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December 2005

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THE ZERO1 AWARDS 2005

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ZERO1
AWARDS
2005

ZERO1 AWARDS

2006: Delivering On Dreams

Maulik Jasubhai Publisher

LAST MONTH, Nicholas Negroponte of the MIT Media Lab, with Kofi Annan, unveiled a prototype of the much-awaited $100 laptop. In an interview, Ajay Chowdhry of HCL discussed his plans to develop a PC that can be powered by pedalling—meaning you'd no longer need to worry about regular electric supply.

In the past twelve months, we have also seen new stories about the Simputer—an extremely economical handheld computer—and the e-Choupal initiative, which places Internet-enabled computers in rural areas. E-Choupal is used by farmers to get better weather forecasts and better prices for their grains. Then there's Intel's "community PC" initiative, as well as their WiMax initiative in Uttaranchal. Think about Project Shiksha, for that matter, which aims at making the masses IT-literate. What happens when you have an entire new generation that is tech-savvy?

These sound like interesting stories, and they pique common urban curiosity. However, one can't dismiss such news as merely interesting. These events are the rumblings of something seismic waiting to happen. Forget about Bangalore. Forget about info parks. For the urbanites amongst us, it's easy to forget that the real India lives in the villages. The implications of these new developments are immense. Imagine what happens when rural computer education is recognised for what it is: a billion-dollar industry. Imagine what happens when WiMax and pedal-powered laptops bring the Internet to villagers who don't even have access to power. Imagine when suddenly, we as a country have a chance—and it is, admittedly, just a chance—to bridge the digital divide.

On the other side of the planet, we are witnessing profound changes that go beyond Moore's law. Google indexing libraries. 64-bit personal computing taking off. VoIP phones everywhere. HDTV livening up the home. The arrival of Internet TV. Nanotechnology creating products you and I can use. High-density optical discs coming to store shelves. Intensely immersive multi-player gaming, incredibly powerful and versatile personal assistants, truly digital workplaces! It all seems to be happening now!

My personal favourite is the possibility that newer games with increased complexity and the ability to create truly immersive experiences will make us more intelligent. One theory goes that games such as SimCity and Grand Theft Auto actually teach us new skills, without us realising that we are learning them. They teach us to make simultaneous decisions which are obvious to the situation as well focus on the macro issues of the overall objective. Surely these are skills that are not the exclusive domain of simulated environs.

On both sides of the planet, 2006 could well be the tipping point in mass rollout of tech.

> Imagine what happens when WiMax and pedal-powered laptops bring the Internet to villagers

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Digital Business

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Here's about dotcoms that decided to get down on the ground to reach a wider audience. Why did they do it? What has this done for them as online brands?

166 Wiki At Work ▴
The wiki is a new, fast way of collaborating at work and sharing information. Get the why and how of setting up your own office wiki. The best part is, it won't cost you anything!

173 Trend
Integrated security solutions is what many offices today are opting for. We spoke to a few companies to take stock of this trend

170 Face Off
The Linux versus Windows debate continues into the server space in this month's Face Off

December 2005

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193 Accelerating IT Literacy
Can India become a nation of computer literates? Project *Shiksha* plays catalyst by training teachers in basic computer skills ▾

200 Tech Critique ▾
It's easily the most awaited game of the year. *Quake 4* will surely have you asking for more. A blockbuster yet again!

195 Hi-tech Products
Take a look at these drool-worthy electronic goods, and you'll rue the fact that you're not a millionaire a few times over!

Escape

205
A brief introduction to Brin and Page, creators of the world's best search engine

205
Would you want a technology that makes sure that you see no skin?

DVD

DIGITAL PASSION

NetBeans IDE + JDK 5.0 Update 5

This distribution of the J2SE Development Kit (JDK) includes NetBeans IDE, which is a powerful integrated development environment for developing applications on the Java platform.

J2EE 1.4 SDK 2005Q2 UR2

Contains: Sun Java System Application Server Platform Edition 8.1 2005Q2 UR2; J2SE 5.0; J2EE 1.4 SDK Samples 2005Q2 UR2; J2EE 1.4 API Documentation

DEVELOPER TOOLS
n SQL Manager 2005 for SQL Server 2.0.5
n Pronto Survey 1.0.5
n Web Questionnaire 3

GAMES

Age Of Empires III

Serious Sam 2 Demo 2

X-Men II: Rise Of Apocalypse

Pro Evolution Soccer 5 Demo

PLUS
n Sunrise Extreme Demo [Single & Multiplayer]
n Age of Empires 3 Update 1.01

DIGITAL TOOLS

Macromedia Flash Professional 8

Design, develop, and maintain interactive online experiences with the latest release of Dreamweaver, Flash Professional, Fireworks, Contribute, and FlashPaper.

Macromedia ColdFusion MX 7 Developer Edition

Design, develop, and maintain interactive online experiences with the latest release of Dreamweaver, Flash Professional, Fireworks, Contribute, and FlashPaper.

CyberLink DVD Solution

CyberLink DVD Solution consists of over 10 software programs integrated in one application: CyberLink PowerStarter; CyberLink PowerDVD 6 Express; CyberLink PowerDirector 4 Express; CyberLink PowerProducer 3; CyberLink Power2Go 4; CyberLink LabelPrint; CyberLink InstantBurn; CyberLink PowerBackup; CyberLink PhotoNow!; CyberLink MediaShow 3; CyberLink PowerDVD Copy

Ulead Photo Express 6

Ulead Photo Express 6 is home photo creativity software that makes it easy to edit and share digital photos and create fun photo projects. Edit and enhance images, browse your photo collection and express your creativity with stunning special effects and creative photo projects. Ulead Photo Express puts you on the fast track to photo fun.

MULTIMEDIA
n Nero 7.0.1.2 Premium
n iTunes 6
n AVS Audio Tools
n Blender 2.40 alpha2
n mosascii m2 2.0.053
n bcTester 4.0
n My Pictures 3D 0.9

INTERNET
n Yahoo Messenger 7 Build 7.0.0.437
n MSN Messenger 7.5
n mIRC Power Pack 7.10 RC5
n Windows Live Messenger 8.0.0328
n SysUtils LAN Administration System 1.1
n Spyware Hospital 1.0
n TurboFTP 4.60 Build 432
n SpamExperts Home 1.0 beta
n Mantis 1.0.2090

SYSTEM
n SiS UniVGA Drivers
n Realtek AC'97 Audio CODECs 3.79
n nVidia ForceWare 81.85
n Kaspersky Anti-Virus Personal 5.0
n VMware Player 1.0.0 Build 18007
n Catalyst 5.10 Windows XP
n Microsoft Office 2003 Service Pack 2
n Windows XP TheHotfix.net Pack
n Panda Titanium Antivirus 2006
n Norton Internet Security 2006

DIGIT IN PDF
By popular demand, archives of the past 12 months are back!

DIGITAL BUSINESS

OpenOffice.org 2.0

OpenOffice.org is a multiplatform and multilingual office suite and an open-source project. You may need Java Runtime Environment installed, if you do not have it, install it from the Developer tools section on the CD.

SpeechToolsCenter 2.0

Recover and reuse your PDF content with Solid Converter PDF to Word

PRODUCTIVITY TOOLS
n Window Eyes 5.5 Beta 2
n OpenOffice.org 2.0
n Excel Invoice Manager Express 2.1.1007
n Sydock XForms 2.5.4.4
n iMediaCONVERT 3.3.12
n SpeechToolsCenter 2.0

MOBILE APPS
n Oxygen Express 1.1
n Nokia PC-Suite
n Sony Ericsson PC Suite 1.7.10
n Cell Phone Manager 5.4
n MOBILedit Lite 1.99.0.3

DIGITAL LEISURE

Gun Trailer #6

A Western shooter mixing first and third-person viewpoints, this simplistically entitled game is far from a simple shooter in chaps and a holster. This original story follows the life of Colton White, reared as a mountain man in Montana close to the headwaters of Missouri. The game offers free-roaming exploration as well as set story missions and side missions.

Mini Golf Tournament 1.0

Mini Golf Tournament puts you on the greens and challenges you to make a hole-in-one. Have fun beating par on creatively designed courses. Chip and putt the ball in true 3D and experience remarkable real-world physics.
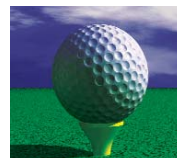
E-BOOKS
Including:
n The Last Journals of David Livingstone
n "Unbounding the Future: the Nanotechnology Revolution"
n J2ME & Gaming

1495 WALLPAPERS
n Our Pick: 431 Wallpapers we liked
n 79 Movie Wallpapers
n 45 Anime Wallpapers
n 11 Island Wallpapers
n 52 Lake Wallpapers
n 143 Miscellaneous Wallpapers
n 110 Motor Wallpapers
n 72 Mountain Wallpapers
n 26 Music Wallpapers
n 63 National Park Wallpapers
n 36 Nature Wallpapers
n 35 Ocean Wallpapers
n 11 Rainbow Wallpapers
n 83 River Wallpapers
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n 62 Space wallpapers
n 34 Sunset Wallpapers
n 47 Tree Wallpapers
n 41 Vista Wallpapers
n 10 Volcano Wallpapers
n 28 Winter Wallpapers

Contents Interactive

DIGITAL PASSION

Java Runtime Environment 5.0 Update 5
The latest, complete Java Runtime Environment that contains the core executables and files that constitute the standard Java platform

MyGeneration 1.1.4.1
MyGeneration generates code from templates that can be written in C#, VB.NET, JScript, and VBScript. MyGeneration is for generating ORM architectures or O/R Mapping files for architectures such as Gentle.NET, and NHibernate.

DEVELOPER TOOLS
n Microsoft Application Compatibility Toolkit 4.1
n AWinstall 4.0.1
n CyD WEB Menu Creator 2
n Pageflix 1
n PDF Split Merge ActiveX 1.0

Galacticards 1.002
In Galacticards, five players start out with a home world, some defensive ground units, and a hand of five cards with which they begin their struggle to become the largest species in space.

LINUX
n CreditCruncher 0.8 beta
n DSPAM 3.6.1
n GeoServer 1.3.0 RC5
n gvSIG 0.4.2
n mechanoid 0.5.21
n Newega 0.6b1
n Play What I Mean 0.08
n Simput 0.4
n Big Faceless Report Generator 1.1.28

File Beamer 0.1.5
File Beamer is an easy to use file transfer tool. The programm is platform independent. That means it runs with Windows 98/ME/2000/XP, Linux, Unix and MacOS X.

DIGITAL TOOLS

Macromedia Dreamweaver 8
Design, develop, and maintain interactive online experiences with the latest release of Dreamweaver, Flash Professional, Fireworks, Contribute, and FlashPaper.
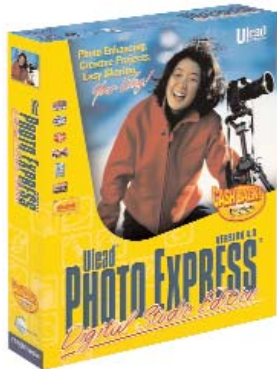
MULTIMEDIA
n Babya Logic 1.0
n Babya Photo Workshop 10.5
n Digital MC 1.0
n Lalim MP3 Player 3.0.0
n MyPixelVault 1.0 Beta
n Rip Wiz 2003 2.4.0
n ShotGenius 1.0
n SKMP3 3.3.3
n t@b ZS4 0.946
n VH Screen Capture Driver 1.2.0
n WinMP3Shrink 1.1
n Audio Edit Magic 7.5.9
n AVS Audio Editor
n HyperSnap-DX 6.00 Beta 3
n Industrial Audio Editor 1.0.0.15
n InterVideo DVD Copy 4 Platinum
n JPEGtoASCII 1.0.0
n Jriver Media Center 11

INTERNET
n IceChat IRC Client 7.0
n MegaIRC 2.85
n Opera 9 Beta 1Build 8031
n Portable FileZilla 2.2.17
n Staff-FTP 2.85
n Syncnotes
n MetaProducts Integra 1.0.63
n MetaProducts Mass Downloader 3.2
n mIRC 6.16
n SmartFTP 1.5.991.7 Beta
n Web Lightning XP 3.0.1

SYSTEM
n APO USB Autorun 1.0
n Attribute Editor Wizard 1.0
n Central Brain Identifier 7.7.0.1
n Chaos MD5 1.0
n Cpu-Z 1.31
n EaseUs Disk Copy 1.0
n nLite 1.0 RC3
n ReNamer 2.20
n SpeedFan 4.27
n Tony Arts EasyCleaner
n Unlocker 1.7.4
n SiSoftware Sandra 2005.1.10.69 SR3

ESSENTIALS
n Adobe Acrobat Reader 7.5
n AntiVir Definition Updates
n Avast Home Edition 4.6
n AVG Definition updates
n Kaspersky AV Definition Update
n Kazaa Lite Mega Codec Pack 1.40
n Kerio Personal Firewall 4.2.2
n Norton AntiVirus Definitions Update
n Spybot S&D detection updates
n Spybot Search & Destroy 1.4
n WinRAR 3.51

In the **Digital Tools > Internet** section of the CD, a software called **High-Octane Skrypt II** was found to contain a virus during replication. This file was removed, but the link for it remains in the interface. This link will not work, and there is no threat to your system. Inconvenience is regretted.

DIGITAL BUSINESS

PRODUCTIVITY TOOLS
n DocTagger 1.0
n DocYouMeant Hound 1.2.0
n Transparent 1.1
n XML Viewer 2.3
n Batch Text Replacer 2.0
n CT Quick Spell 1.0
n Formulator Pro 3.0
n OfficeToExe Converter 1.0
n Online Functions - Exchange Rates 2.0
n Powerpoint-PPT to AVI-GIF Converter 1.10
n Softinabox Paste Fast 1.2.0 Build 30
n Total Doc Converter 1.01
n XLS Converter 1.5.9

Outlook Anywhere 1.01
The anywhere service lets you easily share files with others under your control. It offers private and secure management of shared files to only those people you designate.

NXPowerLite 2.0
Automatically reduce the size of your PowerPoint presentations!

MOBILE APPS
n IceCendol Mobile Phone Instant Messenger 1
n Magic Button 2.0 build 51023
n Card House 2.4
n Create Ringtone 3.1
n Keep Track (Smartphone) 2.0
n ListPro 4
n MetaTrader CE 1.52
n MP3 To Ringtone Gold 3.15
n Numberz 3.4
n P900Themer 1.0.1
n Pragma PocketVT
n SaveBackup 2.0
n Top of the League 1.6.1
n WeatherGuide 1.0.1

WOWScreens Standard 1.5
WOWScreens places lively animated characters and backgrounds at your fingertips providing you with a fully interactive 3D interface. Zoom in or out, move left or right, and even rotate 360 degrees.

Sony Ericsson SendFile 1.2
With SendFile you can send any supported file to an Ericsson mobile phone, incuding: E-Melody (*.emy), I-Melody (*.imy) and MIDI (*.mid) melodies, GIF and JPG pictures, and more
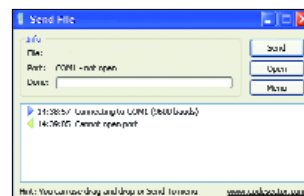
DIGITAL LEISURE

3D Chess 1.0
For over a thousand years, people throughout the world have been seduced by chess. Here's a realistic 3D version of the computer chess game.

