black-and-white pages aren't reproduced that well—especially newspaper clippings etc. The scanner unit does a decent job at acceptable speeds. Edge-to-edge sharpness is excellent, and details are well-preserved.
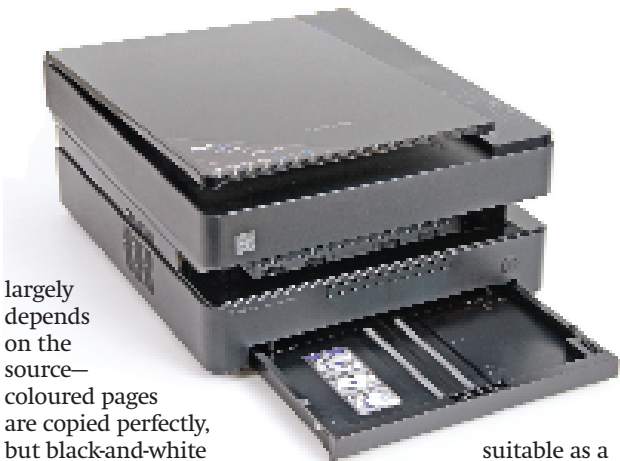
At Rs 10,999, the Samsung SCX-4500 is sweetly priced. This stylish printer strikes the right chords—you get a beautiful-looking MFD that delivers where it matters. The SCX-4500 is more suitable as a personal MFD or for a very small workgroup.

Specifications
Mono laser, 600 dpi print, 16 ppm, flatbed scanner, 600 x 2400 dpi scan, copy without PC, USB 2.0 and Samsung SmarThru driver

Contact: **Samsung India Pvt Ltd**
Phone: **011-41511234**
E-mail: **anupam.k@samsung.com**
Web site: **www.samsung.com/in**
Price: **Rs 10,999**

RATINGS	
Features	★★★★☆
Performance	★★★★☆
Build quality	★★★★☆
Value for Money	★★★★☆
Overall	★★★★☆

Canon PowerShot SX100 IS
Easy Snapper!

The Canon PowerShot SX100 IS is the first ultra-zoom camera boasting 10x optical zoom in its compact body. Touted as the perfect camera in the hands of any family member, we found it to be true—the SX100 IS is simple to use, and delivers superb photographs with minimum tweaking.

The SX100 is relatively bulky and can only be carried around in a pouch—too large for any pocket. Similar to other A-series cameras from Canon, the SX100 has a plastic body, however it is well put together and exudes a built-to-last feel. Instead of a five way rocker, the SX100 IS has a rotating click wheel for browsing the menu—quite intuitive to use.

The SX100 IS an 8 Megapixel camera with 10x optical zoom, face detection and image stabilisation. The camera has other features typical to the A series of cameras—scene modes, manual focus, colour swapping, panorama mode and so on. The 10x optical zoom combined with an excellent image stabilisation works wonders taking distance shots. The flash on this camera is simply superb—in fact, the best flash we have seen on any point-and-shoot camera. The SX100 IS uses AA size batteries—on an alkaline pair, we got around 120 photographs; using Ni-MH, batteries we got 400 shots—terrific. The downside to the use of AA batteries is the flash recycle time—painfully long, and becomes noticeable when batteries are low.

Colour rendition is accurate and natural. The camera performs admirably even in low ISO settings—we got excellent photographs even at 80 ISO. Higher sensitivity ISO setting such as ISO 800 and 1600 are completely useless—grainy images.

Working with manual focus and macro was fun, and it delivered some really good shots. The best part about SX100 IS is the ease with which anyone can take good photographs. Video capture is excellent. A 20-second video requires 30 MB of space.

Priced at Rs 19,000, the PowerShot SX100 IS is certainly expensive in India. At less than $300 (Rs 12,000) abroad, the camera is a steal for the features and performance it offers. If you have any friends coming from abroad, ask them to get you this camera.

Specifications
8 MP, 10X optical zoom, Image stabilization, 2.5-inch display, Manual focus, Scene modes, Video capture, SD memory card (512 MB included)

Contact: **Canon India Pvt Ltd**
Phone: **1800-345-33-66**
E-mail: **info@canon.co.in**
Web site: **www.canon.co.in**
Price: **Rs 19,000**

RATINGS	
Features	★★★★☆
Performance	★★★★☆
Ease of Use	★★★★☆
Value for Money	★★★☆☆
Overall	★★★★☆

Canon PIXMA MP610
All-in-One With A Class

The MP610 is the latest in the PIXMA range of inkjet multifunction devices from Canon. Successor to the feature rich PIXMA MP600, the new device boasts of significant upgrades to the scanner unit.

Like previous MFDs from Canon, the MP610 has dual paper feeding mechanisms—a top-loading tray at the back and the bottom cassette. Both these trays can hold a maximum of 150 sheets. The paper-feed selector switch on the top can be used for selecting either tray.

On the front, above the scanner unit, a fold up tilting panel has a 65mm TFT display and the button console. The TFT display is crisp and can easily rival any high-end cell phone screen. The control buttons are logical, and the command wheel is easy to use. Browsing the menu is intuitive, thanks to the command wheel. The card reader is located just besides the output tray and it accepts almost all types of memory cards except for xD card; bad luck if you own Fuji or Olympus cameras.

The MP610 takes five cartridges and they clip on to the head assembly. These cartridges are illuminated Red when clipped properly into place. It features USB 2.0 and the port is located at the back of the machine.

The MP610 raced though the speed test and delivered the first print within 10 seconds. For the combi-document, it took around 34 seconds on normal printing quality and 50 seconds when taxed with best quality. Our photograph was printed in 70 seconds—relatively fast. On the quality front, the MP610 is very similar to other PIXMA printers—sharp text and negligible feathering. Photographs were stunningly reproduced—colour rendition was spot on.
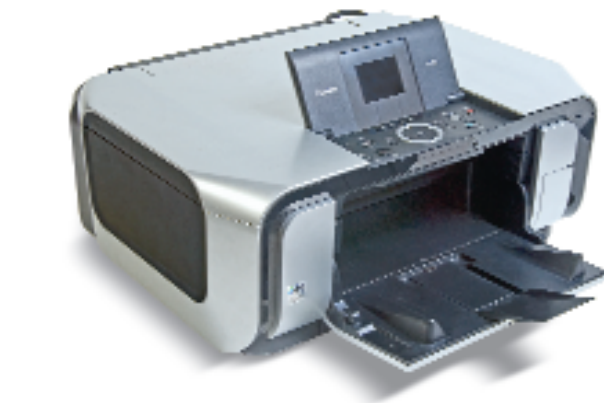
The scanner is fast—preview times really amazed us, and scanning is equally fast too. The quality at 300 dpi was good, though details have an over-sharpened feel to them. Copying is fast thanks to the brilliant printer and scanner unit.

At Rs 17,995, the MP610 is reasonably priced for the features and performance on offer.

Specifications
Thermal Inkjet, 300 paper capacity, 2400 x 9600 dpi print, 14 PPM, five separate ink tanks, 4800 x 9600 dpi scan, copy without PC, SD/MMC,MS, CF support and auto-duplexer.

Contact: **Canon India Pvt Ltd**
Phone: **1800-345-33-66**
E-mail: **info@canon.co.in**
Web site: **www.canon.co.in**
Price: **Rs 17,995**

RATINGS	
Features	★★★★☆
Performance	★★★★☆
Ease of Use	★★★★☆
Value for Money	★★★★☆
Overall	★★★★☆

Western Digital RE2-GP WD1000FYPS
Going Green Is Costly!

Everything seems to be about saving the environment these days, and Western Digital's latest drive with the GP badge is all about green computing. GP stands for Green Power, and WD claims these drive are more energy-efficient. The one we have for review is a 1 Terabyte monster. The drive has been developed to give as much performance as possible while keeping power down, by making optimum use of the cache and spin speeds of the drive. WD claims that the power consumption for the drive is 3-4 Watts less than the others.

Considering this is a RAID Edition drive, the performance isn't near the best by any standards. Even the desktop Caviar SE16 drives beat it in many places. The only place where the RE2-GP actually catches up to the Caviar SE16 is in the SiSoft tests with data rates sequential and random file transfers differentiated by just 1 to 2MBps. HD-Tach also recorded similar data transfer rates. In real-world tests where files were copied to and from the drive, the RE2-GP fell behind other drives.

The temperatures tell the entire story, though. Just by feeling the drives we were using, it was clear the RE2 GP drive was considerably cooler. At around 40 degrees C, the WD RE2 GP ran some 7 degrees C cooler than the others after some intensive benchmarks—which is a lot. It is also very quiet, and the sound of the drive itself is drowned out by any fast fans that may be running—such as the graphics card fan.

The RE2 series isn't aimed at the desktop market. The price for the drive is Rs 17,000, which is a whole lot more than a standard 1 TB drive. The performance is above average, but if low temperatures, reliability and low noise emissions are necessary, it's something you would want to buy—but it's still is too costly to consider for home use.

Specifications
Capacity: 1 TB, 16 MB Buffer, SATA-II Interface, Perpendicular recording

Contact: **Western Digital**
Phone: **9321029204**
E-mail: **amarjeet.singh@wdc.com**
Web site: **www.wdc.com**
Price: **Rs 17,000**

RATINGS	
Features	★★★★☆
Performance	★★★☆☆
Value for Money	★★★☆☆
Overall	★★★☆☆

Palit N73PV
Aged nForce Powered Entry Level Board

The Palit N73PV is a micro-ATX format LGA775 motherboard for Intel processors. It's based on the nForce 610i chipset and uses the GeForce 7100 as the graphics solution. It has native support or 1333 MHz processors, so the Core 2 Duo E6x50 processors will run without the need to flash the BIOS.

The focus is on being an entertainment board—it features a DVI-D port and a 7.1 channel Realtek HD audio onboard sound card.

The onboard graphics solution isn't great, with *Doom 3* giving frame rates in the 20s on medium settings and low resolutions. There is a PCI-E 16x slot and two standard PCI slots for any

upgrading that you might want to do. There are only 2 DIMM slots, which means you can't plug in more than 2 GB of RAM.

The layout of the board is compact, and there are no major flaws with it. A graphics card with a large cooler could render the adjoining PCI slot useless leaving only 1 slot for expansion—a TV tuner card for example. Luckily, the SATA ports have no such issues. The bundle is extremely basic, and there

RATINGS	
Features	★★★★⯪◯
Performance	★★★★⯪◯
Bundle	★★⯪◯◯
Value for Money	★★★★◯
Overall	★★★★⯪◯
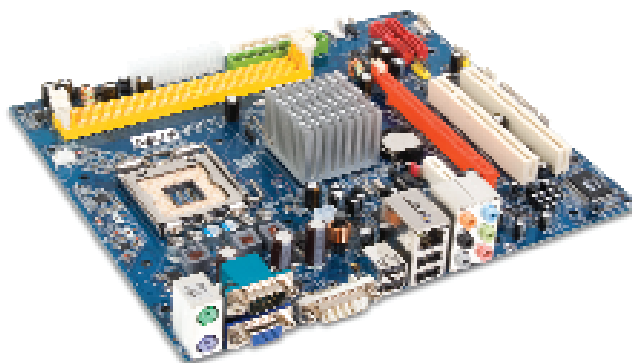
is no supplied software other than the necessary drivers for the board.

For users who are looking for performance in a gaming machine, there are cheap P35 based motherboards available starting from around Rs 4,500 which would make a better buy than the Palit N73PV. The price for this motherboard is a mere Rs 2,950 which makes it ideal for anyone building a HTPC, or maybe just a PC for

regular use with an extremely tight budget.

Specifications
NVIDIA MCP73PV, Upto 1333 MHz FSB, Socket 775, 4 SATA ports, Realtek ALC883 7.1 Channel Audio, Realtek Gigabit network controller

Contact: **Tirupati Enterprises**
Phone: **09339207519**
E-mail: **abhishek@tirupati.net**
Web site: **www.palit.biz**
Price: **Rs 2,950**

Intel Core 2 Duo E8500
Leader Of The Wolf Pack

It's all afterburners on at Intel with their aggressive assault by releasing the Wolfdale line of processors. It's an unexpected release, and there hasn't been enough action from the AMD Phenoms that released at the end of last year. Things have definitely not gone as planned. The E8500 is the spearhead processor of this new attack early in the year. One of the biggest changes in these processors is the move to 45nm fabrication process, which means cooler processors. The other changes in the E8500 are the 6 MB L2 cache (up from 4 MB) and the core speed—a dizzying 3.16 GHz.

All the synthetic benchmarks showed the expected boost in scores. The real-world rendering benchmark—Cinebench—also gave a fairly large increment in performance in rendering but the benefit of the two

additional cores on the quad core cannot be matched with a dual core processor just yet even with such a fast core. This means even the low-end quad core Q6600 shoots ahead in the rendering and video encoding tests. For gaming, the quad core is no match for the E8500 because games hardly exploit the four cores. The temperature, despite higher ambient temperatures, was just around 50 degrees C after some heavy benchmark bombardment.

The performance increase throughout all the benchmarks from the E6850 is more or less 10-15 per cent, while the processors are all priced in the market at pretty much exactly the same as the earlier Core 2 Duos. The new processors then become better value for money. Anyone planning on upgrading to an E6850 should switch tracks and go for the E8500 or the other

Comparison Chart

	Intel C2D E8500	Intel E6850	Intel Q6600
Far Cry 640x480	152.01	142	118
Far Cry 800x600	171.17	160	133
Doom 3 640x480	286.6	264	220
Doom 3 800x600	282.7	262	219
CoH 800x600	221	215	175
CoH 1024x768	192	194	170
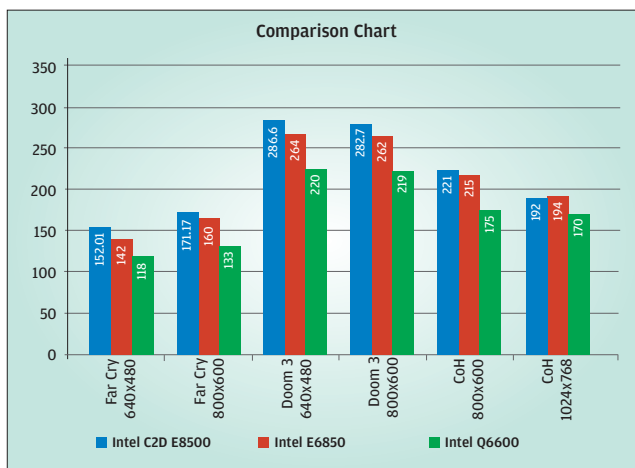
E8xxx processors—they're faster, cooler and much better bang for the buck. The games that make proper use of quad cores processors are still awaited, and until they arrive, the E8500 is an excellent choice for gaming rigs. Prices for the E8500 should be around Rs 13,000.

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TIPS & TRICKS

SECRETS THAT KEEP YOU AHEAD IN THE RACE

IE 7 AND ADD-ONS

The latest version of Internet Explorer has significantly evolved from its earlier iterations with enhanced features, improved security and crispier looks.

In terms of extending the features of the basic browser, IE 7 can be coupled with add-ons, which though not as numerous as Firefox, still does a pretty good job.

Favourites
IE 7 has newer features and more options when it comes to organising your favourites. The Favorite items represented by a bright yellow five-pointed star.

Bookmarks
The bookmark toolbar is very useful for obvious reasons, but there is no such toolbar enabled by default in IE 7. To enable it, hit the `[Alt]` key and go to `View > Toolbars > Links`. Drag and drop the icons from the address bar or even a link from a Web page. The new links are visible once you click on the arrow at the extreme right of the toolbar. Deleting the bookmarks is as easy as right clicking and then clicking on the `Delete` button.

Search
Similar to Firefox, Microsoft has thankfully ditched its Windows Live Search functionality by allowing users to use other search engines. To use this function, click on the arrow labelled `Search Options`, which is located at the right of the search box. A drop down menu will appear, with options for adding other search engines. Click on the `Find More Providers`. Select from a list of search engines comprising Google, Ask, Lycos, Wikipedia and Amazon. Click on any of these to install them. Although the list is long, in case you don't find your favourite search engine, enter the URL in the text field to install it to your browser.

If you have disabled the Google toolbar, you can search for any item without typing it in the search box. Just type your search string in the address bar itself. If it consists of more than one word, the Google search page will be displayed automatically with all the results. Depending on the string, if an exact match is found the browser redirects you to the first result, otherwise accessible by the "I am feeling lucky" button.

Manage Add-ons
Apart from third party add-ons, which you can install for productivity, IE comes with add-ons such as Java and Adobe Reader. Whenever you notice a reduction in browsing speeds, check the memory consumed by IE in the Task Manager. In case it's extremely high, disable all the add-ons installed from `Tools > Internet Options > Programs > Manage add-ons`. However, you need Windows XP Service Pack 2 installed for this. Look through the list and disable all add-ons such as Browser Helper Objects and Browser Extensions. You can enable these later, if you want to. Also, be a little more wary while installing add-ons that are ActiveX objects. These have the nasty reputation of triggering security holes.

Editing The Registry
There are certain hacks in the registries that can make IE 7 look more like IE6 in terms of the positioning of the menu bar. Proceed with care: the usual statutory warnings when it comes to registry editing apply here.

Go to `Start > Run` and type

Shortcuts

Keyboard shortcuts make your job easier, especially when you use heavy software. IE has its own long list, and recalling them will do you good.

Go back to the last page	[Alt] + [Left Arrow]
Go forward to the next page	[Alt] + [Right Arrow]
Focus the Address Bar	[Alt] + [D]
Add site to favorites	[Ctrl] + [D]
Open the right click context menu for selected item	[Shift] + [F10]
Open links in a background tab	[Ctrl] + [Click/Middle-click]
Close current tab	[Ctrl] + [W]/Middle-click on the tab
Switch to the last tab	[Ctrl] + [9]
Close other tabs	[Ctrl] + [Alt] + [F4]
Open quick tabs	[Ctrl] + [Q]
Go to the search box	[Ctrl] + [E]
Open search query in new Tab	[Alt] + [Enter]
Bring down the search provider menu	[Ctrl] + [Down Arrow]
Open Favorites Center to your favourites	[Ctrl] + [I]
Open a new tab	[Ctrl] + [T]/Double click on the tab bar
Zoom the page	Ctrl + [+],[-] / [Ctrl] + scroll whell
Display classic menu items	[Alt]

Old look in the new browser

regedit. Navigate to HKEY_CURRENT_USER\Software\Micr osoft\Internet Explorer\Toolbar \WebBrowser and click on it to view the contents on the pane. Right click on the WebBrowser item and use Select > New > DWORD. Name the DWORD ITBar7Position and hit [Enter]. Double click on the new value and assign a value of 00000001. Make it a hexadecimal value. Close the editor, and restart IE 7 to see this view when you enable the menu bar.

Printing

When you need to print a Web page and you have to adjust the settings for headers, footers and margins, click on File > Page Setup. Click on Page Setup with the [Alt] key pressed. In the pop up, type in your measurements for the page setup, which are in inches. For changing them to millimetres, go to Control Panel > Region and Language Options. You can also change the size settings to A3, A4 and A5 and also choose between

Window title	&w
URL	&u
Date in short format (as specified by Regional and Language Options)	&d
Date in long format (as specified by Regional and Language Options)	&D
Time (as specified by Regional and Language Options)	&t
Time in 24-hour format	&T
Current page number	&p
Total number of pages	&P
Right-aligned text (following &b)	&b
Centred text (between &b&b)	&b&b
A single ampersand (&)	&&

Portrait and Landscape options. In the Header and Footer section, there are some operators such as &w, &b and &p. A complete list of the variable is given above. These variables can be also combined in the header and footer fields. Finally, use File > Print Preview to view the changes.

Add-ons For IE

In our past articles we have talked about add-ons for IE 7. Here, we are going to touch on a few nifty ones:

IE7 Open Last Closed Tab: This is a common problem for users of IE 7 who savour the Tabbed windows. Clicking on the X and all your open tabs close. This add-on will come in handy for such accidents. It creates a shortcut

[Ctrl] + [X] that lets you undo the closed tab. This is a free extension and can be downloaded from **http://tinyurl. com/3yzhlv**

Inline Search: This add-on mimics the find as you type functionality of Firefox.

Now mimic Firefox's [Ctrl] + [F]

Press [Ctrl] + [F], and a toolbar will appear at the bottom of the browser window. All the instances of your search string are highlighted in the window. There are still some important shortcuts to remember: Esc closes the search pane, [F3] or [Enter] takes you to the next occurrence while [Shift] + [F3] or [Shift] + [Enter] will take you back. This add-on is free. Get it from **www.ieforge.com/InlineSearch/HomePage**

GooglePreviewIE: This add on is a boon for product and image searches. Also present in Firefox, this toolbar shows image previews of Web pages when you run a Google search. This is not an official Google offering like Google Toolbar. Get it from **http://ackroyd.de/googlepreview/**

WOT for IE: With incidences like online fraud and phishing on the rise, it is very important to know the reputation of a site beforehand. WOT (Web of

View image previews of search results with GooglePreviewIE

Trust) is such an extension that constantly checks any Website you open, against a community submitted list and displays its appropriate ratings. This is based on a colour code, with green being highly reputed and red being potentially dangerous. After installing this add-on from
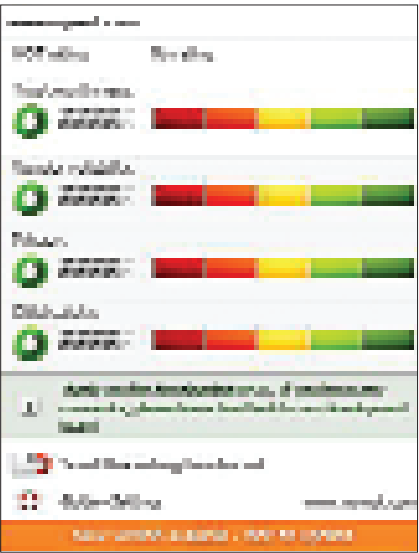
The different colour codes in WOT

http://www.mywot.com/en/ download/ie, check the top right corner of your browser window. Monitor the colour of the ring as you keep browsing. In case you come across a Website that you suspect is harmful you can also submit the link for potential inclusion into the list of malicious sites.

IE's Compatibility Issues

IE 7 has started to adopt Web standards for rendering HTML elements, in contrast to the previous versions that had a plethora of standard-related issues. However, due to an almost 90 per cent share of the browser market, most Web developers had to hack their source code in "illegal" ways so that their rendering would not be broken. Many sites you will visit on the WWW have still not updated their code, and will be rendered horribly, with fonts and links askew. A registry hack can allow you to display such sites in IE7 with IE6's default behavior.

Go to Start > Run, type regedit and press [Enter]. Go to HKEY_LOCAL_MACHINE\SOFTWARE\Mi crosoft\Windows\CurrentVersion \Internet Settings\5.0\User Agent. Right-click on the white space and select New > String Value. Name the string Version. Right-click on the new value and select Modify. Insert MSIE 6.0, close the registry editor and restart IE. All sites will now be rendered properly.

Speed Up IE

Like Firefox, IE is very slow to load pages. There are various reasons for this: the number of simultaneous connections that IE makes with the server is limited and it also keeps searching for network shares and printers. There are some registry tweaks to get around this problem and

significantly improve your Internet browsing experience.

In the Registry editor, go to HKEY_LOCAL_MACHINE/Software/Mi crosoft/Windows/Current Version/Explorer/RemoteCompute r/NameSpace/{D6277990-4C6A- 11CF-8D87-00AA0060F5BF} and delete the key named Printers. That ought to do the trick.

For opening up to 16 simultaneous connections with the remote server, and hence pushing your speeds up considerably, you need to modify (or create, if they don't exist) two values in the registry. Go to HKEY_CURRENT_ USER\Software\Microsoft\Windo ws\CurrentVersion\Internet Settings and check these two DWORD values: MaxConnectionPer1_0Server and MaxConnectionsPerServer. Change their values to 0000010 and 00000010 respectively. After doing the customary restart you will notice increase in browsing speeds.

Normalizing The Size Of A New Window

IE 7 has this annoying behaviour where clicking on a link in sites causes another window to open in the middle of the screen. Most people maximise this window by clicking on the Maximize button. However, the next time you open a link the same behaviour is repeated.

There is a simple tweak to get rid of this behaviour. Whenever you open a new link in a new window stretch the window so that it covers 100 per cent of the desktop. Restart IE again and click on the links. You should see the new window open full size.

SOUNDFORGE

Soundforge, a proprietary audio editing package by Sony, is used by professionals as well as amateurs to insert audio effects to sound tracks, repair damaged tracks, master and mix them and perform encoding tasks.

Costing between US$299.95 to US$319.95 (approximately Rs. 12000 to Rs. 12800), depending on the packaging
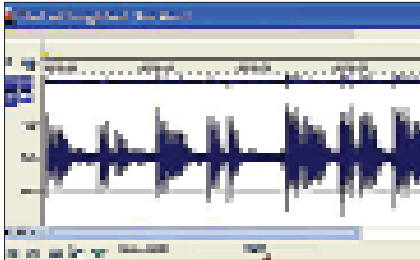
Soundforge graphically displays music

offered, they also offer a 30 day free trial—get it on this month's DVD. Whenever you open a file in Soundforge, the track is displayed in a series of waves and troughs, resembling seismograms. From the graph, you could figure out regions with either a high pitch or, say, low bass.

Effects

You enjoy a particular soundtrack, but don't want to hear the applause at the start and end of the track? Just open the track from the Open menu and hit the play button. Once you encounter the regions in the soundtrack where the clapping and whooping takes place, use the cursor to select them and hit the delete button. On the other hand, if you want to retain only a particular part of the file, and cut the rest out, go to Edit > Trim/Crop.
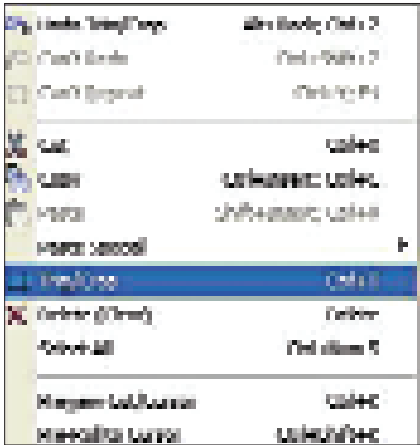
Options in the edit menu

The Effects menu has additional options to manipulate files. All these effects, when used sensibly and combined together, can mean the difference between a professionally edited track and an amateur recording. Each option has several sub options,
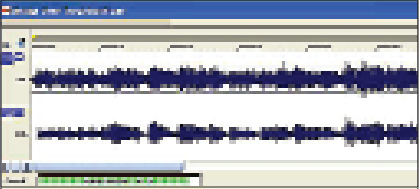
This was the waveform before the envelope was applied

...and after. Notice the difference in the wave-form
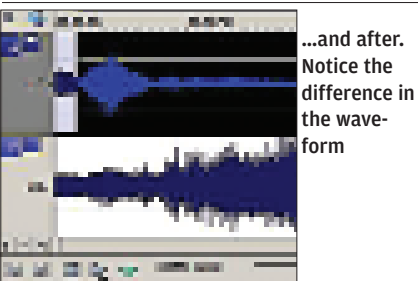
and detailing them would exceed the available space. Take, for instance, the Envelope option (Effects > Envelope). Envelope is a tool used to make the soft parts sound louder and lower the volume of the louder parts. You can adjust the volume depending on some preset parameters. It is used when you need to give different types of "fade" effects. You have custom effects provided, however by using the graph you can create your own effects. The waveform changes when the envelope effect is applied as you can see from the screenshots here.

Hush

Many audio tracks, which would otherwise sound awesome, remain unheard and unappreciated because of an unfortunate problem during recording. Now with noise reduction tools available, you don't need to bury your recordings of that baby talk because of honking in the background. Use the noise reduction tool from Tools > Noise Reduction to get rid of all external noise. There are options such as Noise bias, Attack speed and Windowing overlap. All these options reduce the external noise. The best way to edit, for newbies, at least, is by trial and error—tweak around the
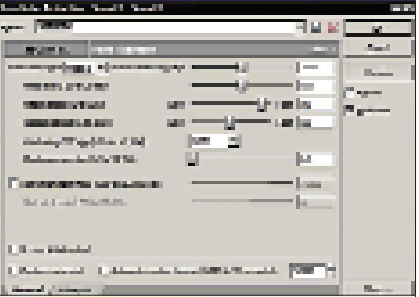
This tool provides options for removing external noise

sliders and preview the effect each time. When you are satisfied with the output, hit the OK button.

Mix And Match

What's the difference between DJs and us? They mix music, we don't. Mixing audio tracks may sound a bit
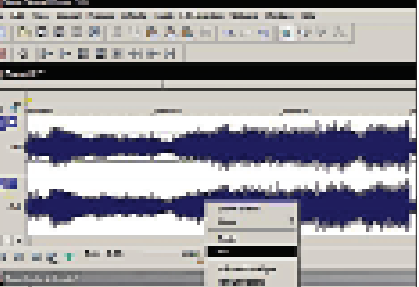
Mixing two or more tracks in Soundforge

Wings3D

Take Free Flight into the 3D world with Wings3D

Rossi Fernandes

The entire CG scenario has evolved since the late 90s and world class results can be achieved from pretty much anyone's computer. Open source and free 3D modelling tools such as Blender have closed the gap with commercial software. Today, we look at Wings3D, which is a 3D modelling software similar to Blender, but easier to use. You can download it from **http://www.wings3d.com** or get it from our DVD in this month's issue. There are Windows, Linux and Mac versions of Wings3D.

Handling The Viewport Easily
The biggest issue when you're so comfortable with commercial software such as 3ds Max or Maya is that a transition to completely different software, be it free or paid, becomes very annoying. One of the most significant changes is that you need to get used to be the way you handle the viewport and manoeuvre the camera. By default, Wings3D sets the mouse controls to invert which makes working on Wings3D even more confusing than some others.

Click on `Edit > Preferences` and go to the `Camera` tab. Click the dropdown for the `Camera mode` and select `3ds Max` if you are comfortable using it. Click `OK`. Now you can use 3ds Max's keyboard and mouse configuration to handle the scene. You can also choose from any other software in the list.

Using Third-party Renderers
Contrary to popular belief, Wings3D is not a plain modelling software,
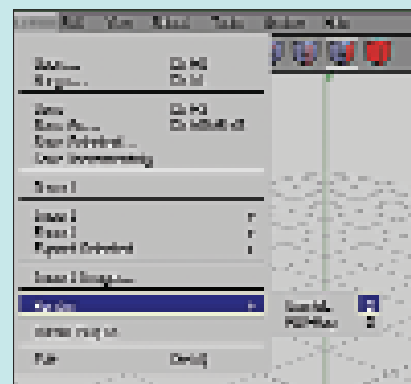
Customised renderers can be used with Wings3D

without any renderers. It has a basic default OpenGL-based renderer along with it. To render a scene, click on `File > Render > OpenGL`. To change the quality settings click on the block sign next to `OpenGL`.

You can also install custom renderers such as Povray. For that you first download and install Povray (**www.povray.org**). Install it into the default location. Then in Wings3D, click on `File > Render > Povray` to use this renderer.

Object Management

Objects can be hidden or locked and also put into wireframe mode using the object manager—Geometry Graph

Wings3D, like any other 3D modelling software has a resource manager, which gives a single-window view of all the objects in a scene with decent control. The `Geometry Graph` in Wings3D does just that. Click on `Window > Geometry Graph`. You will see a small window all the objects listed. There are three tiny icons to the right of each object. The eye icon is used to hide or unhide the object. The lock icon locks or unlocks the object being interacted with, while the last icon toggles the wireframe view for the object.

Customising Views
Another obstacle with Wings3D is the lack of side views from different axes. Instead of those views, you just have one big perspective view window. Wings3D allows you to create as many windows as you need. You can resize a window by clicking and dragging the right bottom tip of the window. Each one of these windows can be set to an axis. First, create a new window by clicking on `Window > New Geometry Window`. Drag and drop the window to the location of your
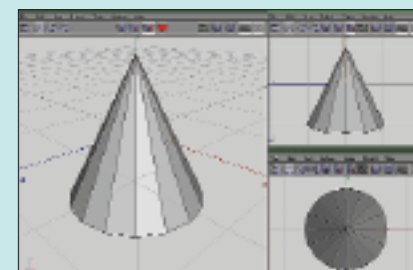
Additional views can be added and positioned within the Wings3D window

choice. Now to set a view, click on `View > View Along` and select the axis you want to set the camera to.