Foosball Frenzy 1.0
Foosball Frenzy's colorful graphics, realistic sound effects and true-to-life physics.

SMALL GAMES
n Backgammon Lite 5.0
n Blocks Annihilator 1.0
n Castle Constructor 1.0
n Elite Gomoku 1.0
n Just Sudoku 1.0
n Royal Sudoku 1.0
n Switcheroo Deluxe 1.0
n Air Hockey Adrenaline 1.0
n Checkers Ultimate 1.0
n Crystal Lines II 1.00
n Mahjong: Journey of Enlightenment 1.0
n Pangea - Conquest For Fun 1.5
n Rainbow Web 1.1
n Shuffleboard Showdown 1.0
n Starcars 1.1

E-BOOKS
n Hackers, Heroes of the Computer Revolution, by Steven Levy
n MEN OF INVENTION AND INDUSTRY - Samuel Smiles
n Nonsense Novels by Stephen Leacock
n TAMBURLAINE THE GREAT
n THE THEORY of NUMBERS
n Three Men in a Boat by Jerome K. Jerome

505 WALLPAPERS
n Wallpapers provided by our reader and forum member Jayant Kaul (aka "Ice" on the forum). We thank him for sharing his personal collection with our readers.

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

Online

By Demand

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

Age Of Empires III
Macromedia Dreamweaver 8

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It really does
pay to be loyal!
Find out more
on **www.
thinkdigit.com**

Digit Reader Poll

This Month's Question

**What would you like to
read about more in
Digit?**

☐ Careers In Technology
☐ Linux
☐ Apple Mac
☐ Software Reviews
☐ Consumer Electronics

Log on to **www.thinkdigit.com**
and vote

Last Month's Question:

**What would you like to see more of on the
DVD/CD?**

Linux Software — 13.3%
Office Software — 4.6%
Games — 22.2%
7.3%
System Software — 42%
11%
Developer Tools
Videos/Wallpapers

Total votes **13,208**

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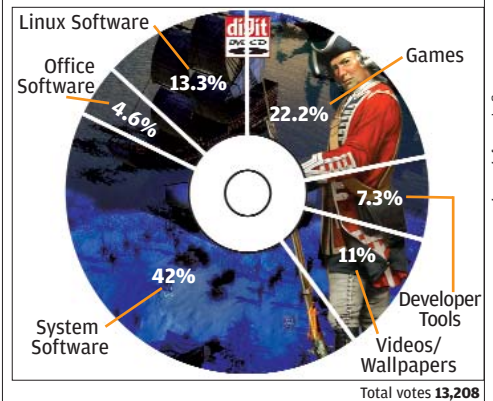
taste technology at **www.thinkdigit.com**

There's something for everyone on the Digit Forum www.thinkdigit.com/forum

Another First For Samsung
Samsung unveiled the world's first wireless broadband handsets—called WiBro mobile handsets—at the Asia Pacific Economic Co-operation Summit. WiBro prepares to be fully implemented and utilised next year. Samsung put on display both the mobile phone-type H1000 and the PDA-type M8000.

Microsoft Says Yes To Supercomputing
Software giant Microsoft has released the second beta of its mainstream technical computing software or supercomputing software, Windows Compute Cluster 2003. This is the company's first foray into supercomputing software, where it is up against open source competitors such as Linux.

Microsoft

Enter

Shaan
Singer

Shaan gave a new dimension to Indipop with his songs, right from his first release *Q-Funk* to the hugely popular *Tanha Dil*. Is the singer tech-savvy too? Read on...

★ CELEB GEEK ★ CELEB GEEK ★ CELEB GEEK ★

What does technology mean to you?
Technology means progress. It helps us achieve what would otherwise be beyond our reach. It enhances the way we live and work, and it has also made us dependent on it—and life *sans* technology is now unthinkable. Gadgets such as the mobile phone that were earlier a luxury have now become a necessity—such is the growth of technology in our life and society.

How do you use technology in your daily activities?
I primarily use technology for calling people. I also use e-mail. However, I prefer to maintain a fine balance between using and over-using technology.

What gadgets do you own?
I own a number of gadgets, but I rarely have the time to use them. A Motorola Razr is the cell phone of my choice—it's neat and sleek. My earlier phone tried my patience. I also have a Hitachi DVD camera which can record directly onto DVDs.

How has technology influenced your career?
Technology hasn't played a big part in my career. Admittedly, it has made recording and playback convenient. Personally, I would never use devices such as pitch correcting machines for recording.

SHOULD WE CALL IT 'SONYWARE'?

Windows Labels XCP Spyware

Sony thought they were just protecting their music from being ripped and stolen, but a Windows programming expert by the name of Mark Russinovich recently unearthed something dirty. Used as a protection system for their audio CDs, Sony's XCP system has turned out to be the darling of a number or spyware and virus writers. This support to malware provided by the copy protection system, albeit inadvertently, has resulted in Sony staring at a number of class action suits and other legal hassles.

The XCP system is controversial because it uses techniques more often seen in computer viruses to hide itself on users' machines. Specifically, XCP uses a 'root kit' to conceal itself deep inside Windows.

A root kit is a set of tools used by an intruder after hacking a computer. These tools can help the attacker maintain his access to the system and use it for malicious purposes. It could also be a hacker security tool that captures passwords and message traffic to and from a computer, or a collection of tools that allows a hacker enter into a system.

Subsequently, Microsoft labelled the system as malware, and has announced that further updates of its anti-spyware kits would have XCP removal tools!

According to Microsoft, the XCP software qualified as spyware under the "objective criteria" Microsoft uses to assess potentially malicious programs. The company, in its corporate blog, also recently said, "Root-kits have a clearly negative impact on not only the security, but also the reliability and performance of the users' systems."

There also has been news of virus writers taking advantage of the XCP system to hide their malicious pieces of code. The resulting negative publicity has meant that Sony has suspended the manufacture of audio CDs with the XCP protection system.

To add to Sony's woes, amateur sleuths have claimed that the code used to create XCP, which guards CDs against copyright infringement, itself has been culled from the code written by Jon Johansen to circumvent DRM (Digital Rights Management) on DVDs! Sony had outsourced the coding work for XCP to First4Internet, a British software firm. Now the sleuths claim that First4Internet lifted pieces of code that are covered by the Free Software Foundation's LGPL, or Lesser General Public License. This license covers the author's

UH OH!

SONY

LOOKS LIKE I—THE 'MUSIC PIRATE'—WIN THIS ROUND!

Illustrations **Harsho Mohan Chattoraj**

Macromedia Flash Player Vulnerability

The Problem

A vulnerability has been reported in Macromedia Flash Player, and has been described as "highly critical." Many users have Flash Player 6 or 7 currently installed, and the vulnerability has been reported in Flash Player version 7.0.19.0 and prior on Windows.

Damages

The bug could be exploited by using specially crafted (malformed) SWF files to execute arbitrary code on the machines of users induced into visiting sites under the control of hackers.

Solution

To find out what version you have installed (if you have different browsers installed, you'll have to check each browser independently), use your browser to access www.macromedia.com/software/flash/about. If it's below version 7.0.19.0, you'll need to update to Flash Player 8 (8.0.22.0) or apply the Flash Player 7 update (7.0.61.0 or 7.0.60.0). The Flash Player 8 download is at www.macromedia.com/shockwave/download/download.cgi?P1_Prod_Version=ShockwaveFlash.

The Flash Player 7 update is at http://www.macromedia.com/go/d9c2fe33. Note that the only reason you'd want to apply the Flash Player 7 update is that Flash Player 8 is not supported by Windows 95, Windows NT, or classic Macintosh operating systems.

right to chunks of code rather than a complete program.

With this new twist to the tale, it looks like Sony has a number of new battles to contend with, and their copyright protection codes will be off the CDs for a while. So, it's a field day for music pirates?

COPYRIGHT ISSUES AGAIN

Google Print Faces Roadblocks

The Authors Guild, an association of published authors, and five major publishers—including Penguin and McGraw-Hill—are suing to prevent Google from scanning copyrighted material in libraries without explicit permission. But Google seems keen on thumbing their face—they have launched Google Print, a service that provides users with entire texts of books and government documents, scanned and indexed from five major libraries in the US.

These books, according to Google, are in the public domain, which means their copyrights have expired and that anybody can access them and use them for copying and publishing. But Google also plans to scan and index many other books that aren't yet in the public domain. The groups suing Google are accusing it of not having obtained explicit permission from the books' authors.

Google began the library-scanning project late last year. The company had postponed the scanning of copyrighted books in August to give writers and publishers more time to opt out of the program; the scanning of copyrighted material resumed early last month with a larger emphasis on books that were no longer in print.

Google claims that since only excerpts of the books will be made available to anyone who searches them, they are not violating any copyright laws. However, the copyright cases being filed by publishers may still prove to be an obstacle in the company's gargantuan copying and indexing project.

For us, of course, the project is good news—do visithttp://print.google.com and tell us what you think!

AI AND FACE RECOGNITION

Automatic Photo Tagging!

There are a number of photo sharing and image management software to suit your specific requirements. Flickr and Picasa are the most preferred, and the rest of the field is struggling to keep up with them.

Amidst this crowd of photo sharing services, a new service from Redwood City, California, which automates the tagging of pictures using artificial intelligence and face recognition technology, is hoping to stand out and grab some market share.

The service, called Riya, has developed software that can recognise who is in a picture, and tag it with their names. Photos can be uploaded to Riya from hard drives, photo-storage sites such as Yahoo! Photos, and from e-mail attachments in Gmail, Hotmail and Yahoo! Mail. The service will soon be including uploads from Flickr, Outlook, Friendster and MySpace.

The results of this new service have been said to be very impressive: testers have said that the software was even able to differentiate

HOT
DVD-Writers
These can burn DVDs and CDs and also play back almost all formats. Most come for about Rs 3,000, including high-quality ones. We think DVD-Writers should be part of standard equipment on any computer!

Combo Drives **NOT**
Combo drives were huge sell-outs when they hit the market. However, we think it's time to say goodbye to them! Who needs a Combo drive when you can get a DVD-Writer for just a few hundred rupees more?

"The 'Sea', since it's unfathomable"
Mudasser Mulla, Mumbai

"I don't know. 'Furniture' maybe?"
Pooja Chipalia, Mumbai

"I would call it 'Mini-Windows'!"
Bhavik Doshi, Gujarat

"I feel 'Peep-out' is fine."
Nirja Gandhi, Mumbai

"What else but 'Doors'?"
Heer Sanghvi, Mumbai

The Digital World

UNITED STATES

Despite support from only 1 per cent of the public, the State Department has finalised plans to go ahead with passports containing RFID chips. It plans to have all passports RFID-enabled by October of 2006.

FINLAND

Too many mobile phones are turning up in the sewage system of the Helsinki metropolitan area. At the sewage plant in Viikinmäki, a thousand tons of solid junk is collected every year, a lot of this being in the form of mobile phones. Talk about e-waste!

CHINA

The number of Internet users in China reached 103 million in June of this year. China's Internet sector is now the world's second largest. This despite Chinese authorities doing their best to control the medium.

JAPAN

Tokyo offers the cheapest broadband amongst major world cities, and Japan claims its broadband is the cheapest. Flets ADSL in Tokyo charges just ¥4,850 per month (Rs 1,850).

UNITED KINGDOM

The British Library, which holds 13 million books, will begin digitising its collection and make 25 million pages of it available online. These will be available for free on Microsoft Web sites: Microsoft has pledged $1.7 million a year to pay for the project, probably in response to Google Print.

AUSTRALIA

Australian telecom major Telstra recently announced it will roll-out a W-CDMA network that will cover 98 per cent of Australia's population! This bolsters the idea that mobile can play a prime role in providing rural broadband connectivity.

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between identical twins and spot family members! In addition to this, the software can also read street signs in a photograph and thus identify a location. The service's context-based approach looks at 50 variables in a photograph, including hair, eye colour, shirt colour, height, sex, etc.

Munjal Shah, CEO of Riya, says the software's mission is to make every photo in the world searchable.

Of course, to tag a photo by identifying its contents, the software needs to be trained. The training software is available on the Internet and is currently offered for Windows-based computers. A user would train the software by identifying, or tagging, individuals in their photos. As the software learns who's in your pictures, it begins to auto-tag the photographs, quickly scanning the rest of your photos and identifying each person it can recognise.

Photos uploaded to this free service for tagging can be made private, or users can choose to make images viewable by friends in the photos or by the general public. Friends may search each others' images and even add their own tags. Riya plans to make the images and metadata exportable to 'any application.'

HARDWARE VIRTUALISATION

As Good As Two

Earlier last month, Intel launched two Pentium IV chips—the Pentium IV 672 and 662 processors—which will support a technology that allows computers to simultaneously run several operating systems, and also tools such as anti-virus and other high-end applications such as image processing and video editing software. The technology, called 'virtualisation', is said to impact the multitasking capabilities of a PC tremendously. Intel claims these processors are the first desktop processors to have these capabilities.

Three Incredibly Useful Sites

Et Cetera

www.bplans.com

Bplans.com

Are you looking for information to help start your own business? First of all, chalk a business plan. And a visit to Bplans.com will do you a whole lot of good. It has it all—legal information, business plan software, 500 sample plans—you name it.

www.avantgo.com

AvantGo.com

If you're tired of the way Web pages look on your handheld device, AvantGo is the answer to your prayers. The company offers customised Web content from Reuters, *Wired*, AccuWeather and *The New York Times*. You just need to sync your handheld once beforehand daily, and your favourite sites will travel with you all the time. And yes, the service is free!

www.grokker.com

Grokker.com

Grokker returns query results organised into a visual map. What this means is your search results are no longer mere hyperlinks on a white page: they're colourful and cross-referenced. And how good are the search results? Well, it depends on what kind of search you're conducting. Go ahead, give Grokker a shot!

Photograph **Jiten Gandhi**

Every 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 **15**th of this month.

Formally, the 672 and the 662 will feature Intel Virtualization Technology. They are priced at $605 (Rs 27,000) and $401 (Rs 17,500) respectively, in 1,000-unit quantities.

Virtualisation will be extremely beneficial in a business setting, where the system administration can carry on with their maintenance duties without interfering with any workers' PC use. Virtualisation could also isolate virus attacks to only the setting in which the attack takes place—this will ensure that the virus will not spread and infect the entire system or even a network.

The virtualisation concept and technology are themselves not new. Several software-based virtualisation solutions already exist in the market. However, when implemented in the hardware, virtualisation could become more efficient in terms of space and speed.

Computer makers such as Acer and Lenovo, will be the first to offer PCs with the new Pentium IVs. More manufacturers are expected to begin selling machines with the chips in early 2006.

With virtualisation in desktop computer chips, Intel can claim an area where it's beaten AMD. Intel had a big setback earlier this year when they lost the race for coming out with the first dual-core processor for servers. In this respect, Intel was over six months behind AMD. With the current pace of developments, Intel will make virtualisation available for its Itanium and Xeon server processors as well as the Pentium M chip for laptops by next summer. Intel also plans to introduce these in dual-core Pentium processors for desktop computers by mid 2006.

Intel is making virtualisation technology available now, even though software makers have not yet introduced operating systems that can take advantage of the technology. Intel expects the software to be available by the middle of next year. However, analysts are of the opinion that these software may be available as early as January 2006.

EFFICIENT MULTICORE

A New 8-Core Chip

Is this the rise of a new Sun? Well, Sun Microsystems surely hopes it is. The company has just launched a new processor aimed at the server market. The Ultra Sparc T1 chip, code-named Niagara, promises to be more than just a chip off the old, umm, chips! Powered by eight cores on a single chip, the T1 at 70 watts consumes less than half the power required to run similar processors.
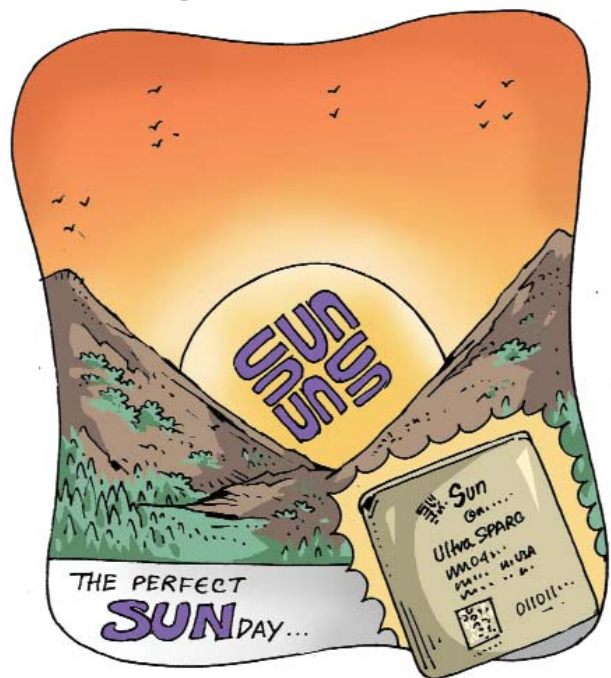
GENDER BENDERS

Nachiket Mhatre vs Urmila Rane

Enabling A Tone Alert For Num Lock, Caps Lock and Scroll Lock

5 sec
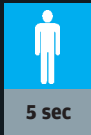
A computer engineering student, Nachiket was excited about Gender Benders. On being told his task, he just said, "That's in the Accessibility Options, right?" We were kind of taken aback. He went the window to do the changes by typing the following command on the Run window - access.cpl. And next he enabled the 'Use ToggleKeys' option. There, the job was done in the blink of an eye. And he didn't even have to think much! Very impressive Indeed!

3 min 22 sec

Urmila was at ease, though she wasn't sure about the solution. She went to the right place anyway—the Control Panel. She considered 'Sounds' and 'Audio Devices' first. But nothing there! Next, she looked at other options including 'System', 'Keyboard' and 'Accessibility'. She felt she couldn't nail it here, so she exited that window just as fast as she had entered it. When she did realise that the answer actually lay within 'Accessibility options', she went back there and zeroed in. Good line of thought, girl, but be quicker next time!

The T1s will be the brain behind the Sun Fire servers that the company plans to launch later this month. Sun claims that this chip—with eight processing cores—is a five-year leap over its existing competitors, namely IBM's Power chip and Intel's Xeon microprocessors. Sun hopes this energy-efficient chip will drive customers to buy Sparc-Solaris servers.

With an energy crisis looming on the horizon, albeit distant, any move towards energy conservation will be met with applause. Sun is hoping that this applause turn into sales figures and lift sagging profits. At Sun's Summit on 21st Century Eco-Responsibility on 14 November, CEO Scott McNealy said Sun would make money in a "socially and eco-responsible way."

According to Sun, "The impact on our environment is real: if half the entry servers sold in the last three years were replaced with the UltraSPARC T1 processors, over 11 million tons of CO_2 emissions, or the equivalent of that emitted by about a million SUVs, would be eliminated each year."

PHILIPS EYES INDIA
Mobiles for Less

Philips, the electronics giant, sees India as a testing ground for its products. Speaking to reporters in Bangalore, CEO Gerard Kleisterlee said India's large population makes it the best testing ground for solutions that address the unmet needs of the four billion people at the bottom of the global economic pyramid.

In a bid to address a number of technological concerns, Philips plans to increase both the staff and manufacturing and research capabilities in the country. Among many of the initiatives undertaken by Philips are the DISHA (Distance Healthcare Advancement) programme, a telemedicine initiative that it began in July 2005 to provide healthcare to rural communities, and the endeavour to manufacture a sub-Rs 1,000 mobile phone. To achieve this, Philips is currently developing the Nexperia cellular system, which will develop and mass-produce low-cost chipsets for mobile phones. These chips are slated to cost not more than Rs 250 a piece. This is a major cost reduction from the current levels of over Rs 1,000 per chipset.

By undertaking moves that will help the general masses, especially those who haven't yet benefited from the boom in the technological advances and innovations, of the past few years, Philips is attempting to become a truly global corporation that can meet consumer demands anywhere in the world.

SKY-HIGH WI-FI
Balloon Beams Broadband!

A balloon floating 24,000 metres above the earth has been used to test, for the first time, a lightning-fast data downlink (read broadband!) from the stratosphere, one of the topmost layers of the atmosphere. The helium balloon was tested on 31 August for several hours. Analysis now shows the test was a success, and that it sent data to the ground at 1.25 Gbps—which is a thousand times the speed of a typical home broadband connection.

The test craft was developed by the Capanina Consortium—14 European academic and industry partners funded mainly by the EU. They hope such craft may be able to provide low-cost internet access in the developing world, or perhaps communications in

Flock

Blogs of a feather Flock together—that seems to be the idea behind a new browser that will soon hit the average Internet user. Flock, the browser, looks very similar to Firefox, which isn't surprising considering both share the Mozilla core. The best part about this browser is that it lets you add blog posts right through the user interface: it has a blog tab, and features widely-compliant WYSIWYG, drag-and-drop blogging tools.

Advertised as a 'social browser,' Flock incorporates very well with 'social' things on the Web such as Flickr and del.icio.us. With the mission of integrating all our Web activities—blogging, photo sharing, wikis, maps, podcasting and video blogging included—into a one-system-one-UI product, Flock sure is the buzz in the tech world!

Buzzword of the MONTH

W5H

WHAT WHEN WHY WHERE WHO HOW

WHAT WHEN WHY WHERE WHO HOW

Web 2.0

What is Web 2.0?

Web 2.0 is a term often applied to the perceived ongoing transition of the World Wide Web from a collection of Web sites to a full-fledged computing platform serving Web applications to end users. Ultimately, Web 2.0 services are expected to replace desktop computing applications for many purposes. If Netscape was the standard bearer for Web 1.0, it's Google for Web 2.0.

Where is Web 2.0?

Web 2.0 is not a physical entity, but is, rather, the way the Web will be used in the future. For instance, Google started its life as a Web entity and has remained so ever since. It never created any products that could be shipped physically. Its income was generated through users—directly or indirectly—and will continue to do so. Moreover, the integration of its services is a good example of what the Web 2.0 definition encapsulates.

Who is running Web 2.0?

Web 2.0 is not a piece of software; it refers to the way an application or service or domain exists on the Web.

Why do we need Web 2.0?

Web 2.0 is about 'glocalisation' —making global information available to local social contexts and giving people the flexibility to find, organise, share and create information in a locally meaningful fashion that is globally accessible.

When will Web 2.0 be available?

Look at Web 2.0 as a set of compliance guidelines. There already exist sites that comply with these, for example, Flickr.

How is it different from what we have now?

The technology infrastructure of Web 2.0 is complex and evolving, but includes server software, content syndication, messaging protocols, standards-based browsers, and various client applications.

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areas stricken by a disaster. David Grace from the University of York, one of the project scientists behind the test, says stratospheric communications balloons can indeed provide wireless alternatives to fixed Internet infrastructures.

The main concern with balloons as communications hubs is ensuring they don't interfere with commercial aircraft. Controllers on the ground can alter the altitude of the balloon, but they can't steer it—as of now.

The consortium is also looking to develop other types of communications craft that can fly at very high altitudes. Craft such as airships could be useful when heavier communication equipment such as radio antennas need to be carried to the skies.

SOAPS ON YOUR PC

Net TV As Early As 2006?

Media giant Time Warner has announced they will be launching Internet television as early as 2006. In a bid to beat Internet companies such as Yahoo! and Google, who are planning to use computers and the Internet to relay television shows, Time Warner is readying to launch In2TV.

This ad-supported Internet TV model will have six channels, comprising the comedy, drama, animation, action, classic and superhero/villain genres. With 4,800 episodes of various shows and over 3,000 hours of programming, the Internet TV model has a huge bank of ready content to go live. The company plans to show already-aired episodes to start off before conceiving original content for this medium.

Time Warner also hopes to sell Microsoft a stake in this venture. The move to non-traditional media for airing television shows has been on the anvil for a couple of years now, and the advent of the Video iPod and podcasting has only quickened the pace of development in this area. So the next time your mom tunes into your computer to watch her daily soap you know which plug to pull!

ACCORDING TO TIME WARNER ...
SAY NO TO TV ... SAY YES TO IN2TV
NO! YES! in2tv.

CHEAPER PRINTS NOW GET DONE QUICK

HP's New Printing Technology

Late last month, HP launched the Officejet Pro K550 colour printer. This, HP claims, is the fastest printer in its category. HP also launched a photo printer for home users—the HP Photosmart 8238, which can print high quality colour photographs in 14 seconds.

What's interesting here is that both ranges of printers incorporate technology that HP claims is revolutionary as far as the printing and imaging industry is concerned. Designed using what HP calls Scalable Printing Technology, these printers have print heads that have been created photolithographically. This process of creating nozzles in the print head has been borrowed from the chip fabrication process. It ensures that the cost of printing comes down by almost half.

HP has designed a kind of common core for all print heads, thus making sure that the cost for manufacturing them in bulk comes down—and thus the price of the printer, too, comes down.

The photo printer features six separate ink cartridges. The printer also incorporates a smart printing technology that ensures no print job is left half done.

Digit is yet to test HP's claims, and we're hoping to get our hands on one of these printers soon! ⊠
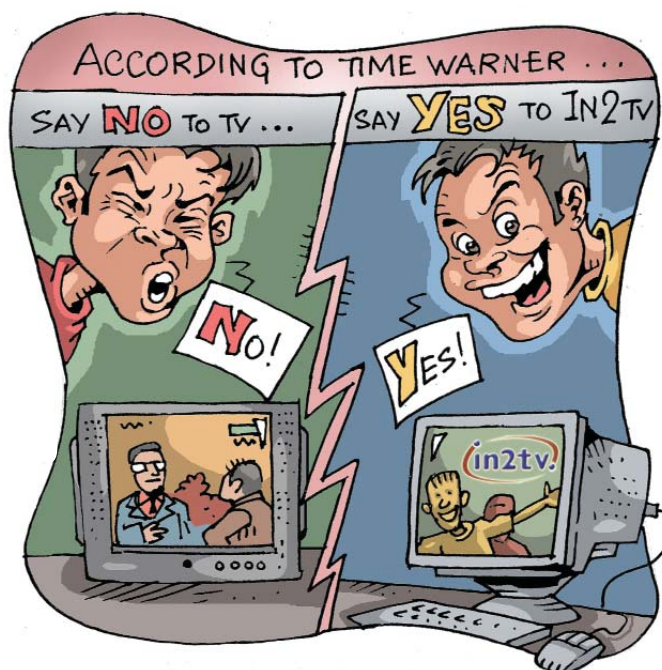
Compiled by Aditya Kuber, Mithun Kidambi, Ram Mohan Rao and Renuka Rane

Lead Feature

Concocting Dreams

When it comes to technology in movie-making, India is, admittedly, just catching up. But we're getting there pretty fast

Aditya Kuber

Lustre, Flint, Smoke, Combustion, Fire, Flame... no, we're not talking about making a bomb! These are the software used today to digitally enhance a movie—or create scenes for one. The way it's done is quite marvellous, and very often you don't notice that there's a computer at work behind the scenes, literally. We take a look here at where India stands in the adoption of the computer as a tool in movie-making.

India lags behind Hollywood (or for that matter, most technologically-advanced countries that make movies) in implementing advanced editing technologies, but we're certainly catching up. We're quickly learning the new art of creating things that cannot be shot through the camera.

There was a time when movies were made with a camera, a lot of lights and a great deal of sweat. They still are, but now, they have help from technology. A nip here and a tuck there... it's all in a day's play! Movies today are being shot digitally, with live voice (no dubbing), online editing (deciding the edit points—where a shot will be edited and joined—as one shoots), and are being processed digitally.

The Old Days

Let us first understand, though, how it happened earlier. It was relatively simple. A film would first be 'canned', meaning it would be shot on film stock in negative format. Then, it would be processed; this meant converting the negative format into positive, which could be projected. This is quite similar to the film processing we do

(or used to) for our photos. After this, the canned and processed film would be edited to create the movie, which would be output and duplicated for projection at movie theatres.

While some parts of this process still remain, there are new stages that have been added to this workflow, if you will, which are dramatically altering the way a movie looks.

Take, for example, the recent blockbuster *Black*. The entire soft, dreamy look the movie has could not have been possible using just the camera. Enter the post-production experts. Using software such as AutoDesk Lustre, the entire movie (after editing) was given a look and feel that was consistent throughout, and did not cause the viewer to think there was something 'special' going on. This, however, is a special case. What is not a special case, though, is the Digital Intermediate (DI) that virtually all movies today undergo.

Digital Intermediate

DI is an ever-evolving process. In a nutshell, it is the middle one-third of the operation loosely termed 'Digital Film'. The other two-thirds of Digital Film consist of acquisition (the obtaining of the source material through some form of capture) and presentation (the distribution, projection and/or transmission of the final result).

But before DI comes acquisition and editing. The entire movie is usually transferred to a computer and digitised, making it easier to edit. In some cases, though, filmmakers prefer to edit in the linear format—from tape to tape, without transferring it to a computer or digitising it.

In either case, the DI process begins after editing is complete. The transferred film is colour-corrected, 'cleaned up' (more on this later) and composited (put together again as one package). The final product is then output to either analogue (film) format or digital format for projection.

What happens in DI is, colours are made consistent, edit jerks are cleaned, and special effects—even the basic ones—are added. Remember the multiple screens in *Dhoom* where four different shots were visible at the same time? All four were shot separately and were made to look consistent using DI.

But DI is going beyond post-production: it is now being used in pre-production. "*Dhoom 2* will be using a pre-viz (pre-visualisation) technique that will create a blueprint of all shots. This will mean that everyone on the set knows exactly what is to be done before they even reach the location. The cost saving and clarity of job responsibility this offers is phenomenal," says Pankaj Kedia, Regional Manager, South East Asia and India, Autodesk (Media and Entertainment Division).

Indeed, one of the greatest advantages DI and other such processes have offered is the cost savings. At the same time, these have also resulted in increased creativity and better planning—which has, in turn, has meant that less time is spent wondering what to do when on the sets.

"Tools such as pre-viz are finally being used. These allow the director to decide where everyone in the unit will be for a shot. Everyone involved, too, is aware of this, and that makes for less time spent on the sets," says Pankaj Khandpur, Creative Director Visual Computing Labs, Tata Elxsi.

So Will Tech Take Over?

Some time ago, myths circulated as the use of technology increased: for example, that cinematographers might go obsolete, or that they would not have to work as hard. But these were never true. "Yes, there were a lot of ideas that now cinematographers will not have to work as hard, when these processes were gaining popularity in the US around 1990. But this is definitely not true," assures Sibille Cooney, Senior Trainer, Autodesk M&E Division, US. Cooney is, in fact, engaged in training upcoming Indian editors in the art of DI and post-production effects.