Unwrapping The Model
One of the steps involved in creating a model is the unwrapping of the model where the object is spread open, by creating cuts on key edges. The unwrapped
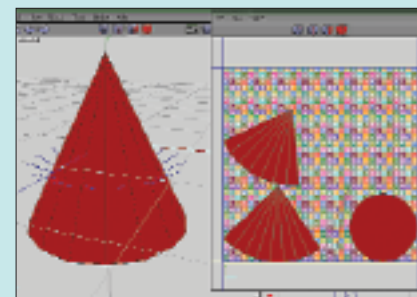
The unwrapped model can be used to create a texture in an image editing software

model is used to create a texture for it. There are many ways to unwrap a model, and it depends on the way the model structure has been made.

First, select the faces you want to unwrap by selecting the face mode and clicking on multiple adjoining faces. Right click and then select `UV Mapping > Direct`. In the window that opens, once again select the faces and right-click, choose `Continue > Unfolding`. Throughout these steps, you can choose different kinds of mapping to unwrap the model. Your selection will now be unwrapped.

To export the unwrapped model, right click in the UV Mapping window and click on Create Texture. Click on `Window > Outliner`, to enable the `Outliner` window. In the outliner, look for the map with the outline, right click on it and click on `Make External`. When prompted, enter a name for the image you want to export. Click `Save`.

Once you're done with creating a texture in a different application, you need to import the image by clicking on `File > Import Image`. Choose the image and click `Open`. You can see all imported images here. You can even drag and drop images into the UV Window.

Finally, it may be a bit difficult and needs a different approach to get used to, but there's no denying that in the end, you can get the same results modelling in Wings3D that you expect from a suite costing several thousands!

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intimidating, but it's as easy as a copy-paste operation. Open all the tracks that you want to mix in the main window. Hit the `File > New` button for opening a new workspace where the final mixed track will appear. For further convenience, go to the Windows menu and choose either the Align Horizontally or Align Vertically option that will align all the windows. After you have decided on the particular sections of the tracks that will go into your mixed track, use the cursor to select them and paste them in the empty workspace. Finally, use the Mix option to combine the tracks, and you're done!

Replicate
For some specific purposes, the Replicator function is another nifty tool. If you need to extract a specific portion of audio, say about 10 seconds from a 5 minute clip the Replicator is precisely the tool you need. Or say you need to replace certain sections of the audio with repetitive sounds. Copy the audio that you need to replicate, and go to `Edit > Paste Special > Replicate`. Select either `Copy Partials`, if you want to fill the selected region completely with effects. Whole Copies option means that only an integral number of replications will occur.

Selecting the section to be replicated

The final effect

Burning
Sometimes you need a reference CD for a quick sampling of how your final effect sounds. A third-party CD burning tool such as Nero can be quite inconvenient for a quick burn. Go to `Tools > Burn Track-at-Once Audio CD` and select the options like burning speed. The Track-at-Once is similar to a multi-session disc, where more tracks can be added later.

Limit Yourself
When you are mastering or editing a digital soundtrack, you need to take care of distortions. It might not sound very bad when you are wielding the scissors, but it will sound chalk-scratching-the-blackboard bad if you don't pay attention and get the final

result burned on a CD. This can be prevented by monitoring and limiting the amplitude of the audio signal. From `Effects > Wave Hammer`, click on the `Volume Maximizer` tab. There are a host of presets to choose from, while the sliders would enable you to manually adjust settings such as selecting the maximum and minimum sound levels in decibels. After you are
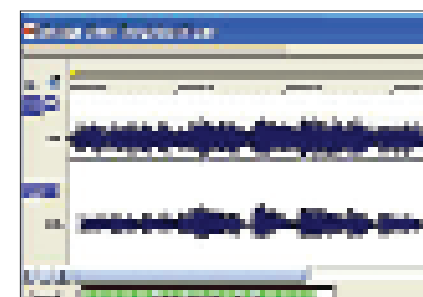
The waveform before using the volume control function
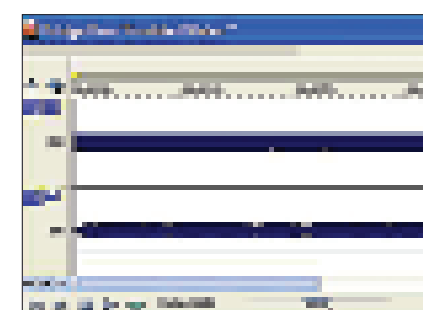
Volume control effectively adjusting the sound levels

done, click `OK` and you have the perfect track—nice and tidy within the limits you've specified.

Mono Sound
While stereophonic sound is all well and good, sometimes you might need to know how your fantabulous track sounds in the Mono mode. This is needed in certain applications, especially broadcasting where there are plenty of TVs and radios running on mono speakers. The stereo sounds can be changed to mono by using the `Process > Channel Converter` option. Apart from converting from stereo to mono,
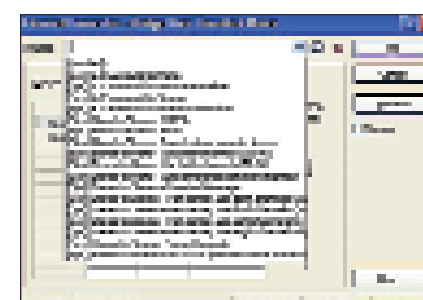
Channel converter presets

you can perform other tasks such as reversing the left and right channels and inter-mixing them.

Batch Work
In some cases, you might need to apply the same effects to multiple tracks. Such tasks call for the use of the Batch Converter. Go to `Tools > Batch Converter` and select the files that need you to apply the effects. Select the effects to be applied, the format in which the files are to be saved and finally hit the Run Job in the Status window to start the conversion.
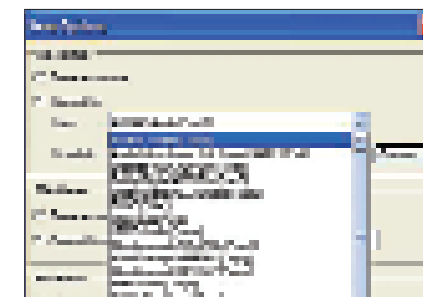
Different formats available for saving

Conclusion
Soundforge is among the best sound editing software out there. Even though it is incredibly complex, it can be used from the absolute amateur to the polished professional. You need to practice a lot in order to master sound editing. However, with tools such as Soundforge and slight added effort, you no longer have to run to an audio parlour for your home-made videos and audio.

WINDOWS VISTA

Here is another round of Vista tips, served piping hot. As usual, backup your registry before trying any of the registry hacks.

Defrag Faster
We have talked about the importance of defragmenting your hard drive earlier, but the fact remains that defragmentation takes up too much time. However, a free tool bundle is
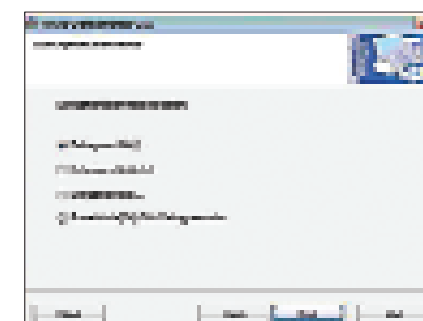
Options for defragmenting

Windows Batch Files

Automate some mundane tasks in Windows using batch files

Rossi Fernandes

Batch scripts were an easy way to make tiny software necessary for drivers back in the days of DOS. DOS batch files can still be run in the same way in the Windows operating system through the command prompt. A few of the commands present in the DOS days don't exist anymore, but most are still intact. Batch files have the extension .BAT, and any text editor can be used to create them.

Automate Your Net Connection

A lot of us use the dial-up method to connect to our ISPs—yes even the broadband users amongst us usually have to use PPPoE (dial-up broadband). The problem occurs often enough to be irritating—connections drop, for whatever reason, and downloads fail, transfers are restarted...you know what we mean. To automate the redialling process, make sure you have the account set up by going to `Start > Control Panel > Network Connections`. Open Notepad, and type in the following: `RASDIAL <Connection Name> <username> <password>`

You have to be careful to ensure that you type the connection name exactly as it shows in Network Connections. Now just hit `[Ctrl] + [S]`, and save the file as `<filename>.bat`—here filename is whatever you want to call it. Now you can add a scheduled task to set the connection to dial automatically. Go to `Start > Control Panel > Scheduled Tasks > Add Scheduled Task`. Click `Next` and then click `Browse` and select the BAT file you just created.

Next, set the schedule for the application, so, say, you want to run the BAT file every day, after every half hour, just choose `Daily` and click `Next`. Fill in other details such as starting time, entering your user account information, and completing the schedule creation. To make this a repetitive schedule, right-click on the task, select `Properties`, click on the `Scheduled` tab and then on the `Advanced` button. Check the `Repeat Task` checkbox, and enter a value for the interval. You can be sure that your PC will, more or less, stay connected as long as it's on.

Start Your Favourite Programs

As soon as you walk into office, you may launch Outlook to get your mail, open IE to start browsing and perhaps launch your RSS reader. Designers may start work by launching another set of programs. Whatever your job, you're bound to have a few rituals like these, and instead of going through the motions every day, you can let a Batch file do all the work for you.

Start Notepad and create entries (as shown below) for all the applications you want to run one after the other.

```
CD       "C:\Program   Files\
wings3d_0.99.00b"
Start Wings3D.exe
CD       "C:\Program   Files\
Adobe\Adobe Photoshop CS3"
Start Photoshop.exe
```

CD is used to switch control to the directory of the application and the `Start` command runs the application itself. Once again, save the file with a .bat extension, and all you have to do is double-click this file when you want to start working.

Start And Stop Services On Demand

Not all of us are blessed with fast computers, and even if you are, you might not like too many services running in the background. Normally, you could go to `Start > Run` and type `net stop <Service>` to stop services individually, but if you want, say, 10 services stopped when you're about to begin gaming, this would be painful.
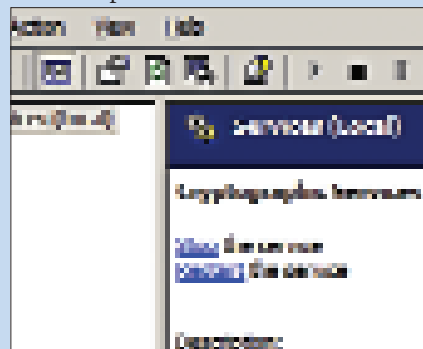
Use the list of services to get exact names of services running on your Windows

With a Batch file, all you would need to do is create one that contains all the `net stop` commands in the following format:
```
NET STOP <Service 1>
NET STOP <Service 2>
```
...and so on

This way, you can add all the services you want stopped, and just double-clicking the Batch file will stop them all.

You can even do the reverse, and use the `net start` command to restart the same services using another Batch file. To find the exact names of the services, go to `Start > Control Panel > Administrative Tools > Services`; double-click a service and note down the name given under `Service Name`.

Killing Tasks

Tasks can be shut in the same way services are stopped. The Taskkill command can forcibly shut applications from the command line. This can be used in a batch file to shutdown multiple applications together. This is especially useful in case you're usually goofing off and the boss walks in! In the batch file, create entries in this format: `Taskkill /im Processname.exe /f`.

Quick Shutdown Or Reboot

There are commands that can be used to shutdown the computer and these can be customised as well. The command is `shutdown -s -t 0`. Create a shortcut
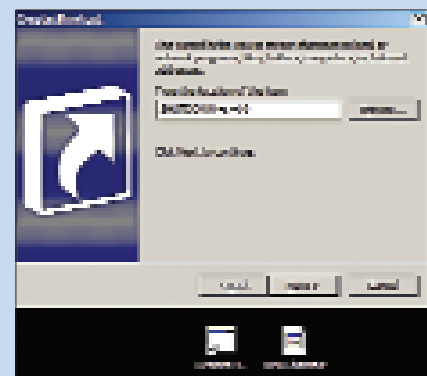
Creating shortcuts for the shutdown command is a quick way to shutdown and restart your PC

with this command and you can shutdown your PC without having to go to `Start > Shut Down`. This will force the PC to shutdown immediately without any confirmation dialog boxes. To set a time before the shutdown commands replace the value 0 with anything else. You can use this same command along with schedules to automatically shut down the computer. At any time if you want to abort the shutdown, use the command `shutdown -a`.

Similarly, the command for rebooting the computer without any alerts or confirmation windows is `shutdown -r -t 0`. ■

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going to change that sad story. Download Power Defragmenter from **http://tinyurl.com/z74l3**. It is a user interface for a powerful disk utility named called Contig, which lets you defragment single files instead of blocks and sectors. Run the Power Defragmenter GUI and you will arrive at the screen shown.

The `Defragment File(s)` option lets you defragment up to four files, while `Defragment Folder(s)` lets you defragment up to four folders. You can also choose to defragment your entire hard drive. The process is very fast—the 82-minute defragment time for 25 GB in Vista Ultimate is cut down to just six minutes!

Resize Partitions

You can resize partitions in Vista without losing any data; start by backing up important data: it pays to be careful. Right-click on `Computer` and select `Manage`. Go to `Disk Management` under `Storage` and right-click on the partition you want to shrink. Click on `Shrink Volume` in the menu and voila: you have shrunk the disk.
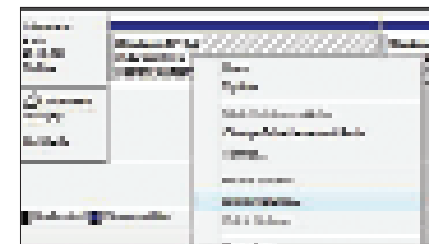
Shrinking disk space in Vista

Tweak Search Options

Windows Vista's search is completely revamped, and looks different when compared to XP. It also has more search options—different from the vanilla ones provided in XP. Right-
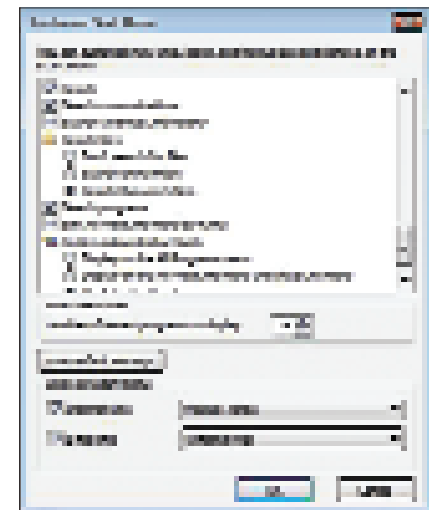
Various options in search

click on `Start > Properties > Start Menu` and click on the `Customize` button. A window pops up where you will be able to select the way searches can be made in your Vista Start box. The `Search Communications` option searches the files in Windows Mail and Contacts. `Search Favourites and History` searches the IE favourites and history. `Search Files` has further options: you can either choose to search the whole computer, or only files that you have created yourself. The final option is `Search Programs`. Depending on your preferences, searches will be done faster, or might even take more time than usual.

Trim The Control Panel

The number of control panel items that we have to access regularly is miniscule. There is no sense in displaying all the icons as this slows down the loading time before you get to access the panel. The unused icons can be hidden by using the Group Policy Editor.
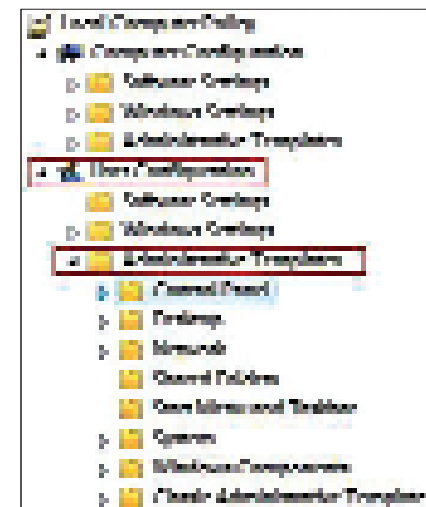
Tweaking the Control Panel

Go to Start and type `gpedit.msc` in the search bar. Go to `User Configuration > Administrative Templates > Control Panel > Hide Specified Control Panel Items / Show Specified Control Panel Items`. After enabling it, click on Show and type the name of the icon you want to hide or show. That has to be done exactly as written, with proper attention to case.

Make ReadyBoost Default

ReadyBoost is a disk caching technology that kicks in when you attach USB flash drives. This optimises your system performance and is should be automatically switched on if you're

short on system memory and want to use a flash drive. However, no software is that intelligent, and in some cases this feature is not enabled automatically. A registry hack can, however change the way Vista deploys this feature. Proceed at your own risk.

Go to `Start > My Computer > Right click on device > Properties > ReadyBoost`. Select `Stop retesting the device when I plug it in`. Remove the device and open the registry editor—`Start > type regedit` in the search box. Navigate to `HKEY_LOCAL_MACHINE/SOFTWARE/Microsoft/Windows-NT/CurrentVersion/EMDgmt` and change these registry values: `Device Status` to 2, `ReadSpeedKBs` to 1000 and `WriteSpeedKBs` to 1000. Restart the machine, and ReadyBoost should be enabled every time.

Get Widgets From The Net

Widgets and Google Gadgets can liven up a Web site. If you are a fan of any particular widget and you want to use it in Vista, you can now install these widgets in your Sidebar. For that, first download the Amnesty Generator from **http://www.amnestywidgets.com/GeneratorWin.html** (or get it off our October 2007 CD). After you have installed the program, get the source code of your favourite widgets and paste the HTML code in the space indicated by Step2.

You might also want to tweak with the HTML code a little to optimise the size parameters. Besides, you can also input the size in the boxes provided. Select an image for your widget and click on Generate. The Widget will be placed in your sidebar, and you will be able to check the daily weather, play games, get the latest stock quotes etc. In case you want to further fiddle with the gadget click on `Start` and type
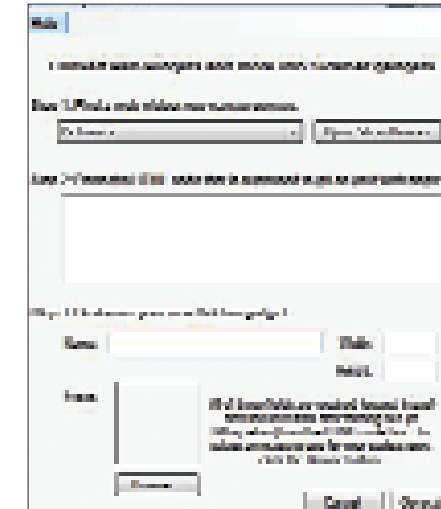
Use Amnesty Generator to get your favourite widgets off the Internet

`%userprofile%\Appdata\Local\ Microsoft\Windows Sidebar\ gadgets` in the search box. This will take you to the folder where the widgets are stored.

Registry Hacks

Here are some useful hacks for Windows Vista. As usual, back up your registry before you try them.

- To change the name of the registered user or company, browse to `HKEY_LOCAL_MACHINE\Software\ Microsoft\Windows NT\ CurrentVersion` and look for `RegisteredOwner` and `RegisteredOrganization`. Double click on them and change the values

- If you have a sufficiently powerful machine and love the animations in Vista, you might want to slow them down a bit. Navigate to `HKEY_CURRENT_USER\Software\ Microsoft\Windows\DWM`. Once there, create a new key by right clicking on the space below existing keys and choose `New > DWORD (32 bit) Value`. Call it `AnimationShiftKey` and enter the value as `1`. After rebooting the machine, whenever you want to slow down the animations, press the `[Shift]` key before it starts.

- Encrypting and decrypting files in Vista is a multi-click process which takes a fair bit of navigating. With a registry hack, this task can be done with a simple right-click. Navigate to `HKEY_CURRENT_USER/Software/ Microsoft/Windows/CurrentVe rsion/Explorer/Advanced` and create a new 32-bit DWORD. Call it `EncryptionValue` and use the value as `1` there. After the system is restarted, you can get encrypting with just a right-click.

- Speeding up Flip3D: Eye candy is well and good, but not all of us have top-of-the-line graphic cards to render all the slick effects. This hack will limit the number of windows that are rendered in 3D, which will hopefully let you have your cake and eat it too. Navigate to `HKEY_CURRENT_USER\Software\ Microsoft\Windows\DWM` and create a new DWORD value called `Max3DWindows`. The value should be set to a number between 4 and 9: higher the number the more muscle your graphics card needs to pack. Try it out with different number values by opening multiple windows and checking out the difference.

Enabling Detailed Status Messages

Vista has a verbose mode which informs the user of what is going on behind the scenes when you are either logging in or shutting down. Click on `Start` and enter `gpedit.msc` in the search box. Navigate to `Computer Configuration > Administrative Templates > System` and locate the `Verbose vs. Normal status messages`. Right-click and enable it.

Enable NAS Devices In Vista

Vista is still not compatible with many regularly used peripherals, and network storage boxes are one of them. This trick will let you use NAS boxes without downloading any new drivers. In the Start search field, type `secpol.msc`. In the Local Security Policy editor, expand the `Local Policies` and select the `Security` option. Locate the item titled Network Security: LAN Manager Authentication Level and select Properties by right-clicking on the setting. The settings should be changed to `Send LM & NTML—use NTLMv2 session security if negotiated`. The incompatible NAS box will work now.

Get Detailed Statistics

The Windows Experience Score indicates how well your system is running, but it is at a superficial level. Advanced users need to use Microsoft's Management Console to find out the state of the OS. To access this tool, right-click on Computer and select `Manage > Reliability and Performance > Reliability Monitor`. The detailed graphs show stability indices that determine how stable your system is at any point. Red circles show stages where failure has occurred, with a detailed description on which process had gone belly up. As a troubleshooting tool, this is pretty neat.
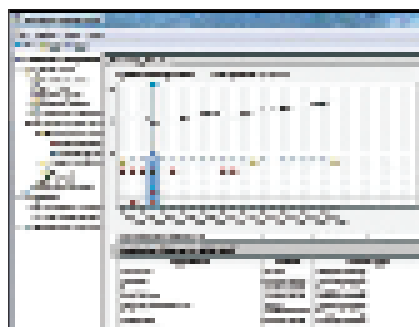
The Reliability Monitor provides detailed system diagnostics

Quickly Transfer Photos

Transferring photos from a digital camera involves quite a bit of mouse clicks. Even if the photos are copied to the computer, they remain on the camera's memory card. The Windows Photo Gallery can do this transfer-then-erase function in one go. After the camera is detected and before you start to transfer your photos,
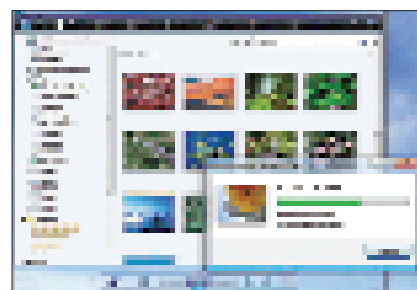
Easily transfer photos and manage camera memory

select `File > Options > Import > Always erase from camera after importing`. This will clean out your camera memory, essentially completing a cut-paste operation.

Set Core Priority

In machines with multiple cores, most tasks are divided amongst the cores so that the computer can run multiple operations at the same time. There is a performance lag to this system, as running on multiple cores can cause processes to slow down a bit due to data transfer issues between the cores. This is particularly true for programs that make heavy demands on the CPU. In effect the whole computer slows down to a crawl as this affects other programs too. However in Vista you can set a process to run on a single core. Go to the Task Manager and select the process which is hogging all

Restrict processes to specific cores

system resources. Right-click on it and select `Set Affinity`. You can now restrict the process to one of the cores and improve the overall speed.

Get Multiple Clocks

Vista can display more than one clock—a total of three clocks actually. To enable this feature from the Control Panel, click on `Date and Time` and go
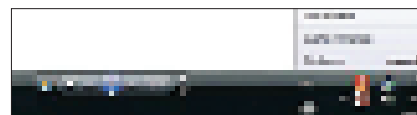
Get multiple clocks in the System Tray

to the `Additional Clocks` tab. You can set different time zones along with a display name for each. After you click OK these clocks will be visible when the cursor is placed over the default clock. ∎

Coffee-cup Holder?

My Samsung CD writer keeps ejecting when I put a CD in it, and only after 5 or 6 attempts, it manages to read a CD. What could be the problem? Do I need to reinstall Windows?

Srinivas N.

Your CD writer keeps on ejecting the media because it finds it difficult to read it. The most common reason for this to happen is due to the laser head power deterioration over a period of time, or due to the lens getting dirty. You can try to clean it by using a lens cleaning CD, which you can get at any stationary store. Another possible reason could be that your power connector or data cable is bad, so you should try replacing these with new ones. If all fails, then it is time to get a new optical drive.

Find What You Need

My friend has just bought a new hard drive and installed Windows XP. But she does not know what drivers are required. Please tell me how to find the drivers without opening her cabinet.

Vineeth Pooppada

The best and the easiest way to approach your problem is to call up the place from where the computer was bought and ask them the system configuration. Note down the names of the individual components—motherboard, graphics card, network card, etc. and search for their drivers online. You can also download, install and run Everest (any edition) from www.lavalys.com. In the Summary module, you will be able to see all the components of the computer without having to open it. Once again, you must note down the names of the components and search for their drivers online.

Indirect Memory

I had read about setting the DMA mode for an optical drive in your older Q&A section, and
have been able to do that with success. But the problem is that I find that my drive keeps going back to PIO mode again.

Shruti Saxena

To set your device to DMA, go to `Start > Run > devmgmt.msc` to open the Device Manager. Expand "IDE ATA/ATAPI controllers". Double-click on Primary IDE, go to Advanced Settings tab and set the Transfer Mode to `DMA if Available`. Do the same for Secondary IDE as well. Restart Windows, and if you still see the mode as PIO, you should uninstall the Primary IDE and Secondary IDE channels and restart Windows to redetect them. This should solve your problem.

In your case, the drive keeps switching back to the PIO mode, and the reason for this is often attempting to read scratched media. Another reason could be that your IDE cable may be faulty or too long. Use only IDE cable with 80 conductors as are commonly available today, as against the 40-conductor cables available earlier. There may also be certain power management issues that may cause this problem when the computer wakes from the Standby mode, but this can be solved by installing the latest chipset driver for your motherboard.

ME No Work

I have recently reinstalled Windows ME and the problem is that System Restore no longer works. I sometimes get a blank window or the following error:

```
An error has occurred in the script on
this page
Line: 14
Char: 9
Error: Object doesn't support this
property or method
Code: 0
URL: res://rstrui.exe/start.htm
Do you want to continue running script
on this page?
```

Priyank Bhanushali

It seems that your computer did not create a restore point during the first boot of Windows ME. You should therefore create one manually to get rid of this issue. Run the following command at the command prompt:

```
C:\Windows\System\Restore\rstrui.exe
/makefirstrestorepoint
```

Now restart the computer and System Restore should work fine.

Stop That Nag!

I want to know how I can stop Automatic Update from nagging me repeatedly to restart the computer after installing an update.

Mahesh Joshi

There are two ways to get around this issue. We will first tell you how you can do this for just the current update. Click on `Start > Run`, type `net stop wuauserv` and hit `[Enter]`. This will stop the Windows Update service until the next time you restart your computer. The second method describes the way to stop these

I Can't Do That, Dave

My computer was working fine, but one fine day, it started displaying a message that said something like "Windows could not start because the following file is missing or corrupt: /system32/hal.dll" and Windows does not start. Please help.

Sathish Rajan

This problem can be attributed to a missing or corrupt Hal.dll file and / or Boot.ini. Here is how you go about with the repair process. Boot from the Windows XP CD and press `[R]` to start the Recovery Console when you see the "Welcome to Setup" screen. Press the number corresponding to the correct location of Windows you want to repair (this is typically 1). Type `bootcfg /list` to view the current entries in the Boot.ini file. If you get a message that this file does not exist, you should type `bootcfg /rebuild`, to repair it. This will automatically scan your hard drive for installations of Windows XP, 2000, 2003 and NT and display the results. Now follow these instructions:
1. Total Identified Windows Installs: 1
(1) C:\Windows
Add installation to boot list? (Yes/No/All)
Type Y and hit `[Enter]`
2. Enter Load Identifier
This is the name of the operating system. When you receive this message, type the name of your operating system, and then hit `[Enter]`.
3. Enter OS Load options
After receiving this message, type `/fastdetect`, and then hit `[Enter]`. Eject the CD and type exit.

Now to repair (or replace) hal.dll. You must once again, boot through the Windows XP CD and enter the Recovery Console. Press the number corresponding to the location of the Windows installation to be repaired. Type the following command at the command prompt:
`expand X:\i386\hal.dl_ C:\windows\ system32\hal.dll`
(Replace X by the drive letter of your CD/DVD drive and you can specify the actual drive letter of your Windows installation instead of C: as in the case above).

Select `Yes` if you are prompted to overwrite the existing `hal.dll`. Type `exit` and restart your computer normally. In very rare cases, the above procedure may not help you. In such cases, you may need to make a temporary installation of Windows in another partition of the drive. Now (assuming that your original Windows installation is in the C drive and your temporary Windows in D), copy hal.dll from
`D:\WINDOWS\ServicePackFiles\i386 to C:\WINDOWS\ServicePackFiles\i386 and C:\WINDOWS\System32`. Overwrite, if prompted.

reminders forever. Assuming that you are running Windows XP Professional, click on `Start > Run`, type `gpedit.msc` and hit `[Enter]`. This will launch the Group Policy Editor. Select `Local Computer Policy > Computer Configuration > Administrative Templates > Windows Components > Windows Update`. Double-click on `Re-prompt for restart with scheduled installations`. Change the value to `1440`. Close the Group Policy Editor. Click on `Start > Run`, type `gpupdate /force` and press `[Enter]`. This will stop the repeated reminders for this and all future Windows updates.

Twice Isn't Nice

Help! My Outlook Express sends two copies of any mail I try to send.

Sarika Choudhary

This problem occurs if you have configured Outlook Express Read options to Read all messages in plain text, but are still sending messages in HTML format. Outlook Express creates a dummy attachment with the formatted (HTML) copy of the message, so that you can easily view it if needed and it does so for incoming messages as well.

To solve this problem, configure Outlook Express to send messages using plain text—go to `Tools > Options` and navigate to the Send tab. Deselect `Reply to messages using the format in which they were sent`. Set `Mail Sending Format` to `Plain Text`.

Spyware Attack!

I had installed a 3-day trial of moviepass.tv, but now that the trial has expired, I am unable to remove it and am continuously bombarded with
pop-ups demanding that I sign up for a monthly subscription. Please help.

Amit Lakhani

You can attempt to remove moviepass.tv in one of the following ways:
1. Use System Restore to roll back to the state before you downloaded this adware. Go to `Start > Programs > Accessories > System Tools > System Restore`, select `Restore my computer to an earlier time` and click on `Next`. Select a checkpoint date before the moviepass.tv software was downloaded and click Next to continue with the restore. Download, install and scan using a good spyware such as Spybot to remove any residual occurrences of this adware.
2. If the above method does not help, or if you don't use System Restore, you can do a manual uninstall. Start your computer in Safe Mode. Open the Control Panel, and go to `Add or Remove Programs`. Uninstall any program with names starting with or similar to the following: AltBill, AltPayments, AltPayV2, DownloadManager, FileGrabber, FSupport, ITBills, License Manager, MediaPipe, MoviePass, MovieLand, MPNotifier, MyAccessMedia, MyWaySA, Notify, Notifier, Notification Utility, OptimumOnline, and P2PNetworks.

Now open Windows Explorer, and go to the Program Files folder. Delete any subfolders with names related to the items you just uninstalled. Go to `Start > Run`, type `msconfig` and hit `[Enter]`. Go to the `Startup` tab. Disable any items with command names related to the items you just uninstalled by clearing the associated check box. Click on `OK` and restart the computer when prompted to do so.

Create Your First Track In FL Studio

Become a DJ with your own virtual turntable and mixer

Rossi Fernandes

FL Studio (formerly Fruity Loops) is an audio creation tool that works by creating sequence of sounds. It's been around for years now, and generally gives the impression that music creation is easy. Sure, anyone can randomly go about clicking to add beats and get a respectable sound, there are a few features and steps that need to be understood first.

Creating A Suitable Base Project
By default, an empty file is created when you start, but you can create a new project based on a few bundled templates. Some of these templates are set for certain genres of music or types of tasks such as surround sound panning and recording. Go to `File > New from template` and select a template that best suits your plan.

Set The Tempo
The tempo for the track is the speed at which your track plays. Most newcomers will leave the tempo—which is denoted in beats per minute—at the default value. It should be set to suit the style of the track you're composing.

The tempo value can be changed by clicking on the BPM value next to the playback buttons. Click and drag the mouse cursor upwards or downwards, to change the value. You can also enable a metronome to get the idea of the tempo by clicking the `Metronome` icon from the toolbar at the top.

Adding Items To The Playlist
The playlist is one of the most important windows and is centric to FL Studio. It contains the entire track, and is where all the loops and patterns come together to create a proper song. Most people end up creating a random loop and adding sounds and effects to it, but audio tracks can be added to the playlist as well. This is useful in places where you want to add vocals to your track. Like image or video editing software, multiple tracks and effects can be arranged in layers. The lower section of the playlist window is where these recorded sounds can be added. The browser tab on the left contains all the sounds and tools that can be used to create tracks—simply drag and drop sounds from there on to the playlist.

If you have a long playlist, then navigating through it using the scrollbars is a pain—use middle click instead. Hold down the middle click button and move the mouse to navigate through the playlist window.

Creating Loops Using Step Sequencer
A step sequence is to be created, because in the end, your entire track will be made up of many such steps. There are a few things that can be done in the Step Sequencer. The

The loop step sequencer is one of the most basic, but vital, starting points for a song

length of a step can be increased in a similar manner to the tempo of the track. On the top left of the Step Sequencer window, click on the empty text box and drag it up to increase the number of beats per bar. You can now put in more steps per beat. Here again, you can drag and drop new effects from the browser. The view can be filtered to show just drum beats or recorded sounds—use the drop-down menu at the bottom left of the Step Sequencer window to do this. To make any changes to the properties of a channel, click on the channel name and a new window should open which lets you do that.

Using the Piano Roll
The Piano Roll feature allows you to give each note a characteristic sound—you can set the velocity at which the notes are hit and make very minute and accurate notes on the sheet.
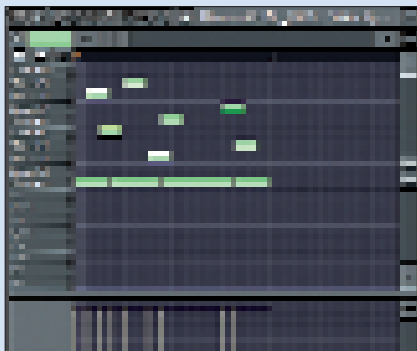
The Piano Roll feature allows accurate notes and beat plotting

Right-click on any of the channel buttons and select Piano Roll. Here, you can plot beats, and the bottom section of the window can be used to change the volume of the beats—so every individual beat has its own intensity. To further customise beats, click on the Graph Editor icon on the right top of the Step Sequencer window. Use the scrollbar to switch to a different property.

Using Scratching And The Mixer
An interesting feature to use in FL Studio is the Fruity Scratcher, which allows you to create the same sounds that you hear from DJs scratching discs. To add a scratcher to Fruity

Your very own personal turntable for disc scratching in Fruity Loops

Loops, click on the View Mixer icon on the right of the upper toolbar. Click the drop-down there and go to `Select > Fruity Scratcher`. Load a music file using the folder icon on the left. When that's done, click Play and you can click and drag the mouse over the disc on top or the status bar below. There are controls on this window for the speed and sensitivity of the turntable.

The Fruity Loop Mixer is a feature that allows you to plug in multiple processors and generators in a loop. The Fruity Loops Scratcher is one such add-on. Similarly, you can add many other plugins in a chain. The volume for each plugin can be controlled individually as well. Instruments and items can be excluded from being affected by the added plugins, if required. The Fruity Loops Mixer is a great way to make

fine tweaks to the track in real time. It also works fine with the recording feature that we will talk of next.

Live Recording
When you're comfortable with the software and you've created a basic tune, you can also record small clips in real time. We'll try using the scratching feature in FL Studio as an example. Before we start the recording itself, we first load the scratcher, and click the Record button next to the playback buttons. If you click the `321` icon on the same toolbar, you will be given a countdown before recording starts. Click the `Playback` button to start the recording itself. All your loops and tunes will play as usual—if you want the recording to loop, then click the `Loop record / Enable Overdub` icon in the main toolbar.
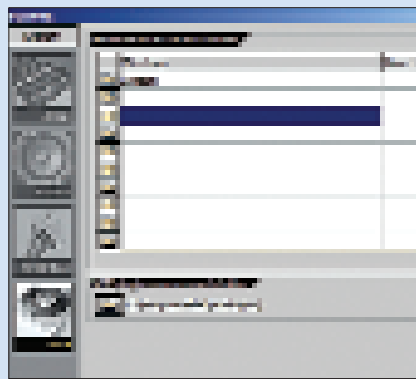
Downloaded or custom made audio samples can be added to the Fruity Loops library

Adding Audio Samples To the library
FL Studio has loads of audio presets and sounds that will keep you busy for a very long time. When things do turn a little dull, you can also choose to use downloaded or self-created

Edison is an audio editor built into Fruity Loops

sounds, which can be added to the browser. Go to `Options > File Settings` and click on the folder icon to the left of the empty field and choose the folder where you have the custom sounds. When done, close the window and you will find the newly added folder in the browser. Like other tracks, left click and drag your clips to the step sequencer. Keep in mind that large MP3s will hog up the system resources and significantly slow down FL Studio.

FL Studio also has a very versatile inbuilt audio editing plugin called Edison that can be enabled by clicking on the `Open New Audio Editor` icon on the top toolbar. This is useful to create your own samples.

Tweaking FL Studio
Fruity Loops might seem optimised when you're working on a few channels, but it becomes a

Completed tracks can be exported as MP3s and other formats without any problems

completely different beast when you go large-scale. It then becomes necessary to make a few adjustments to the audio settings to optimise the program a bit. Go to `Options > Audio Settings`. If you haven't made use of ASIO yet, enable it by selecting it from the dropdown menu for Output. ASIO4ALL is a driver, which gives very good latency on most sound cards—it is installed along with FL Studio. Changing the sampling rate using the dropdown menu can also help. If you choose the sound

Fruity Loops can be unforgivable if loaded with too many tracks—so tweaking is necessary

driver itself, you can then set a buffer length to it. A shorter buffer length will reduce latency, but will hit performance. If your sound is already stuttering, you should try increasing the buffer length.

Exporting The Final Result
Encode.tif—Completed tracks can be exported as MP3s and other formats without any dramas

When you feel your track is ready, and it's time to export—go to `File > Save As or File > Export > MP3 File`. Select the format, and if you choose MP3, you can choose from quality settings such as bit rate and depth of the song. The approximate resulting file size is also displayed, so you are free to make any changes. Click `Start` to start the encoding process.

That's it, then! It is pretty obvious that there's a lot of that can be done with FL Studio, but it's only a matter of messing around in the software to know the best ones.

Shortcuts For FL Studio
Some helpful keyboard shortcuts that'll make working with FL Studio much easier:
Toggle Step Sequencer — `[F6]`
Toggle Mixer — `[F9]`
Send to Piano roll — `Alt] + [P]`
Toggle Piano Roll — `[F7]`
Toggle recording countdown — `[Ctrl] + [P]`
Next pattern — `[+]`
Previous pattern — `[-]`
Solo step—`[Ctrl] + [1] to [0]`⬛

rossi.fernandes@thinkdigit.com

Computing For Everyone

I'm looking for the cheapest (respectable) PC configuration I can get my hands on

This is for the reader who e-mailed me recently—he was finally building his first PC after a number of years of reading *Digit*. He had a very modest budget, and wanted something that would *work*—allow him to use MS Office, and run Windows XP. I decided to build a *good* PC from scratch, for those on a very tight budget. At the same time, I want some sort of future-proofing—after all, we all know how most users expand their applications for the PC after a few months of use.

I took a trip to Lamington Road last week to check what I could come up with. I was surprised to find single-core processors totally out of stock with most vendors. Dual-cores have well and truly gone mainstream, with the best deals being combo packs. I was faced with two options—the Intel E2140 processor and Intel D945G motherboard is available for Rs 5,350, while AMD's 4000+ CPU is available on a Jetway GeForce 6100 for Rs 100 more. Both processors have comparable performance, but the AMD 4000+ is a little snappier than the E2140, which is a severely cut down Allendale core (Core 2 family). I went for Intel, mainly because the E2140 (1.6 GHz stock) is a very cool product, and overclocks very, very well, and runs very cool at stock. The 945G comes with onboard graphics—a boon for a value PC that doesn't require a graphics card. There is an x16 PCIe slot for future upgrades, however, as well as two PCI slots. For as little as Rs 700, I could get myself 1 GB of generic DDR2 667 MHz RAM; Transcend's 667 MHz value RAM comes for Rs 850. I was thinking 512 MB for price reasons—Transcend (667 MHz) was priced at Rs 500, but I decided not to be too skimpy and went with the 1 GB. For a hard drive, I decided to go with 80 GB, since basic browsing and office work will rarely require significant space. Seagate's ST380815AS 80 GB, 7200 rpm SATA drive is priced at Rs 1,500 and comes with a three year warranty, with doorstep replacement—hassle free.

With my core components chosen, I was at a loss deciding between a CRT and an LCD. Cheap LCDs aren't very clear, and a value CRT is a much better option. I chose a 15-inch LG 500E, which after bargaining a bit came for Rs 3,000. It's a nice screen, and better than a lot of the cheaper CRTs around—just because you're on a budget doesn't mean your eyes should suffer,

right? A multimedia keyboard and optical mouse from Logitech was available for Rs 550—sweet! Next, I went cabinet shopping. I saw a few cabinets from the likes of iBall, Zebronics, VIP and Intex, but didn't like any of the designs. After browsing a couple of catalogues at a few vendors, I came across a value series cabinet from Zebronics called Krish—a neat-looking box decked in black with cooling features like a PCIe vent and CAG duct. Best of all expansion, is good with three external 5.25-inch bays; at Rs 950, this was a must-buy.

For the power supply, I couldn't find anything decent below Rs 1,000 till I came across a 450-watt Adcom power supply for Rs 700. I've had good experiences with Adcom power supplies in the past—one of my old download rigs used Adcom power for over three years.

My DVD writer (yes, budget PCs get to burn DVDs too) was a Liteon LH20-A1H, a 20X burner—very reliable, very cheap, and just Rs 1,350. My last remaining component was a set of speakers; I decided on a non-woofer setup, since speakers can always be upgraded if better music performance is needed later. Creative's Inspire 245 is a gorgeous looker, and at Rs 750, a good deal.

Finally, after six hours and three shops, I've got a PC that will happily run all essential applications, and will even allow moderate multimedia usage—all for just Rs 15,000!

A genuine copy of Windows XP Home OEM costs Rs 3,900. I recommend an original copy for the tech support you can avail of if things go wrong. Instead of shelling out for more software, you can find free essential software like Avast! Antivirus on our CDs every month. ⬛

agent001@thinkdigit.com

Here's my Ultimate Value PC:

Component	Model No	Price
CPU + Motherboard	Intel E2140 (1.6 GHz) + Intel D945G	Rs 5,350
RAM	1 GB Transcend Value DDR2 667	Rs 850
HDD	Seagate ST380815AS 80GB SATA	Rs 1,500
Monitor	LG E500 15" CRT	Rs 3,000
Keyboard + Mouse	Logitech multimedia combo with optical mouse	Rs 550
Cabinet	Zebronics Krish	Rs 950
Power Supply	Adcom 450 watts	Rs 700
Optical Drive	Liteon LH20-A1H 20x DVD Writer	Rs 1,350
Speakers	Creative Inspire 245 2.0	Rs 750
	Grand Total	**Rs 15,000**

Chaitanya Surpur

Want more of Agent 001? Turn over to read his answers to your buying questions

Dream Come True

I have put together my dream gaming rig after quite a lot of research:
ASUS P5E3 Deluxe, Intel Q6700, Corsair TWIN3X2048-1333C9 G, ASUS GeForce EN8800GT 512MB, Samsung SpinPoint T166 HD321KJ, Lite-On DH-20A3S DVD writer, CoolerMaster eXtreme Power 600W PSU, Antec TX1088AMG cabinet, Logitech G5 Laser mouse, Microsoft Natural Ergonomic Keyboard 4000. But all this performance comes down to the screen I'm using. Please suggest the one with the best performance in the 20 to 22-inch size category. My budget is Rs 15,000 to 16,000. Also, comment on the above configuration and suggest any improvements.

Reuben "Re. J" James

Firstly, your system is very good, and a true gaming rig—congrats! Secondly, I suggest a 22-inch monitor for that budget. Look at Dell's E228WFP or BenQ's FP222W—two of the better panels I've come across. If you must go 20-inch then the Dell SP2008WFP is a very good buy.

Reviving An Ancient Rig

I want to buy a new motherboard which supports an old 478-pin Intel Pentium 4 processor, and 512 MB DDR RAM at 333 MHz. I also want a 256 MB graphics card and an SMPS (for gaming) in same budget even if the performance increment is mediocre. Help!

Sumit Lal

An upgrade would still leave you well behind the hardware curve, and enjoying most year-old games would be well beyond your setup. DDR memory is still available, but the price would be around double the price of DDR2 memory, simply because nobody is manufacturing DDR anymore. Assuming your motherboard even has an AGP slot you're out of luck, unless you manage to find an older GeForce FX5200/5500 or a 6200 graphics card. What I suggest is a complete upgrade after some saving up. Invest in a DDR2-based rig and a Core 2 Duo processor and you'll be well set for another two years or so. You'll also have a plethora of powerful and affordable PCIe graphics cards to choose from.

Beyond Onboard

Hi, I have an AMD Athlon 64 X2 4000+ Processor with an MSI K9N6GM (NVIDIA GeForce 6100) motherboard, 2 GB of DDR2 800 Mhz RAM and Windows Vista Home Premium. I am not satisfied with the graphics performance. I can't run games like *NFS Pro Street* or *Call Of Duty 4*. Can you please recommend a good NVIDIA GeForce graphics card? My budget is Rs 4,000 to 5,000.

Sumith Mohan

I suggest you save up a bit more and invest in an 8600GT-based card—its performance far surpasses the 8400GS and 8500GT chipsets which are priced around your budget. The 8600GT is a *real* mid-range offering, unlike the 8400GS and 8500GT which are meant more for powerful HTPCs rather than gaming setups.

The ASUS EN8600GT costs around Rs 7,000, and is terrific for the price.

Sight And Sound

I need a PCI Express graphics card, and my budget is Rs 10,000. I am also planning to buy a good set of headphones for Rs 1,000. What can I get for that budget?

Anonymous

For Rs 12,000, you can swing a sweet deal—an 8800GT-based card which will satisfy all your gaming needs. A whole lot cheaper is the 8600GT (Rs 7,000) chipset but this is also around 250 per cent slower. Creative's EP630 are in-ear plugs available for Rs 900 and deliver outstanding sound for the price. Among the larger circum-aural sets, the Sennheiser HD201 is available for around Rs 1,400.

Finally!

I have saved a little bit, and finally want to go for the long-pending dream—my own desktop PC. My budget is about Rs 40,000 (keeping away Rs 5,000 for Windows Vista). This includes everything, literally (what I mean is, the motherboard, processor, graphics card, DVD writer, cabinet, monitor, mouse, keyboard, SMPS, UPS, speakers). My main purpose would be movies and games. Although I know the budget does not suffice for the aforementioned, please suggest whatever you can. I want to play *Far Cry*, *Prince of Persia—The Two Thrones*, etc. But, if somehow *Crysis* runs on it, I'll be thrilled!
After taking into consideration the Zero1 Awards I have zeroed on the following:
1) Hard Drive—Western Digital Caviar SE16 WD3200AAKS 320 GB
2) Graphics Card—ASUS EN8600GT
Please, don't tell me to expand my budget much. The reason is simple, I can't. Also, I can wait for another month or two if necessary. So, if there is a probable price slash looming ahead...

Koustav Bhattacharya

Rs 40,000 is a good budget, although keeping in mind you also want to buy Vista you'll have just 35,000. Why not keep your hardware budget at Rs 40,000?
The ASUS EN8600GT is a very good card, and you can't go wrong there. For the hard drive, I recommend the new Seagate 250 GB 7200.10 series, which is a single-platter drive and costs Rs 2,800 now. It's a superb buy and is blazingly fast, too. ⬛

Ask Away!

Want a tech product, but don't know how to go about buying it? E-mail agent001@thinkdigit.com with your complete contact details, and he might answer them here! Please note that Agent001 only answers purchase-related questions in this space.

Agent 001's Recommendation

		Price
Processor	Core 2 Duo E6550	Rs 6,400
Motherboard	Galaxy 650i LT	Rs 4,800
RAM	2 x 1 GB Transcend DDR2 667	Rs 2,200
Graphics Card	ASUS EN8600GT	Rs 7,000
HDD	Seagate 7200.10 250 GB—single platter disk	Rs 2,800
Monitor	Dell E198WFP 19" LCD	Rs 11,000
Keyboard + mouse	Logitech	Rs 500
Cabinet	Zebronics / VIP	Rs 2,000
SMPS	VIP 500W	Rs 2,000
	Total	**Rs 38,700**

Memory Matters

So how does Flash Memory really work?

Bhaskar Sarma

Most of you know that the most compact memory type is called Flash memory. Currently, Flash memory is most popularly available as USB drives, cell phone or camera memory, portable media players (PMPs), handheld consoles, and even laptops—basically anything that's built to be portable. There's even talk of Flash replacing the bulky and power-hungry hard drives that have been around for ages. Flash too, is not very young, and was invented by Dr Fujio Masuoka in 1964, while he was working for Toshiba.

Gates And Stacks

At the most basic, microscopic level, flash memory is composed of an array of floating gate transistors called cells. These cells are of two types: NAND (Not AND) and NOR (Not OR). The cells are also classified in two ways depending on how they store data—binary 0s and 1s: SLC (single level cells), which are older, can store only one bit at a time, while MLC (multi level cells) store more than one bit per cell by varying the electrical charge. Obviously, MLC devices will be able to store more data per unit area than the

legacy SLC devices. Such devices are already in the market, and though they cost more than SLC ones, research is on to cut costs and make them more available.

Unfortunately, the laws of physics set a limit on the amount of miniaturisation possible—too much, and leakage of electrons causes data loss. Multi-level cells are created by stacking two "dies" of the same size, hence doubling the capacity. This is the type of memory used in iPods. However, though MLCs double the capacity, they also reduce access speeds.

NAND vs NOR

NAND and NOR flash drives have considerable differences. Those with NOR gates provide high speed and random access to data. This means that data can be read and written to any location in the memory without having to access the memory blocks sequentially. The minimum information that can be retrieved from a NOR flash is 1 byte. This makes NOR suitable for use in BIOS chips and for storing mobile phone firmware, where high-speeds and minute data transfers take place.

NAND, on the other hand stores and retrieves data sequentially, one block at a time. It also has a fixed lower limit below which it cannot transfer data. This data is usually what resides in an individual block, also known as pages. NAND flash memory is used for data storage and can be found in external hard drives, pen drives, memory cards and the like. NAND drives typically have higher capacities, and are cheaper.

Formats

For use as a data storage medium, NAND flash comes in several formats. The oldest is SmartMedia, with other newer standards like MultiMediaCard and CompactFlash. MultiMediaCard (MMC) has a new avatar in the form of the Secure Digital format, which itself has several component formats such as SDHC (Secure Digital High Capacity). MicroSDHC, microSD and miniSDHC. Most of these cards are used in consumer electronic devices such as cameras and mobile phones. Besides, there are several proprietary standards like Memory Stick (Sony) and xD Picture Card (Olympus, Fujifilm) that are used in products made by specific manufacturers. A newer standard, UFS (Universal Flash Storage) is being developed by a consortium for release in 2009, and will be backward-compatible with present formats.

New Hope

Manufacturers are aggressively working to increase data densities and reduce costs. A 3D flash technology is being developed that inserts silicon columns between layers, instead of trying to stack multiple layers. Although not immediately available on the shelves, you can hope to see such flash cards and devices in a year or two. ⊠

bhaskar.sarma@thinkdigit.com

A flash cell is made up of two transistors separated by a thin oxide layer. These transistors, either NAND or NOR, are called floating gates and control gates. A floating gate is connected to the array by a link called the wordline, which passes through the control gate, as shown in the figure. When the link is connected, the value of the cell is 1, which is the default state. To change the value to 0, a process called tunnelling is used. The process is simple—apply enough charge to reverse the direction of flow of electrons. Data is erased when a voltage of about 12 to 15V is applied to the blocks. When the charge of a block is over 50 per cent of this value the bit state is 1; less than 50 per cent means the bit state is 0.

External Portable Hard Drives
WD Passport Portable (Black)
- Excellent performance, good value
- None in particular

Contact Champion Computers Pvt Ltd
Phone +91-11-26214751
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 +91-11-26214751
Web site www.championindia.com
Price Rs 4,500

Internal DVD-Writers
Samsung SH-S203
- Performance, inexpensive
- None in particular

Contact Samsung India Electronics Pvt Ltd
Phone +91-11-41511234
E-mail c.serrao@samsung.com
Price Rs 1,200

Internal SATA Hard Drives
WD Caviar SE16 WD5000AAKS
- Fast transfer speeds
- None in particular

Contact Champion Computers Pvt Ltd
Phone +91-11-26214751
Web site www.championindia.com
Price Rs 7,500

MP3 Player above Rs 10,000
Cowon D2
- Very good performance
- Slightly bulky

Contact Lipap Systems P. Ltd
Phone +91-9819917440
E-mail iaudio@lipap.com
Price Rs 11,000

Digital Cameras (High-End)
Canon PowerShot A570 IS
- Good overall performance
- Lacking in macro performance

Contact Canon India Pvt Ltd
Phone 1800-345-3366
E-mail info@canon.co.in
Price Rs 13,995

Graphics Cards (High-End)
Galaxy GF8800Ultra
- Sheer performance
- Heats up

Contact Technology and Gadgets
Phone +91-22-23823331
Web site technologyandgadgets.com
Price Rs 35,000

Graphics Cards (Mid-range)
ASUS EN8600GT
- Well priced, fast
- None in particular

Contact Asus Technology Pvt Ltd
Phone +91-22-67668800
Web site http://in.asus.com
Price Rs 8,800

Desktop PCs
Sahara 20CK16
- Great performer
- Slightly bulky

Contact Sahara Computers & Electronics Ltd
Phone +91-120-4397777
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 +91-22-30616666
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 +91-22-67668800
E-mail media_india@asus.com
Price Rs 15,870
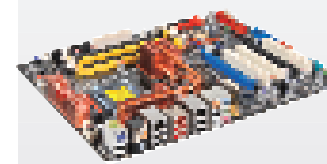
Intel Integrated Graphics Motherboards
Gigabyte GA-G33-DS3R
- Very good layout
- Expensive

Contact Gigabyte Tech India Ltd
Phone +91-22-30616666
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 1800-345-3366
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 +91-44-42042565
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 +91-124-2566111
E-mail kakuni.mahto@hp.com
Price Rs 6,999

The A-List

The best products tested so far in different hardware and software categories

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Wi-Fi Access Points
Linksys WAP54G
- Great performance
- None in particular

Contact Ingram Micro India Pvt Ltd
Phone +91-9323112279
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 +91-22-66345758
E-mail mail@kunhar.com
Price Rs 8,500

MP3 Players up to Rs 5,000
Apacer Steno A4351
- Good performence
- Tacky build, Screen quality

Contact Apacer Technology
Phone +91-80-25702208
E-mail suraj_raina@apacer.com
Price Rs 1,720

MP3 Players up to Rs 10,000
Samsung T10
- Good music quality, nice screen
- Tacky exterior

Contact Samsung India Ltd
Phone +91-11-41511234
E-mail jitendra.c@samsung.com
Price Rs 6,600

Processors
Intel QX6850 Core 2 Extreme
- Extreme performance
- Expensive

Contact Intel Tech India Pvt Ltd
Phone +91-9833823474
E-mail saranya.rustagi@intel.com
Price Rs 52,000

Projectors
Acer PD726W
- Great overall performance
- Lacks remote sensor at rear

Contact Acer India Pvt Ltd
Phone +91-9880544226
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

Multimedia Cell Phone above 20,000
Nokia N95 8 GB
- Great all round performance
- Slightly bulky

Contact Nokia India
Web site www.nokia.com
Price Rs 28,000

Below Rs 12,500
Sony-Ericsson W910i
- Great sound
- Flat and clumsy keypad

Contact Sony Ericsson Mobile Comm. India Pvt Ltd
Web site www.sonyericsson.com
Price Rs 19,000

Business Device
Nokia Communicator E90
- Extremely powerful
- Heavy, bulky

Contact Nokia India
Web site: www.nokia.com
Price Rs 40,499

Value Executive Phone
Nokia E51
- Loads of features
- None

Contact Nokia India
Web site www.nokia.com
Price Rs 13,000

Office Inkjet MFDs
HP Photosmart C4188 All-in-One
- Good print quality
- No fax

Contact HP India Sales Pvt. Ltd.
Phone +91-124-2566111
E-mail kakuni.mahto@hp.com
Price Rs 7,999

PC Webcams
Logitech QuickCam IM
- Strong performer
- Manual focus

Contact Compuage Infocom Ltd
Phone +91-22-65297356
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 +91-124-2838700
E-mail response@logitech.com
Price Rs 8,000

Performance Laptops
HP DV6226tx
- Funky Looker, features
- Needs better graphics

Contact Hewlett-Packard India
Phone +91-124-2838700
E-mail tapoti-t.tipnis@hp.com
Price Rs 56,990

Shortcuts To Geekdom

Samir Makwana

Enhance your keyboard wizardry, and know what's really going on behind the scenes in Windows

www.keyxl.com

Using a GUI without a mouse might seem insane at first, but you see these people around you every now and then, the types who seem unaware that there's a mouse by the side of the keyboard. Keyboard shortcuts save time—precious seconds of your day, to be precise—but more importantly, it's one more fun skill to show off, and it saves you from moving your hand between the two devices.

You can find 3D objects for free download, and much more!

KeyXL has the largest database (believe it till we discover otherwise!) of keyboard shortcuts—you'll find shortcuts for Windows, Linux, Mac, and popular Web applications. Even the latest software—like Photoshop CS3—figure, and there's a short description with each shortcut. As a matter of fact, you can learn complicated software more quickly once you know, memorise, and practise the keyboard shortcuts. The ever-useful search field is there on the main page, and you can search for shortcuts for various software.

Shortcut lists for different programs are constantly being added, and you can submit your own list(s), too.

If you need to make, say, a budget plan or a consulting agreement, the first step would be to visit **docstoc.com** to find the right starting document. The site is an online document sharing community where you can post, view, download, comment upon, and rate thousands of documents, searchable category-wise (registration is required to comment or rate). The tabs you'll see are Legal, Business, Financial, Technology, Educational, and Creative.

The document collection here can be classified into three broad categories—Business / Legal, Educational, and other user-generated material. Business / legal templates and documents can be reused after modification.

As an example of the broad variety of documents available, if you're looking for a specific legal document, the Legal tab brings up several sub-categories: Contracts, Employment, Family, Forms, Incorporations, IP, Real Estate Agreement, Wills & Trusts, and more.

www.processlibrary.com

When an OS takes ages to load, hangs, and eventually dies, it's time to take a peek into system processes. Many simultaneous processes run silently on your computer. It's generally not possible for you to know what a process (say, "lsass.exe") does—the Task Manager doesn't state anything about it! ProcessLibrary.com is recommended for when you find yourself in such a situation.

ProcessLibrary is a comprehensive online database and reference source about system processes along with spyware and Trojan threats,

Process library is, well, a library of processes

and it's all explained in simple English. You can get to know about the nature and purpose of the processes that should run on the system, and which ones are unwanted or suspicious and should be terminated.

The Library tab shows a list of processes, information about each of which is available on the site. When you narrow it down to a particular process, say *svhost.exe* or *AlrtIntl.dll*, you'll have an explanation about the process and its path detail, as well as the level of threat it carries—you can check the Security Risk (Spyware, Virus, or Trojan) associated with the process .exe or .dll. On the same page, you'll see a box on Removal & Security, which offers you the options to perform a free scan. Also, using that software, you can "boost"—as in fix—the process you're looking up.

www.docstoc.com

Docstoc is your one-stop doc shop

There are also educational documents like research papers, term papers, and other study material for students as well as teachers. Creative and user-created material like *Learn Japanese (in English)*, various user guides, tips & tricks, tutorials, scripts, e-books, articles, etc. also figure in the document database.

Take a look around; it's a great collection! You'll find documents ranging from *Asset Purchase and Sale Agreement* to *Configure DNS in Linux* to *How to control your brain at will*. They're categorised, but there's a virtually unlimited range of documents available. We really can't go into more detail—this site is a must-visit!
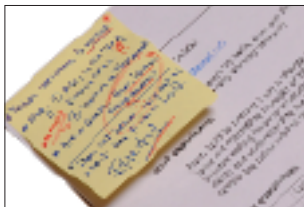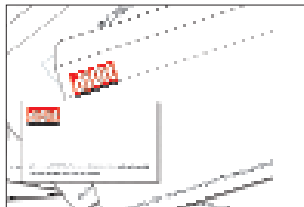
Smart Business

The Customer is King

Nimish Chandiramani

It's already widely accepted that Customer Relationship Management (CRM) can boost your business significantly, not to mention make your customers happy—what if you could implement it for your company at little or no cost?

Consider this: you've called up, say, your mobile service provider to resolve an issue you're having with your connection. Once it's been addressed, the customer service executive informs you of a special offer on tariffs—you think, "Ah! This fits perfectly with my usage", and accept the offer. You disconnect, satisfied and impressed. No coincidence, this—if you've ever been satisfied with customer service, it's because your service provider is using a Customer Relationship Management (CRM) solution that gives them all the information they need to know what will make you happy.

What And Why

CRM solutions let you do just that—manage your relationships with customers—making sure that service requests are responded to in a timely manner, for instance. For you as a businessperson, it means that all your customer information is consolidated in one database, making it easier for you to identify opportunities for further sales. Like the example above, a CRM solution will let you track all your customers' history, so when you start a new sales campaign, you'll know which customers are likely to buy your product. You'll get your income, and your customer will walk away satisfied, which will eventually translate into even more income. Everybody wins.

Indirectly, you'll even be able to better your products (or services, as the case may be). For example, if your customers are having trouble with a certain feature in your product, you can use this information to amend the product's manual, or even change the product itself.

Before you decide to opt for a CRM solution, however, you should ask yourself whether you really need it. If you handle a lot of repeat business, then you'll benefit tremendously from a CRM solution—especially if your sales force isn't the size of a battalion. Even a small travel agency, for example, may have a few thousand loyal customers without having more than ten employees. With a CRM solution, the agency can track feedback on customers' trips, their suggestions, their travel patterns, and based on all that information, keep them informed of special packages that they're most likely to purchase. By targeting the right customers for a package, salespeople won't waste their time listening to the dreaded "Not interested". In fact, they'll be able to handle even more customers with the same effort!

If, on the other hand, you're always trying to snag new customers, and your existing customer database is for reference only, a contact management solution will work, and won't be as much of a headache to manage as a full-blown CRM system.

CRM solutions are typically big investments, but the cost of "commercial" open source software is significantly lower than a

proprietary solution. *Commercial Open Source* means that the software and source code is available free of cost, but you pay for additional features, customisation and support. If you're comfortable with that, you can download the software, deploy it on a server and get cracking right away...

Give Me Some Sugar

Most commercial open source CRM solutions offer you a free online demo, so you can see which one works best for you. After foraging a little, we're very impressed with SugarCRM—it's undoubtedly popular (the site claims over 500 downloads a day), and is definitely one worth considering. It's available as a free Community Edition, or you can choose to purchase one of their paid solutions. Sugar On-Demand is an option you could consider if you don't want to host the software yourself—it's hosted on SugarCRM's own servers, and available to you from wherever you have access to the Internet. At $40 (Rs 1,600) per month per user (for Sugar Professional; $75 (Rs 3,000) for Sugar Enterprise), it might be worth it if you'd end up spending more on the IT infrastructure.