Agreeing with Cooney is one of India's leading post-production and Visual Effects (VFX) artists, Huzefa Lokhandwala of Prime Focus Studios. "Each aspect of the post-production process sometimes requires varied specialised training. Hands-on experience thereafter definitely helps. Not speaking technically, however, we could safely say that the basic requirement would be the ability to observe and visualise. The ability to combine man and machine in the most effective and aesthetic fashion is what makes a good post-production artist in this technological age," he says.

Gayab

Mughle Azam

Final Composite

VFX

Computer Graphics (CG) encompasses all there is to Visual Effects (VFX). CG is, in fact, the engine that drives this train. There are various sub-branches under CG—such as animation, 3D character animation, creation of inorganic 3D objects, and even mixing and compositing them all.

To explain these terms a little, 3D character animation would refer to movies such as *Shrek* and *Ice Age*, where the characters were entirely created using a computer, and lived out their lives right there! In the case of 3D inorganic objects, these are things such as hurricanes and smoke, and sometimes live action. Remember the twister in *Twister*?

In India, though, there is not much of a market for either. If anything, there is a small market for 3D inorganic objects. "The problem is that not too many filmmakers in India include this as part of their budget. They are still unable to quantify the results of using these technologies. By that, I mean they cannot translate it into monetary benefits," says Khandpur.

Lokhandwala agrees to some extent, but is sure that India will catch up. In fact, India has already started using these technologies. "Creatively, the number of filmmakers employing and getting aware of digital tools is increasing. VFX has become an integral part of Indian filmmaking. It could be features, advertising commercials, music videos, documentaries. From subtle enhancements, to crucial corrections, to seamless compositions, to in-your-face computer generated imagery... we use them all," he says.

Differentiating between the two basic types of VFX—the subtle and the in-your-face—reveals that the covert form is tougher to execute simply because no-one should notice it. "These are the subtle effects that need to be in a movie, but if they're noticed and someone says, 'Hey, that's a nice effect', it's actually like telling us we didn't do a good enough job of integrating it into the movie," says Khandpur.

The other form, the obvious one, requires blasts, pyrotechnics, prosthetics, robotics and even miniatures. "These are the ones you don't

The process above is the Digital intermediate that involves scanning the film, processing it, adding FX and releasing the final output for presentation
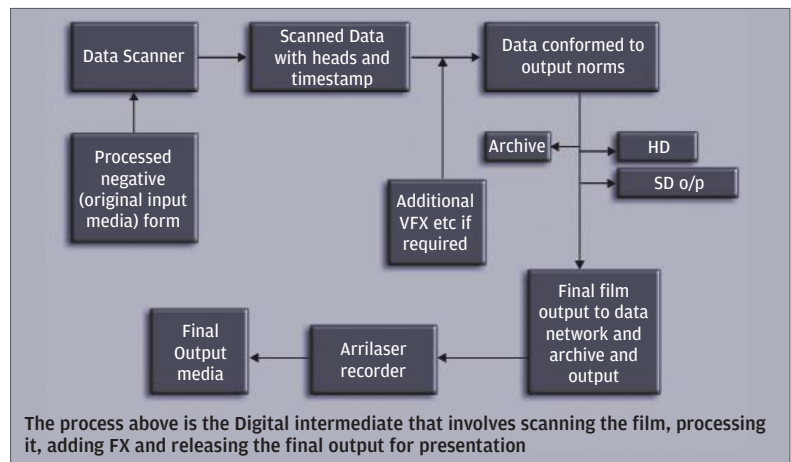
want to hide! A blast has to be bigger, better and more realistic. This is where we are trying to create experts by working on a mentor-protégé system," adds Khandpur.

Some of the other forms of effects that are commonly done include wire stamping. This just involves cleaning out the wires by which actors hang during stunts. "Not just us, but most people involved in this work hate wire stamping. But we can't help it. If only the director involved us earlier, I think we could do something about it," laments Khandpur.

An example of this much-hated stamping would be the climax scene of the recent Salman Khan-Fardeen Khan-Anil Kapoor starrer *No Entry*. When all three leading men are hanging on to dear life on what is shown as a cliff, in reality, they couldn't be safer, standing on *terra firma* at Khandala. But the actual shot shows them on a cliff overlooking the sea. The sea, the cliff and the actors, too, were added using a computer. The entire scene (and the film) was then processed to maintain the same colour temperature, and composited to look like they were hanging over a cliff. The only thing that was real here was the hanging! To complete the entire sequence, the safety rope they were hanging by had to be stamped out later, as well as any traces of harnesses and hooks.

TV Commercial

Darna Mana Hai

Promo

The Software

Discreet Lustre
Discreet Lustre system software is Autodesk Media and Entertainment's award-winning high-performance DI system for colour grading and look creation. The design of the software is such that it delivers real-time primary and secondary colour correction and grading capabilities, while providing a sophisticated feature set for working with high-resolution imagery and digital intermediates. It has come to be regarded as the industry standard today.

Discreet Smoke
Discreet Smoke is an all-in-one integrated creative editing and finishing system.

Autodesk Combustion
Autodesk Combustion 4 is an all-in-one professional compositing application designed to meet the needs of the world's most demanding artists. It features non-destructive workflow, an extensive toolset, and the kind of power professionals demand.

Discreet Flint
Flint lets you design stunning graphics with speed and interactivity. It provides instant feedback for complex compositing, paint, motion-graphics animation and visual effects. It also lets you work with high-quality RGB images with real-time video I/O.

Discreet Inferno
Inferno provides the instantaneous feedback required for fully-interactive online experimentation and rapid turnaround. Now architected for 64-bit performance, Inferno provides the best real-time performance for high-definition post-production, from 4K feature film and digital cinema to HDTV and video.

Discreet Flame
A powerful 3D compositing environment, this delivers amazing creative results using industry-leading tools specifically designed for high-definition, multi-format post-production—from video and HDTV to 2K digital cinema. Flame tools include Action (a 3D visual effects design environment), 3D tracking, Motion Estimation, and the powerful Colour Warper and Modular Keyer features.

Discreet Fire
This is a premier online editing and finishing system designed for 2K/4K digital intermediate, HDTV, and video post-production. It lets you interactively manipulate up to 30 layers of high-resolution film in its advanced 3D DVE (Digital Virtual Environment) and compositing environment.

Hollywood To Bollywood

It took over a decade for post-production and special effects technologies to cover the distance between the western coasts of the US and India. And during this time, the technology leapfrogged. "We in India will catch up, though. We are always playing the same game even when it concerns other technologies or aspects of technology. It will not be too different here either," says Kedia.

Acceptance of the technology was not overnight in the US either, says Cooney. "There were doubts about the abilities of these software and technologies and then, of course, there were the sceptics. But eventually, when the first big hit that used technology extensively was delivered, everyone wanted to do it," she says.

Precisely what Khandpur thinks is required for the Indian film industry to completely realise the potential of these software. "One big hit and the whole industry will be making special effects oriented movies," he assures. But for now, it's mostly clean-ups and corrections. "When directors come to us today, what they are looking for is to mainly clean up some grey areas. But once we show them what is possible, they realise their mistake of not having involved us earlier. It's a one-time thing we have to do with all directors, but it's starting to pay off," says Khandpur.

The Professionals

What directors lack today is the presence of VFX supervisors on the sets. "It's important to get the logic right when planning or executing effects. Unfortunately, the concept of a VFX supervisor is absent in India. There is activity, though, to create such specialists," says Namit Malhotra, managing director of Prime Focus.

While filmmakers struggle to come to terms with the possibilities before them, those behind the scenes making things happen are already having to grapple with problems of their own. "DI and VFX are two totally different aspects. To get into either, though, you need knowledge of editing," says Cooney.

There seems to be an abundance of editors willing to learn the tricks of the trade, but there hasn't always been a place they could go to learn it from. So most end up learning on the job. "It's a good thing and a bad thing too... while the new

guys can see what the real needs are, they don't always get enough time to fathom the possibilities. We do put them through the paces and handhold them for some time, but eventually, we have to tell them it's time they started on their own," says Khandpur.

Cases In Point

There has been a wide range of movies that have either undergone the DI process or had a great amount of VFX in them. Some of these you know about, some you don't. Presenting an exposé:

Kal Ho Na Ho: A love story with virtually no action scenes, you must wonder where the VFX were. "There are a couple of scenes where it was required that VFX step in. The movie was shot on location in the US and there was a scene when snow was required. The director ordered only one snow machine thinking it would be enough, but when they started shooting, it was less than adequate. After talking to us, we gave a solution: just make sure the two main actors in the scene were covered with snow, and we'll take care of the rest. You couldn't even tell that the snow was added later," reveals Khandpur.

Dhoom: Here was a movie with loads of SFX. Not just VFX, but plenty of special ones! "This was an out-and-out action thriller, and there was plenty of scope to work on it. Take for example the stunt scene where the motorcycle rider has to jump over a rake… we were on the set when they shot it and everyone was like 'Wow'. But when we saw the scene a little more objectively, the thrill was missing. The scene showed the motorcyclist jumping over an empty rake between two bogeys. What we realised was that the rake was too long and this took the thrill away… so we reduced the length of this! The effect was superb," says Khandpur.

"Another scene where we got the chance to add some special effects was the one after the title song-and-dance sequence. In this one, there are lines of petrol spill along the ramp, and these are supposed to be lit by the actor. He is supposed to fling his Zippo lighter into the petrol. When his close-ups were shot, it hardly looked appealing. But we took this onto the computer and made it dramatic," says Khandpur. Eventually, this movie ended up having over 20 minutes of

special effects… a fact that is not often realised when you watch a movie, and that, perhaps, is the best compliment for the creators!

Mangal Pandey - The Rising: A period film and an epic, this movie has it all: DI, VFX and a great deal of wire stamping!

Assuming you've watched the movie, let's jump right into the scene when Aamir Khan has challenged the might of the British regime. The Rangoon regiment is on its way to handle him and his group of revolutionaries. Now, the very reason this regiment was called in was because it had 50,000 soldiers. Hiring as many people had monetary and logistical implications… actually nightmares. So just about 200 people were shot and then replicated to make the regiment look like it was attacking in all its glory.

Right after this scene is the part where Khan is tried and is about to be hanged. Again, the problem was the number of people that could be realistically had on the sets. Once again, replication was done. This time, though, some 'creation' was also done—and not through the camera. A tent, an elephant and some villagers behind the lead actor were added. Also cleaned up was some lighting equipment that had crept into the shot!

Over the years, as the Indian film industry matures and gets more professional, there is a good possibility that a special effects film could well come out of Bollywood. "We might be a long way away from making our own Matrix-like tech-centred movies, but the signs are positive. Who knows, but soon, we could…" says Khandpur. Amen. ∎

aditya_kuber@thinkdigit.com

The Geneva Sound System redefines home entertainment with its refreshing design and singular audio output

Passionate about music? Here's a sound system that not only packs in powerful audio, but is eye-candy as well! Enclosed in a single, stunning piano lacquered wooden cabinet, the Geneva Sound System uses advanced, patented algorithms to digitally adapt the left and right sound signals to ensure a balanced sound output, regardless of where you are in the room.

The system is available in two models and in three colours—white, black and red. Model L measures 17x11.1x15 inches and produces 100 watt RMS, while model XL measures 21.7x23.5x15.8 inches and generates a thumping 600 watt RMS. Each unit features an iPod Universal Dock connector, a built-in slot-loading CD, and an FM radio—all controllable by remote. You can plug in your iPod Video, iPod Photo, iPod Mini or iPod nano to its integrated universal dock.

The Geneva Sound System can also work with any other type of audio input inluding the computer, TV, game console, turntable, and more, through its line-in port. An LED display shows the source and the currently playing track.

Sleek and contemporary, the Geneva Sound System actually lives up to its tagline—*Passion and Simplicity*! Priced at $599 for model L and $1075 for model XL, these beauties are available for pre-order at the manufacturer's web site.

Geneva Sound System

Imaging Sivalal S
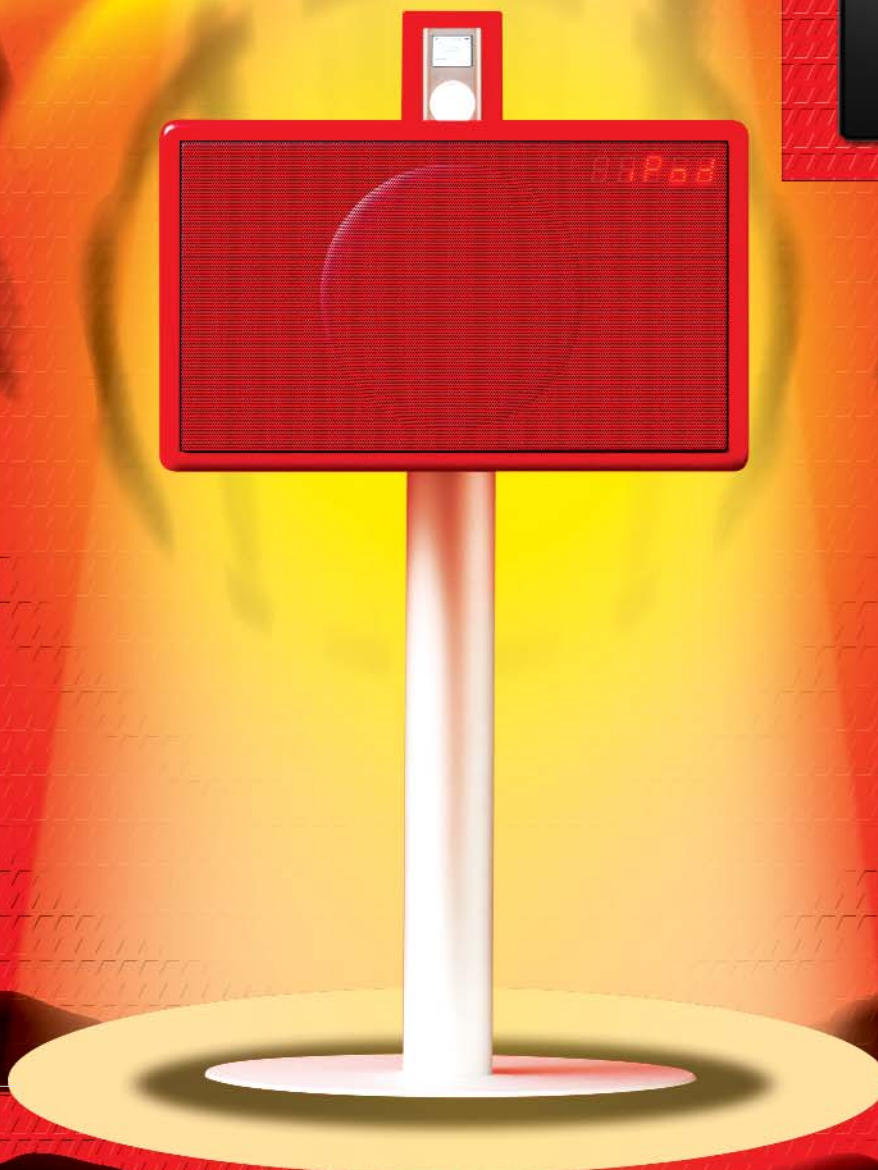
The **Future** Is **Paper**

The future of displays could see a radical shift in technology. Coming soon: displays as thin as a human hair!