Sugar's interface can look a little scary—it aims at large enterprises as well—but once you start exploring it, you'll see that it's logically laid out, and you're always only a couple of clicks away from the information you need. When you log in to the system, you see a list of things that demand your attention—calls you have to make, issues to resolve, meetings for the day and so on. There's also a Jotpad to type notes to yourself. Your individual home page is fully customisable, and you can drag the "dashlets" around to suit your needs. You can also add more dashlets, including a *Space Invaders* clone for those slow days.
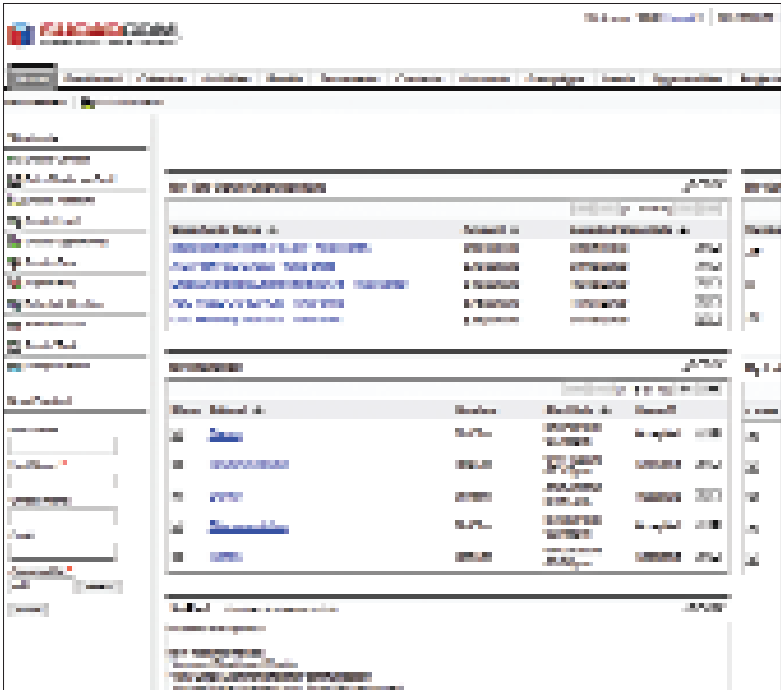
Flash-based tutorials on Sugar's Web site ease your learning process

The tabs at the top are self-explanatory—click on them to manage contacts, customer accounts, marketing campaigns and so on. They also let you manage sales leads—people who are your first contacts before a deal is finalised—and potential sales opportunities, so if one salesperson is unavailable, another can follow up with the lead and close the sale. This ensures that your income isn't affected if unforeseen circumstances put a salesperson out of commission.

The row of links under the tabs shows you areas that you've visited recently, so you can get back to, say, a customer account from the Opportunities screen in a flash, without having to search or navigate a list all over again.

Sugar also has an online library to help you get started with the software—just click on the Training link at the top right. You can also view a number of Flash-based demos on their Web site—**http://www.sugarcrm.com**—which will walk you through using and administering Sugar.

And now, to ensure that you don't end up with a dirty database...

Keeping It Sane

What good is a tool for creating a customer database if the data itself is garbled, duplicated many times over, or just plain inconsistent throughout? Bad quality data can be the bane of a good CRM system, but it's fairly easy to avoid if you address the problem before it even begins. You'll need to set down rules for using your CRM system, and ensure that everyone knows them.

First of all, access rights—you'll need to decide who gets to create, edit or delete customer records. With a proper access hierarchy, you'll ensure that data is manipulated only by people who know what they're doing.

Sugar's home page gives you a quick run-down of what's expected of you today

Second, enforce a policy to check for duplicates before creating any new customer accounts. This is crucial for new salespeople on your team, for whom customer names won't be familiar at all. Duplicate records might have annoying consequences—a support request on one record may go ignored because everyone was referring to the duplicate, for example.

Third, decide on a convention for company names and acronyms—whether you're going to use IBM or I.B.M., for example. The same applies for places—whether you're going to use Delhi or New Delhi, for example. This will prove handy when you're searching for customer records. Also, decide how you're going to use uppercase letters—whether data will all be in capitals or title case (the first letter capital). You'll notice the former in a lot of bulk e-mails that you get; it involves less effort—no worrying about the [Shift] key ever—but isn't visually appealing at all.

To make it easier for you to track your sales team's progress, decide on when the system is to be updated—would a salesperson create a new entry as soon as the customer is acquired, or wait till the end of the day to key in all the day's customers?

Finally, spellcheck—typos in your e-mails look very unprofessional. When speaking to a customer, make sure the spelling of their name is verified—misspelling a name is a very effective way of having your e-mail deleted in a second.

If you've already got yourself a messy database, there's no better way to fix it than to start getting in touch with customers again—you'll be able to get updated data, and re-connect with your customers, so to speak.

Other Options

If you're not a large company, it doesn't make sense to even consider a proprietary CRM solution—licenses can go as high as $995 (Rs 39,800) per year for just five users—it's the commercial open source solutions we'll stick to. DaffodilCRM (**http://crm.daffodilsw.com/**) is another promising solution—not quite as polished as Sugar, but quite usable. Their online demo is down as of this writing; you might have to download and deploy it to check it out. A big plus is that the company's based in India, so you'll have better access to support. The support plans, however, are a tad unreasonably priced for our tastes.

CentricCRM (now ConcourseSuite—**http://www.concursive.com/**) has also been well-received online, and unlike other open source solutions that are AMP (Apache-MySQL-PHP)-based, this is based on the J2EE platform. Setting it up on your own server can be tricky—you'll have to compile the source code yourself—so the on-demand option is much better.

Bottom line: no matter which solution you choose, you'll see significant benefits to your business before you know it.

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Handle
With Care

Your paper resume isn't the only thing potential employers are looking at. Your life, your friends, your hobbies—if it's on the Web, they can see it

Bhaskar Sarma

What do most of us do when we fire up our browsers first thing in the morning? Chances are, apart from checking e-mail, we log in to social networking sites to check up on friends and acquaintants. This trend is more noticeable with the current generation of professionals, many of whom believe that e-mail is so last century. If you are in the age group of 15-30, when was the last time you had e-mailed a colleague to enquire whether he or she would be there at the office party this Friday?

As places to hang out, have fun and meet people from all over the world these Web sites are the online equivalent of the office watercooler. Most of them offer features like writing short messages to friends, uploading pictures and videos and projecting a unique identity by customising profiles. Still other sites focus exclusively on sharing photos and videos, and thereby aim at creating a community. In fact, we've covered these sites exhaustively in our *Fast Track To The Social Web*. What we haven't

talked about is their impact on individuals, and the feeling of freedom they grant us. For every LinkedIn that could get you a job, there's an Orkut that could result in your losing it.

Responsible Behaviour

With that freedom—to paraphrase the Indian Constitution—comes responsibility. And for a change, this responsibility is not towards society or the country—it's towards you. In the *laissez faire* world of social networking, it's almost too easy to go astray. With the absence of any accountability or the need to face people personally, users are tempted to spice up their profiles and adopt a completely different persona. Peer pressure also adds a lot to this multiple personality syndrome: after all, we all want to look great and have more friends or messages from the opposite sex. And if those people are good looking, you are guaranteed to be the talk of the campus and the heart of the party. In fact, there are sites where you can hire models to be in your friend profile: they will also message or scrap you with sentences that don't look like they have been spewed by a chat bot. Choices are yours—the sky is the limit. You might even become an Internet celebrity based on a YouTube video: a case in point is Lonelygirl15, a "teenager" who posted a series of videos where she talks about her lonely life, and which were followed by millions of people as avidly as they would follow a blockbuster TV show. That she was later revealed to be an actress and those videos were professionally shot is another matter.

The point is that people can draw erroneous conclusions based on your online presence—they say that on the Internet, a dog could be a man, and nobody would know. The reverse is also unfortunately true. The Web is a biased judge, jury and executioner all rolled into one. For example, not so long ago the gruesome pictures of Nicole Castouras, a young girl killed in a high speed crash were leaked by officers of the California Highway Patrol. Those pictures eventually appeared in more than 1600 Web sites and made life hell for the Castouras family, who had to repeatedly endure the sick photographs of their daughter's decapitated body posted on these sites and also mailed to them, some accompanied by comments which insinuated that she got what she deserved.

Many A Slip

It doesn't take gruesome accident pictures to ruin your reputation and peace of mind. Your Orkut profile is just as effective. Think about it: while you are in the race to impress your peers by snagging the most number of female friends and updating fake photos which show you off as über-cool, there are some other people out there that would possibly take a dim view of this whole scenario. One group is your family; another group is potential and present employers. For the purpose of this article, let's focus on the latter.

By default, profiles, photos, videos and such other badges of identity in most networks is public. They have to be—there is no point in
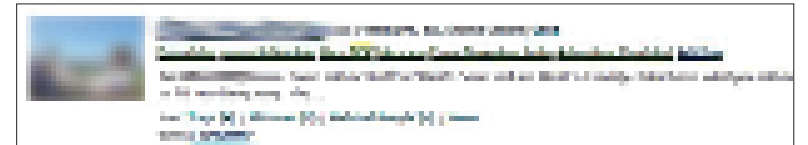
We'd guess you don't want your boss to see this

First impressions are incredibly hard to dispel, and "sensitive" keywords always raise warning flags in minds of prospective employers and partners

slaving over your profile and leaving it to be seen by three friends. But there is a downside to all the attention-mongering: you can be searched for just as easily by people from whom you'd prefer to not know that side of your personality. Search engines accomplish this in seconds with a few carefully chosen keywords. General search engines like Google, as well as people search engines like Spock—which specifically crawl most social sites—throw up profile photos, interests, books you read, movies you saw and a hundred other details. Oh, and another thing: Google caches Web results for years. If you had led a wild life which was reflected in your older MySpace profile and posted a few NSFW (Not Safe For Work) photos, be assured that someone will still be able to access it even after you became respectable and deleted them.

Since it is always better to show than talk, we fired up Spock. Here you can search for persons by name and/or e-mail ID, while more advanced search options let you narrow down the search by age, sex, location, tags and picture. We entered a few sufficiently generic names—we won't mention the—and entered the tag "sex". A second later, the whole page was full of profiles where the "sex" word was either in a TV show or in the name of a movie or a book they recently saw or read. Later in the page, we hit paydirt: people who've put "likes sex" (along with books, movies and what not) on their profiles. Oops! While we won't be judgemental, and wish them the best of luck, we can bet that when any of them walks into a room with a Web 2.0-savvy interviever, their applications will be looked at with at least one raised eyebrow.

Employees In Sights

That's actually sad, because many of them might have made those profiles just for fun. But first impressions are incredibly hard to dispel and such keywords always raise warning flags in minds of prospective employers and partners. Videos and photographs can also get out of hand pretty fast and become viral. While job oriented Web sites allow candidates to post video resumes of themselves, putting irrelevant material there would risk your present and future job prospects, especially if it showed off your tap dancing skills with a half naked partner, and if it ever got popular on YouTube. As a candidate, we always research prospective employers, looking not only at financial reports but also how good the work environment is. It stands to reason that employers would also check not only our academic background, but also our social background as reflected in such sites. As Ulhas Aher, HR Head of Datacraft—a unified com-

munication solution provider says—"I have used sites like Orkut and LinkedIn for recruitment purposes. The candidates express their likes and dislikes which is a representation of their character. These sites are also great for serving up sources of unbiased reference".

These checks continue even after the candidate is hired. A search on Orkut would easily bring up several communities dedicated to corporations, large or small. These communities are informally monitored by interested managers to get a feel of what employees think about their workplace. Preferring to remain anonymous, an HR executive in an MNC based in Hyderabad confirmed this trend, "Our department keeps an eye on these communities and if they see something objectionable, often contacts the immediate superior of the

If the "worst boss ever" read this, they'd end the posters' misery rather quick, we'd say

concerned employee. Depending on the comment, appropriate action might be taken. We also unofficially check the profiles of new hires: even my profile was checked out by my boss before I was hired." While cases of firing a person based on his comments about the boss's paunch or the company cafeteria are not heard of, there is every possibility that such disclosures would be viewed dimly and harm inter office relationships.

To Blog, Or Not To Blog?

Blogs are another potential landmine in the context of work life balance. They started off as personal journals where people talk about anything they want to—in some cases, that might also be about work: problems with colleagues and superiors, new things that are happening at the office, criticism of policies and so on. While this is all very well on pen and paper in a private place, they are a strict no-no in public places like blogs. Just ask Matthew Brown, who was given the pink slip by Starbucks for criticising his boss on his personal blog!

With companies starting their official blogs, this medium has attained a modicum of official acceptance. Official blogging, though, is another no man's land without historical precedence. While corporate blogs aim to

With companies starting their official blogs, this medium has gained some acceptance in the workplace

project an image of the organisation that is different from the image projected by press releases or PR agencies, quite often there are misunderstandings where individual bloggers might inadvertently or maliciously show the company in poor light. Not many have an official blogging policy or official bloggers, which leads to incidents like the furore raised when a Google employee commented negatively about Sicko (Michael Moore's documentary on healthcare) on the Google Health Advertising Blog   (**http://google-health-ads.blogspot.com/ 2007/06/does-negative-press-make-you-sicko.html**) , thus imparting an official slant to her personal opinion. There have been other cases where people have been fined, demoted or fired for leaking company secrets on such blogs.

Netiquette 2.0

As we have e-mail etiquette and social etiquette, there is a crying need to develop a set of conventions where social networking is concerned. The rule of thumb while you use Web 2.0 is: ask yourself if what you have intended to be seen by friends can also be shown to your boss. If the answer is no, don't post it—your boss might see it anyway. Social sites like Facebook have privacy controls where you can make your profile viewable only to a select group of people: use them, and even then refrain from keeping a half-naked picture as your profile photo. Don't use the e-mail ID which appears in your official communications. When blogging, don't talk about controversial topics related to work and keep your blog profile temperate. You also need to be careful of what friends are saying about you. As in school, you are known by the company you keep on the Internet too. Be careful in posing for photos in say, a beer party or a strip club and request your friends to remove such photos from their profiles. You might come across as a party pooper, but that's better than generating negative impression on an interviewer's mind and losing that dream job. Even if you aren't affected now by the exuberant description of how you streaked across the campus in your second semester, these things might haunt you when you are applying for top management positions. It didn't affect George Crump, allegedly the world's first streaker from becoming a Congressmen and an Ambassador to Chile because, you see, way back in 1804, there was no Internet.

Then, there is always the danger that someone (a business rival or resentful ex) might create a fake profile on social sites and fill it with provocative details that make you seem like a nymphomaniac or a Casanova (as the case may be). In fact, cases like this related to Orkut have been reported in the Indian media *ad nauseum*. In such cases the affected parties might have to take legal measures to salvage their reputation; the best course to adopt is always discretion, caution and constant vigilance.

You never know who's watching you in cyberspace. ◼

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digit

Get Self-published

Publishing needs are universal—here are publishing solutions that yield professional results, without the need for hiring professionals

Nash David

SoHos have publishing needs that have no end—brochures, fliers, bulletins, business cards—the list just goes on and on. Saving money is what SoHos swear by in order to stay competitive, and we're here to tell you just how to get it done.

Desktop publishing is the need of the day, and many SoHos are outsourcing their requirements. Why? Because even though their desktop publishing may not require the professional touch of an agency, the software that is used to achieve professional looking results will cost them an arm and two legs! Quark Express 7—about Rs 32,000! Adobe InDesign CS3—almost Rs 28,000! There's no way most SoHos can justify such expenses, especially for occasional publishing needs. That's where free and open source software comes in, and all you have to do is look around to find one that suits you. We found PagePlus SE (**www.freeserifsoftware.com**) and Scribus (**www.scribus.net**) to be the best free desktop publishing software—you can find both in this month's CD.

Look Before You Leap

All creative work needs planning. Before you search for software, you need to identify your requirements. Whether it's a brochure you need to make, a flier, or a self-designed visiting card, before you do anything else, sit down with a pencil and paper and try and plan out what you want to achieve. This holds true for any sort of desktop publishing you may have—plan, arrange, execute!

Frame a mental picture of the most appropriate layout of text and images—this aids in faster execution of the task at hand. Go hunting for the best images to suit your requirement—use Google to find royalty-free images, or buy one from one of the many services that offer them. TIFF or PNG images with a resolution of 200 DPI or higher are generally preferred, because although images may seem alluring on your computer screen, results differ once they are printed.

Take The Plunge

Of the two software solutions we mentioned earlier—Scribus and PagePlus SE—we prefer PagePlus: firstly, because it's extremely user friendly, and secondly, because it gives you more useful tools. Scribus, on the other hand, is too intimidating for a beginner in layout.

PagePlus is a flexible and effective solution. After you've installed the software, and before you begin designing, say, your business card, you need to make sure everything is organised. Gather all the relevant text and images—including your company logo—in a specific folder. Use this as your project folder. Now you can start by launching PagePlus.

The first task is to help you design your very own professional-looking business card. To do this, you need to follow some simple steps in PagePlus.
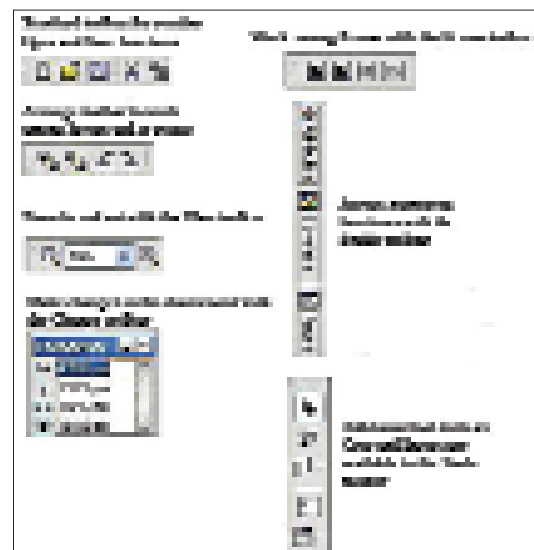
The Right Layout

- Once you launch PagePlus, select the option to `Create my own design`. In the Choose a Design window, select `Small Publications > Wide Business Card`. Wide Business Cards are Landscape-oriented, while Tall Business Cards are Portrait-oriented.
- Before you start work on the card, in order to be certain that you view all the available tools, click on `View > Toolbars` and check all the toolbars.

The Business Card

- The blue rectangle that you can see in the middle of the page is to guide you while aligning the text and images. Similar to a grid in the background, it helps you decide the appropriate position of the various elements in the card.
- Start by inserting your company logo. To do this, go to `Insert > Picture > From file` (or you can simply press `[Ctrl] + [G]`).
- To insert text for your business card, click on the Artistic Text Tool (the alphabet "A") on the Tools toolbar. Alternatively, you can insert text from any file by clicking on `Insert > Text File` (or simply pressing `[Ctrl] + [T]`). You can further adjust the font size, height, width, line spacing and positioning through the Change toolbar.
- Each text or image component forms a box that you can easily move around the page, either by dragging with the mouse or using the cursor keys.
- After inserting all relevant image and text, our next step is to insert a separator, which is a line towards the bottom of that card, separating the address of the company. To insert a line, click on the Straight Line Tool. You will find this tool just below the artistic text tool. After selecting this tool, click on one end of the intended position and drag the mouse to the other end forming a straight line. You can adjust the position of the line by using the up and down cursor keys.
- In the same way, insert the address of your organisation and proceed to view your card by doing a Print Preview.
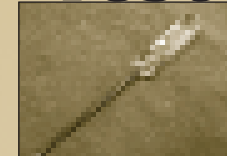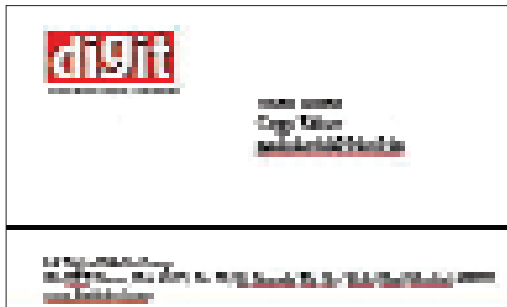
Create professional business cards at leisure with PagePlus

Booklets, Brochures, Fliers And Pamphlets

The brochure we are going to design has four printed sides, created out of a single A4-sized paper. When printed on both sides and folded into half, it yields four pages.

- Similar to the procedure that we followed for the business card, after launching PagePlus, start by clicking on `Create My Own Design`. In the `Choose a Design` window, select `Folded Publications > Books/Booklets`. Select Side Fold Booklet and hit the Finish button.
- Click on the Pages tab of the Studio toolbar located on the right, to see a snapshot of all the four sides. Only one sheet of paper can be used to form the four page booklet.
- To the right of the screen, you can see four sheets of paper laid out as portrait. However, do not confuse these to be four individual sheets of papers. These are the four halves of the two sides of a single A4 sheet.
- Insert your title with appropriate fonts and size for emphasis. For your logo, follow the same procedure that we followed while preparing the business card—`Insert > Picture > From File`. Alternatively, you can click on the Import Picture button on the Tools toolbar. Drag the image to its appropriate size by viewing its dimensions on the Change toolbar. You can also directly type in the dimensions in the Change toolbar to adjust the image appropriately.
- Double-click on `Page 2 of 4`. This opens a fresh page in the work area. You can still see a preview of Page 1 in the studio area on the right of the screen. Continue adding your text and images on this page. Generally, in most brochures, this is where the density of information increases. Hence, to make it really easier, to insert significant amount of text, click on `Insert > Text file` or simply press `[Ctrl] + [T]`, if you are more comfortable with keyboard shortcuts for faster results.
- Continue working on Page 3 and Page 4 in the same way. Once you are done with your work, we recommend that you periodically save using good old `[Ctrl] + [S]`.

Associated Office Stationery

We have created a business card and now a booklet that you can use either as a flier, a bulletin or even a brochure for your product. You'll likely have a lot of mailing requirements, and as a result also require envelopes and address

You get a preview of the other pages on the right

You can easily design letterheads in a similar manner to creating a business card

labels. Customised address labels have great appeal. For example, your logo on the address labels or the envelopes of your letters creates the impression of professionalism when compared to a handwritten address, or one that is simply typed out.

- After launching PagePlus, select `Use Downloaded Designs`.
- In the Choose a Design window, go to `Business Stationery > Envelopes > DL`.
- With an envelope in the main work area, click on the Design tab of the Studio toolbar. Here, you can see a form containing fields such as Company, Address, Phone and other contact details. Fill in all the essential details here.
- These data fields are appropriately displayed on the face of the envelope.
- You can also change the background images, if they do not appeal to you. You can delete the earlier picture by selecting it and hitting the delete button. You can also replace it with a newer image.
- Similarly, for the address labels, click on `Create my own design > Small Publications > Avery Labels`. Select among the options given and hit the `Finish` button.
- Working on this is similar to the documents we have worked on so far—Insert Text then Insert Image!

Wrapping Up

We've dealt with the most common office publishing needs in this article, which should make other publications easier for you. For example, a letterhead is a single A4 sheet of paper. You can easily design one by keeping the layout similar to the business card, with the logo on top of the page followed with a separator. You can place blanks to provide Date and Ref on either side of the page. Finally, a separator and the address at the bottom of the page, and you are done with a professional letterhead.

Time to start publishing! ◼

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Chaitanya Surpur
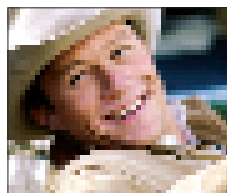
Lead Feature

The
ULTIMATE
Gaming Guide

Gaming is a far better pastime than watching movies, and can be just as cinematic and riveting. But you've got to start somewhere, right? Here you go...

Agent 001

Does the word *gaming* remind you of happy hours spent in front of a Nintendo Game Boy, or does it have you fondly reminiscing with memories of late night *Quake 3* frag sessions? Does a pleasant game of *Spider Solitaire* relax you? Maybe you like to remember yourself poised with a twitchy finger curled around the trigger of your carbine with an enemy's skull in your sights? Gaming brings different levels of satisfaction in different ways to different people and though we Indians are well and truly on the gaming bandwagon, our journey into the realm of interactive entertainment has just begun.

For me, gaming began with classics like *Art of Fighting*, *Contra*, *Mario*, and *Spartan*. The move to PC gaming came around with classics like *Doom*, *Quake* and *Diablo* on an old Pentium 2 machine, and it's been a move from whence there's no return.

But that was in the late nineties—today's gaming market has evolved tenfold. For one, there are more options available. Two—

upgrading your PC isn't the headache it used to be. Three—a lot of consoles vie for your attention—the Xbox, Xbox 360 (X360), PlayStation 2 (PS2), PlayStation 3 (PS3) and Wii, and even handheld consoles like the PlayStation Portable (PSP). In fact, getting into gaming can be daunting for the sheer variety of choice. Not all of us can afford a super-PC, an X360 and a PS3 with a 50-inch plasma screen—resources are limited, and a decision has to be made. If anything, the fact that your cash is going to be spent on leisure rather than work, education or productivity will ensure that your budget is even skimpier. And for good reason too—while spending on a gaming setup, it's all too easy to lose your sense of financial decorum.

Unlike music—where one piece of equipment plays all kinds of music equally well—there's another variable. The platform you choose—PC or console—is going to affect your gaming experience with different genres of games. What plays well on a PC may not play well on a

console, and vice versa. Again, remember that you will probably migrate to different genres as you get more and more involved with gaming. You may, for example, start with racing games and get hooked on FPSes after playing a couple of them, or RPGs may start to interest you. In my opinion, both PC and console make equally good gaming boxes, and which one suits you largely depends on the genre of game.

Speaking of which...

The Genres Explained
Shooters
This is the most popular genre. Such games have, (in general), much easier learning curves, and

offer instant gratification which is why many newbies dabbling in games for the first time start here. Shooters can be of a number of types depending on the type of action and tactics employed, or even the camera angle.

FPS (First Person Shooter):
The most popular type. Characterised by combat from the perspective of the player—as if you are holding the weapon. The best graphics and the most action are generally found in this genre. Some shining examples are *Crysis*, *Far Cry*, *Prey*, *Doom 3* and *F.E.A.R.*

TPS (Third Person Shooter):
These shooters usually take a "behind the shoulder" view to deliver a slightly more cinematic (if less realistic) view to the action. They usually have slightly deeper storylines and a little less violence than FPSes, but this is no hard rule. *Grand Theft Auto 3* (GTA 3), *GTA San Andreas*, *Manhunt* and the *Max Payne* games are examples.

Tactical Shooter:
These are based on either FPS or TPS camera angles, but offer the additional element of stealth. A tactical shooter could also be a squad-based action game where you work with a team to, say, take down a group of terrorists. The best examples of stealth-based tactical shooters are the *Splinter Cell* series, and the *Metal Gear Solid* series. For squad based tactical shooters, *G.R.A.W*, the *Delta Force* series and the *Rainbow Six* series are the best examples.

Shoot 'em Ups:
Games like the *Serious Sam* series simply have one objective—fun. Just shoot anything that moves.

RTS (Real Time Strategy)
Although the RTS genre is as diverse as Shooters, most RTS games have one thing in common—use resources to build up an economy and gradually build structures of different sorts which give you certain benefits like additional units or technology research options. Then build up an army, and attack. RTS games can be very slow or lighting fast. Some strategy games are turn-based as opposed to real-time, where you make a move and wait for the enemy to move (somewhat like chess). For example,

Warhammer, the *Civilization* series and the *Warlords* series are legendary turn-based games. RTS games tend to be a little faster paced, since you actually build, expand and defend in real time. Examples are *Warcraft 3*, *Company Of Heroes*, *Age of Empires* and *Warhammer 40,000*.

RPG (Role Playing Games)
Traditionally, an RPG will have you playing the game as an adventurer of sorts. There are usually classes of characters like wizards, barbarians, bards, rogues and so on, but the classes and the skills that each class has depends on the story's setting. Typically, an RPG tries to create a believable world out of fantasy settings, and you are an individual in that world, living, travelling, eating, sleeping, adventuring, fighting and so on. All RPGs will have some sort of points system, where you get to *level up*, thereby increasing your character's skills—for example, a warrior may be able to perform new moves, or a wizard may be able to cast new spells. *Neverwinter Nights*, *The Witcher*, *Knights of the Old Republic*, *Mass Effect*, and *Hellgate London* are some of the better known RPGs around.

Vehicle Simulation
This is another wide genre, as it could involve a multitude of vehicles from cars, aeroplanes and motorbikes, to fighter aircraft, battle tanks, and even spaceships. Such games can be very serious, simply fun, or somewhere in between. The most common of the vehicle simulators are car racing games—cars are something everyone can relate to. Games like Microsoft's *Flight Simulator* accurately depict flying an aeroplane, while the *Colin McRae* series have you racing in rallies with realism. Games like the *NFS* (*Need For Speed*) series are fun, with hardly any deep simulative nature.

Arcade Fighters
These games usually have you as a combatant in a series of fights against a single opponent or a multitude of other combatants. You will have an array of special moves and powers to aid you, like

All RPGs will have some sort of points system, where you get to level up, thereby increasing your character's skills—for example, a warrior may be able to perform new moves, or a wizard may be able to cast new spells

being able to shoot fireballs from your hands. Games like *Mortal Combat*, *Art of Fighting*, and even classics like *Contra* and *Spartan* fall into this genre.

There are a whole lot of other genres like sports games (football, basketball, tennis, etc.), music based games (want to be a rock star? Play *Guitar Hero*), puzzle solving games, and other fun games like pinball which don't really fit into any specific genre.

So now, let's take a look at your two major options:

PC Gaming: A Window Seat To The Action
How can I not sound biased when I say that I've always been a fan of the computer? Its unmatched flexibility is the key—learn on it, send e-mails, work, listen to music, surf the Internet, watch movies—the PC has something for everyone. It's shockingly adept at each of these tasks, and far from the jack of all trades that it may sometimes appear to be. While consoles cannot even dream of approaching the functionality that the PC offers, they do have one noteworthy advantage where gaming

The best visual treatment, graphics, effects and realism are often found in this genre. Not to mention the most realistic, visceral action. PC gaming's worst proponent will agree when that consoles *suck* at FPSes. They require accuracy and precision while wielding weapons that only a good mouse can provide.

RTSes and RPGs also play best on a PC—this is mainly due to the fact that both these genres have a lot of environment interaction, or even group control of characters or units. Most RTS and RPG games also have a lot of sticky key shortcuts (such as [Ctrl] + [Alt] + [E]) or some other combination, which you simply cannot execute on a console. Most of these games have been designed for the PC, and console versions remain poor ports. Some of the best RTS games like *Company Of Heroes*, *Warcraft 3*, *Age Of Empires* and *Warhammer 40000* all have strong roots in the PC, on which they play the best.

Of course, the PCs forte has been customisability. A variety of keyboards and mice are available specifically for gaming—

LAN, gaming mice are worth a cursory look (at least). My advice is to skip the keyboard unless you really plan to take your gaming seriously—a regular multimedia keyboard will suffice. Note that the mouse is more important for nearly all genres of games than the keyboard, so choose one carefully.

Visually speaking, the PC also delivers the best visual experience. Of course you need a modestly powerful rig, but with the right components, the graphics on a PC will blow consoles out of the water—though the X360 and PS3 have bridged the gap, there's still a decent way to go before con-

is concerned—they were designed specifically from the ground up for that purpose. The X360 and PS3 also have limited Web surfing and movie-watching potential, which simply means that their manufacturers are trying to bring them closer to their competitor...

Games People Play
Computers reign supreme for games of the FPS, RTS and RPG genres. They also match consoles for TPSs and many adventure games, sometimes even overshadowing them. With one or two shining exceptions, the moment you say First Person Shooter, I'll happily point you towards a PC.

Logitech's G15, Microsoft's Reclusa and Razer's Tarantula are gaming keyboards designed to make the overall gaming experience more fun. Such keyboards have a number of additional features like extra configurable buttons, macro keys (keys that can store multiple keystrokes and useful for executing combos in arcade fighting games) and backlit keys (for gaming sans illumination). Mice like Razer's Lachesis, Copperhead and Logitech's G5 and G9 will leaving opponents quaking (no pun!) in their boots.

Whether you're playing your first FPS or starting up a *Quake 3* frag-fest with your friends on a

soles get to where current-generation PC graphics are.

Hardware Requirements
When talking PC, the ugly issue of the "hardware upgrade curve" usually surfaces. Computers aren't exactly easy on your wallet once you try to get them game-ready, and the process of converting a PC into a gaming rig can be expensive! Once you start building a PC for gaming, there's virtually no end to the expenses you can face, and you will also need to save up for at least one upgrade per year!

For the biggest gains keep this order in mind:
1. Graphics Card: This is the

The graphics card is the primary component for gaming, and upgrading it will yield the biggest performance gain

primary component for gaming, and upgrading it will yield the biggest performance hike

2. Processor: Your CPU feeds your GPU with data. The faster the CPU, the faster the GPU will work

3. Memory: if have less than 1 GB, then upgrading your memory to 2 GB can give you a boost of around 40 per cent!

If you are not very discerning about how good your game looks, then a mid-range, Rs 8,000 graphics card will get you through easily. Discerning gamers who want to play the latest games in all their visual splendour will need to keep a budget of around Rs 15,000 for a good card. I recommend NVIDIA's 8800GT-based card (Rs 13,000) to the discerning gamer, and NVIDIA's 8600GT core (Rs 7,500) to the more budget-minded. For the extreme gamer who wants to run games at very high resolutions with all the visual settings kept at maximum, a single graphics card may not suffice. But for the simple reason that PCs get outdated so fast, I don't recommend investing in an SLI or Crossfire (multiple graphics cards) setup.

The second component you need to inspect is your CPU. The faster the clock speeds, the more frames per second you will get in any game. Intel's latest 45 nm Penryn processors (codenamed Wolfdale) are just out. The Wolfdale E8400 which runs at a speedy 3.0 GHz, is priced at just under the Rs 10,000 mark, and is an excellent solution for gamers. In fact, this processor is a killer deal for any kind of fast PC, and I heartily recommend it. If you must have something cheaper, Intel's older 65 nm Core 2 Duo based E6750 (2.66 GHz) is available for Rs 7,900. Quad-core processors are also available, but the two additional cores don't do much for gaming, since most games are heavily single-threaded. The cheapest quad-core is Intel's Core 2 Quad 6600, a 65 nm, 2.4 GHz chip (Rs 11,000). As for memory, opt for a minimum of 2 GB of DDR2 system memory—its dirt cheap these days at Rs 900 per GB—and you're set to go as far as your PC's performance goes. Look for good brands like Transcend, Kingston, and Corsair.

But wait...the devil is in the details, right? A good monitor is essential to get the best out of premium components, and these days the name of the game is widescreen LCD. A 22-inch widescreen LCD will sport a native resolution of 1680 x 1050 pixels, and should cost around Rs 15,000. 24-inch TN panels are in the realm of 19,000 bucks and I feel this is superb value for money. Brands to look out for are Dell, ViewSonic, AOC, Acer, BenQ, Samsung and LG.

Keep in mind that these recommendations are generic, and certain genres of games will run easily on even lower-end hardware. Games like racing games and adventure games (in general) are not as harsh on system requirements as other genres, although there is no hard and fast rule.

Consoles: Single Minded Purpose

Consoles are broadly of different types and the term *console* is used to signify that the gaming station is a device other than a PC. Even the Sony PSP—a tiny

handheld device—is a console in the strict sense of the word. Over the past two years, we've seen a lot of developments in the world of consoles. One serious advantage over the PC remains that consoles are designed keeping games and game developers in mind, and it takes a console a couple of years to mature and to get proper development support. After all, what good is a shiny new, powerful console with no games to play? The PS2, for example, was released in the year 2000, and still enjoys a much larger fan following than the PS3. In fact, it was a title that was released much later that actually sold the PS2—*God of War*. Even the X360 experienced a tremendous boost in sales with the release of *Gears of War*—a third person shooter that was launched a year after the console. Whereas you would have undoubtedly have had to upgrade your PC a number of times from 2001 to 2007 to play games, and spent more than a lakh on components, if you had a console like the PS2, chances are you'd still be enjoying the experience. In fact, the best titles for any console tend to release at least two or three years after the console is launched, that being the period of time it takes developers to churn out a good game.

The X360 is in no way a mature platform. Sure, it has some great titles, like *Gears Of War*, *The Elder Scrolls 4: Oblivion* and *Mass Effect*, but the best is yet to come. In fact, I remember when the Xbox came out, Microsoft only had a single big title for it—*Halo*. Consoles also cannot be modified to improve performance and parts can't be swapped out like a PC, so a developer has to think of the hardware of the console and its limitations when he writes code. With a PC, on the other hand, most developers know that they can design something a little heavier than what current generation hardware can run comfortably, and manufacturers like NVIDIA, ATI, Intel and AMD will just go back to their drawing boards and design

Keep in mind that these recommendations are generic, and certain genres of games will run easily on even lower-end hardware. Racing games and adventure games are not as harsh on system requirements

something more powerful. So when you go with a console, you needn't think about future-proofing.

The Hidden Costs

So then, a console seems to have all the answers. Why not buy an X360 for Rs 20,000, instead of a PC which costs Rs 50,000, and which you have to upgrade repeatedly? There's a pitfall to consoles too. Most consoles have anti-piracy measures built in and so do the game titles, but unlike PCs where you can have cracks and registry editors, you must have the original game DVD in your drive before you can start playing on a console. If you're like a bowling ball at an arcade with game titles you're going to chalk up quite a bill, especially considering new titles for the latest consoles (X360, PS3) can cost as much as Rs 3,000. While this doesn't mean that you should buy a PC just so that you can play pirated games, PC titles are generally more varied than console titles, and tend to cost less, and you also get special editions where you can buy an entire series in a single box for much less than the individual titles.

Most people who buy an X360 use their TVs to play games, and then complain "man, the graphics suck!" And why not? Consoles like the X360 and PS3 have been designed with a resolution of 720p (1280x720 pixels) in mind—a regular television cannot even hope to meet that specification, and you the image you see is blurry, lacks colour, resolution and even detail. An additional cost which you *should* incur is to buy yourself an LCD / Plasma screen to go along with the console—this is really where a console will earn its stripes and the experience will be enjoyable and immersive.

For a viewing distance of around 10-12 feet, a 32-inch LCD should do the trick. Brands to look out for are Sony, Samsung, and LG. If you have a larger living room then go for a bigger screen, since chances are you'll be sitting further away, and remember that such a screen, in addition to your console, makes for a killer movie-theatre like experience.

In fact both Microsoft and Sony have gone through pains to ensure that their consoles are more than just gaming stations. The X360 is a full fledged HD-DVD player, while the PS3 comes with a Blu-Ray DVD drive. This kind of future proofing ensures that your console is ready for the next generation of content, although on a minus point such drives do increase prices.

What To Consider

Consoles use controllers to interface with them. Some of them are wireless, which give you the liberty to sit far away from your screen without having a clutter of cables. Both the X360 and the PS3 have such controllers, while other consoles like the Nintendo Wii (pronounced "we") has a special remote control unit that makes use of built in accelerometers and gyroscopes as well as infrared tracking to make use of user gestures and actions to control actions in a game, as well as the traditional

The most convenient titles for consoles are arcade fighters and hack-em-up games that require a lot of frantic key presses

button system. But really, it's titles that sell consoles; the only point of difference that matters to the user is applications—in this case, games.

So what games feel better on the controllers of a console? Well the most convenient candidates are arcade fighters and hack-em-up games that require a lot of frantic key presses (called button mashing) to execute combo moves, or use special powers. Accessories like racing wheels are also available for consoles as they are for PCs, and racing games on a console have the added advantage of being played on a larger screen as opposed to your PC's monitor.

The next thing you need to look at is the present and upcoming crop of game titles for each console. This is very important, because unlike a PC which can be used for many things other than gaming, you don't want to be stuck with a console that hasn't got adequate title support. Garnering developer support is important—more game developers developing for your console equals better games. Development studios have been taken over (a so called forceful conversion) and we're even seeing developers who are working on titles for both consoles. Franchisees change hands too—we've seen *Devil May Cry 4* being announced for the X360 as well as the PS3, previously this franchisee was a Sony exclusive.

The PS3 doesn't have many noteworthy titles to speak of—in fact, *God Of War 2* (the sequel to the best-selling *God of War*) was announced for the PS2 and not the PS3, which clearly proves the point I was making about the longevity of a console as compared to a PC. That aside, the PS3 is a very strong contender for your attention, especially considering that most of its big titles are scheduled for 2008 launches. However, the PS3 makes a costly proposition and costs 60 per cent more than an Xbox 360.

Microsoft has another distinct advantage when it comes to the X360—they have very strong roots in PC gaming, where their Windows rules supreme as a gaming platform. It's a simple matter, therefore, to approach developers to develop games for their console platform as well, or even release X360 versions of PC classics. We're seeing games like *Universe at War: Earth Assault*, *Rainbow Six: Vegas*, and *Fallout 3* all heading for the X360 as well. The reverse is also true, and many Xbox / X360 titles make their way into PC—*Gears Of War*, *Halo*, and *Jade Empire* are a few examples.

In Retrospect

Regardless of how much you spend, the hardware you use, the platform you choose, or even the genres of your taste—the main aim of games is to have fun. They involve us, pull us into a world where anything is possible, and you're at the centre of it. You get to control events around you...playing God can be fun! Games in moderation will benefit your thinking, and can even have effects like lowering stress levels, or even improving hand-eye coordination. You're never too young or too busy to start, and it's never too late to get into it. As for me, I'm gearing up for our next *Quake 3* session which begins in another 15 minutes...

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PuMP up The VOLUME!

Whether road warrior or daily commuter, your journey just isn't complete without a good dose of music—to soothe your soul, bust stress and relax your nerves. We've got 46 faithful companions, just waiting to take that dusty, noisy ride with you...

Michael Browne

Silence speaks a thousand words. Poetic but true, though the sheer amount of noise pollution these days means you may well need some silence to hear anything, or be heard yourself. If you're a metropolitan who spends a couple of hours commuting to work, you'll probably lament the lack of time spent with loved ones. To make things worse, the couple of hours of *mandatory* travel are marred by all kinds of pollution. Short of scrapping hydrocarbon-spewing automobiles totally, there's nothing that can be done about air pollution, but what about all the honking around you, or the din made by fellow travellers aboard your daily 9.30 am local train?

For many of us, the Portable Multimedia Player (PMP) is a blessing sans disguise. The next time you're travelling, just ask anybody with earplugs stuck in his ears what it means to him. Music soothes, relaxes, and is akin to the daily morning cup of fresh tea. To further testify the popularity of PMPs, just visit any electronics store—chances are you'll see many such devices—they sell like hot cakes these days. Not only are they immensely functional, but whip out an iPod and a couple of people around you will surely perk up. Add to that the fact that no cell phone can approach the kind of multimedia functionality (camera aside) that a PMP will give you. PMPs in general have bigger, better screens and better music playback quality—that alone is enough to ensure a steady demand from more discerning users.

A PMP is as personal a device as a cell phone or headphones, and no two people will have the same requirements. While someone may want to watch videos in bed, another may need something with exemplary music quality to use as a portable source. Someone else may need a basic player to tune in to music en route to their workplace. PMP vendors

Imaging Rohit A Chandwaskar
Photograph Jiten Gandhi & Sandeep Patil

have realised this, and throughout this test you'll see devices specifically designed for a particular use and performing other tasks as well—sort of like a jack of all trades and master of one.

FLASH-BASED PMPS
BELOW RS 5,000

Sure, PMPs scale with price, and you get exactly what you pay for, but not everybody wants a high-end PMP with excellent performance and features to boot. That doesn't mean that a *value*-based player has to be a compromise. *Au contraire*, sub-Rs 5,000 players have a host of features that were previously available only on much costlier models. Part of the diminishing cost is due to the sharply declining prices of flash memory—prices have dropped to quarter of their values a year ago. Equally to blame is the increasing popularity of PMPs—nothing mysterious, just the simple laws of economics at work. So, you can get a very good sounding PMP, with features like FM radio, text document support, and basic add-on features like an alarm, stopwatch, and even PIM features like contact management.

Features
Of all the players we received, the concept of a watch that's an MP3 player as well was somewhat exciting. The Aigo U Watch MP3

Apacer Steno AU351
Performance at extreme value

is a nice little item—cool and funky-looking with all the settings of a good MP3 player, including an equaliser. It loses out on FM support, and of course, video playback isn't possible. It's also let down by an unintuitive and painful menu system, and the fact that you'll have a cord dangling from your wrist doesn't help any. Transcend's T.Sonic 840 comes in a piano white facia with a solid steel back that is (thankfully) not chrome plated, but matte—no smudges! It's a full-fledged multimedia player with music, photo and video capabilities, and has a pretty good screen to boot. The buttons seem a little tacky, but not as bad as some of the other players. iRiver's S7 is another cool looking player—its front surface looks like a magic cube with indented intersecting grooves built into it. The S7 is meant to be worn around your neck—and it's certainly attractive enough. YES had four players in this comparison—and all their players in this category have been in our labs last year. Creative's Zen Stone and Zen Stone Plus are very compact looking players shaped like pebbles—the difference being the screen on the Plus.

The Sansa Shaker was another novelty—it looks like a salt cellar (hence the name), and

although it isn't feature rich, it's good for kids, owing to its tough body. Apacer's Steno AU581 sports a grey metallic finish that is dominated by a crisp blue OLED screen. Zebronics had the smallest players in test—both the Beta and the Gamma are compact and solidly built, and sport OLED screens. Zebronics' Gamma has a very nice feature where music fades in if the player is paused and then un-paused, so your ears don't get blasted. Sony's Duo—the NWD-B103F and NWD-B105F—are designed to look like large flash drives, and there's no hassle of a USB cable—you can just plug the player into a USB port. Needless to say, both are built really well despite their plastic bodies. The pearl-white finish is bright, without being overly flashy. Another pen-drive-like player, the SanDisk Sansa Express attracted and held our attention. It's built like a little brick, and sports an aesthetic pearl grey finish. The front is dominated by a legible OLED screen. Both the SanDisk Sansa Express and the Transcend T.Sonic 840 have very well laid-out menus—the former is very simple and uncomplicated—a boon when dealing with a small screen—while the T.Sonic 840 scores on usability due to its much larger screen and intu-

itive interface. The Aigo MP-F585 is a well-built and compact player with a smudge-attracting chrome finished rear. The only irritation here are the small and tacky buttons.

Performance
Sony's duo offered good performance—while the overall bass seemed a little muddy on the Bose earplugs, things sounded just right with the Audio Technica circum-aural cans. One complaint was the volume levels on both these players—not as high as we'd like—far from ringing, our ears barely even got warmed up...

The Transcend T.Sonic 840 suffers from sluggish performance. Navigating menus will cause music to skip—not a good thing at all; keep your hands off it while tuning in to your favourite tunes. Both the T.Sonic 840 and the T.Sonic 610 offer good music quality, but the former is a better player as far as vocals go—a strong mid-range is never bad. The T.Sonic 840 is a decent video player mainly due to its clear screen, but with the issue of processing juice rearing its ugly head again, movies weren't the experience we hoped they'd be. With its lighter interface and the OLED screen, the cheaper T.Sonic 610 doesn't have the issues that plague its pricier sibling.

The cute Aigo U Watch MP3 may be fun as a wristwatch, but it wasn't as much fun to listen to. With boomy bass and a very restricted top end, we were disappointed—novelty is no substitute for performance. Its costlier sibling has overly bright female vocals, with a little extra colouring in the top end of the vocal spectrum. Male voices sound spot on and the mids are strong, even over-emphasised. Both the Sony players impressed us with their sound quality, good highs, and nice instrument detail—unfortunately, they don't go up to even normal listening volumes, let alone *loud* volumes. SanDisk's Sansa Express is an impressive music offering.

The YES YMP 30 is the best music player from amongst the YES players—the YMP 18 has some issues with female vocals—they sound harsh and the volume needs to be turned down to prevent an earbleed; guitar

tones are well-rounded with decent detailing. The YMP 35 scores halfway between the better YMP 30 and the inferior YMP 18. The two Zebronics players—the Beta and the Gamma sound good—comfortably high volumes, good bass, and with a full mid-range.

SanDisk Sansa Express
A Li'l monsta in disguise

Conclusion
We were quite honestly, (and pleasantly), surprised to see the

performance that these minnows put forth. A good product with serious value for money is always a good thing, since one purchase will encourage several more from people who come in touch with the owner and his or her positive experience. The fact that we've seen a few of these players in the hands of various commuters aboard buses / trains simply means that market penetration is quite good.

If you look at our graphs, you'll see a strange phenomenon—the cheaper PMPs in this category offer superb performance for the money, while the costlier players don't offer a proportional bang for the buck. This clearly means that hikes in price in these sub-Rs 5,000 products come with a minimal hike in value—something we were alarmed to see.

Apple iPod Touch 8 GB: Thy Palm Over Flo-eth!

When Apple announced a PMP based on their iPhone concept, many of us were excited—for the first time we'd have freedom from menus, complicated sequences of button presses to achieve a simple task, and the ability to navigate a device at our leisure. After all, exploration is a leisurely activity, isn't it? Now that we've used the iPod Touch, we must say it's an experience that's been conceptualised exceptionally well and executed with the same panache and finesse that Apple has been known for. Once you play around with the Touch, feeling it and exploring its world, chances are you're already doomed to shell out the 17,000-odd Rupees that it takes to own one. And people will want to possess such a device with the same fervour that wannabe rich-boys chase Lamborghinis and Playboy Playmates with. And all this even before you listen to what it can do to your senses!

The Touch incorporates excellent sound, with the kind of tonal neutrality that most run-of-the-mill PMPs can only dream of. With a bass response approaching perfection, a deep hit-in-the-gut feeling that can only come with expensive speakers, the Touch sounds equally at ease with Heavy Metal as it does with Jazz or Blues, or even Rock

music where liquidity of response is the name of the game. With class-leading vocals and mids, the Touch has a revealing top end that's clear and precise without being overly bright.

It's a photo viewer well above par, and you'll love the way browsing through photos is as simple as flipping through an album. As if to prove its "touch" status, there's a single button on the facia whose sole aim is to return to the main menu, regardless of where you are. It's a very good video player too, and will satisfy even movie junkies with its large, crisp and clear screen.

The integrated WiFi ensures that you're connected even while...err...disconnected, even as the Safari Web browser makes a snap of surfing the Internet. Initial firmware issues had us bothered about the sluggishness of the browser, but that's history with the version 1.1 firmware. With the ability to flash your device online, and the use of the entire storage space as a Flash drive, the Touch also boldly goes where no previous iPod (save the very recent 3G Nano and 5.5G Classic) has gone before.

Its one of those rare *must have* lifestyle products, like a Nokia N95 8GB, or even a BMW M3—one of those flashy yet functional devices that doesn't really deserve your hard earned cash, but demands it...

How We Tested

We divided our PMPs into two categories:
1. Flash-based
2. Hard Drive-based

We further divided the flash category into price based segments:
1. Flash-based players up to Rs 5,000
2. Flash-based players from Rs 5,001 to Rs 10,000
3. Flash-based players above Rs 10,000

For a look at the features we graded, turn over to our tables. For performance, we tested the audio and video performance of each player. Audio performance has been given greater weightage, simply because this is more of a priority for most people.

On the video front, we judged each player's display quality in general for multimedia content.

Alongside is a list of the audio tracks used and what we looked at in each track.

Good music requires equally good gear, and the bundled earplugs aren't any good if one is to make a comparison. We used a pair of supra-aural Grado SR60s, a

Tracks	What We Looked At
Eagles—*Hotel California*	The lead guitar in the beginning, drum bass, male vocals. There are a couple of places where minor nuances like the the artists hand moving along the guitar body can be heard, something we looked out for
The Corrs—*Brid og ni Mhaille*	Very good track for female vocals. Voice timbre, accurate tonal balance and vocal texture is of utmost importance. Accompanying instruments are mostly higher frequencies, soundstaging is also important
Charlotte Church—*Bridge over Troubled Water*	Strong female vocals. Charlotte Church has a lot of depth to her voice, and can take low and high octaves equally well
Pink Floyd—*Speak to Me / Breathe*	Sensitivity to low volume sounds, soundstaging, and accurate reproduction of electronically produced sounds
Dire Straits—*Sultans of Swing*	Guitar work is exemplary here. We look for clarity, and detailing around the 500 Hz mark (guitar frequency)
Guns N' Roses—*November Rain (Live)*	Fast drum attack, good array of instruments, lots of guitar fill-in
Eric Clapton—*Layla*	Male Vocals, and a lot of intricate guitar work make this one of the best blues songs to check for music quality
Chand Sifarish (Fanaa)	Good vocals, and a super hit song, drum and tabla accompaniments make for a melodious number with a lot of nuances to pick up
Beedi (Omkara)	Female vocals, and a fast number, gives us a good idea of how the player will perform on most indipop albums

circum-aural Audio Technica ATH A900, and Bose's Intra Ear earplugs for our testing purposes. These headphones allowed us to listen to the finer nuances of each track. Each song was rated on a

scale of 1 to 10, taking an average of its performance on each headphone. After that, we tested each PMP with their bundled earplugs and rated their earplugs against the trio of reference cans.

Transcend's T.Sonic 840 is an impressive offering—all the features and decent performance at an honest to goodness price of Rs 3,750, but one look at the Apacer Steno AU351 will shock you—85 per cent of the 840's performance at just 46 per cent of the price. That's value for money! Supercomp's Semp3-S7A was another such player—very decent music quality at a price of just Rs 1,500, and it even manages a tiny screen—excellent value for someone looking at something entry-level. *Digit's Best Buy* is an award few like to share, but we've seen enough to award it jointly to the Supercomp Semp3-S7A and the Apacer Steno AU351.

Other noteworthy products in this category are the duo from Sony and the Sansa Express. Surprise picks, yet equally good products, were the duo from the Zebronics stable—superb price for the sound quality—Rs 1,650 for the Gamma, and Rs 1,750 for the Beta. YES' YMP 30 was another excellent performer as far as music goes, and we have no qualms about recommending this to someone who's a little more discerning with sound quality.

Aigo's MP3 watch catches your fancy, but doesn't offer either the performance or the usability to please. If you're looking for a watch, chances are you'll look elsewhere. Do the same in case you want a good PMP.

FLASH-BASED PMPS
Between Rs 5,001 And Rs 10,000
Anyone spending more than Rs 5,000 on a PMP had better know what he's buying, and that's what we're here to ensure. In general, these players have more storage space, a better list of features and even better audio and video performance. And not for nothing, because they vie for attention amidst sub-Rs 10,000 multimedia cell phones, which have their own added benefits. Features such as FM radio and better screens are taken for granted. What you need to look at is the quality of audio and video, as most of these PMPs will support movie playback—unless they're specifically targeted at *music only* user groups. Also look at photo viewing options—a neat
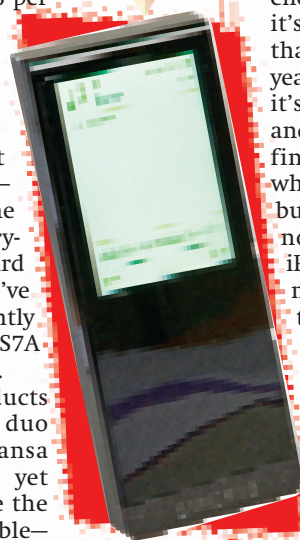
little plus point that much cheaper players—like the Transcend T.Sonic 840 in the previous category support.

Features
SanDisk's Sansa E280 has experienced a sharp decline in pricing—it's an 8 GB PMP, priced lower than its 4 GB sibling was last year! The E280 is built like a tank; it's also very traditional-looking, and has a nice solid metal back finished in matte. The scroll wheel dishes out some feedback, but it's a scroll-type wheel and not touch-sensitive like the iPod's. Speaking of which, the new Nano 3G (third generation) is gorgeous! It's nearly half the length of the previous Nano, and a little wider with a slightly larger and brighter screen. The smudge-happy yet utterly sexy chromed rear makes a comeback, and the new Nano is compact enough to sit in the tightest pockets without fuss. It's got video playback now, and Apple claims to have upped the battery life as well. Their click-wheel is as good as we remember, and with the controls designed into it, there are no protrusions of any sort on any part of the body.

Samsung's T10 is even slimmer than the Nano, and lighter,

with a fibre body instead of metal. Its sibling, the YP-S5 is very similar to the S3 from last year, with a sideways sliding body that opens to reveal the inbuilt speaker and disable the headphone jack. Both these players feature illuminated touch controls—great flaunt value, but perfectly usable. One irritation was the volume level on the headphone out getting reset to 50 per cent each time you switch from the loudspeaker to the headphones. Very unassuming and un-glamorous the Philips GoGear might be, but it's a well-built, satin black player that's replete with features. The only let down is the screen—not as bright or as clear as we'd hoped. Not unreadable, but for a video PMP, we expected better.

YES' YMP 45 is a neat PMP, made attractive by a strip of red plastic that runs around the screen and adds a touch of pizzazz to a rather ordinary black body. Mitashi's MWI-4GA has a chrome-finished posterior, but it seems to be plastic and not metal. Although the player is attractive, build quality is mediocre and the tackiness of the buttons is unacceptable. Creative's Zen is a plain looker with a black glossy front and matte-finished plastic rear

Samsung T10
Slim is good...

Cowon D2: A Different Beast

When we think wild, performance uncontrolled, we think Touch. When we think features, power, usability we think D2. The Cowon D2 was last year's winner, and the reason for making it two in a row is as complicated as it is simple. Why improve on perfection, or as close to it as is possible in this imperfect world?

The Cowon D2 is a very unassuming player—as small as a Nano, but twice as thick—and with very unappealing lines that make you go "Yuck!" at first. By then, you quickly realise that first impressions aren't necessarily the last, and it's more a device that you can live with daily rather than admire from a distance, much like the neighbourhood belle when compared to a supermodel.

You want features? How does FLAC support, inbuilt FM radio, expandable memory, a touchscreen, text reading and notepad support sound to you? This device is an amazing music player as well, and although the screen is on the small side, it offers a fantastic movie experience as well. It's very powerful, and offers more features

and performance per cubic inch than any other device we can think of.

The D2 is all about functionality and features, and you will find lots of settings to play with while playing music and even movies. In fact, we were surprised at the equaliser options, where cut-offs can be set for each frequency range—for example, you can set the first equaliser from 40 Hz to 80 Hz or to 110 Hz. Our only possible issue with the D2 is it's a little thick for its small dimensions, and may not gain popularity as an in-pocket jogging companion as the iPod Nano 3G. We're sorry not to find anything else to nitpick, but it's the way of a class A device to deliver all the goods with nary a hint of bad in sight.

Samsung YP-S5: The Power Of A Touch

Samsung's been known to make excellent PMPs—our only issue has been their atrocious pricing, thanks to which hardly anyone is seen toting a Samsung player. Someone in Samsung's top brass must have heard our not so silent plea, and here goes—the YP-S5 has more features than the YP-K3 we tested last year, and costs just a fraction of its predecessors' price of Rs 18,000, at just Rs 6,600. An amazing deal, this, considering the S5 is a potent all-round PMP. It has an amazing LCD screen—that at first glance appears to be an OLED screen—and soft touch controls that are backlit in very pleasing colours such as cool blue and light yellow. We can guarantee looks from just about anyone if you just whip out this player, because chances are people will figure it for being at least thrice as expensive.

It features Bluetooth, a rare but useful feature in case you want to transfer music from it to your cell phone or even PC, but the S5 itself requires to be synced with a PC to transfer music. While on the topic, sound quality is very good, and the S5 approaches the quality of costlier players easily. Its got a very clean and crisp sound to the vocals, and both male and female vocals seem to come alive. While it doesn't go as low as the Cowon D2 or the iPod Nano and Touch, the bass definitely can't be termed as deficient in any way. It also provides sufficient volume to drive most headphones properly, and we didn't notice any issues on our two reference models.

If you're looking at something extremely usable at a great price, but you want something that stands out and feels far more expensive than its price, the S5 is a tailormade fit. It represents the best value amongst the sub-Rs 10,000 PMPs and is one of those rare products that actually offers more satisfaction for the compensation it demands.

Performance
Our first major fight for top spot sees the excellent Samsung YP-S5 and the T10 slug it out with the Apple iPod Nano 3G, the SanDisk Sansa E280 and the Cowon iAudio 7, with the iRiver X20 neck and neck with everyone. Both Samsungs aren't flawless, however—closer tests reveal what seemed like a slight roll-off for lower frequency sounds in the first couple of octaves. The highs sound excellent, however, and female vocals are delivered outstandingly. If we were to choose the two best-sounding PMPs from this excellent lot, the laurels would rest with the iPod Nano and the iRiver X20. From the lower to the upper bass ranges, low frequencies are defined and tight, yet the thump is very apparent—something that is as important for bass-heads as it is for audiophiles. The mid-range is well-defined, smooth and full bodied, and guitar detailing will

that's been moulded to look like ripples in water after a splash. Note that the Zen has a large-ish screen, and is targeted at video aficionados. Cowon's iAudio 7 is another neat looker—very compact and very well built. The screen isn't as good as some of the other players, particularly the Samsung models, the iPod Nano, the Sansa E280 and the iRiver X20.

The Sansa E280 has all the features you need—music, photo and video support, FM radio, text support and even expandability (should 8 GB not suffice). The iPod Nano has most of these features (excluding FM radio and expandability), and the addition of nifty add-ons like a stopwatch, alarm, calendar and contacts make the Nano a superbly converged device. Unlike older Nanos, this one can also be used as a pen drive. Both Samsung PMPs also have Bluetooth support, which can be used to transfer music to (but not from) other devices—that's taking anti-piracy nuttiness to the limit, in our opinion.

Sony's NWZ-615F also impressed with its feature list, the only thing missing is expandability (and Bluetooth, which was exclusive to the Samsung PMPs).

Apple iPod Nano 3G 4 GB
Pocket audiophile

knock your socks off. A glorious top-end awaits you at the upper echelons of the audible sonic spectrum. The Cowon iAudio 7 loses out by a hair's breadth, but bass on the iAudio 7 is astounding—a deep hit-in-the-gut feeling that was especially noticeable with the circum-aural Audio Technica reference cans. Once again, we must caution you—such detailing is only possible on *good* headphones. The default earbuds that ship with even some of the best players are atrociously short of any kind of aural experience, and if you're serious about sound, you'll chuck them out.

The YES YMP 45, Philips GoGear and Mitashi MWI-4GA just aren't in the same league as the above mentioned PMPs, and the Sony NWZ-S615F and Creative Zen 4 GB fall slap-bang in the middle of the best and the rest.

If you're looking for primarily a video player, then you should look at another category. The YES YMP 45, Creative Zen, and the Mitashi MWI-4GA have the largest screens—and size matters when you're talking anything visual. The Creative Zen will win the race for the best video PMP, because it's got a better screen, and has excellent music quality to begin with.

iriverX20
Feature rich 'n flashy

Conclusion

Our graphs reveal two products standing a little taller than the rest—amazingly, the Apple iPod Nano 3G and the iRiver X20 score exactly the same, even after having slightly different features and a bit of a performance gap. While its sheer audio quality, compact build, looks and extensive feature list are enough to make the Nano stand out in any company, the more suave iRiver matches it very closely. The Nano is especially recommended for those looking for something compact yet powerful—it offers the smallest footprint and best performance (albeit by the smallest of margins). But if you take a look at that one dimension—the price—things begin to change. The Samsung YP-S5 offers the biggest bang for the buck—it's a marvellously well built device, the touch controls are as precise as clockwork, and it comes very close to both the Nano and the X20 in terms of performance. We find no serious reason to nitpick—it's even got speakers! Our *Best Buy* award belongs to the second-cheapest

device in the entire category—the Samsung YP-S5, it'll just about be the best Rs 6,600 you've ever spent.

Cowon's iAudio 7 and SanDisk's Sansa E280 also have a nice mix of quality, storage space and features—highly recommended as well.

If you're looking for a video PMP with good audio quality, look at the Creative Zen—it offers the best of both worlds: good music quality and a superb screen. The YES YMP 45 and Mitashi MWI-4GA could also interest you, but audio quality takes something of a nosedive.

FLASH-BASED PMPS
Above Rs 10,000

By now, all memories of tonal colouring, recessed mid-ranges and boomy bass have gone (but not forgotten), the pockets are a little deeper, the audience more discerning and expectations skyrocket. If you're part of the small but growing group of consumers who are willing to shell out in excess of four figures on a PMP, you'll probably grin at the above statement. Such PMPs have an uphill task ahead of them—they should excel a couple of things, while still retaining excellence for all other areas of functionality.

Apple iPod Nano 3G 8 GB: Tiny Dancer

If you thought the older model was compact due to its slimness, wait till you lay eyes on the new one. It's shrunk to nearly half the length of the previous Nano while getting a couple of millimetres wider, and also getting a better, bigger screen in the bargain. The conscious attempt at space-saving is unabashedly evident, and the 3G is more "nano" than ever.

It's a very well built device, although the smudge- and scratch-prone rear will have you using a case whenever you take it around. The 3G Nano supports video playback, and with this move, Apple has just raised the bar for the compact PMPs—no other model in this class has comparable features. Why no FM? Simple...why listen to radio stations when you can listen to your favourite numbers with four (and eight) gigabytes of storage space?