Robert Sovereign-Smith

In *Gadgetopia* (*Digit*, July 2005), we designed the theoretical Gadget of Our Dreams (GOD)—basically, a single gadget most of us would like to have, provided someone put it together and marketed it. It was conceptualised using existing technologies, one of which was the paper/foldable display.

Thus far, gadget sizes have been defined by the size of their screens. Too large a screen and the gadget cannot be sold as a 'portable' device; too small, and the screen becomes barely readable, ruling out full-fledged computing on it! This, perhaps, is why there's still a market for PDAs, despite the fact that mobile phones—which have a much more compact form factor—have enough processing power to accomplish the tasks of a regular PDA.

We may not yet be at the stage of bringing high-end 3D gaming to a mobile phone, but we certainly have the technology and hardware capabilities to make devices powerful yet small. Again, the problem has always been displays: a display that's too large not only results in an unacceptable form factor, but also eats up battery power by the watts.

But what if there was a technology that could provide you with a large display screen which could be rolled, folded and manipulated to fit into a tiny space when not being used? And at the same time it used less battery power than the backlight of your cell phone?

Amazing, right? Well, not quite: this is old news now. The problem is that the black-and-white era is behind us, and we're not interested in going back there—most such displays are only monochrome capable yet, with the operative word being "yet"!

The Legacy

The idea of paper displays, or ePaper as it's also known, is hardly new. Back in 1975, Nicholas Sheridan, a physicist working at the Xerox PARC (Palo Alto Research Center), started his

Xerox PARC's SmartPaper

Here you can see that the spheres are coloured half-black and half-white, and are contained between thin plastic films
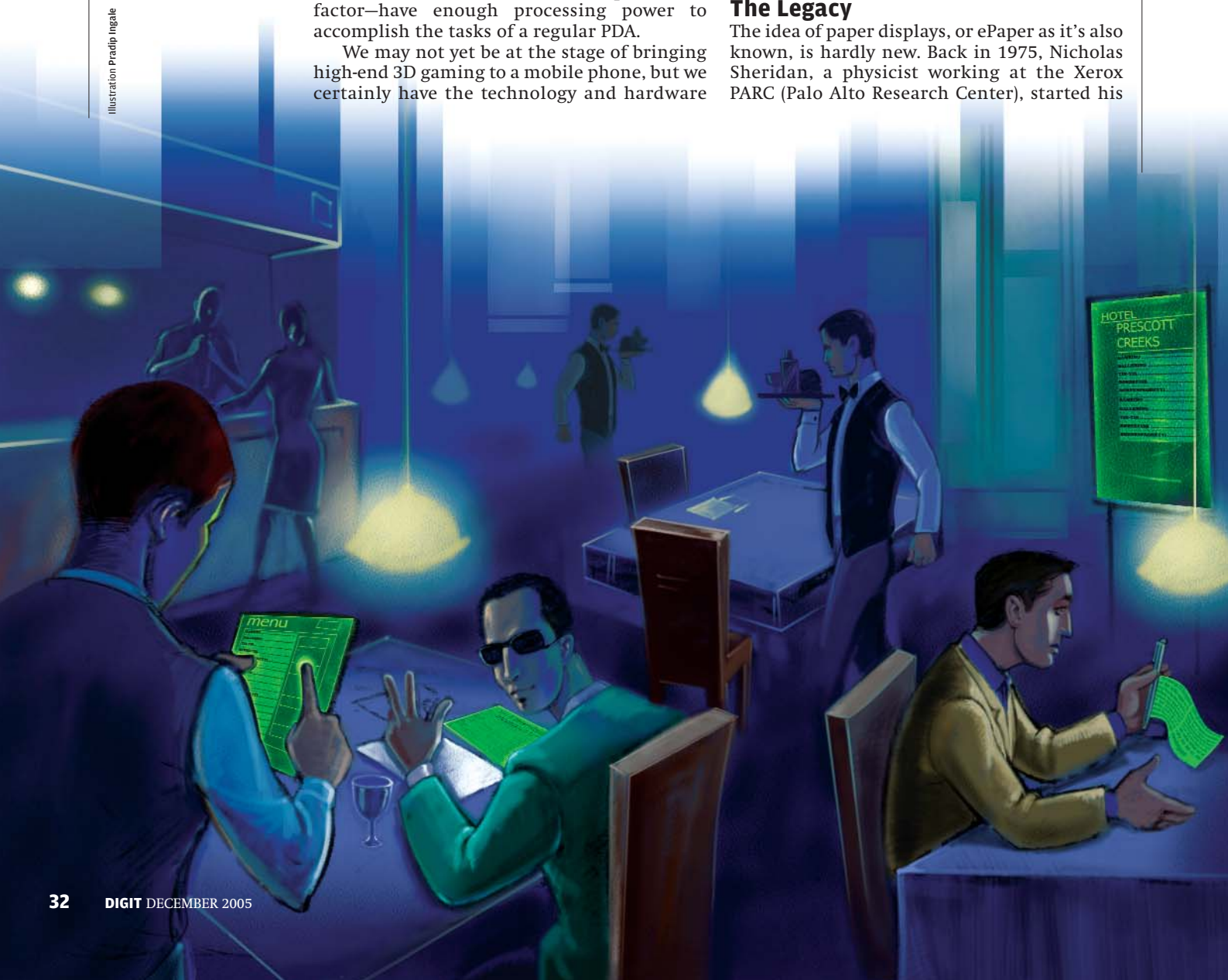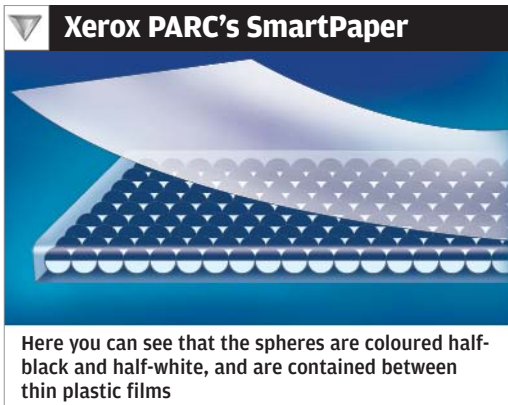
research on ePaper. To give you an idea of how ahead of his time Sheridan was, the novel idea back then was to replace paper with portable flat-panel displays, which, as we all know, were not exactly portable back then, were very expensive, and had terrible contrast—you could hardly make out the screen in a lit room, forget about outdoors!

Sheridan's dream was to make a flexible paper-like sheet that could not only display text and images, but also be re-written by using an electrostatic charge. The solution he came up with was to use tiny electrically-charged spheres, enclosed in the oil-filled cavities of a thin layer of a transparent elastomer.

Incidentally, this is the technology Xerox PARC still uses in its research of ePaper, which they call SmartPaper. Each 100-micron sphere is coloured half white and half black (or another dark colour). The spheres contain a dipole—like a magnet, with positive and negative charges on opposite ends.

Thus, when an electric charge is passed over certain pre-designated areas of the elastomer film, the spheres in those areas rotate to show their dark side, colouring the area. A chip can control the charges at different areas to produce a sort of advanced, electronically-controlled etch-a-sketch!

Since the spheres are reflective in nature, they are extremely high-contrast, making them readable even under direct sunlight. This technology has already been used to make some interesting products. We will talk about those a little later. Needless to say, this technology, though easily implementable, has the drawback of being monochrome. Still, it's a step in the right direction.

The Leaders

Say the words "paper display" and the name that springs to mind is E-Ink Corporation—the Xerox or Discman of paper displays! A pioneer in this field, E-Ink is consistently working towards building better and slimmer displays.

E-Ink currently provides technology and paper displays to many corporates—not just to help them build prototypes, but also for full-fledged products. E-Ink's investors include Toppan Printing of Japan, Intel Capital Corporation, Motorola Corporation, Philips Components (a division of Royal Philips Electronics) and Vivendi Universal Publishing (France).

The list of companies that are actively researching paper displays is even longer. Needless to say, the market is waiting impatiently to see some significant progress in this field, and researchers are working overtime to meet this demand.

E-Ink's technology is similar to what Sheridan came up with at Xerox PARC, but is definitely not the same. Instead of using microcapsules that are coloured half-black and half-white, E-Ink uses microcapsules that contain granules of a positively-charged white pigment and granules of a negatively-charged black pigment.

These capsules are suspended in a clear fluid that lies between thin layers of a plastic material, which is, in turn, laminated on a layer of micro-circuitry and electrodes. The top plastic layer is a transparent electrode, whereas the bottom layer contains the control electrodes.

Now, in order to draw a display, the electrodes are charged either positive or negative, according to the image requirement. The

How E-Ink Works

This image explains how E-Ink works, and you can clearly see the advantages it offers over Xerox PARC's texhnology
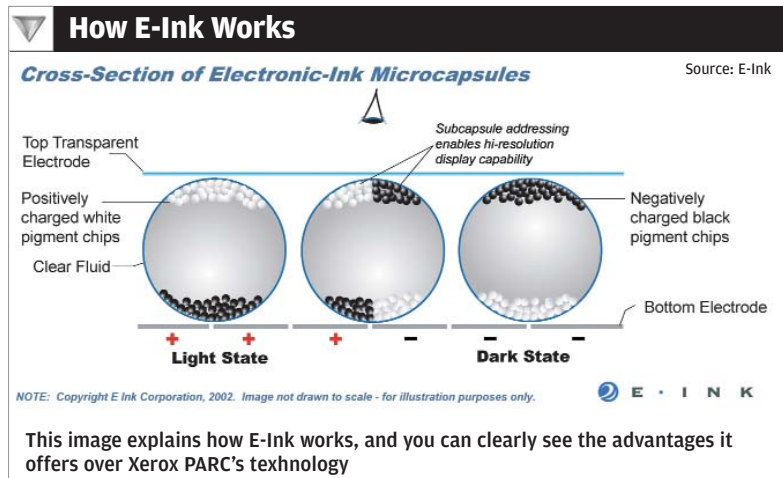
micro-circuitry is small enough for two electrodes to be placed under each microcapsule, and if both electrodes are charged positively, the positively-charged white pigment granules in the capsule directly above them are pushed to the top, thus forming a white dot, or pixel. Similarly, a negative charge causes the negatively-charged black pigment granules to be pushed up, thus forming a black pixel.

Now, the two electrodes under each microcapsule can be polarised differently as well, thus forming a half-white and half-black pixel. This is how E-Ink's technology achieves higher resolutions and apparent shades of grey. All this circuitry forms a screen with a calculable resolution, which can then be controlled by a display driver or graphics chip.

Moreover, the "E-Ink" is reflective in nature, and it looks just like print on paper, has a readable angle of 170 degrees, and is clear even in direct sunlight.

But enough on costs and technology briefs—let's get on to the actual prototypes that have been developed to further illustrate the road ahead.

Prototypes

Here we'll take a look at some products that are currently in development, and which, hopefully, should reach the markets, and you, within the next few years. Instead of looking at the available prototypes individually, we'll look at some of the possible implementations of paper displays, and see what products are being developed to fill those gaps.

Electronic Newspapers / Books

This is the very first implementation that the world thought up, which, unfortunately, is still only in the prototype stage. The most obvious implementation of a paper display is to replace paper! Since the most common interaction people have with actual paper is perhaps the newspaper, it is only natural that paper displays try and find their way into this space.

How can a paper display replace your newspaper? The answer is simple. Consider this: you probably go out and buy a newspaper everyday, or wait for the delivery boy to drop off one at your home. What happens if you have to leave home early on certain days? What about the news that happened after the paper was printed? What about those of us who like to read three and four different newspapers? Though TV and the Internet have fulfilled some of these needs, it's still not enough!

Now think of a paper display that's the same size as your newspaper. It's foldable, for easy storage, just like your newspaper, and isn't 40 pages thick! Now imagine if you could connect this paper via Wi-Fi or WiMax to news servers. Essentially, you would just need the single paper display to read all the news from all your favourite news sources. Obviously, news distribution would have to become subscription services, much like iTunes.

Not only do paper displays in this form solve the problem of storage and mobility, it also means that this sort of a system would enable you to access news as it happened, much like RSS feeds do for you right now. The added advantage here would be that you can sit and read it like a newspaper, which beats peering at a monitor any day!

Another advantage is that you could essentially sort your news according to taste. What

this means is that, say, you prefer *The Times Of India* for their sports news, *The Indian Express* for their political news and *The Hindustan Times* for general news, you could program your paper display to show you the relevant news from the desired news source. This is akin to using a news site that allows you to personalise the way your news appears, except that using the paper display you could be anywhere at all—travelling in a train, standing on a street corner waiting for a bus, or even while in the loo!

So what products have been, or are, being developed in this context?

Sony LIBRIé

Though only available in Japan right now, this is an e-book reader that uses a paper display. It can store up to 10 MB of e-books, and boasts of an impressively sharp resolution of 170 pixels per inch. The display, unlike all other displays available on readers or PDAs, is absolutely clearly readable even in direct sunlight. Though the screen has a dull plastic look, it's almost as readable as newsprint.

The Sony LIBRIé is not exactly the perfect e-reader, but it has a great contrast ratio for reading e-books, even under direct sunlight

The reader runs on four AAA batteries, which can last for as much as 10,000 page changes. Thankfully, the option of AAA batteries means that you can just pick up a fresh set at almost any general store across the world, and not have to rely on a power outlet to recharge any internal batteries!

There's a memory stick slot to add additional memory to the LIBRIé, and a small speaker and headphone outlet to play any embedded audio in your e-books. It also features a keyboard that lets you use the inbuilt dictionary, so that you can translate words into English. We're hoping to see a fully English version soon!

There are drawbacks though, namely screen refresh rates—or the lack thereof! When you click to turn a page, it takes a second to refresh the screen. While it may seem that we're being unreasonably harsh by complaining about this, try entering text on a display that takes a second to show every letter you type! Hopefully, these kinks will be ironed out soon—perhaps when a "LIBRIé 2" is launched!

This is a wall-sized paper display that was set up at an exhibition in Japan. It used E-Ink's technology to display newspaper articles on the paper display, while images were displayed on the smaller LCD

The Philips READIUS has a rollable display that lets you carry around a much larger screen in a pocketable form factor

Philips READIUS

This is a really cool gadget! It features a rollable paper display in a device that can best be described as a "mobile e-reader." The display is capable of four monochrome shades, that can be rolled up to a radius with a curvature as little as 7.5 mm. The contrast ratio displayed is 10:1 (bright to dark), more than sufficient to be able to read it in direct sunlight. The screen resolution is 320 x 240 (QVGA) pixels at a diameter of five inches. When closed, the device measures a mere 100 x 60 x 20 mm, obviously making it extremely pocket-able. We're not quite sure about battery power, but reports say that the consumption is minimal.

Being a mobile gadget, it should be able to receive news and updates of various kinds (traffic, weather, and so on) quite easily, through Wi-Fi, WiMax, or even cellular networks. All this has still not been finalised, of course, but we're hoping for the best!