Audio quality is class-leading and the Nano is within a hair's breadth of the quality of the iPod Touch, which for us

was the best sounding PMP, period. Second place is not a bad place to be, especially when both are flying the same colours. The Nano approaches the same kind of deep, pounding yet lively bass that the Touch has, there's no hint of flab or colouring of any sort, and in tracks like *Hotel California*, the drum score in the beginning will cause you to close your eyes and sigh with satisfaction. It gets better with the mid-range, as guitar harmonics have that very live feel, there's no over-emphasis on tones like some players—if there's a sound in the recording, you'll hear it the way it was produced—accurate to a fault. With a fully revealed top-end, the Nano will satisfy lovers of high frequency instruments like saxophones and violins. We got the chance to audition a couple of

Yanni DVDs—we daresay the maestro himself would be pleased. The other little utilities like a calendar, alarm, contacts and stopwatch are all present as are three engaging little games, with more stuff downloadable from the iTunes store (which isn't available in India, unfortunately).

The Nano positions itself in a league just below the iPod Touch in price, but serves a very different audience. We don't see anyone (for example) working out with the Touch in their pocket. In fact, a user who could afford to would buy both PMPs—so different are they from each other. What they share in common is brilliance of design, usability and performance. If you're looking for something that's compact and powerful while retaining stellar performance—and that too under Rs 10,000—you'd be daft to even consider anything else.

Cowon A3: One PMP To Own Them All

A shiny off-white pearl finish, a contoured body with sleek steel buttons down the front side of the facia in a neat row, and with dark grey trimming on the outer bezel, sporting powerful hardware under the hood, a brilliant view to the action, and a look that's in a class of its own. You'd be forgiven for thinking we're writing an advertisement for the latest Aston Martin or something. It is the proverbial Bentley amongst PMPs though, and the moment we laid eyes on it, we knew we beheld something special.

To power itself, the A3 uses a DaVinci dual-core processor. If your wondering where that came from or why Cowon decided on overkill, let us tell you that this device is the first of its kind to actually support 720p HD content natively without any transcoding. Imagine dragging huge .VOB files to a PMP and enjoying skip-free video. Or imagine playing a 50 MB audio file in all its FLAC splendour without a hiccup. The A3 does it all. About the only trick Cowon missed is the gimmicky and "in" touchscreen, but we're told they have another A3-like PMP called the Q5W lined up, which addresses "touchaholics".

The A3 is a very good music player, and does everything right if it's all you listen to. The iPod Touch and the Nano highlight the sonic limitations of the A3, unfortunately. Another little niggle is the volume level of the A3, which isn't satisfactorily loud. But once you fire up a video on this baby, prepare to be blown away—the A3 is all rampaging performance, a video player on steroids that delivers quite a wallop for the money you pay. It's got an AV-out cable as well, which means you can take the action-onscreen. We tried a 720p movie on the A3 on our 32-inch LCD screen and the experience was as good as any HD DVD player. All the regular features—Cowon's full-fledged equaliser, FM radio, photo viewing, and voice recording—are also present, should you need them.

Quite simply put, if you need the best video PMP around, this is your safest bet. It's also your cheapest bet, as both 30 GB and 60 GB versions are cheaper than Creative's sole challenger, the Vision W. Do remember that its bulky and also heavy, so its not something you'd slip into your denims, its intended as a micro *home* theatre, so please keep it there.

Features

Right off the block, Apple's iPod Touch duo (8 and 16 GB models) impresses with just a glance. The rear, chrome plated and buffed to a mirror-like sheen will only make the black front—devoid of any buttons save one large and dimpled menu button—stand out. A large and crisp touchscreen (identical to the iPhone's) greets you. Menu navigation is a snap, and the much-vaunted *Touch-flo* isn't just hype—it really works! You're never lost too deep in the Touch's menu subsystem, a press of the aforementioned button and you back on the main menu. Icons are bright, well laid-out and everything seems designed with usability in mind. Browsing is fun with finger swipes, particularly when resizing and zooming in on photos with your fingers onscreen. The inbuilt gyroscope means the Touch reorients its screen for your viewing convenience when it's tilted.

The Apple iPod Nano 3G makes another appearance in an

8 GB guise, as does the iRiver X20 (4 and 8 GB). Creative's Zen was another familiar face, and the 8 GB version finds itself amongst the upper echelons of the Flash-based players. The only real newcomer is the Cowon D2, a device which won our *Best Buy* award last year. The Cowon has a nice crisp touchscreen; though the screen icons don't look too clear, this is a 16 million-colour LCD and it makes its presence felt later. It also supports text and PDF, besides the usual features like voice recording and FM radio.

Performance

Up front, the Apples were clearly distinct from the oranges and everything else, and with the exception of the stalwart Cowon D2, Mr Jobs' offerings would hog the limelight. Cowon's D2 is really a superb performer and sonically very nearly nirvana. A full extension throughout the audible spectrum—an excellent low-ends and fully revealed mid-

range coupled with a very transparent and tonally accurate upper range means the D2 is at home with almost any kind of music. It does have a whopping output of 74 mW, but surprisingly doesn't seem to drive either the Bose or the Audio Technica cans as well as the iPods do.

The iPod Nano is hardly superior to the D2—it offers slightly higher volumes, (which doesn't mean a lot unless you're a decibel junkie), what is perceptible is a marginally better extension in the lower bass. The Nano also seems to do a little more justice at detailing the higher frequency ranges, but this is a close comparison, and noticeable only if you're looking for it. As far as video playback goes, both the Nano and the D2 have good screens, but the D2 sneaks ahead with greater picture clarity, a slightly larger viewing area and significantly better colour.

The iRiver X20 4 and 8 GB kept very close to the D2 and the Nano as far as sound quality goes. The real revelation proved to be the none other than the exquisitely designed iPod Touch, which simply blew us away with the sheer music quality. If you want absolutely the best sound, this has to be it. The Touch seemed slightly brighter than the Nano, but some more

BEST BUY
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MARCH 2008
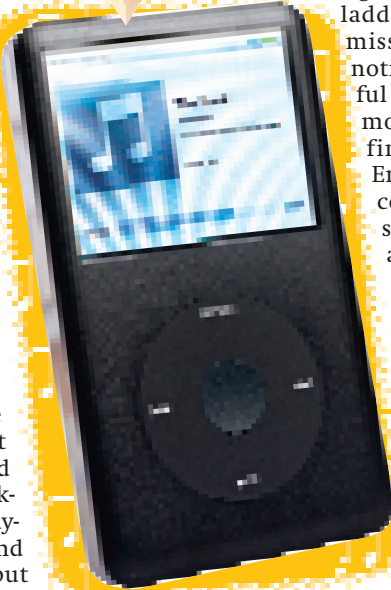
Apple iPod Classic 80 GB
80 Gigs of nirvana

time spent auditioning both 8 and 16 GB versions convinced us of their sonic excellence: there was a little more detail high up the frequency ladder that the Nano missed out on. Also noticeable to the careful listener was a tad more texturing to fine guitar-work on Eric Clapton's *Layla*—certain chords sound a little richer and somehow more full bodied. There's also a barely perceptible (but perceptible nonetheless) increase in depth and detail to Charlotte Church's incredible vocal chords in *Bridge Over Troubled Water*. Both the Nano and Touch offer similar bass signatures, and a nearly similar mid-range—all the micro-improvements seem to have gone into frequencies higher than 4 KHz.

The iPod Touch makes a good video PMP too, with its large and crisp 3.5-inch screen, but the D2 pulls one over here, and makes for a better micro-theatre.

Conclusion

The iPod Touch is an excellent PMP, and offers good value for

its price. After all the hype surrounding the iPhone, this is one player that will satisfy your sense of flair, and you're virtually a show-off for just taking it out of your pocket! As with any sensational product, pricing is always a deterrent and Apple never meant for every aspiring PMP owner to buy an iPod Touch—if music quality means the most to you, and very good video playback capabilities are as important as the large screen and touch-flo, just close your eyes and stop searching. If you decide you can do without the extra screen size and the flash factor, look at the iPod Nano or the Cowon D2. The former is an excellent music PMP and its compactness makes it an ideal workout companion. The D2 is a very different beast—it has a lot of features, and a brilliant screen, and the added advantage of it being touch-sensitive. It's also something of a novelty with the ability to scribble in a notepad—a perfect conglomerate of performance, features and price. And yes, the D2's 4 GB of storage is also expandable thanks to an SD card slot.

We're conferring our *Best Buy* award on the Cowon D2 for its superb music quality and overall brilliant features and functionality. At Rs 11,000, it's quite a bit cheaper than the iPod Touch—although the Touch is more of a lifestyle device than the D2 can ever be. Nonetheless,

the D2 offers unbeatable features and performance for its price.

The iRiver X20s offer similar features and pricing to the iPod Nano, but don't sound as good, and although the difference isn't very significant, it is noticeable. The Creative Zen 8 GB finds itself up against the wall with the other brutes in this category. Completely outgunned, this PMP cannot really be recommended to anyone, though it's a good device in its own right.

HDD-BASED PMPS

Unlike Flash players—which are mainly geared towards music with a few exceptions taking a stab at a more video-oriented device—HDD-based PMPs have colossal amounts of storage at their disposal, and are geared more towards video-watching than anything else. Chances are HDD-based PMPs will have larger screens, and of course have a larger footprint—something that won't be very unobtrusive in your pocket. Such players are also useful for people who have a gigantic music collection and like to carry all their music with them. Quite honestly, very few people would carry more than 16 GB of music with them, but if you happen to have a 20-odd gigabyte MP3 collection that you want at your fingertips, along with a dozen or so movies, then Flash players aren't going to cut it. Hard drive-based PMPs also have the advantage of cost per GB—which is ridiculously low compared to Flash-based players—comparatively still an expensive storage medium.

Features

One look at the beautiful Cowon A3 duo had us all as excited—while music is definitely cool, what could be cooler than a personal cinematic experience? The screen has got to be as close to the real thing as possible—with a 24-bit LCD that measures four inches diagonally and can display a whopping 16.7 million colours, the A3 is geared towards being a proper video player. Its even got a dual-core processor, so it can play .vob files (DVD movies) without resampling or downsizing! What's more, even 720p is supported—once again a drag-and-drop away. It goes without saying that the A3 plays all other major video formats. Absolutely amazing, considering we've seen some notebooks stutter with 720p content. On the audio front (like its cousin, the Flash-based D2), it supports FLAC files, so diehard audiophiles who constantly complain about the pitfalls of lossy formats can finally hold their peace. The icing on the cake has to be the superb build quality and upmarket look—with pearl white as a base and a dark grey bezel, the A3 is a stunner.

The other large-screen PMP was the Creative Zen Vision W, with an even bigger screen (4.3 inches). Despite the fact that the Creative doesn't seem to have the specifications on paper that the A3 does, it manages to impress with a very simple menu layout, exceptionally good build quality, and a screen that despite displaying only 262,000 colours doesn't look the worse for it.

Apple has upped the storage on their 5.5G iPod Classic to a massive 80 GB, and an even more colossal 160 GB. The fact that the Classic manages to fit in nearly six times the data of the Zen Vision W at nearly half the footprint itself says a

Headphones: Do They Make A Difference?

Most definitely! "But how, and will I notice it?" you might ask. Well, good sound is quite like good food, or even a nice car—it's habit-forming, and going back to something archaic after something neo isn't an easy thing to do. A simple example—if you listen to any of the award-winning PMPs in this test on their bundled earplugs, you'd go "Wow!" Listen to them on our reference headphones (the Bose Intra Ear, Grado SR60, and the Audio Technica ATH A900), you'd go "Damn! I didn't even know this track had that little sound in it" and "Wow! Listen to that guitar...awesome!" You have just come a little closer to becoming discerning—a trait of audiophiles—those evil men and women who spend more than a third of their disposable income on audio equipment.

Headphones make a resounding difference, and even two very good headphones will sound quite different due to the fact that they have different *sound*

signatures, or in common terms, are endowed by their manufacturers with different acoustic properties. Remember that a headphone is a miniature speaker, with two little drivers, and will respond favourably to changes in the music source, amplification, and basically anything which cleans up the sound signal being fed to it. Most high-end headphones can't even be used with PMPs, simply because such sources don't provide enough juice to properly drive the headphones' drivers. Most earplug-type headphones make do without amplification—they're intended for portable use. If you're serious about sound, ditch the stock earplugs as soon as you can, and buy a decent set of earplugs—we recommend Creative's EP630—which, at Rs 900, is superb value for money. If you want something better, the Bose Intra-ear is available for Rs 5,000—and will give you more clarity in the highs than the EP630.

If you're listening at home and you don't mind something bigger, (like circum-aural headphones), look at the Sennheiser HD201 and HD202—at Rs 1,400 and 1,800 respectively. Stick to known brands and you should be all right. Costlier headphones don't make much sense, because they need a much better source than a PMP is ever going to be. For those who are interested, higher-end models from the likes of Sennheiser, AKG Acoustics and Grado Labs are also slowly becoming available in India. These headphones range in prices from Rs 2,000 to Rs 35,000, and with such a wide price range, there's literally something for everyone.

If you're spending anything over Rs 8,000 for a PMP intended for long music sessions, take our advice and invest in a good set of headphones. Shell out big and cry once, but forever have world class audio at your disposal.

Scoreboard — Flash Based PMPs Up to Rs 5,000

BRAND MODEL	Supercomp Semp3-S7A	Zebronics Gamma	Apacer Steno AU351	Zebronics Beta	SanDisk Sansa Shaker	Apacer Steno AU581	Transcend T.sonic 610	Creative Zen Stone	SanDisk Clip	YES YMP 35	YES YMP 18	SanDisk Sansa Express	Mitashi MPL 1004	Aigo U Watch MP3
Price (Rupees)	Rs 1,500	Rs 1,650	Rs 1,720	Rs 1,750	Rs 2,090	Rs 2,240	Rs 2,500	Rs 2,599	Rs 2,990	Rs 3,150	Rs 3,250	Rs 3,399	Rs 3,490	Rs 3,500
Comments	+ Compact, light weight − Build quality, slightly tacky keys	+ Very compact, solidly built − Tiny screen, display quality	+ Built well, good performance − Poor screen quality	+ Very compact, built well − Tiny screen, screen quality	+ Funky concept, solidly built − Low performance, slightly bulky	+ Great build quality, good performance − Small screen, non intuitive menu	+ Good set of accessories − Tiny screen, tacky buttons	+ Solidly built, compact − No screen, buttons little hard	+ Compact, funky, belt clip inbuilt − Volume button tacky	+ Neat looking, compact − Less storage space, hard buttons	+ Very light, neat looking − Requires batteries, build quality	+ Good performer, built well − Tiny screen	+ Large screen, well laid out menus − Low performance, tacky buttons	+ Novel concept, compact − Low performer, un-intuitive controls
Grand Totals (Out of 100)	43.87	42.98	47.15	42.98	27.23	47.53	50.91	49.28	51.77	48.01	39.94	53.13	43.31	33.77
Features (Out of 35)	10.85	9.45	12.53	9.45	4.20	12.53	18.20	15.44	14.77	17.01	10.85	14.77	16.38	5.67
Performance (Out of 65)	33.02	33.53	34.62	33.53	23.03	35.00	32.71	33.84	37.00	31.00	29.09	38.36	26.93	28.10
Features														
Capacity	1 GB	2 GB	2 GB	2 GB	1 GB	2 GB	2 GB	1 GB	1 GB	512 MB	1 GB	2 GB	1 GB	512 MB
Display Type	OLED	OLED	LCM	OLED	NA	OLED	OLED	NA	OLED	OLED	LED	OLED	LCD	NA
Display Number of Colours	1	1	1	1	NA	1	single	NA	1	65K	Single (multiple backlit)	1	262K	NA
Display Size	1.1 inches	0.9 inch	0.9 inch	1 inch	NA	1.3 inches	1 inch	NA	1 inch	1.5 inches	1.2 inches	1.1 inches	2.2 inches	NA
Type of Battery	Li-ion	Li-ion	Li-ion	Li-ion	AAA	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion	AAA	Li-ion	Li-ion
Weight of Device	26 gm	26 gm	28 gm	30 gm	32 gm	30 gm	28 gm	18.5 gm	25.8 gm	40 gm	25 gm	31.1 gm	45 gm	38 gm
Firmware Upgradeable (Y/N)	Y	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N
Memory Upgradeable (Y/N) / Type of Memory	N / NA	N / NA	N / NA	N / NA	N / NA	N / NA	N / NA	N / NA	N / NA	N / NA	N / NA	N / NA	Y / SD	N / NA
FM Tuner (Y/N)	Y	Y	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y	N
Voice Recording (Y/N)	Y	Y	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y	Y
Audio Formats supported	MP3, WMA, WAV	MP3, WMA, WAV	MP3, WMA, WAV	MP3, WMA, WAV	MP3, WMA, WAV	MP3, WMA, WAV	MP3, WMA, WAV	MP3, WMA, WAV, audible	MP3, WMA, WAV	MP3, WMA, WAV	MP3, WMA, WAV	MP3, WMA, WAV	MP3, WMA	MP3
Photo Viewing / Video Playback (Y/N)	N / N	N / N	N / N	N / N	N / N	N / N	N / N	N / N	N / N	N / Y	N / N	N / N	Y / Y	N / N
Video Formats supported	NA	NA	NA	NA	NA	NA	NA	NA	NA	SMV	NA	NA	MPEG-4	NA
Screen Brightness adjust (Y/N)	Y	Y	Y	Y	NA	Y	Y	N	Y	N	N	N	Y	Y
Screen Orientation Sensor (Y/N)	N	N	N	N	NA	N	N	N	N	N	N	N	N	N
Built-in Speakers (Y/N)	N	N	N	N	Y	N	N	N	N	N	N	N	N	N
No of Preset Modes / Customisable Equaliser	5 / N	5 / N	6 / N	5 / N	NA / N	6 / N	6 / Y	4 / Y	4 / Y	5 / Y	4 / N	4 / Y	6 / N	4 / N
Point A to B Track Repeat (Y/N)	Y	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N
Custom Playlist saving (Y/N)	N	N	N	N	N	N	Y	Y	Y	Y	Y	N	N	N
Folder Creation (Y/N)	Y	Y	Y	Y	Y	Y	N	N	Y	N	Y	Y	N	N
Use as Portable Drive (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Addon Features														
Built-in Calendar / Contacts / Stopwatch / Alarm	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N
Bundled Accessories	N	N	N	N	N	N	Carry pouch + wrist strap + Neck strap	N	N	Carry Pouch	Carry Pouch	N	N	N
Additional Features (If any)	N	N	N	N	N	N	N	N	NA	Dual 3.5 mm jacks	FM radio recording, Dual 3.5 mm jacks	N	NA	N
Performance														
General Display Performance (So 10)	1.5	1.75	1.5	1.75	NA	1.5	2.25	NA	2.5	4	2	2	6	NA
Video Performance (Movies) (So 10)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	NA
Music Performance (Out of 10)														
Eagles−*Hotel California*	7.25	6.75	7.25	6.75	4.75	7.25	7	7.25	8	6.5	6	8	5	6
The Corrs−*Brid og ni Mhaille*	6.75	6.75	7	6.75	4.75	7	6.5	7	7.5	5.75	4.75	7.75	4.5	6.25
Charlotte Church−*Bridge over Troubled Water*	7	7	7	7	5	7	6.5	7	7.25	6	5.5	7.75	4	6
Pink Floyd−*Speak to Me / Breathe*	6.5	6.5	7	6.5	4.5	7	6.25	7.25	7.5	6.25	5.75	8	5	6
Dire Straits−*Sultans of Swing*	6.5	6.75	7	6.75	4.75		6.5	6.75	7.25	6	6.25	7.5	3.5	6
Guns N' Roses−*November Rain (Live)*	6.25	7	7	7	4.5	7.25	6.5	7	7.5	6	6	7.5	4.75	5.75
Eric Clapton−*Layla*	6.5	6.5	7	6.5	4.25	7	6.25	7.25	7.5	5.5	6.25	8	5	5.5
Chand Sifarish (Fanaa)	7	7	7.25	7	4.5	7.5	6.75	7.5	7.25	6.25	6.25	7.75	5	6.5
Beedi (Omkara)	7	7	7.25	7	4	7.25	6.5	6.75	7.25	6.25	6.25	7.5	5	6.25
Bundled Headphone Quality (Out of 10)	4.75	5	5	5	5	5.25	5.25	5	5.5	4.25	4	6	2.5	NA
Battery Life (Actual Tested)	6.5 h	8.3 h	7.7 h	8.1 h	6.7 h	6.5 h	11.2 h	7.6 h	9.1 h	10.2 h	23 h	14.2 h	8.2 h	4.6 h

Scoreboard

	Flash Based PMPs Up to Rs 5,000								Flash Based PMPs from Rs 5,001 to Rs 10,000					
BRAND	Transcend	Sony	Aigo	YES	iRiver	Creative	YES	Sony	YES	Samsung	Mitashi	Philips	Cowon	Sony
MODEL	T.sonic 840	NWD-B103F	MP-F585	YMP 35	S7	Zen Stone Plus	YMP 30	NWD-B105F	YMP 45	YP-S5	MWI-4GA	GoGear 4GB	iAudio 7	NWZ-S615F
Price (Rupees)	Rs 3,750	Rs 3,990	Rs 4,000	Rs 4,150	Rs 4,399	Rs 4,399	Rs 4,950	Rs 4,990	Rs 6,490	Rs 8,900	Rs 6,790	Rs 6,999	Rs 7,750	Rs 7,990
Comments	+ Good performance, built well − Tacky buttons, slightly heavy	+ Compact, well built, good controls − Tiny screen	+ Well built, good features − None in particular	+ Looks cool, compact − Hard buttons, un-intuitive menu	+ Neat looks, built well − Overpriced, few features	+ Compact, clear screen, built well − Overpriced, hard buttons	+ Good music quality, built well − Plain looks, no video support	+ Compact, well built, good controls − Tiny screen	+ Large screen, stylus provided − Lacks music quality, build quality	+ Built well, great music performance − Bulky, prone to fingerprints	+ Large, clear screen, loudspeaker − Poor music quality, unintuitive menu	+ Well built, good menu system − Mediocre screen, lacks volume	+ Powerful sound, great music quality − Looks too simple and unassuming	+ Good screen, good features − None in particular
Grand Totals (Out of 100)	55.51	47.65	46.81	48.01	40.14	50.32	45.23	47.65	44.38	64.20	46.74	56.86	63.13	57.04
Features (Out of 35)	19.60	15.05	11.90	17.01	7.70	15.44	13.51	15.05	13.23	22.09	19.53	17.01	19.60	17.15
Performance (Out of 65)	35.91	32.60	34.91	31.00	32.44	34.88	31.72	32.60	31.15	42.11	27.21	39.85	43.53	39.89
Features														
Capacity	2 GB	1 GB	1 GB	1 GB	1 GB	2 GB	2 GB	2 GB	2 GB	2 GB	4 GB	4 GB	4 GB	2 GB
Display Type	LCD	LCD	LCD	OLED	NA	OLED	OLED	LCD	LCD	LCD	LCD	LCD	LCD	LCD
Display Number of Colours	65K	65K	65K	65K	NA	1 (blue)	dual-colour	65K	262K	262K	262K	65K	262K	262K
Display Size	1.8 inch	1 inch	1.8 inches	1.5 inches	NA	1 inch	1.3 inches	1 inch	2.4 inches	1.8 inches	2.4 inches	2.2 inches	1.3 inches	1.8 inch
Type of Battery	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion
Weight of Device (gms)	70 gm	30 gm	50 gm	40 gm	17.5 gm	21 gm	35 gm	30 gm	60 gm	78.7 gm		45 gm	60 gm	50 gm
Firmware Upgradeable (Y/N)	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Memory Upgradeable (Y/N) / Type of Memory	N / NA	N / NA	N / NA	N / NA	N / NA	N / NA	N / NA	N / NA	SD	N / NA	Y / SD	N / NA	N / NA	
FM Tuner (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Voice Recording (Y/N)	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Audio Formats supported	MP3, WMA, WAV	MP3, WMA	MP3, WMA	MP3, WMA, WAV	MPEG 1/2/2.5 Layer 3, WMA, ASF, OGG, MP3	MP3, WMA, WAV, audible	MP3, WMA, WAV	MP3, WMA	MP3, WMA, WAV	MP3 AAC WMA	MP3, WMA	MP3, WMA	MP3, OGG, WMA, ASF, FLAC, WAV	MP3, AAC, WMA
Photo Viewing / Video Playback (Y/N)	Y / Y	N / N	Y / Y	N / Y	N / N	N / N	N / N	N / N	Y / Y	Y / Y	Y / Y	Y / Y	Y / Y	Y / Y
Video Formats supported	MTV	NA	AVI	SMV	NA	NA	NA	NA	AVI	MPEG-4	MPEG-4	MPEG-4, WMV	MPEG-4	H.264, MPEG-4, AAC-LC
Screen Brightness adjust (Y/N)	Y	Y	Y	N	NA	N	N	Y	Y	Y	Y	Y	Y	Y
Screen Orientation Sensor (Y/N)	N	Y	N	N	NA	N	N	Y	N	N	N	N	N	N
Built-in Speakers (Y/N)	N	N	N	N	N	N	N	N	Y	N	Y	N	N	N
No of Preset Modes / Customisable Equaliser	5 / Y	5 / N	5 / N	5 / Y	NA / N	4 / Y	4 / N	5 / N	5 / Y	6 / Y	6 / Y	7 / Y	5 / Y	5 / N
Point A to B Track Repeat (Y/N)	Y	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Custom Playlist saving (Y/N)	Y	Y	N	Y	N	Y	N	Y	N	Y	N	N	Y	Y
Folder Creation (Y/N)	N	N	N	N	Y	N	N	N	Y	Y	Y	Y	N	N
Use as Portable Drive (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Addon Features														
Built-in Calendar / Contacts / Stopwatch / Alarm	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N	N / N / N / N
Bundled Accessories	N	N	N	Carry-pouch	N	N	Carry-pouch	N	Carry-pouch and strap, stylus	N	N	N	N	N
Additional Features (If any)	N	N	N	Dual 3.5 mm jacks	N	N	N	N	Touchscreen	Bluetooth	N	N	N	N
Performance														
General Display Performance (So 10)	6.25	2	3.5	4	NA	2	2.25	2	6	6.25	6.5	5.5	2.5	6
Video Performance (Movies) (So 10)	5	NA	4	NA	NA	NA	NA	NA	4.25	6.25	4.5	5	3.5	6.5
Music Performance (Out of 10)														
Eagles—*Hotel California*	6.75	7	6.5	6.5	6.75	7.25	6.25	7	5.25	7.25	5	7	8.5	7.5
The Corrs—*Brid og ni Mhaille*	5.75	6.5	6.75	5.75	6.75	7	6.25	6.5	5.25	7	4.75	7	8.25	7
Charlotte Church—*Bridge over Troubled Water*	6	6.5	6.25	6	6.5	7	6.25	6.5	5.5	7.5	3.75	7	8.5	7.25
Pink Floyd—*Speak to Me / Breathe*	6	7	7	6.25	6.5	7.25	6	7	5.75	7.25	5	7	8.5	7
Dire Straits—*Sultans of Swing*	6	6.25	6.25	6	6	6.75	6.25	6.25	5	7.25	3.5	6.75	8.25	6.25
Guns N' Roses—*November Rain (Live)*	6.25	6.25	6.25	6	7	7	6.25	6.25	5	7.5	4.5	7	8.5	6.5
Eric Clapton—*Layla*	6.25	6.25	6	5.5	7	7.25	6.75	6.25	5.25	7.75	5	7	8.25	7
Chand Sifarish (Fanaa)	6.5	6.5	7	6.25	6.75	7.5	6.5	6.5	6	7.5	5	7.5	8.5	7
Beedi (Omkara)	6.5	6.25	6.5	6.25	6.5	6.5	6.5	6.25	6	7.25	4.75	7.5	8	6.75
Bundled Headphone Quality (Out of 10)	5	5.5	4.5	4.25	6	5	5	5.5	3.5	6	2.5	6	6.75	5.5
Battery Life (Actual Tested)	9.5 h	8 h	6.3 h	10.2 h	7.5 h	7.6 h	13.2 h	8.1 h	11.3 h	19.4 h	6.7 h	11 h	29.8 h	20.2 h

Scoreboard | Flash Based PMPs from Rs 5,001 to Rs 10,000 | Flash Based PMPs above Rs 10,000

BRAND / MODEL	SanDisk Sansa e280	Apple iPod Nano 3G	Samsung T10	iRiver X20 2 GB	iRiver E10	Creative Zen	iRiver X20 4 GB	Cowon D2	Apple iPod Nano 3G	iRiver X20	Creative Zen	Apple iPod Touch	Apple iPod Touch
Price (Rupees)	Rs 8,490	Rs 8,800	Rs 6,600	Rs 8,999	Rs 9,499	Rs 9,999	Rs 10,999	Rs 11,000	Rs 11,400	Rs 12,999	Rs 13,999	Rs 17,700	Rs 22,000
Comments	+ Decent screen, feature-rich − Scroll wheel feels tacky	+ Great music quality and screen − No FM radio, smudge prone back	+ Good music quality, nice screen − plasticy exterior, slightly long	+ Good performer, feature rich − Slightly costly, controls tacky	+ Built well, neat navigation − Low quality screen spoils video	+ Good screen, decent music quality − None in particular	+ Feature rich, feature rich − Slightly costly, controls tacky	+ Very good performance and features − Slightly bulky, weird looks	+ Great music quality and screen − Lacks FM radio, smudge prone back	+ Feature rich, good performer − Slightly costly, controls tacky	+ Good screen, decent music quality − Slightly costly	+ Amazing performer, great interface − Pricey	+ Amazing performer, great interface − Pricey
Grand Totals (Out of 100)	68.15	69.48	62.68	69.08	57.05	63.46	69.21	73.90	69.48	69.21	63.46	73.20	73.20
Features (Out of 35)	23.45	22.93	21.04	23.45	20.41	21.81	23.45	26.95	22.93	23.45	21.81	24.96	24.96
Performance (Out of 65)	44.70	46.56	41.65	45.63	36.64	41.66	45.76	46.95	46.56	45.76	41.66	48.25	48.25
Features													
Capacity	8 GB	4 GB	2 GB	2 GB	6 GB	4 GB	4 GB	4 GB	8 GB	8 GB	8 GB	8 GB	16 GB
Display Type	LCD	LCD	LCD	LCD	LCD	LCD	LCD	LCD	LCD	LCD	LCD	LCD	LCD
Display Number of Colours	65K	262K	262K	262K	65K	16.7M	262K	16M	262K	262K	16.7M	262K	262K
Display Size	1.8 inches	2 inches	2 inches	2.2 inches	1.5 inches	2.5 inches	2.2 inches	2.5 inches	2 inches	2.2 inches	2.5 inches	3.5 inches	3.5 inches
Type of Battery	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion	Li-Ion	Li-ion	Li-ion	Li-Ion	Li-ion	Li-ion	Li-ion
Weight of Device (gms)	76.54 gm	49 gm	43 gm	15 gm	76 gm	65 gm	15 gms	91 gm	49 gm	15 gms	65 gm	120 gm	120 gm
Firmware Upgradeable (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Memory Upgradeable (Y/N) / Type of Memory	Y / Micro SD	N / NA	N / NA	Y / Micro SD	N / NA	N / NA	Y / Micro SD	Y / SD	N / NA	Y / Micro SD	N / NA	N / NA	N / NA
FM Tuner (Y/N)	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	N	N
Voice Recording (Y/N)	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	N	N
Audio Formats supported	MP3, WMA, WAV	MP3, AAC, AIFF, WAV	MP3 AAC WMA	MP3, WMA, OGG, ASF	MPEG 1/2/2.5 Layer 3, WMA, ASF, OGG	MP3, WMA, AAC5 (.m4a), WAV (ADPCM), Audible 2, 3, 4	MP3, WMA, OGG, ASF	MP3, WMA, FLAC, OGG, WAV	MP3, AAC, AIFF, WAV	MP3, WMA, OGG, ASF	MP3, WMA, AAC5 (.m4a), WAV (ADPCM), Audible 2,3,4	MP3, AAC, AIFF, WAV	MP3, AAC, AIFF, WAV
Photo Viewing / Video Playback (Y/N)	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
Video Formats supported	AVI, MPEG-1/2/4, DAT, ASF, MOV	H.264, MOV, MP4, MPEG-4	MPEG-4	MPEG-1/2/4	AVI, SWF	MJPEG, WMV9, MPEG-4-SP4, DivX4 4/5 and XviD4	MPEG-1/2/3	AVI, MPEG	H.264, MOV, MP4, MPEG-4	MPEG-1/2/3	MJPEG, WMV9, MPEG-4-SP4, DivX4 4/5 and XviD4	H.264, MOV, MP4, MPEG-4	H.264, MOV, MP4, MPEG-4
Screen Brightness adjust (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Screen Orientation Sensor (Y/N)	N	N	N	N	N	N	N	N	N	N	N	Y	Y
Built-in Speakers (Y/N)	N	N	N	Y	N	N	Y	Y	N	Y	N	N	N
No of Preset Modes / Customisable Equaliser	7 / Y	22 / N	6 / Y	5 / Y	3 / Y	8 / Y	5 / Y	5 / Y	22 / N	5 / Y	8 / Y	22 / N	22 / N
Point A to B Track Repeat (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Custom Playlist saving (Y/N)	Y	Y	Y		Y	Y		Y	Y		Y	Y	Y
Folder Creation (Y/N)	Y	N	Y	Y	N	Y	Y	Y	N	Y	Y	N	N
Use as Portable Drive (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Addon Features													
Built-in Calendar / Contacts / Stopwatch / Alarm	N / N / N / N	Y / Y / Y / Y	N / N / N / N	N / N / N / N	N / N / N / Y	Y / N / Y / N	N / N / N / N	N / N / N / Y	Y / Y / Y / Y	N / N / N / N	Y / N / Y / N	Y / Y / Y / Y	Y / Y / Y / Y
Bundled Accessories	Pocket strap	N	N	N	N	N	N	Stylus, Carry-case	N	N	N	N	N
Additional Features (If any)	NA	N	Bluetooth	N	N	N	N	Touchscreen	N	N	N	Touchscreen	Touchscreen
Performance													
General Display Performance (So 10)	6	6.5	6	6.5	2.5	7	6.75	6.5	6.5	6.75	7	8	8
Video Performance (Movies) (So 10)	6	6	6.25	6.5	3	7.5	6.5	7.5	6	6.5	7.5	7.75	7.75
Music Performance (Out of 10)													
Eagles–*Hotel California*	8	8.75	7.5	8.25	6.75	7.25	8.25	8.5	8.75	8.25	7.25	8.75	8.75
The Corrs–*Brid og ni Mhaille*	8	8.5	7	7.75	7	7	7.75	8.5	8.5	7.75	7	8.5	8.5
Charlotte Church–*Bridge over Troubled Water*	7.75	8.75	7.5	8	7	7	8	8	8.75	8	7	8.75	8.75
Pink Floyd–*Speak to Me / Breathe*	8	8.5	7.25	8.25	7	7.25	8.25	8.25	8.5	8.25	7.25	8.5	8.5
Dire Straits–*Sultans of Swing*	7.5	8.25	6.75	8.25	7.25	6.75	8.25	7.5	8.25	8.25	6.75	8.25	8.25
Guns N' Roses–*November Rain (Live)*	7.75	8.5	7.25	8.25	7	7	8.25	8.25	8.5	8.25	7	8.5	8.5
Eric Clapton–*Layla*	8	8.75	7	8.25	6.5	7.25	8.25	8.5	8.75	8.25	7.25	8.75	8.75
Chand Sifarish (Fanaa)	8.25	8.5	7.5	8.5	7	7.5	8.5	8.5	8.5	8.5	7.5	8.5	8.5
Beedi (Omkara)	8	8	7.25	8	7	6.75	8	8	8	8	6.75	8	8
Bundled Headphone Quality (Out of 10)	6.75	5	6.5	5.5	6	5.5	5.5	6.5	5	5.5	5.5	5	5
Battery Life (Actual Tested)	14.1 h	19.2 h	17.6 h	14.3 h	13.24 h	14.5 h	14.3 h	36.5 h	19.4 h	14.3 h	14.5 h	16.5 h	16 h