This product is still a prototype, and its makers, Philips' Polymer Vision, currently have no plans to mass-produce it—unless popular customer demands say otherwise. Basically, what this means is that they built this prototype to give us a glimpse of what's possible, and should we decide that we just have to have one, some manufacturer or the other can lease the patent rights and provide us with products! A tall order indeed, but if you would like to support the "Build me a READIUS" cause, go to **http://www.polymervision.com/ contact/Index.html** and demand that Polymer Vision start mass manufacturing some!

Everyday Life

Apart from the standard uses of paper displays in e-newspapers and e-readers, paper or rollable displays might have an important part to play in everyday life as well. The simplest example would be hoardings, where space can be sold as per the time of the day. So you could have animated advertisements that are just as visible in the day as in the night—current neon signs are useless in the day! There are also huge power savings that paper displays offer over neon signs. As for standard painted or printed billboards, they're no competition to cheap paper display billboards that can be animated.

Apart from this, you could also see ultra-thin watches being made, which could be possible of displaying news or traffic updates at the push of a button.

Then there's the whole print advertising industry to be thought of. Imagine if you got a copy of *Digit* that was just two pages thick, yet contained 10 times more content than it does currently! After all, all print magazines are limited to a certain number of pages due to printing and handling costs. But that's still the content—what about the advertisements? Imagine if, instead of flipping pages, all you had to do was press a button, and as things are even now, there would be advertisements

placed at strategic points between text. The difference here is that advertisements could be animated, and perhaps even supported by sound—sort of like the Flash advertisements you come across online!

If connectivity improves, you could perhaps use the (imaginary/future) WiMax public network to avail of a special offer that was advertised! Of course, we're getting ahead of ourselves here... or are we?

Let's take a look at a few ways rollable paper displays have started to revolutionise a few areas of everyday life. Expect to see a lot more of these examples in the near future!

Seiko's "Future Now" E-Paper Display Watch

This watch looks like a stylish wristband, and is incredibly slim and sleek. The watch's display is made up entirely of a paper display, and offers, as usual, a high-contrast screen.

Seiko's watch displays the time using a paper display. The flexibility of the paper display allows for some innovative designs

Since the display has pure black and pure white particles, it offers almost the same readability as printed paper, and about twice the contrast of an LCD screen. Since the display is flexible, it helps Seiko use only curves in the design, which is why the watch looks so sexy! This also opens up a whole new world of outlets for the creative juices of watch designers: they can now achieve designs that were not possible earlier, due to the inflexible nature of previous faces and displays.

Because the paper display is so small, and is a simple implementation, it has virtually no power consumption, at least when compared with any other existing display technologies. You can hope to see the "Future Now" watch to hit stores somewhere in mid-2006, since release dates have been set for spring 2006 for Japan.

Colour?

So far, we've only seen products that offer monochrome displays, as those were easier to produce. However, this does not mean that colour displays were ruled out. Till date, all the aforementioned products and technologies

were flexible monochrome displays. So, when E-Ink's technology was recently used to produce colour paper displays, it resulted in a great deal of excitement. However, E-Ink is still working on making these displays flexible or rollable.

Let's look at a few products that have been made using this colour paper display technology:

Microsoft Xbox's Point-Of-Purchase Jade Empire Game Release

Yes, we realise it's a mouthful, but that's what it's called! A Point-Of-Purchase (POP) promotion is basically an advertising or promotional gimmick that's undertaken in stores (the points of purchase) to attract customers to a particular product.

Those of you into Pink Floyd might remember that their album *Pulse* utilised a revolutionary method of attracting attention—the Laser Disc of the album had a red LED on the box that would blink "Pulse" every couple of seconds. This actually increased sales!

Neolux Corporation, a leader in the field of POP promotions, devised a plan which could use E-Ink's paper display technology to create a revolutionary POP promotional method called the "Ink-In-Motion". Basically, they could use paper displays to attractively animate the packaging of a product!

Apparently, someone at Microsoft thought this was perfect for the launch of the new Xbox game *Jade Empire*. Shown here are three images, one with all displays off, the second is the next step in the animation and the third is an even more enhanced animation. You can also see the GIF file at: www.eink.com/press/images/image_release_82.html/ to get a better idea of how the animation appears .

Considering all this was done, affordably, using paper displays, you can well imagine how stores are going to look in the future. Perhaps low-cost products may not employ such tactics, but game distributors are surely going to be looking into this technology.

As the paper displays improve, we may even be able to preview actual screenshots from games before buying them. Or even turn the box over and read reviews of the game, from our choicest Web sites, which can be downloaded off the Net! The possibilities are well and truly limitless!

It's impossible to show you animation in *Digit*... yet! Somewhere down the line, perhaps, even we can use paper displays the way Microsoft did—to help draw attention to their new Xbox release. Notice the changing colours!

Shown here is the new colour display that has been produced by E-Ink and Toppan Printing. The image above shows you the device's capability of displaying text, while the image on the right shows off the decent image resolution offered—all in 12-bit colour of course!

E-Ink And Toppan Printing's Colour Paper Display

We foretold the coming of this product in *Gadgetopia* in the July 2005 issue, and just six months later, here it is!

This is a colour paper display screen that was developed using E-Ink's display technology and Toppan Printing's flat panel colour filters. Incidentally, Toppan Printing is the world's largest supplier of colour filter arrays for flat panel monitors.

The display offers a sharpness of 83 pixels per inch at a resolution of 400 x 300, and achieves 12-bit colour! The custom-made colour filter array, provided by Toppan, uses high-brightness colour (RGBW) to maintain paper-quality contrast. Basically this means that the white is as good as paper, and the black and other colours are shown up in high contrast to give the display a proper magazine page look!

The screen is six inches in diameter, which is the size of an ordinary paperback novel. This step forward by E-Ink and Toppan now makes the dream of colour paper displays in mobile devices an achievable reality!

Since the display uses minimal power and has a readability angle and contrast on par with paper, it's already got conventional mobile displays beat. The colour display reportedly uses as much as 100 times less power than a conventional LED, which means that battery life on existing mobile products can easily double if this technology is used—not to mention a sizeable reduction in weight!

Perhaps the first adopters of this technology will be everyday devices such as electronic sign boards, digital cameras (for the preview screens), ATMs, GPS devices, and kiosks, thanks to the amazing readability under direct sunlight. Later, we might see the display being used in mobile phones, PDAs, laptops, and other mobile devices that need to save on battery power. The product is said to be able to hit production lines soon—by the end of 2006.

The Return Of Paper

If, or rather, when, these displays are successfully made flexible, perhaps all of us will be able to enjoy gadgets that don't keep running out of battery life, and have screens we can actually read easily in the daytime.

Although we normally cover technologies of the near future in this section, this time we focussed on paper displays, which were first invented in the '70s. The reason for this is: within the next two years, we see paper displays being used a lot more, and becoming a part of everyday life, thanks to their reduced manufacturing costs and battery use.

Since every development that's happened in the past few years has revolved around mobility and the ease of information flow, paper displays seem to fit right into the mould for the future. They're cheaper, less fragile, offer better readability, are lighter, and use less battery power. Now, if only manufacturers and researchers can find a way to rival LCD and CRT refresh rates, we're set to see the return of the paper era, albeit in the new form of e-paper!

Would you be interested in buying any of the products talked about in this article, as and when they're available? Does the idea of an interactive *Digit* printed on e-paper excite you? Write in and tell us—we'd love to hear your take on the subject. ⌧

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The Battle Of The Blue

Your new DVD-Writer will soon be obsolete. But which blue-laser technology will replace it?

Ram Mohan Rao

We don't need to tell you that technology moves at a fast pace, do we? But we have here an indicator of just how fast: in September of 2004, in *Space: The Final Frontier*, we talked about the DVD format wars. Back then, we just mentioned Blu-ray and HD-DVD in passing. Just about a year later, the DVD format wars have been all but forgotten. Blu-ray and HD-DVD are already upon us, and we need to talk about them in much more detail than we did last year.

For the uninitiated, Blu-ray and HD-DVD are the next generation of optical storage, though there do exist several competing formats as well. Blu-ray offers about 25 GB of storage on a single layer, but a Blu-ray Disc (BD) can and will host more than one layer—hence a typical dual-layer

BD will be capable of holding up to 50 GB. HD-DVD offers about 15 GB on a single layer. Dual and triple-layer discs of this format have been manufactured.

Again, for those who came in late, there's a format war of unprecedented proportions taking place. The Internet is abuzz with discussions, news, views, and speculation on which format—which camp, so to speak—will emerge the winner and become the standard, whether there will be a peaceable co-existence, and a host of other things. What follows is a W5H of sorts on Blu-ray and HD-DVD, followed by the much-asked question, "Which format will win?"

So What Are Blu-Ray And HD-DVD?

The Blu-ray standard was developed by a group of companies called the Blu-ray Disc Association (BDA). Blu-ray gets its name from the "blue-violet" laser used to write the data to disc. (Different laser wavelengths have different colours.) The blue-violet laser has a wavelength much shorter than that used to write conventional DVDs, which happens to be red. The shorter wavelength makes it possible to read and write smaller "pits," meaning that data can be packed more densely.

Ones and zeroes are stored on optical media—CDs and DVDs included—in the form of

3D Modeling Vikram Kathare and Pradip Ingale

Some Blu-ray And HD-DVD specs

Parameter	Blu-Ray	HD-DVD
Capacity (ROM SL)	23.3/25 GB	15 GB
Laser wavelength	405 nm	405 nm
Numerical Aperture	0.85	0.65
Read power	0.35 mW	0.50 mW
Protection layer	0.1 mm	0.6 mm
Track pitch	0.32 µm	0.40 µm
Minimum pit length	~150 nm	204 nm

Where the technical specs are concerned, the main difference between Blu-ray and HD-DVD is in the disc structure itself

bumps and pits. A bump is an area of the substrate (the material on which the data is written) where there is no pit, so the pit is what is taken into consideration when one talks about burning data onto optical media. It is definitely not as simple as "a pit is a one and a bump is a zero," but one can think of it that way to simplify things.

HD-DVD, too, uses the shorter-wavelength blue-violet laser. The name "HD-DVD" itself stands for, of course, High-Density Digital Versatile Disc.

Both the Blu-ray and HD-DVD camps say they will initially be providing "hybrid discs," with a high-definition disc on one side and a regular DVD on the other—so that consumers will be able to play movies on their DVD players for now, in a measure of future-proofing.

How Are BD And HD-DVD Different?

We need to explain three terms here—numerical aperture (NA), track pitch, and pit length.

The light-gathering capacity of a lens is indicated by its NA. It is dependent on the diameter of the lens as well as on the quality of the optics. The higher the NA—meaning the lens can gather more light—the better.

The track pitch (see figure *Track Pitch And Pit Length*) is the distance between the centres of two successive rounds of the spiral track on which the pits are burnt. The smaller the track pitch, the more the number of tracks on the disc, and hence the more the data that can be stored on the disc as a whole.

The pit length (again, see figure *Track Pitch And Pit Length*) is simply the size of the burnt pit.

Now, the NA and the wavelength define the size of the laser beam. A higher NA and a shorter wavelength means a laser beam with a smaller

area of illumination, which allows for the focusing of the beam with higher precision—and therefore, the possibility of a reduction in the track pitch and pit length.

Where the technical specs are concerned, the main difference between Blu-ray and HD-DVD is in the disc structure itself. HD-DVD uses specifications similar to DVD: the base disc is 0.6 mm thick, and the protective layer is 0.6 mm thick. Blu-ray uses a 1.1 mm base disc, with a protective layer only 0.1 mm thick. This "small" difference means a lot: in Blu-ray, the recording layer is closer to the disc surface. This means the laser has to pass through less material to read from and write to. This in turn makes for a higher NA for the laser lens (see figure *The Effect Of NA On Lens Focusing*). A higher NA, as we said, means a lower track pitch and a smaller pit length. And the lower track pitch and smaller pit length mean more data can be packed onto a BD than an HD-DVD.

So why does HD-DVD use a thicker protective material, and how come a BD won't get scratched easily?

Track Pitch And Pit Length
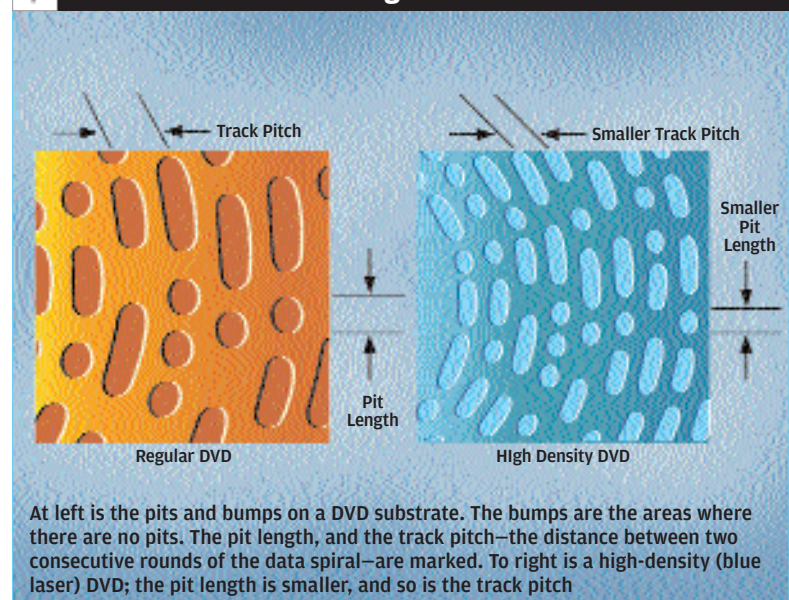
At left is the pits and bumps on a DVD substrate. The bumps are the areas where there are no pits. The pit length, and the track pitch—the distance between two consecutive rounds of the data spiral—are marked. To right is a high-density (blue laser) DVD; the pit length is smaller, and so is the track pitch

HD-DVD went with the thicker protective layer so that, by virtue of its similarity to DVD, no hard coating was required; this also meant it was easier to make future drives backwards-compatible

Indeed, backwards-compatibility with DVD is one of the things HD-DVD proponents frequently state. However, it might well turn out that Blu-ray drives will be forced to be backwards-compatible with DVD as well.

Early BDs were indeed susceptible to scratches, so much so that they had to be enclosed in plastic caddies. But in January of 2004, TDK introduced a proprietary clear polymer coating under the name 'Durabis'. This made BDs even more scratch resistant than DVDs! Now, BDs with the coating can also withstand attack by a screwdriver. according to a release on CNET News.com: "Researchers at TDK have developed a tough coating that will make scratched DVDs a thing of the past. In a test conducted by CNET News.com, a DVD treated with TDK's coating survived a determined attack with a screwdriver with no effect on playability."

Layers And Speeds

A single Blu-ray layer holds 25 GB; a single HD-DVD layer holds 15 GB. But it's not as simple as "Blu-ray is higher capacity than HD-DVD," as you'll find out.

In March of this year, at the Media Tech Expo 2005 in Las Vegas, the two camps demonstrated their current disc production capabilities. A standard two-layer HD-DVD-ROM is 30 GB. Toshiba showed off a three-layer HD-DVD-ROM, which is 45 GB; this was essentially their response to the criticism of HD-DVD's lower capacity. Now a dual-layer Blu-ray disc is 50 GB, but with 45 GB possible with three layers, HD-DVD had narrowed the difference to a mere 5 GB.

The capacity game itself is indicative of what's going on in the format war. For instance, in response to Toshiba, TDK, a member of the BDA, said it was working on a four-layer Blu-ray disc, which would have a capacity of 100 GB. And in June, it was reported that TDK had delivered on their promise—a prototype recordable Blu-ray disc

Data transfer speeds, though not as important as capacity, are still an important factor in the adoption of any storage medium

with a capacity of 100 GB had been developed. It is, of course, the most advanced optical media developed to date.

What about speeds? Data transfer speeds, though not as important as capacity, are still an important factor in the adoption of any storage medium. Here, Blu-ray is ahead again by virtue of the specifications themselves—specifically, the NA and the wavelength. Blu-ray needs a lower disc rotation speed than HD-DVD to reach the same data transfer rates. 36 Mbps (1x) is the base speed for BDs, but BD-ROM movies will require a 54 Mbps data transfer rate—so the minimum speed the BDA is expecting to see in drives is 2x (72 Mbps).

Blu-ray also has the potential for much higher speeds. While the media itself limited recording speeds in the past, the only limiting factor for Blu-ray is the capacity of the hardware. The upper limit of today's drives in terms of constant rotation speed is about 10,000 rpm. This speed would result in a 12x (400 Mbps) transfer rate for a BD, and "only" 9x for an HD-DVD.

It's true that such high speeds are not required today, and HD-DVD proponents are likely to point out that 9x or 12x should make no difference to the end user—you. In reply, Blu-ray proponents would say that the 9x/12x difference showcase the superiority of their technology.

Where And When Can I Get Them?

We can provide a few indicators here: for the general consumer, 2006 seems to be the year. Players for Blu-ray and HD-DVD discs should arrive in stores in the US, Japan and many other countries sometime in 2006. BD-ROM pre-recorded media will probably be available by early 2006. Recorders should become available later in 2006 or in early 2007. It's not clear how much of a delay there will be in terms of availability in India.

Pioneer might soon introduce a Blu-ray writer for PCs. Toshiba might soon introduce drives for reading HD-DVDs in laptops. Imation, a member of the BDA and a name familiar in India, is finalising the development of both HD-DVD and Blu-ray media, utilising a protective disc coating for both formats. During 2006, Imation plans to launch BD-RE (rewritable) and BDR (recordable) 25 GB (single-layer) and 50 GB (dual-layer) media. At around the same time, the company also plans to launch the HD DVD-R (recordable) and HD DVD-ReR (Re-recordable) 15 GB single-layer and 30 GB dual-layer HD-DVD formats.

Who's On Whose Side?

There's news every week or so about someone having joined one camp or the other. Here are some of the more important or interesting facts.

The first consumer Blu-ray device in the US is expected to be PlayStation 3. In October, Paramount became the first studio to lend its support to both sides—earlier, it was part of the HD-DVD camp. Closer home, Moser Baer, interestingly, is on the HD-DVD side.

Prominent companies on the BDA (Blu-ray Disc Association) include Sony, TDK, Dell, Hitachi, Apple, HP, Philips and Samsung. The list of consumer electronics companies on Blu-ray's side is long—from Panasonic, Samsung, Sharp and Pioneer to LG Electronics and more.

The Effect Of NA On Lens Focusing

CD
Laser Lens
DVD
Blu-ray
Recording Layer

Infographic **Shrikrishana Patkar**

At left is a laser lens focusing the laser onto a CD substrate. Note that the distance between the lens and the top of the CD is quite large. Next is the DVD case; the NA value is larger, and the beam is more sharply focused. Finally, in Blu-ray, the NA is even larger, the lens gets even closer to the disc surface, the amount of material the laser has to go through is the smallest, and the beam is the most tightly focused.

Video game maker Electronic Arts is with Blu-ray, as are the entertainment companies Twentieth Century Fox, Vivendi Universal, Walt Disney, and, of course, Sony Pictures.

HD-DVD is being promoted by, amongst others, NEC, Sanyo, and the Wintel duo—Microsoft and Intel. Toshiba leads the HD-DVD consortium. Entertainment companies backing HD-DVD are HBO, New Line Cinema, Universal Studios Home Entertainment and Warner Home Video.

What Do HD-DVD Proponents Say?

Blu-ray boasts of higher capacities, and that's enough to make one wonder, "Why HD-DVD?" It appears that Blu-ray has everything going for it, including a lot of support from hardware makers.

But HD-DVD has one key advantage for now: cost. In the case of Blu-ray, new facilities will be required in all areas—disc and player manufacture, and also movie-disc replication. Since the physical specifications of HD-DVD have a lot in common with DVD, most manufacturing plants currently making DVD players, discs and movies can also be used for HD-DVD.

Proponents of the two camps say different things, and sometimes quote obscure sources. We can't be sure who's accurate, but we know that Microsoft and Intel have joined the HD-DVD bandwagon, thus lending some weight to the HD-DVD camp. Here are some things that HD-DVDers (if we can call them that) are likely to say:

- ☑ "HD DVD has a proven 30 GB capacity, while currently, Blu-ray has only delivered 25 GB outside of the lab—this is half of what its proponents promised."
- ☑ "Both formats said they would develop a standard that supports playing of both, DVDs as well as their next-generation standards, but so far, only HD-DVD has delivered."
- ☑ "The capacity for volume production of HD DVD discs is already in place."

And as to Microsoft and Intel backing HD-DVD, they cited the following requirements of "any successful next-generation optical format for high definition," which HD-DVD can deliver right now.

> **In the case of Blu-ray, new facilities will be required in all areas—disc and player production, and movie-disc replication**

- ☑ Managed Copy is a guaranteed feature in HD-DVD that enables consumers to make legitimate copies of their discs to a hard disc.
- ☑ Proven low-cost, high-volume manufacturing.
- ☑ HD DVD-ROM discs will offer dual-layer 30 GB discs *at launch*, compared with BD-ROM discs, which will be limited to (single-layer) 25 GB.
- ☑ The compatibility of HD-DVD with DVD facilitates development of slim drives for integration in notebooks.
- ☑ HD-DVD supports the iHD interactivity standard, that uses XML—and Vista uses XML. Blu-ray does not!

So Which Format Will "Win"?

We're as unsure as anyone else out there! Here's a disjointed set of facts that could possibly have a bearing on the issue.

First, a word about hybrid discs. We mentioned that both camps will initially offer hybrid discs that can be played on existing DVD players. That was a simplification: the truth is that Microsoft and others claim hybrid discs will be a reality with HD-DVD, but probably not so for Blu-ray.

In late September, Richard E Doherty, program manager in Microsoft's media entertainment technology convergence group, stressed the matter of timing in delivering a solution. Saying that "HD-DVD has shown that hybrid discs will be a reality for consumers at launch," he indicated there was "no roadmap for the development and availability of a BD hybrid disc"!

Some say Microsoft will eventually support Blu-ray due to its inherent capacity advantage—there might not be native support for Blu-ray in Vista, initially, but it will be there! Vista is, of course, something one must think about when talking about technological storage and entertainment issues these days.

Who will get to the market first with higher capacities? It's not obvious that it will be Blu-ray. Remember, we spoke about Blu-ray being limited to 25 GB (single-layer) at launch, compared to HD-DVD that would be 30 GB (dual-layer) at launch.

Here's an example of the kind of bickering that seems to be going on these days: two months ago,

the above claim was refuted by Blu-ray, which said that BD-ROMs will be 50 GB at launch, although no launch date was mentioned. Doherty had this to say about the 50 GB launch: "The 50 GB claim for BD-ROM discs is unproven and will not be available for many years to come, based on discussions with major Japanese and US replicators. Replicators not only do not have test lines running, they cannot even pre-order the equipment to begin evaluating this disc. They cannot judge the cost of these discs, or even whether they can be manufactured at all. Major replicators can mass-manufacture 30 GB HD-DVD discs today…"

There are more computer manufacturers backing Blu-ray, again because of the storage capacity aspect. Blu-ray is ready to go with 50 GB, and the theoretical limit for a four-layer HD-DVD disc is only 60 GB. The present might be in favour of HD-DVD, but remember that a 100 GB BD has already been developed!

In terms of the security and anti-piracy features that will be offered by the two formats, Blu-ray has BD+ and ROM-Mark, which HD-DVD doesn't offer (see box *Enhanced Security In Blu-ray*). That means in theory, Blu-ray discs will be tougher on pirates than HD-DVDs, which is good news for the studios.

News of hardware support for Blu-ray keeps coming in. Just last month, it was reported that Panasonic would soon begin sampling what it claims is "the first optical drive control chipset capable of writing to any recordable or re-writeable disc format"—except HD DVD. Not much of a surprise, since Panasonic's parent company Matsushita is backing Blu-ray. The chipset specifications list format support, and amongst these are CD-ROM, CD-R/RW, DVD-ROM, DVD-RAM, DVD±R/RW, BD-ROM, and BD-R/RE. No HD-DVD here, definitely! Panasonic said mass production of the chipset would begin in January next year.

One could look to history and see that this is just another format war. Case in point: when VCRs were introduced, there were two competing formats. Sony was pushing Betamax, considered technologically superior; JVC and Matsushita were pushing VHS. Sony refused to

> **When VCRs were introduced, Sony was pushing Betamax, considered technologically superior; JVC and Matsushita were pushing VHS. VHS became the standard. Sony is now pushing the technologically superior Blu-ray**

license Betamax to OEMs, while JVC and Matsushita licensed VHS to whoever wanted it. VHS became the standard. Sony is now pushing the technologically superior Blu-ray…

Talking about Betamax, one of the reasons your old video cassettes are VHS and not Betamax is because pornographers took to VHS and not Betamax. Like it or not, much of entertainment technology has been driven by "The Other Hollywood." The porn industry releases over 11,000 new titles on DVD every year, compared to about 400 by Hollywood. In which case, we don't know anything right now about whether HD-DVD or Blu-ray will win—the fate of the format wars might lie in the hands of the pornographers.

It may not even be Blu-ray or HD-DVD at all: it may be EVD, China's next-generation DVD format! EVD is a red-laser format, and promises capacities of 16 GB. So what's so great about EVD? Not much, except that China wants it. That country produces 70 to 80 per cent of the world's DVD players, and manufacturers pay a large amount in terms of licensing fees to the international owners of the intellectual property patents for DVD players. China is not happy.

According to the state-owned news agency Xinhua, China will put EVD on the market "before 2008." Hollywood is behind much of the development that's happening in the high-definition storage arena, but what about China's thriving movie industry, and Bollywood as well—considering that China's biggest potential export market is India? Things could change as 2008 comes by.

There is some weight behind the idea that it will be the consumers who will ultimately decide what format will rule. So if HD-DVD is initially cheaper, which it might well be, it could gain the advantage—and take over from there.

This opinion is, in fact, shared by a large number of people: that they would upgrade their DVD players when the alternative became cheap enough—so it makes sense to think that whichever format becomes "cheap enough" first will obviously be "the winner."

It could even be something as silly as a name! Historically, consumers have been more likely to adopt a new product when it comes as a natural progression from what it is replacing. HD-DVD seems the natural progression of DVD, in terms of the name. "HD-DVD" sounds like something to do with DVD, and, admit it, "Blu-ray" sounds like the name of a dangerous fish!

In Conclusion

The blue-laser DVD format war has been on for some time now, and will be on for the foreseeable future. There are far too many aspects to it to have explored here, and we can only hope you've gained a foothold on what's going on in this space. 2006 will be an exciting year in the unfolding of this drama, what with mass shipments of drives and studios and other companies switching loyalties.

On the other hand, some people are tired of the deluge of news coming in about HD-DVD/Blu-ray. It might be just as well that you sit back and wait for a 50 GB (should that be 45 GB?) drive to ship to a store near you—and then go upgrade! ∎

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▽ Enhanced Security In Blu-ray

Copy-protection schemes on blue-laser discs are more advanced. BD+ and ROM-Mark are specific to Blu-ray; the scheme called AACS will be used by both HD-DVD and Blu-ray.

BD+ is an encryption scheme that allows for dynamically changing encryption schemes. If the encryption scheme is hacked, as happened in the DeCSS, it can be updated and used on all new discs.

Why is this required? Content-Scrambling System (CSS) is an unsuccessful encryption system used on some DVDs. When the contents of a DVD are encrypted, "keys" are required to unlock the content—more technically, "key sets" (because there is more than one key involved). These key sets are licensed to manufacturers, who incorporate them into DVD drives and movies. As a matter of fact, the CSS algorithm was reverse-engineered in 1999, and a program called DeCSS was released onto the Internet. And from then on, all DVDs became crackable! BD+ will avoid such a scenario.

ROM-Mark is a watermark that players need to see before the disc can be played. Only licensed parties will be able to produce the watermark, and when you copy a disc, the watermark, which is undetectable, will not be copied—so piracy is, in theory, defeated. In addition, if the watermark is detected by any means, the ROM-producing devices, into which the technology will be built, will not reproduce the content.

TAKE a CRACK

You have the original Office 2003 CD, and also the Service Pack 2 CD. How would you integrate them onto one installer?
Write in with the subject 'Take a crack', and your postal address, to **takeacrack@thinkdigit.com** with your solution

Slipstream Service Pack 2 Into An Original Office 2003 CD

▶ To change the background and foreground colour of the text in the command prompt

To change colours in the command prompt

Open the Registry Editor. Navigate to HKEY_CUR-RENT_USER\Software\Micros oft\Command Processor. Locate the DWORD value "DefaultColor". If it does not exist, create the value.

In the right pane, modify the "DefaultColor" value, putting in a hexadecimal number, say "82". The first digit of this value determines the background colour, and the second digit determines the foreground colour of the text. In this case, "8" corresponds to grey, and "2" corresponds to green. The result is a command prompt window with green text on a grey background. Similarly, the value "1E" would yield yellow text on a blue background.
Here is a table that shows what hexadecimal value corresponds to what colour:

To change the Autocomplete key

in the Registry Editor, navigate to HKEY_CURRENT _USER\Software\Microsoft\

Hex Value	Colour
0	Black
1	Blue
2	Green
3	Aqua
4	Red
5	Purple
6	Yellow
7	White
8	Gray
9	Light Blue
A	Light Green
B	Light Aqua
C	Light Red
D	Light Purple
E	Light Yellow
F	Bright White

Command Processor. Locate the DWORD values "CompletionChar" and "PathCompletionChar"; if they do not exist, create them.

"CompletionChar" is for autocomplete of file names and "PathCompletionChar" is for autocomplete of folder names. Modify each of the above values to "6". The value "6" corresponds to [Ctrl] + [F], which is what we wish to set it to.

Next, navigate to HKEY_LOCAL_MACHINE\Soft

The command prompt with green text on a grey background

ware\Microsoft\Command Processor, locate the exact same values as above and make the same change. Finally, exit the Registry Editor.

All changes will be visible when you open the command prompt the next time; there is no need to restart Windows.

Disclaimer: Modifying the Windows registry may cause serious problems that may even require you to re-install Windows. Hence, you should use the Registry Editor with extreme caution. While editing the Registry, there is no way to undo any changes you make! ⊠

MSI MEGA VIEW 588

Deepak Dhingra

Portable media players have been around for a while now. Nonetheless, the arrival of one in our test lab still creates a flutter among the reviewers. I guess it's because reviewing a product in this category is a lot of fun! I was rather thrilled to be able to spend a few days with the new MSI MEGA VIEW 588. Here's an account of my experiences.