Scoreboard — HDD Based PMPs

| BRAND	Apple	Apple	Cowon	Cowon	Creative
MODEL	iPod Classic 80 GB	iPod Classic 160 GB	A3 30 GB	A3 60 GB	Zen Vision W
Price (Rupees)	Rs 14,600	Rs 20,500	Rs 23,000	Rs 26,000	Rs 29,999
Comments	+ Great performance and storage − Lacks FM Radio, slightly heavy	+ Great performance, huge storage − Lacks FM Radio, slightly heavy	+ Amazing screen, great features − Bulky, lower volumes	+ Amazing screen, great features − Bulky, lower volumes	+ Large, crisp screen, good music quality − Costly, bulky, non intuitive controls
Grand Totals (Out of 100)	**68.57**	**68.57**	**65.53**	**65.53**	**70.54**
Features (Out of 35)	22.93	22.93	22.61	22.61	22.30
Performance (Out of 65)	45.65	45.65	42.92	42.92	48.25
Features					
Capacity	80 GB	160 GB	30 GB	60 GB	30 GB
Display Type	LCD	LCD	LCD	LCD	LCD
Display Number of Colours	262K	262K	16.7M	16.7M	262K
Display Size	2.5 inches	2.5 inches	4 inches	4 inches	4.3 inches
Type of Battery	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion
Weight of Device	149 gm	162 gm	280 gm	280 gm	276 gm
Firmware Upgradeable (Y/N)	Y	Y	Y	Y	Y
Memory Upgradeable (Y/N) / Type of Memory	N / NA	N / NA	N / NA	N / NA	N / NA
FM Tuner (Y/N)	N	N	Y	Y	Y
Voice Recording (Y/N)	N	N	Y	Y	Y
Audio Formats supported	MP3, AAC, AIFF, WAV	MP3, AAC, AIFF, WAV	MP3, WMA, ASF, FLAC, OGG, M4A, MATROSKA(MKA), APE, WAV	MP3, WMA, ASF, FLAC, OGG, M4A, MATROSKA(MKA), APE, WAV	MP3, WMA, WAV
Photo Viewing / Video Playback (Y/N)	Y / Y	Y / Y	Y / Y	Y / Y	Y / Y
Video Formats supported	H.264, MOV, MP4, MPEG-4	H.264, MOV, MP4, MPEG-4	AVI, WMV, ASF, MP4, MATROSKA (MKV), OGM, MPG/MPEG, VOB, DAT	AVI, WMV, ASF, MP4, MATROSKA (MKV), OGM, MPG/MPEG, VOB, DAT	AVI, WMV9, MPEG-1/2, MPEG-4-SP, MJPEG, DivX 4.x/ 5.x, XviD-SP
Screen Brightness adjust (Y/N)	Y	Y	Y	Y	Y
Screen Orientation Sensor (Y/N)	N	N	N	N	N
Built-in Speakers (Y/N)	N	N	Y	Y	Y
No of Preset Modes / Customisable Equaliser	22 / N	22 / N	6 / Y	6 / Y	8 / Y
Point A to B Track Repeat (Y/N)	Y	Y	Y	Y	Y
Custom Playlist saving (Y/N)	Y	Y	Y	Y	Y
Folder Creation (Y/N)	N	N	Y	Y	Y
Use as Portable Drive (Y/N)	Y	Y	Y	Y	Y
Addon Features					
Built-in Calendar / Contacts / Stopwatch / Alarm	Y / Y / Y / Y	Y / Y / Y / Y	N / N / N / N	N / N / N / N	N / N / N / N
Bundled Accessories	N	N	Carry case, handstrap, AV Out cables, a/c charger	Carry case, handstrap, AV Out cables, a/c charger	Carry Case, AV Out cables
Additional Features (If any)	N	N	N	N	N
Performance					
General Display Performance (So 10)	6.5	6.5	9	9	8.5
Video Performance (Movies) (So 10)	7	7	9	9	8.5
Music Performance (Out of 10)					
Eagles−*Hotel California*	8.25	8.25	7	7	8.5
The Corrs−*Brid og ni Mhaille*	8.25	8.25	7	7	8.25
Charlotte Church−*Bridge over Troubled Water*	8.25	8.25	6.75	6.75	8.25
Pink Floyd−*Speak to Me / Breathe*	8	8	6.5	6.5	8.25
Dire Straits−*Sultans of Swing*	8.25	8.25	6.75	6.75	8
Guns N' Roses−*November Rain (Live)*	8	8	7	7	8
Eric Clapton−*Layla*	8	8	6.75	6.75	8.25
Chand Sifarish (Fanaa)	8.25	8.25	7.25	7.25	8.25
Beedi (Omkara)	7.75	7.75	6.75	6.75	8
Bundled Headphone Quality (Out of 10)	5.5	5.5	6.25	6.25	6.25
Battery Life (Actual Tested)	17.5 h	17.5 h	12.8 h	12.6 h	11.7 h

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Decision Maker

Great sound, something really compact, and feature-rich: Don't look anywhere beyond the new iPod Nano 3G. In its 4 GB avatar, the Nano is priced at Rs 8,500 and the 8 GB version costs Rs 11,500—perfect performance and features for its price. It's a true audiophile's delight, and will satisfy your cravings for pure sound like nothing else in its price bracket.

A video oriented PMP for watching high quality videos: The Cowon A3 has got to be your target. Priced very conservatively at Rs 20,000 for the 30 GB version, the Cowon has the best processing hardware under its hood and can even be hooked up to your television—it's a fully functional DVD player! Music quality is very good, but not up to the iPod Nano, iPod Touch, or Cowon D2.

Something really cheap—sound quality isn't that important: How does Rs 1,500 sound to you? Supercomp's SEMP3-S7A will certainly do the trick. It's got a small screen, besides very good music quality for the price. You'll be surprised at how much PMP you get for your money.
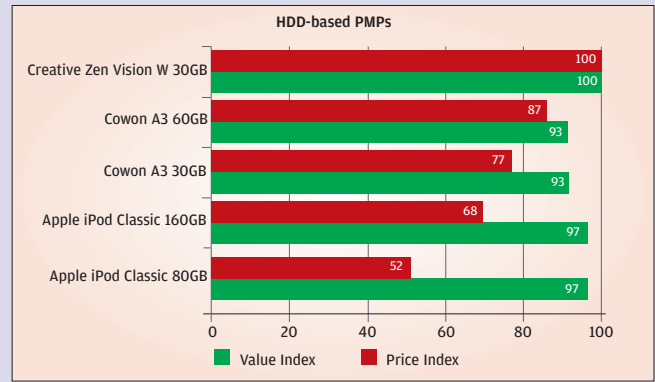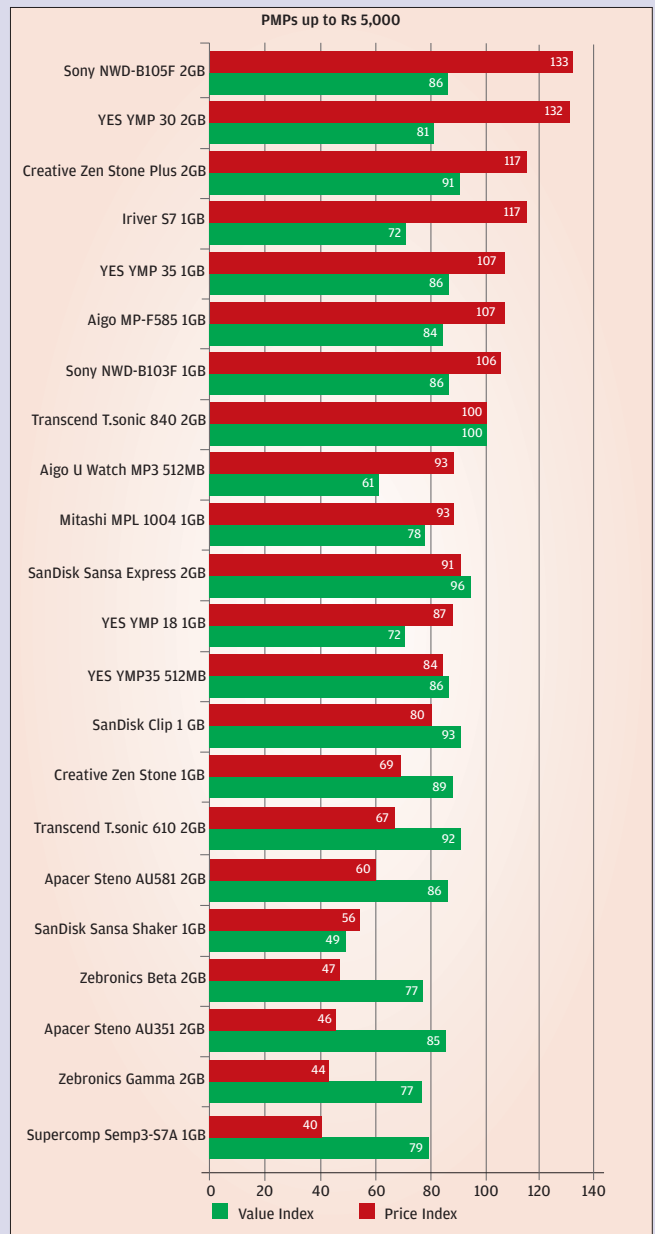
A feature rich PMP, and one that is well priced. Music quality is important: Performance with Value? Look no further than the Cowon D2. At Rs 11,000, it represents sterling value, with a 16.7 million colour touchscreen that's shockingly adept at video, and stunning audio performance.

I have a budget of Rs 7,000. I want the best device for the price: Samsung's YP-S5 is the answer. An excellent screen, amazing audio quality, video playback, funky backlit touch controls, FM radio support, Bluetooth, photo viewing and a customisable equaliser. And it only costs Rs 6,600, too.

I'm rich, money isn't a concern...show me the best: Other than the private jet and the yacht you no doubt own, look at the Apple iPod Touch 16 GB. Or better still, wait a bit for the 32 GB version. The amazing touchscreen will be a feature you'll find eminently practical after a while, adding to your sex appeal, while the music quality will blow those 1,000 rupee socks off!
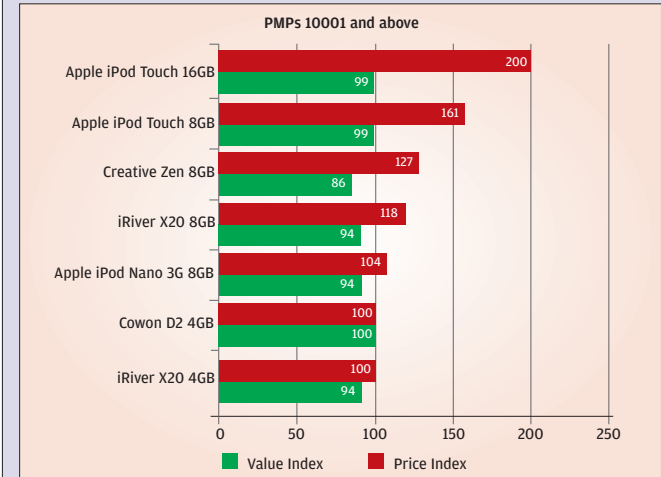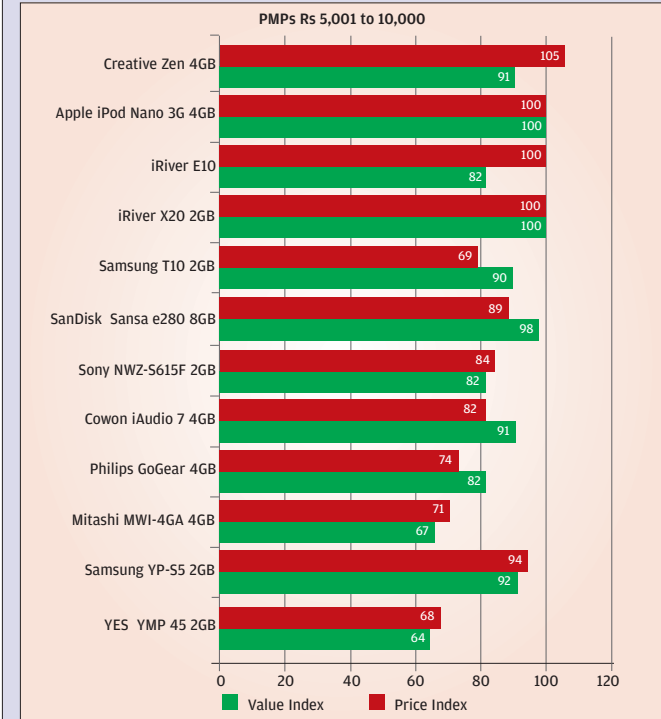
I want a great PMP for music but have a huge collection of MP3s that I wish to cart around: Apple's 80 GB and 160 GB iPod Classic will satisfy. Which one you buy is purely dependent on your storage needs, but they're both equally amazing music players, with strong video playback performance as well. Battery life is also very good for an HDD-based PMP. The icing on the cake is the shocking price—the lowest cost per GB from such exemplary PMPs makes your decision a no-brainer.

PMPs up to Rs 5,000

Model	Value Index	Price Index
Sony NWD-B105F 2GB	86	133
YES YMP 30 2GB	81	132
Creative Zen Stone Plus 2GB	91	117
Iriver S7 1GB	72	117
YES YMP 35 2GB	86	107
Aigo MP-F585 1GB	84	107
Sony NWD-B103F 1GB	86	106
Transcend T.sonic 840 2GB	100	100
Aigo U Watch MP3 512MB	61	93
Mitashi MPL 1004 1GB	78	93
SanDisk Sansa Express 2GB	96	91
YES YMP 18 1GB	72	87
YES YMP35 512MB	86	84
SanDisk Clip 1 GB	93	80
Creative Zen Stone 1GB	89	69
Transcend T.sonic 610 2GB	92	67
Apacer Steno AU581 2GB	86	60
SanDisk Sansa Shaker 1GB	49	56
Zebronics Beta 2GB	77	47
Apacer Steno AU351 2GB	85	46
Zebronics Gamma 2GB	77	44
Supercomp Semp3-S7A 1GB	79	40

PMPs Rs 5,001 to 10,000

Model	Value Index	Price Index
Creative Zen 4GB	91	105
Apple iPod Nano 3G 4GB	100	100
iRiver E10	82	100
iRiver X20 2GB	100	100
Samsung T10 2GB	90	69
SanDisk Sansa e280 8GB	98	89
Sony NWZ-S615F 2GB	82	84
Cowon iAudio 7 4GB	91	82
Philips GoGear 4GB	82	74
Mitashi MWI-4GA 4GB	67	71
Samsung YP-S5 2GB	92	94
YES YMP 45 2GB	64	68

PMPs 10001 and above

Model	Value Index	Price Index
Apple iPod Touch 16GB	99	200
Apple iPod Touch 8GB	99	161
Creative Zen 8GB	86	127
iRiver X20 8GB	94	118
Apple iPod Nano 3G 8GB	94	104
Cowon D2 4GB	100	100
iRiver X20 4GB	94	100

HDD-based PMPs

Model	Value Index	Price Index
Creative Zen Vision W 30GB	100	100
Cowon A3 60GB	93	87
Cowon A3 30GB	93	77
Apple iPod Classic 160GB	97	68
Apple iPod Classic 80GB	97	52

lot for Apple's design. The screens on the 5.5G iPod Classics somehow seem slightly bigger than their predecessors, and definitely brighter. The Classic utilises the same kind of chromed rear that the Nano and Touch do. A neat feature in the Classic and the Nano is the scroll. Previously, you would need to scroll through tracks alphabetically, so getting to a track that starts with, say, R would be a pain. Now, once you do a couple of fast scrolls, an alphabet is displayed and the scroll list now becomes alphabetical—scroll through the alphabets to get to the one you want, and find your track from there. A neat feature, and one that people who use the colossal storage options provided will fully utilise.

Performance

The Creative Zen Vision W is a superb music player—a fact which became apparent just a few minutes into our MP3 tests. It's even better than the iPod Classic, which is a superb PMP for music in its own right. Once again, when you're talking about brilliant PMPs, a few points of difference is hardly a big thing, but the fact is that the Zen Vision W is one heck of a PMP—it scored well because of its superb screen, which made movie watching and navigation a fun-filled affair. The Cowon A3 is another excellent video player; in fact, the slightly smaller screen is, if anything, even crisper than the Vision W. We tried watching a 720p movie on the A3, and were blown away by the extent of immersion that such a small screen can bring.

In comparison, the two iPod Classics don't seem to make as

big a splash with their diminutive 2.5-inch screens, but make no mistake, they are potent video oriented PMPs as well—it's just that their aural roots

Creative Zen Vision W
Pocket Theatre

are a little more evident. Musically, the Vision W scores slightly more due to its very strong mids and vocals, both of which are the most important component of any genre of music and usually the highlight of any track. The iPod Classic rules the high frequencies where the detailing is very close to the iPod Touch. The Touch and the Nano are an extra inch better than the iPod Classic for music, and both are also better at mid-range frequencies than the Cowon D2 and the Vision W.

The Cowon A3 takes a backstage when it comes to sonic

performance—there's no comparison even between it and the cheaper D2, which is noticeably superior in the music quality department.

Conclusion

The best video performance would have to go to the Cowon A3—a brilliant screen, very good music performance, and a very decent all rounder to boot. The Creative Zen Vision W occupies the pinnacle of the audio tests, an outstanding product, considering that the other Creative products didn't make such a splash. But the Zen Vision W is costly, and at Rs 29,999, it's nearly double the price of the Apple iPod Classic, which has 98 per cent of its musical capabilities, 40 per cent of its video capabilities, nearly the same features, and half the price (Rs 15,500). Then there's the small matter of nearly thrice the storage space. For its brilliant all round capabilities, we're awarding our *Best Buy* to Apple's iPod Classic 80 GB. It's also a brilliant music player for the price—go with this if you want a great looking, excellent sounding, feature rich, and large capacity PMP.

If you're looking for a colossal amount of storage, you may consider its older brother the—the iPod Classic 160 GB. For video, go with the 30 GB version of the Cowon A3—it's available at three fourths the price of the Vision W.

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Contact Sheet — MP3 Players

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Aigo	BridgeOne Technologies Pvt Ltd	0484-4049450	contactin@bridgeonecorp.com
Apacer	Apacer Technology Inc.	080-25702208	suraj_raina@apacer.com
Apple	Apple India	080-25744646	indiasales@mac.com
Cowon	Lipap Systems Pvt Ltd.	9819917440	iaudio@lipap.com
Creative	India Digital lifestyle Distributors	011-46096400	contactus@idldpl.com
iRiver	SALORA INTERNATIONAL	011-29207100 / 01	taku.rajeev@salora.com
Mitashi	Mitashi Edutainment Pvt. Ltd.	NA	vishal@mitashi.com
Philips	Philips Electronics India Limited	9833033804	a.k.mathew@philips.com
Samsung	Samsung India Electronics Pvt. Ltd.,	011-41511234	jitender.c@samsung.com
SanDisk	Rashi Peripherals Pvt Ltd	022-67090909	sandisk@rptechindia.com
Sony	Sony India Pvt. Ltd	1800-11-11-88	sonyindia.care@ap.sony.com
Supercomp	Supertron Electronics Ltd.	022-23881397 / 23881924	info@supertronindia.com
Transcend	Mediaman Infotech Pvt Ltd	022-23818100 / 3200	sales@mediamangroup.com
Yes	India Digital Lifestyle Distributors	011-46096400	contactus@idldpl.com
Zebronics	Top Notch Infotronix India	044-26616201	enquiry@zebronics.info

SOCIAL
Revolution?
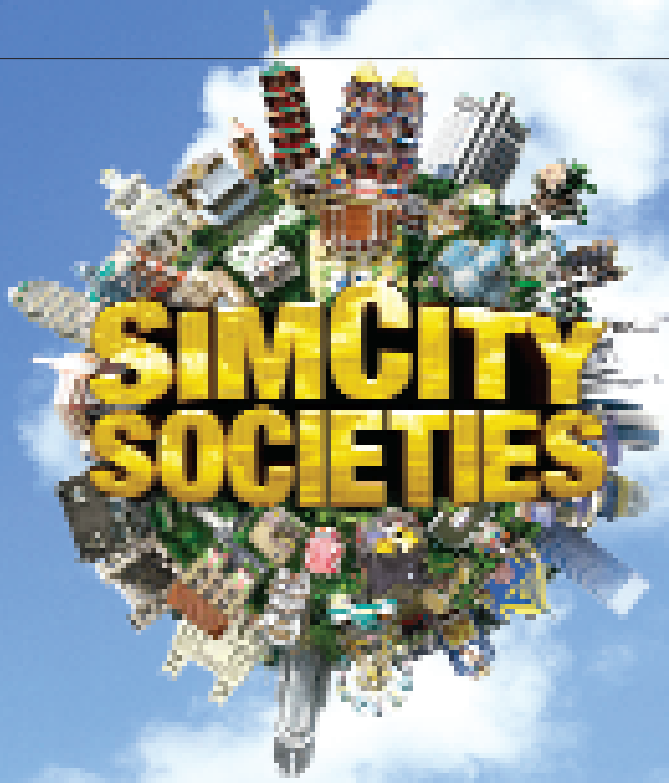
Nimish Chandiramani

If you've got half a strategising bone in your body, you've loved the *SimCity* (SC) series all these years. Each game is practically timeless—I could even pick up *SimCity 3000* (released more than ten years ago) even today, and not have a complaint beyond the slightly dated graphics. I couldn't help but expect the universe from *SimCity Societies* now, could I?

Instead of continuing with the original manage-a-large-city theme, *SC Societies* takes a leaf out of the book that *Caesar III* wrote so well. You don't assign residential, commercial or industrial "zones" anymore—you now have the freedom to choose which structures to build where. Even the focus of the game's changed—instead of strategically managing a city, the scale of the game narrows to managing societies and their values. As someone who's played the previous *SC* games for days on end, I can tell you that this departure from the original can be a little disorienting—if you're a fan, you'll have to keep an open mind while playing this.

So here's how the game works: you'll be managing small urban settlements (on the scale of your locality, if that helps) and building structures that contribute to, or consume various "energies"—Creativity, Authority, Prosperity, Spirituality, Knowledge and Productivity. You could build an Authority-heavy totalitarian regime, a stainless steel IT powerhouse, or your own little artists' village depending on the buildings you choose. On paper, this is a brilliant concept, but it falls apart in the game.

For some unfathomable reason, building energies only affect other buildings! So if you decide to be Big Brother and take joy in oppressing your Sims, you're in for a nasty revelation—as long as they've got a home, a job and a little recreation, they're sickeningly happy. Which brings me to the second thing I don't like about this game—it's (ugh) *easy*. Unlike the previous games where you're always caught in a battle to keep your Sims happy without running your city into debt, it'll take some serious effort to muck up in *Societies*. In some cases, even if you build structures based on their energy rather than their function, you'll survive.

What I could get used to, however, is how visually wonderful this game is. You can choose from various architectural styles—cartoon-like, Cyberpunk, glass-windowed towers—the variety is ridiculous. Building animations are sometimes very cool, and attention to detail throughout the game is impeccable.

Maybe I've been a bit unfair—in the first few hours (even days) that you play the game, *SC: Societies* is wonderful—even if it's only because you'll need all that time to explore what you can do. Checking out all the buildings and their effects is mesmeric, and gets addictive. It's only later—when you've started to invest time in serious city-building—that you realise that the gameplay isn't exactly the cat's meow. It's a game that you need to experience, but that can wait till it becomes a 500-Rupee EA Classic. ◼

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Rating: 6/10
Developer: Tilted Mill Entertainment
Publisher: Electronic Arts
Distributor: Excel Interactive
Contact: customercare@excelinteractive.co.in

Universe at War: Earth Assault

For thousands of years, mankind has stared at the stars with awe and wonder. After today, we'll wish we were blind

Oh God no!–Not another alien invasion...please. These were initial thoughts. Thanfully, *UAW: EA* does things a little differently. At the beginning, I'd go "jeez, couldn't they make this game better looking?" but then you find that the graphics aren't as archaic as they seem, with some nice transparency effects and more. The cut scenes definitely need some make up work—they're bland, along the same lines as the cut scenes in *Warcraft 3*, a six year old game! *UAW: EA* has a couple of tricks up its sleeve, which become apparent once you spend some time with the game. For one—it plays a slightly different storyline (no spoilers!) but you will be entertained. The second trick won't be apparent till you play through a good bit of the game—Unlike most RTS' which have different units with similar properties, you'll find a completely different menu system for each faction—unique research trees and even more unique units—types of weapons, even modes of travel and each unit gets a unique ability...yay!

The Story: The Novus play the crusaders, come to rescue the sentinents (humans) from a hostile alien invasion force (the Hierarchy). The humans fade into the background, as the fighting between these two factions awakes a third and ultimately more dangerous force lying dormant somewhere inside the planet—the Masari. With such an intergalactic storyline, it's nice to see mankind take a backseat for once.

The Novus is a faction of cybernetic beings that are basically hit and run experts characterised by fast movement speeds, fast attacks, and low health. They befriend you in the beginning of the single player campaign, where you play as earth forces, and soon you'll be controlling the Novus. The Novus basically thrives on mobility and they have an energy network through which collector drones travel (at speeds of light) and forage for resources. You can even instantly transport armies from power node to power node.

The faction Hierarchy are the bad guys, and all their powers centre around walkers. They have the Habitat walker—a lumbering colossus, armed with a number of powerful weapons in addition to the ability to spawn troops from pods. He has a number of nodes that can be upgraded to create units, or wield deadlier weapons. While the Novus survive with hit-and-run tactics, the Hierarchy follows a brute force approach.

The Masari are the last race in the game and they don't have the guerrilla tactics of the Novus, nor the numbers of the Hierarchy. Instead, they have fewer, costlier and more powerful units. The Masari also have a twist in their resource gathering and don't salvage like the other two races. Instead, they build batteries that charge up slowly, and gradually add to your resources. They also have the option of going light or dark with the energy produced, which alters the abilities of some buildings and units.

All three factions have hero units, and in the campaign, if your hero dies—its game over. Thankfully, most heroes are capable of taking care of themselves, unless swarmed by enemies en masse. In the campaign, you'll eventually play as all three civilisations, one at a time, through three distinct campaigns.

A very good game, definitely a must try for RTS fans, with a decent plot and entertaining units. The big let down for me was the inability to zoom out of battles, and the camera control could have been much better—a blemish on an otherwise spotless canvas. A refreshing change from most RTS'—this, and one which should keep you engaged with a robust online multiplayer component as well.

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UNIVERSE AT WAR

Rating: **8.5/10**
Developer: **Petroglyph**
Publisher: **Sega**

digit GAMING PC
XFX GeForce 8800 Ultra,
Intel Core 2 Duo E6600,
4 GB DDR2 RAM,
Windows Vista Ultimate x64

Gears Of War:
A *Cog* full of Testosterone!

Gears Of War for the X360 was one of the console selling titles, personally I loved it! Typically, console ports suck. Moreover, following the footsteps of greatness is never easy so you'll forgive my trepidation while reviewing the PC version. It's been two days, and 18 hours… and I have one word for you—awesome! The controls on the X360 were nice (a rarity for third person shooters on any console) and the mouse totally rocks. Now headshots are only limited by weapon recoil and a twitchy arm. The gameplay is as frenetic as the X360 version, and with five new levels *GOW* has something for you even if you've played it on the console.

Marcus Fenix, ex-con and ex-*COG* (Coalition Of Governments) special forces, and his team are up against the locust horde—a race that have mysteriously emerged from the very bowels of the earth through *worm holes*.

Your mission is to plant a very large explosive device at the core of the hordes hives, deep, deep underground. Fire fights are unavoidable and why the heck would you want to? Fenix is the classic grunt—all muscle and abuse, and he's as likely to make worm kebab with his assault rifle as he is likely to make grub salami with his chainsaw. In fact, this weapon (the under-barrel mounted chainsaw) makes for some of the goriest and squishiest moments in the whole game, where you get to melee the locusts if they get too close. The enemy ain't smart, but they are fast, and fearless, as well as a little on the juicy side…yum-yum.

GOW is all about combat, team tactics, and proper use of strategic points like cover, machine gun nests, even elevated positions. There ain't no live heroes in this game…The locust horde takes many forms from the *grunts*, who are man-like, a little taller, to the *boomers*—slightly larger rocket wielding grunts, to much larger enemies like *spawners*. Combat is never boring, and you can actually melee an enemy with a spiked grenade…watch 'em run and go pop…voila, lovely red paintjob.

One of the things I really liked was that *GOW* never at any point feels like a console port, and having played the X360 version, I never once felt this was second best. The graphics are better, and appear naturally sharper and with more detail, due to the higher resolution a PC is capable of. Note that this is no *Crysis*, and this is the only area where *GOW* lets down a bit…it just hasn't got enough eye-candy for us PC freaks. With nice visuals, an extensive multiplayer component where you can partake in battles online and rank yourself, and a deep storyline that we're told will be concluded later (*shhhh!*) *GOW* is one adrenaline load you shouldn't miss. Indulgence is the best form of worship…so get this and play it now…

michael.browne@
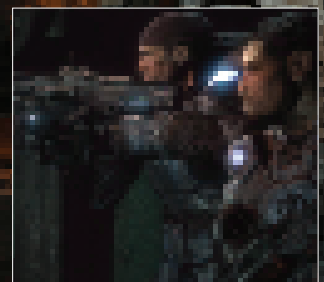*thinkdigit.com*

digit GAMING PC
XFX GeForce 8800 Ultra,
Intel Core 2 Duo E6600,
4 GB DDR2 RAM,
Windows Vista Ultimate x64

Rating: **9/10**
Developer:
Microsoft Game Studios
Publisher: **Epic Games**

Escape

BOXES OF WAR
Are You Game?

Move over, singers and stand up comedians—soldiers in war zones have found a new way to kill their boredom right in their tents. It comes with a shiny green X, and plays games where you blast the hell out of aliens and Nazis. It's called the Xbox 360, and the war zone in question is Iraq.

Soldiers on a tour of Iraq pack their kit bags with more than weapons and rations, apparently. Most of them carry video game consoles along with a few favourite games like *Halo* and *Call of Duty*. In fact, *Halo* has a long history with Iraq. Way back in 2006, the beta release of *Halo 3* was first released by Microsoft and Bungie Studios (the game developers) to be played by troops stationed in Iraq. Smart wits at that time opined that Bungie was

testing the weapons, AI and gameplay of the game on soldiers to get a reality check. Seems the men in fatigues gave a whole-hearted thumbs-up, what with the game finding a place among the tools of war.

One of the reasons why games have found such a great following among soldiers on the front is that war has a habit of keeping people on tenterhooks—one moment you're getting sniped and bombed and shelled, and another moment you are holed in a bunker or trench waiting for the other side to make a move. Such long waits on a constant alert create high levels of stress, and nothing beats stress than spiking a Covenant minion. You get to breathe easy, and not take out the aggression on the POWs or

on the scenery. These games also fostered camaraderie and *espirit-de-corps*—after all, if you're kicking some butt in co-op mode, that makes you comrades in arms. Latest reports indicated that the top brass was seriously mulling over discontinuing regular pep talks by squad officers in favour of this approach.

This is probably why even psychologists, who otherwise roll out charts and presentations detailing the harmful effects of violent video games on society, agree that games were just what they would have ordered. By the way, here is another of our insights: at the rate which mass media is painting video games as the Ultimate Villain and the source of all mental distress, it might be that violent games would be

Whatever Happened To...

Gizmondo

The Gizmondo, manufactured by Tiger Telematics, was a handheld gaming console with GPRS and GPS capability. Launched in 2005, it didn't manage to make a mark and sold poorly. By February 2006, the company discontinued production and was forced into bankruptcy.

The console included a GPS module for in-car navigation which could also be used to track player movement in real-time for multiplayer games. It also had a VGA camera mounted on the rear of the device. It could send e-mails and even SMS / MMS messages.

Known for being extravagant and unnaturally lavish, the UK-based arm, Gizmondo Europe (GE) filed for bankruptcy on January 23, 2006 with an estimated loss of $210 million. Soon after, retail locations in both the US and the UK shut shop, and finally the Gizmondo Web site was also shut down. In addition, their game development arm also went out of business.

Recently, the Chairman of Gizmondo, Carl Freer, stated in an interview in November 2007 that he was interested in the production of the Gizmondo again, and plans a potential launch in the Q3 of 2008. With all the past associated with it and the way Gizmondo has been handled, all we can say is—Carl, your Gizmo...no...do!

outlawed for civilians. Games would become standard issue, and video game developers would become part of the military industrial complex. They would lobby Congress to continue pumping money into wars, and would be buddy-buddy with the likes of Lockheed Martin and Boeing.

MAP THAT
Trouble Spots

The Big G has tripped up. Again. After making enemies with the residents of an Israeli town, it is taking to renaming oceans. Confused?

Google Earth has user generated content where users can describe what the place is about, with short snippets about local history and culture. Sort of like a map-based Wikipedia. This is a classic Google strategy—get the users to do all the work for them. Some call it wisdom of the crowds, others call it crowdsourcing

and yet others say, "For the community, by the community."

However, whenever this strategy is followed, there are always pitfalls. Though it may sound good in theory, in practice there are plenty of controversies—the almost regular controversies about Wikipedia articles are an ample indicator. And now Google Earth has also caught the Wikipedia bug. Turns out that one town in Israel named Kiryat Yam was described as built on the ruins of a Palestinian village after the 1948 Arab-Israeli War. The locals were not amused, because the official version is that Holocaust survivors built the town ground up in a barren desert. They took Google to court, demanding the removal of the offending citation, which had a link to a pro-Palestine site. Google pointed out the terms of its end user agreement, which was probably not read by 99.98 per cent of the residents, and washed its hands of the matter saying that they are not responsible for such

content. The case, as of writing is still undecided.

In the second case where oceans were concerned, Google cannot blame users' misplaced sense of geography. Some days back, the body of water called the Persian Gulf was referred to as the Arabian Gulf in Google Earth. Indignant Iranians promptly took Google to task, pointing out that a similar goof-up by National Geographic was corrected later. Google has not officially responded to the accusation, but we would like to think that they will revert back to status quo. We assume that the best course of action for Google would be to show the whole Middle East as an amorphous whole, and leave the contending parties to fight it out regarding nomenclature. Knowing Google, they wouldn't have too much problems in churning out a foolproof method, complete with DNA profiling and iris scans. This would kill two birds with one stone—nobody will accuse Google of being biased, and the process remains all open source and community driven.

Bluff
YOUR WAY THROUGH

Social Networking

Poke: This is a Facebook trademark. A poke can mean anything–a way to announce your presence to friends, reminding your partner how much you miss their TLC, or just another way of saying Hi!

Wall: This is Facebook's alternative to Orkut's scrapbook with the option to send only text. This is however, not the primary means of communication. The default wall is supplanted by applications like FunWall, which is more flexible in terms of usage.

Scrap: This is Orkut's primary method of communicating with people. Members in Orkut, have an area called scrapbook where all the messages, which they have received are seen. You can send videos, animations and pictures along with plain text in scraps.

Hot list: A list of your special friends in Orkut–this is for your eyes only. A similar feature is the crush list. However, if both the persons have added each other in their crush lists, they will get a message that there is a match.

Teaser: This is a private message in Orkut, which only the recipient will see. Teasers are categorized into different moods and can be customised too, apart from the score that is provided.

Tweet: In Twitter, your update is called Tweet. It's a short message, with a maximum of 140 words.

Nudge: This is a reminder system in Twitter. If you are not updating your Twitter, you might receive a nudge from your friends. Needless to say, there is no restriction on when you can nudge someone.

Usage: Within half an hour of opening my account, I got three *pokes* and seven *wall* messages. Meanwhile, in Orkut my *scraps* are touching 15,000 while *teasers* and *crush list* matches from my girlfriends are filling my inbox. I have, however, yet to see the benefits of Twitter–the *Tweets* are too short, and I have no friends to *nudge*. They don't seem to like Twitter!

W̲ild W̲ild W̲eb

In The Nudesights

What do you get when you combine Google Maps with the local knowledge of where the best peep shows are held? You get Nudar–advertised as a radar for nudity.

At **http://nudar.nudar.com** (it's not safe for work, so look before clicking), Google Maps is used to locate strip clubs, nude resorts, nude beaches, topless bars and all other similar establishments. Currently available in US and Canada, this Web site aims to map out similar places around the world.

These places can be searched based on different categories–location, permission to serve alcohol and distance from landmarks like airports.

By simply pointing out to the location, users can rate and review them. This means that if you are in any city and want to get a bit of action–no more embarrassing questions.

For people who have GPS units, you don't have to look at the Web site. Custom made maps with emphasis on skin spots are on sale by the Web site. Buy the package for $29.95 (Rs 1,196) and waltz across cities and alleys fearlessly, homing in with unerring accuracy.

Catty Exercises

You have a cat, and you love her to bits. You also swear by yoga and think everyone should do some *asanas* once in a while. You pamper your cat so much–it has become overweight and lazy! If you are worried that the cat could have arthritis or bad liver, go over to **www.yogakitty.com** and look at the videos which shows you how to do yoga with your cats. Yes, you heard right! And no, we are not delusional.

We haven't watched all the videos here (the connection was really slow) but the titles are sufficiently exotic–"Clearing past karma", "Electromagnetic Frequency", etc.

PUBLICLY PRIVATE
Hole In Space

MySpace is like a big sieve where there are no secrets, even if you have used the "private" setting. It thus wasn't a big surprise when about 500,000 photos in private areas were accessed by hackers exploiting a security hole in the platform architecture. These photos totalled about 17 GB in size, and were one of the most hotly downloaded items on The Pirate Bay. At one point, about 6,700 downloads were underway at full speed, which tapered off sharply as the comments of the first downloaders started trickling in.

Most of the people who downloaded the private photos were thinking of only one thing: porn. They assumed that because it was MySpace, and because it was private, those half a million photos would be of girls in various states of undress. Sure beats having to pay sites dollars for the daily dose, right? Well not so fast, buster. As the first downloaders opened up the files, expecting to see something else, they were greeted with images of babies, weddings, fat ladies pushing prams, people toasting at parties or guys wearing skirts and tops. The comments in the forums revealed quite a few gems. One unlucky pirate bemoaned that instead of wasting bandwidth to download 17 GB of baby photos, he would have done better to download the real thing. Yet another stricken soul pined for image (he meant porn) detection software. The third commenter had a you-gotta-lie-in-the-bed-you-made attitude: his comment was simplicity personified–"If people want to see porn, they should download porn".

Even after people were warned that the photos were not as expected, many continued to download them. In this context, it must be mentioned that this security hole had remained unpatched in MySpace for the last three months. Many people who continued to download them regarded this as cocking a snook at the site, and also to scare other people into thinking twice before uploading personal photos. In fact, with the rash of hacker attacks reported all over photo-sharing sites–where private or restricted photos have been accessed by outsiders–we have come to this conclusion:

no site is 100 per cent safe, and if you want to keep photos completely private, keep them on your PC. Or better yet, print them out and keep the photo album in a locked box. Hacker proof, the old way.

BUSINESS SENSE
Outsourcing Malice

Outsourcing, globalisation and catering to local needs are not only buzzwords among the legalised businesses. The villains of cyberspace–hackers, spammers, phishers and their ilk–have discovered that going local pays big time. This theory seems perfectly reasonable when the tone of the help wanted postings in underground channels–which are the cyber equivalent of seedy bars where criminals hang out–is inspected.

According to the postings, programmers with Mandarin, Russian and Portuguese skills are in hot demand. The focus is on creating sites without any typos or grammatical mistakes: too often, a fake site can be differentiated from the real goods by lousy language. Another benefit of going this route is that they can sound more genuine when they refer to something that makes more sense in local context. Because face it, if you get a long unsolicited mail offering you houses for sale on the US East, coast you would hit the Delete button without thinking–but if that offer was for one in Mumbai, maybe you would be a wee bit more interested. Besides, knowing local conditions would make their attacks more sophisticated–it is better to spam P2P networks in Japan, gaming sites in China or banks in Brazil. The market for malicious software products in languages other than English is booming, and like any good business, the hacking networks are spreading their wings.

Will this strategy work for India? Will hackers, in the future send mails offering Pongal gift packs in Tamil, or Diwali gift certificates in Hindi? Expect to know in, like, 7 years! *(Disclaimer: that figure is our guess, but don't sue us if you get cleaned out by such a rogue a few months from now).*

Bang!

February's a short month, and in general, we don't approve of it. Where did the Gregorians get off stealing our precious extra days from us? Things get extra-crazy around here anyway, but this February will go down in history...

You'd probably expect the cribbing to start right here, but some good things happened, too: Sanket bit the bullet and got himself hitched earlier in the month. Surely you'll join us in wishing the couple many years of giddy happiness.

We've also got us a new addition—Nash David has joined us as our new Copy Editor. Rumour has it that after watching us for the first two weeks, he had his head buried in his hands and was murmuring to himself "Dear God, what have I done?"

We have plans for this one... MuwahahaHAHAHAHA.....

And now for the bad news. First, (naturally) Sanket wasn't available for work this month, so the Test Centre's job became that much tougher. The result: Raaabo's already sparse scalp even gets sparser.

Nimish was on leave too, spending time with his visiting mother. The result: Raaabo's sparser scalp starts to sweat...

And again, we must bring up the fact that February is an unacceptably short month, and we've got the Powers That Be breathing down our necks. Well, Raaabo's neck, to be precise.

Last we checked, Raaabo was roaming the streets in a daze, asking people if he could borrow a gun...

DIGIT DIARY

Blog WATCH

Google's cold shoulder towards Microsoft's proposal to buyout Yahoo!, a MacBook Air user's experiences and Torrent sites being shut by media hype are part of this month's blog watch

Robert Scoble
http://tinyurl.com/ysq3ls
http://scobleizer.com/2008/02/04/what-you-all-are-missing-about-google/
What you all are missing about Google
The bloggers are going nuts, once again, over the email that a Google lawyer sent to Microsoft regarding Microsoft's proposed purchase of Yahoo.

Here's what's really going on:

1. Google doesn't mind this deal going through at all. Google knows they will be able to outrun a "Microhoo." Why do they know that? Because they've been able to outrun them both separately. As I said on Channel 5 news on Friday night: put two turkeys together and you don't get an eagle....

Enigmax
http://tinyurl.com/2ybmof
http://torrentfreak.com/how-a-bittorrent-tracker-owner-hides-from-the-anti-pirates-080206/
How a BitTorrent Tracker Owner Hides from the MPAA/RIAA
In most countries around the world, the legality of running a tracker is still uncertain, in that definitive court decisions have not been made. Even in the US, the last two big trackers to be shut down–LokiTorrent and EliteTorrents–weren't shut down by a court, but thanks to the mainstream media, and public perception that these sites are operating illegally. The lawyers of the MPAA, RIAA and IFPI maintain they're illegal so that's often enough to cost an admin–if his identity is compromised–lots and lots of worry, and probably money too, regardless of his status under the law....

Guy Kawasaki
http://tinyurl.com/2tc5bw
http://blog.guykawasaki.com/2008/02/into-thin-air-h.html
Into Thin Air: How I Spent $5,000 on Air and Made Fifty-Year Old Women Swoon
...Day 7: Having read all the specs and reviews about the Air, decide that this "no-compromise" machine has way too many compromises. For example, no Ethernet, no CD/DVD drive, tiny hard disk/solid-state drive (I have forty gigabytes of pictures alone), incompatible with my 30-inch Apple monitor, and a ridiculous new power supply. Therefore, order a totally souped-up MacBook Pro 15-inch.

Day 8: Entourage database corrupted for the umpteenth time. Old MacBook Pro hard disk now too small to rebuild (my email database file is 9 gigabytes). Need to do something soon. Delete to make space and rebuild Entourage for hopefully the last time.

Time to think!

1 **What does the SLOOP project refer to?talk about?**
(a) Sloop? There is no such term
(b) Steady Learning Over Obvious Problems
(c) Scientific Lessons On One Principle
(d) Sharing Learning Objects in an Open Perspective

2 **What does spitting in the technology arena refer to?**
(a) Sending VoIP spam
(b) Breaking down a firewall
(c) Bookmarking an article on Digg.com
(d) Editing a Wikipedia entry

3 **What is UMPC?**
(a) Ultra Miniscule Personal Computer
(b) Ultra Micro Personal Computer
(c) Ultra Mobile Personal Computer
(d) Ubiquitous Mode Per Channel

4 **What is David Bradley famous for?**
(a) For starting Bradley Computers
(b) He started in the 70s sitcom Brady Bunch
(c) He invented the transistor
(d) He invented the [Ctrl]+[Alt]+[Delete] combination

5 **I am a former student of Harvard Business School, had a small bicycle business, then introduced push button phones in India. Today I head a major telecom company in India. Who am I?**
(a) Ratan Tata
(b) Anil Ambani
(c) Kumarmangalam Birla
(d) Sunil Mittal

6 **What does LG stand for?**
(a) Luci Gudisheeni
(b) Lucky Getty
(c) Lucky Goldstar
(d) Left Gear

7 **The kitchen computer is a term hardly heard of these days. What is it?**
(a) You must be kidding. Why would someone need a kitchen computer
(b) A PC placed in the kitchen is called a kitchen computer
(c) There was in fact a kitchen computer released by Honeywell years ago to assist women with recipes and other gourmet activities.
(d) Microsoft's next venture into the home business is the kitchen computer.

8 **What is the electric pencil?**
(a) Similar to the stylus, just that you write with a pencil
(b) Handwriting recognition software
(c) First word processor
(d) Stationary company

9 **Galvin Manufacturing Corporation went on to sell car radios. How do we know it today?**
(a) Dunlop (b) Goodyear
(c) Michelin (d) Motorola

Got an interesting question? Send it in with the answer to TQ@thinkdigit.com Mark "TQ" in the subject area.

Did You Know?

The voice in the famous AOL ad saying "Hello! You've got mail", is that of Elwood Edwards, an American voice-over actor who has also dubbed for Simpsons, also advertising for the movie *You've Got Mail.*

Answers

|	
6. c	1. d
7. c	2. a
8. c	3. c
9. d	4. d
	5. d

Crossword

ACROSS
7. An integer's property of being odd or even (6)
8. Characterized by slanting characters (6)
9. Readable and writable external storage medium (4)
10. Chatterbot predecessor (5)
11. American dance form is also a windows application development system that uses predefined templates (5)
13. Storage device that holds incoming messages from the Net (7)
16. Multiple----- - collection of information arranged for processing by a program (7)
17. To go into partial deactivation to save power in hardware technology (5)
20. 8th letter of the Greek alphabet (5)
21. To have a real-time conversation online (4)
22. To correct problems in hardware or software (6)
23. Representing data in continuously variable physical quantities (5)

DOWN
1. Collection of information that is organised for it to be accessible and upgraded (8)
2. Collection of information stored on a computer (4)
3. Common units of computer storage from desktop computer to mainframe (5)
4. 'D' in DVD (7)
5. Side by side interface—used for connecting the printer on a PC (8)
6. ---- Up—temporary connections between machines over a telephone line using modems (4)
12. A pointer to a program or information file in Windows (8)
14. Character that represents an action in computer programming (8)
15. Ad serving program run by Google (7)
18. System for detecting the position and movement of a remote object by radio waves reflected from its surface (5)
19. Sound emitted by the computer to indicate that something requires the user's attention (4)
21. Challenge-Handshake Authentication Protocol(abbr) (4)

Crossword by **Nitta Jaggi**
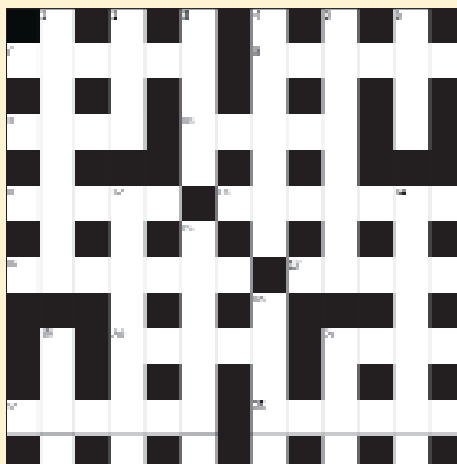
January's Winner
Dushyanth R
Mysore, Karnataka

Send in your entries to **TQ@thinkdigit.com** on or by **20th of this month.** One lucky participant will win **3ds Max 9 Bible** By Kelly Murdock Published by **WILEY-INDIA**

Win!

February's Solution

February 2008

Rich Man's Mag?

I am a Subscriber of *Digit*—my technology navigator. I am from a lower middle class family, and like everyone else I have some wishes to fulfil in my life—one of them is to own a computer.

The reason I'm writing this letter is to tell you that you're a "rich person's" magazine. You have no products for customers like myself. I would love it if you reviewed CRTs or 17-inch LCDs, a budget 160 GB hard disk, low priced speakers (Rs 500 to 1,000), etc.

I know you cannot test everything that exists in the Indian markets, but once in a while why not test budget phones and the like, to tell us what to buy. Aren't the Nokia 1112, 5070, 6070, 6030, etc., considered to be good phones? I know you have limited pages, but perhaps you can test them for us and tell us which budget products we can buy.

I'd like to be able to buy a budget computer, and do not need a quad-core gaming rig. So what about readers like myself?

I don't know if you will read this letter or not, but I still would like to thank you for a great magazine.

Antu Kanta
Durgapur, West Bengal

I rarely answer letters in this space, but I was moved by your letter. We want you to go out and buy a computer, and we thought the best way to inform you of what to buy would be to base my column on this very topic. The team also promises to try as hard as they can to get, test and include products for all budgets.

All I can do is promise that I will keep my eyes open on shopping trips, and see if I can spot deals in the budget categories. Keep writing in and send us more suggestions, we love to help whenever we can.

Agent 001

Unhappy Feet

I think *Digit* feels that we're all penguins—experts at Linux. Although Linux is my passion, and I enjoy using the Open SuSE 10.3 that you gave me, I am disappointed with the Linux content on the DVDs. Yes, it's true that your DVDs have the best content, the Linux content is all provided as tarballs. Not all of us can compile from source. I know the basic commands, such as "./configure", "make", and "make install", but many software require special libraries to work. I wish you guys would look at the requirements and provide those libraries as well. At least provide the software manuals, or give us RPM packages.

Also, you give us Avast! Home Edition and it's update every month, but I feel that it's not the best free anti-virus. I think Avira and AVG are much better, and you don't even give us the virus definitions for them. Please provide us with updates for the same every month.

Still, thanks for providing us with such a variety of software. I would also like to thank you for switching me over to open source. Although I do have a pirated copy of Windows as dual-boot, I'm trying to do everything possible on Linux. I hope Microsoft will forgive me because I am a student and I'm poor, but I promise to either switch over to Linux completely, or buy Windows with my first salary.

Aswin Babu K
Alapuzha, Kerala

We hope Microsoft will forgive you too! We will also try and provide you with executables and RPMs instead of tarballs, which we give so that any users of any Linux distro can compile from source. We're very glad that you're choosing open source over piracy, and hope that more people will continue to do so. Keep writing in, and let us know whether you finally make the switch or when you buy Windows.

Team Digit

Confessions Of A Serial Reader

When I first got your magazine, I committed the blunder of trying to compare it to the others. After a few months of buying them, all I realised was that none of them could beat *Digit*. I was born into a middleclass family, and no one but me has an IT background. I used to work for a hardware vendor, so I picked up a lot on the job. Now, I'm in the music business, but I still use *Digit* to

stay in touch and keep my passion alive. I would suggest that you keep up the good work and add more tutorials and articles about computer education, instead of just product-specific articles. I hope you will forgive my earlier blunder of buying other magazines, and accept me as a member of the *Digit* family.

Vasanth Kumar Jagan Mohan
MD, SA Musicals

We're actually glad you bought those "other" magazines. It's good that you got a first hand look at them and chose us for being better. Unlike jealous spouses, or significant others, we're always forgiving and welcome you back with open arms.

Team Digit

BOO!

My brother has been a "die hard" fan since 2000—when *Digit* was called Chip, and I was in class two. Now I'm in class 10, and we're both fans. This time we actually got your magazine five days earlier than usual, thanks for that. I was terribly disappointed by your mobile phone reviews. I wish you would have compared them the way you normally do, because all the phones seemed to get ratings of 3 or 4. How are we supposed to tell which ones to buy? I would have preferred a comparison test.

Still, I have to admit that you have helped me learn technology, and I am considered a "tech consultant" in class. I also liked the article *Settling Differences*, about which is more secure, Linux or Windows!

Akash Agrahari
Lucknow

We're glad that you've followed in your brother's footsteps, and we hope you'll continue to do so. The reason why we did individual reviews for the mobile phones was to bring out finer aspects of all the mobiles. Unlike graphics cards, hard drives, CPUs and the like, it's a lot harder for us to tell you what to like or hate about a phone. We'd rather give each one its due and let you, and all our readers, decide on what best suits their needs. Of course, we also thought about people like you who wanted to compare the phones and wanted detailed scores and feature lists, and provided you with the tables at the end of the article. We're not going to kid ourselves and imagine that we can please you all, but you can rest assured that we'll keep your suggestions in mind for the next test.

Team Digit

Give Me My Space

I have had a lot of trouble over the past few issues of *Digit*. My problem is that your text and pictures are being placed too close to the bound edges of the magazine.

Please provide more of a gap at the bound edges, because, since I have only one hand, I find it difficult to read the magazine. I hope you will consider my request and implement this soon.

Raghu GS
Bengaluru

Wow, it's heartening to see that your disability has not stopped your passion for technology, or for Digit. We have forwarded this mail to our designers and they promise to look into the matter, and stop trying to pack in too much content into the bound edges.

Team Digit

Slow Track?

I have been a long-time reader of your magazine, through all its name changes, :). I find *Digit* extremely interesting and useful, but this is the first time I am writing to you. Perhaps this is because I have two small requests.

1) Please add the latest version of OpenOffice.org as soon as possible.

2) Please include the previous month's *Fast Track* book in PDF version on the discs.

I would be especially grateful for the second request, because I am tired of my friends "borrowing" the *Fast Track* books, and then never getting it back.

Adding the PDF to the subsequent month's DVD will prevent me from having to chase it around my city all month while it's out on its "walk".

I can't wait till your December or June issues to get my hands on the PDF versions.

Sandeep M

Well Sandeep, we're sorry to tell you that not only are you doing yourself a great injustice, but us as well. You should consider forcing the subscription form on to your friends, and insisting that they subscribe to *Digit*.

Not only will this safeguard your copy of *Digit* and *Fast Track*, it will also be good for all your friends and us as well.

As for the *Fast Tracks* in PDF format, we'll see what we can do. Though you have to admit that adding the *Fast Tracks* in PDF to our special issues does make them worth the wait.

Team Digit

I Want More

I am a regular reader of *Digit* since August 2003, and I haven't missed a single issue since. This magazine is simply mind blowing. I keep reading all my magazines throughout the month, and this helps me keep updating my tech knowledge. Although I am very happy with *Digit*, I still have some suggestions:

1) Please increase the size of the Tips & Tricks section.

2) Please add more about Vista, Linux and the latest hardware.

3) Don't give us those old movies in the entertainment section.

4) Provide the latest games, movies and wallpapers in every issue.

5) A Fast Track to DirectX 10.

6) Give us more information on Web sites and freeware.

I hope you will consider my suggestions.

Imran
Kashmir

Hmm, so let us get this straight. Basically, you want more Tips & Tricks, more Vista, More Linux, more... well... *Digit!*

Although we all wish we could double the size of the content on a regular basis, we're all quite afraid that our families will disown us, our employees will drop of exhaustion, or worse, quit!

Jokes apart, we can understand your point of view, and will try and provide you with the overdose of information that you seek. Of course, we have to keep our costs and our health in mind, so all we can promise to do is try our best.

Team Digit

I Want My Big Mac?

I am a fan, and read your magazine faithfully. I loved the article *Settling Differences*, but I feel you should have included Mac from the security angle. Since the Mac is quite a mystery to us PC users, a little information in that regards would have been useful. Please also add more articles about Linux.

Manish Sharma

The article focussed on Linux and Windows mainly because pretty much every desktop in the world runs either a Unix-based OS or Windows. Apple's OS is based on BSD, which is another Unix-based OS. But yes, we will try and include more Mac-centric content.

Team Digit

No, No, NO! Oh Fine...

I'm writing to you after a long time. I used to buy a lot of IT magazines, but now I only buy *Digit*. However, you guys have to make certain improvements. The disc packaging is getting worse. This month's DVD and CD refuse to sit in place because of the poor jewel case. I have also been getting DVDs with a few corrupted files on a more regular basis, and the Entertainment DVD of your anniversary issue did not run at all. I expect better from India's No. 1 magazine! Also, you said you'd provide the missing Google *Fast Track* on the following DVD, but the DVD-Guy forgot—please add it when you can.

As for the *Fast Track*, you need to take it to the next level, and add topics such as Adobe Flash, Programming, Dreamweaver, etc.

Of course, only criticism and no praise is not fair, so I should tell you that your disk interface is the best of all the magazines. The other magazine's discs do not run on my old computer, but your disc runs perfectly—it's good that you went for usability and not fancy, irritating and heavy interfaces. When I return to my village, where I have 128 MB RAM machines, I don't even bother carrying anything but *Digit's* discs with me. Please start adding movie trailers again, I loved those.

Also, one of my friends is following your advice in the *Tech Careers* section, and is doing well. I thank you on his behalf. Please continue to be our technology navigators! I would write more, but both you and I do not have such luxuries with time...

Inderdeep S

Wow Inderdeep, you've really taken the time to send a feedback letter. We'll look into the DVD jewel case matter, though sometimes a handful might be damaged during packaging and transport. We request you and all our readers to write to **help@thinkdigit.com** to get free replacements for damaged DVDs.

Yes, apparently the "DVD-guy" fell asleep again, and forgot the *Fast Track to Google* PDF again. Seriously though, he was on leave and the rest of us are to blame for that. We'll include it as soon as possible.

Thanks for appreciating everything else, and please keep writing in and giving us your valuable suggestions.

Team Digit

Good Will Gaming

We have featured a clutch of celebs in these pages who are technophiles at heart. The latest to join the list is Robin Williams, the funny man and sensitive actor.

Robin Williams discovered the Internet after giving up addictions like drugs and partying. Once he was hooked and logged on, there was no prying the man away from the computer. Things had come to such a pass that he would not stay in a hotel without a Net connection. Besides being active on chat rooms—where he was once accused of impersonating an 8 year old girl—he is an avid gamer.

His favourite genre is first person shooters, and gets his kicks playing online against other players. *Half-life* and *Warcraft 3* are what he nominates as his favourites, though he is game for other titles too. Williams is fascinated by the clans and myths and guilds that are the heart of modern day games, especially MMORPG and, for a newbie and a guy on the wrong side of 50, picks up stuff pretty well. In fact, his analysis on how mods make a good game greater, as well as how modding evolved, is as good as that coming from a hardcore gamer. Way to go, Robin.

Apart from online gaming and chatting, William's other online activities include trawling the auction sites for kicks and checking on game sites. Curiously, like most of the rest of the world he does not check himself out, even though there are fan sites devoted exclusively to him.

We think he is adopting a wise course, as the Internet is a free-for-all field, and anybody can speak their mind. No sense getting upset about stuff that you can't control, right?

Crashed Career

No matter how much we try not to be prophets of doom and leave a bad taste in your mouths, in the interests of truth we have to spill the bad news. Folks, when you have a broken computer take care to save the data that is on your hard drive. If the hard drive is broken, have the computer guy make a house call. But on no account let the hard drive out of sight. Or else....oh well, read on.

Edison Chen, who had acted in *The Infernal Affairs*, the racy Hong Kong cop drama later remade as the Oscar winning *The Departed* had problems with his customised MacBook and had to drop it off at a computer repair shop. Nothing out of the ordinary. What was out of the ordinary was the data stored in the hard drive—his "personal" pr0n collection! The number of pictures was 1300, and all were pictures of various stars in the Hong Kong entertainment industry in "compromising" situations. Since this is Tabloid Tech lets be blunt: they were all photographed having sex with Chen. In his defense, he says the photographs were not taken without permission, but we're guessing that he did not intend them for public distribution.

However, thanks to his indiscreetness and carelessness all these photos are now stored in multiple servers, downloaded by thousands of people and virtually impossible to stamp out. The actor made the mandatory apology to all his co-stars and has resolved to quit the Hong Kong movie scene, introspect on the mess he created and go underground for some time. As for the actresses who found themselves unwittingly exposed for no fault of theirs, they are all keeping a low profile and hoping the storm will blow over.

Heath Ledger Movie To Be Salvaged

Director Terry Gilliam is trying to proceed with the production of *The Imaginarium of Doctor Parnassus*, which actor Heath Ledger was part of, before his death on January 22 this year due to drug overdose. The movie is reportedly an American fantasy-adventure film. Prior to suspending the production of the movie, Christopher Stoner and Tom Waits were co-starring with Ledger in a story about the leader of a travelling theatre troupe, who through a deal with the Devil, takes audience members through a magical mirror to explore their imaginations.

Ledger's untimely death in January led Gilliam to suspend the production. To his benefit, Ledger's role is based in the magical world, and so he plans to turn Ledger's character "Tony" into other characters to be played by Johnny Depp, Jude Law and Collin Farrell. Gilliam plans to use computer graphics imagery for this.

Unfortunately, the production of Michelle Williams' starrer *Mammoth* had to be put on hold following her grief. Surprising as it may sound, technology advancement has led to the dead continuing to work, while those still alive, take a break to mourn!