Day 1: Features Galore

Boy, this one is sure packed with goodies! It took me a while to just read the features MSI MEGA VIEW boasts of— video, music, photos, voice recording, FM radio, audio/video recording, SD/MMC card slot, and portable storage. Whew! One can even plug-in a digital camera, DV or memory card reader directly into the player to play or view media. I plugged in the charger and got ready for my dose of entertainment.

Day 2: Loading It Up

The 1.8-inch 20 GB hard drive in the MEGA VIEW 588 promises enough storage capacity for long hours of entertainment. The player supports many popular video and audio formats, including the DivX, WMV9, MP3, and WMA. On connecting it with my PC, the player was detected as a removable drive. File transfer through the USB 2.0 interface was fast and I copied videos, music, and photos in seconds.

Day 3: Now The Fun Starts!

The press of a button brought its 3.5-inch TFT display to life. Using the 5-way navigation key, made handling the menu child's play. All I had to do was scroll and select the desired function, click the file I wanted to play, and I was all set!

Day 5: My Personal Movie Theatre

I had to fly to Delhi for some work. During the two-hour flight, I tried out my new personal movie theatre! I plugged in my earphones so as not to disturb my co-passengers and started the action flick I had loaded. Video playback on the gizmo was decent and the movie ended just as the landing was announced.

Day 10: Play It Again

When I played some music, the MSI MEGA

VIEW 588 reproduced the audio faithfully. The in-built speaker was OK, but the bundled earphones were better. The FM radio was very useful when I wanted a change. I could also record from the FM directly to the MP3!

Day 18: Useful At Work

I planned to check the voice recording feature at a press conference I was to attend. Selecting the voice recording function from the main menu, I pressed the record button on top. Got a good voice transcript of the presentation— enough to complete my report at work.

Day 25: Picture This

The digital images I had captured over the years found a great companion in the MEGA VIEW 588. I could view them wherever I was, and also view them at home by connecting it to a TV and running a slideshow with music.

Day 28: For The Record

There was a cricket match between India and South Africa, and I wanted to capture some of the action. I connected the player to my TV using the AV cable and used the wireless remote controller to record replays from the comfort of my armchair. This is one gadget I don't want to let go of!

Day 30: All Good Things...

It was end of the road for me and my MEGA VIEW 588. And I was sad to see it go. I sure hope another one like it comes along soon. Sigh!

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Citius, Altius, Fortius

The Olympic motto perhaps comes closest to describing Digit's Zero1 awards this year. With hundreds of the best products in each category vying for Gold, victory has never been sweeter for the winners than this year

In technology, more than in any other market, the race for the laurels is as hotly contested as in the Olympics. Races are won by a hairsbreadth, scores are often tied to the very end, and when in competition, even superb products may fall by the wayside, losing to the mighty.

The difference between the Olympics and Digit's Zero1 awards is that we encourage competitors on steroids and welcome performance enhancers with open arms! This is, after all, technology we're talking about, and performance is a key challenge here. Of course, reliability and reasonable costs also play a big role in our recommendations to our readers.

As the year draws to a close, we recap which products have survived our gruelling tests, shedding the digital equivalent of sweat and blood to emerge as the 2005 champions.

There has been a fair share of upsets this year, as you will see. However, nothing pleased us more than finding out that the predictions we made last year were spot on!

Just a year ago, AMD stole the limelight with its 64-bit processors, and we predicted that this year would see a shift towards 64-bit CPUs. As you read this, both Intel and AMD are now gradually shifting towards 64-bit computing. What's more, there are already dual-core CPUs from both companies in the market.

This fever hasn't hit only the CPU industry—the GPU community has seen nVidia's SLI and ATi's CrossFire dual-GPU technology really begin to take off. ATi and nVidia have battled it out in the graphics card championship this year, and the result is graphics that make you squeal with delight. Not only did this battle bring us high-end gaming products, it also increased the options for those of us who play in the lower leagues—onboard graphics. Graphics chipsets from ATi and nVidia that can be found even on lower-end motherboards, are better performers than the best graphics cards available just a few years ago!

Competitions were fought not just in the silicon arena, but also between the champions of "iron oxide valley". Hard disk capacities doubled this year, and we actually saw sizes of half a terabyte! And that's not all—SATA was new to the race last year, but is omnipresent this year, and is already being challenged by SATA II. This has brought amazing amounts of storage at terrific read and write speeds.

As with real-world sportspersons, our contestants, too, got numerous face lifts. Manufacturers have suddenly begun to take the looks of several products—including motherboards and graphics cards!—seriously. And when it comes to lifestyle products, looks are just as important as performance. The drop in LCD prices has helped large-scale adoption of the TFT-LCD monitor. Printers have curves and all-new space-saving designs. Speakers are more powerful and smaller, not to mention a lot prettier!

The year has also seen devices compete inter-category, most notably the mobile phone. Today's smartphones contend head-to-head with PDAs, entry-level digital cameras and MP3 players as well. MP3 players have morphed into portable media players, adding video to their list of features. And all the while, prices have fallen drastically, so it's now not ridiculous to think of owning a device that will let you watch hours of movies on the go—or one that will let you click megapixel-resolution images, listen to music, FM, record video and audio, surf the Internet, check your e-mail, while still letting you make and receive phone calls!

We've seen the same trend in the digital camera segment, so much so that it almost makes no sense to even look at a film camera anymore. Entry-level cameras boast of features that were only available on the expensive, "high-end" cameras of just a couple of years ago.

Almost every urban Indian home bought a technology product in the past year, and this has prompted multinationals to flood the markets with a seeming embarrassment of choices in every category. Perhaps this is what makes this year's Zero1 Awards most significant.

Let's take a look at the crème de la crème of technology products that have won the Gold medals in our tests. Remember, no prizes for second place here!

CELL PHONES

Sony Ericsson W800i Walkman

Specs: 262K Colour Screen, Tri-band, Bluetooth, Infrared, 2-mp Camera with Flash, GPRS, Stereo FM radio, Expandable Memory, 512 MB Memory Stick Duo

Our Verdict: The best cell phone we've seen in the year, the Sony Ericsson W800i is the first mobile phone to sport the Walkman branding. It weighs just 99 grams, but packs in some mean features! In terms of memory, the 512 MB Memory Stick Duo card is decent.

Frequent SMSers will love the joystick and the keypad on the W800i. The Walkman branding is justified by a couple of unique features: the ability to use the device as just a music player when the phone is switched off, and the provision of a standard 3.5 mm jack on the headset, which lets you connect your own headphones—or even connect the device to a home theatre system.

Whether you're a music lover, a shutterbug, or just want to make a style statement, this is a great cell phone to own!

Runner-Up: Sony Ericsson K750i

DIGITAL CAMERAS
Low-End
Canon PowerShot A400

Specs: 3.3 Megapixel CCD Sensor, Maximum Resolution 2048 x 1536, 2.2X Optical Zoom With Additional Digital Zoom, 1.5-inch LCD Display, Integrated Flash, SD Memory Support, USB 1.1, Video-Out, AA battery

Our Verdict: In this segment, a combination of over 3 mp with a 2X optical zoom lens would make for an good camera—and that's where the Canon PowerShot A400 stands.

Colour reproduction is remarkable. The camera is comfortable to use, and the menu navigation buttons are ideally placed and sized. Very rectangular in shape with slightly curved edges, this camera has sound build quality; it also has an inbuilt lens cover.

At purchase, the camera relies only on 16 MB of SD memory, which obviously can't store too many snaps. A notable aspect of the A400 is its wait time of only two seconds between two shots, which is good!

Good performance, a decent feature set and sensible pricing makes the Canon PowerShot A400 stand tall in the competitive entry-level segment.

Runner-Up: HP PhotoSmart M307

Mid-Range
Sony CyberShot DSC-W5

Specs: 5.1 Megapixel CCD sensor, Maximum Resolution 2592 x 1944, 3X Optical Zoom With Additional Digital Zoom, 2.5-inch LCD Display, Integrated Flash, MS Pro Memory Support, USB 2.0, Video-Out, AA Battery

Our Verdict: We felt this camera could have done with a higher optical zoom rating than 6X, but the Sony stands tall with its excellent and unmatched picture reproduction capabilities. Featured on this camera is the Carl Zeiss lens—a lens that has partnered with Sony in its success. 32 MB of internal memory lets the camera hold a few snaps without an additional memory card, but that is definitely not an alternative. The camera's size, build quality and ergonomics make it an ideal choice for travel.

HP PhotoSmart 945

Specs: 5.3 Megapixel CCD Sensor, Maximum Resolution 2608 x 1952, 8X Optical Zoom With Additional Digital Zoom, 1.5-inch LCD Display, Integrated Flash, SD Memory Support, USB 2.0, Video-Out, AA battery

Our Verdict: Somewhat on the bulkier side, this camera houses a rather small LCD screen. The HP 945 looks and feels like an SLR; the huge lens zooms to 8X. This is one feature-rich camera; you can use the printer USB attachment to directly print the snaps on a compatible HP printer. The 945 can only captures 60 second movie clips, and the resolution of this capture is unusually low, at 288 x 208. Excellent ergonomics and good performance puts the HP PhotoSmart 945 in the winners' category.

Runner-Up: Sony CyberShot DSC-S40

High-End

Sony CyberShot DSC-P200

Specs: 7.2 Megapixel CCD sensor, Maximum Resolution 3072 x 2304, 3X Optical Zoom With Additional Digital Zoom, Manual/Auto Focus, 2.0-inch LCD Display, Integrated Flash, MS/MS Pro Memory Support, USB 2.0, Video-Out, Li-Ion battery

Our Verdict: The DSC-P200 is sleek and compact, and the Carl Zeiss lens provides amazing picture clarity. The ergonomics of the camera is perfectly designed for travel. The camera features an AF illumi-nator—this emits light to facilitate focus-ing when the subject is in dark surroundings. 3X optical zoom may sound a little low, but the camera's high megapixel rating and excellent print and image quality make up for it. Low image noise and excellent low-light perform-ance make the CyberShot DSC-P200 a winner.

Runner-Up: Nikon Coolpix 5900

GRAPHICS CARDS
AGP cards - Budget

XFX GeForce FX 5200 256 MB

Specs: nVidia GeForce FX 5200, 256 MB DDR Memory, 4 Pixel Pipelines, 250 MHz Core Speed, 400 MHz Memory Speed, DirectX 9 and OpenGL 1.4 Compliant, AGP 8X, Dual-Monitor Support and S-Video TV-Out

Our Verdict: Support for DirectX 9 means this card supports Pixel Shader 2.0 and Vertex Shader 2.0, so most games using these will be playable on this card, although at low resolutions.

Our tests showed that the card allows for moderate gaming at low resolutions. The XFX GeForce FX 5200 256 MB attempts to give you high-end fea-tures at rock-bottom prices, and in many ways, it succeeds in doing just that.

Runner-Up: XFX GeForce FX 5200 64 MB

AGP Cards - Low-End

XFX GeForce 5700 Ultra 128 MB

Specs: nVidia GeForce FX 5700, 128 MB DDR Memory, 4 Pixel Pipelines, 425 MHz Core Speed, 550 MHz Memory Speed, DirectX 9 and OpenGL 1.5 Compliant, AGP 8X, Dual-Monitor Support and S-Video TV-Out

Our Verdict: If 1024 x 768 is the gaming resolution you never breach, the XFX GeForce FX 5700 Ultra 128 MB is the card for you. This card can deal with most games with the eye-candy turned down. There is support for Shader Model 2.0+ as well as OpenGL 1.5.

You can get big-screen gaming at a considerably low price via the S-Video TV-out. This card is for those who still have an AGP system and are get-ting warmed up for a bit of gaming with decent visual quality.

Runner-Up: Gigabyte GeForce FX 5700 128 MB

Bose Wave Music System

Showstoppers!
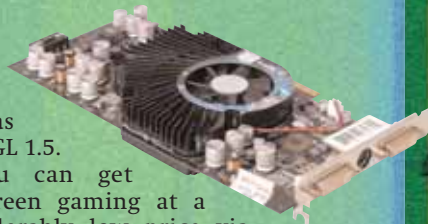
If you're looking for a music system that will fit on the corner table of your bedroom, your search ends here. The retro-looking Bose Wave Music System is packed with current-generation features, including an audio CD player, an MP3 player, an AM/FM radio tuner and an alarm that can wake you up to your favourite radio station. That's not all; the sound quality of the System will make a high-end 2.1 surround system sound ordinary.

These features are packed in a trapezoidal casing with a green display on the front panel that shows the time and other informa-tion such as ID3 tags. All the func-tions to run this device are packed on the remote control, which explains why the thing is devoid of buttons on the front panel.

Other nifty features include automatic night-time dimming of the display, gentle increments in volume to avoid sudden bursts in sound output, and the power cord that doubles up as an antenna.

And, of course, the sound output is pure Bose—pristine, clear and vibrant, with hardly a trace of distortion.

AGP Cards - Mid-Range

Gainward GeForce FX 5900XT 128 MB

Specs: nVidia GeForce FX 5900XT, 128 MB DDR Memory, Pseudo 8 Pixel Pipelines, 420 MHz Core Speed, 700 MHz Memory Speed, DirectX 9 and OpenGL 1.5 Compliant, AGP 8X, Dual-Monitor Support, TV-Out

Our Verdict: This card has the core and memory overclocked so you get the highest performance possible at its specifications. The DVI connector means that a digital display can be connected to this card.

In our gaming tests, this card gave more than acceptable frame rates at high resolutions and high settings. The performance is more than satisfying and it gives you more bang for your buck.

Runner-Up: None
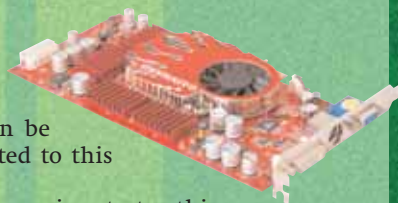
AGP Cards - High-End

Gainward GeForce 6800GT 256 MB

Specs: nVidia GeForce 6800GT, 256 MB GDDR3 Memory, 16 Pixel Pipelines, 350 MHz Core Speed, 1000 MHz Memory Speed, DirectX 9 and OpenGL 1.5 Compliant, AGP 8X, Dual-Monitor Support, TV-Out

Our Verdict: The Gainward GeForce 6800GT 256 MB is the big daddy of all the AGP cards we'd tested. Its unique dual-fan heat sink is designed to provide extra cooling to the 6800GT core.

The card churned out frames at blinding speeds in resource-hungry games such as Doom 3 and applications such as 3DMark at the highest of resolutions with all settings cranked up to the max. It is priced very high, but for those with a real passion for gaming, price never does matter.

Those insane frame rates at the highest resolutions ensure this card is our Zero1 Award winner!

Runner-Up: PowerColor Radeon X800 Pro

PCI Express Graphic Cards - Low-End

Gainward GeForce 6200 256 MB

Specs: nVidia GeForce 6200, 256 MB TurboCache, DirectX 9.0c Compliant, DVI Connector, S-Video out

Our Verdict: The Gainward GeForce 6200 256 MB graphics card is targeted at the budget segment of the graphics market, and it gives you access to high-end features that you generally see only on higher-version models. It features Shader Model 3.0 and OpenGL 2.0, which means you can play every current game on this card, albeit at lower resolutions. The card performed pretty well in our game and synthetic benchmark tests, and the price is just right.

Runner-Up: PowerColor X300 256 MB

PCI Express Graphic Cards - Mid-Range

XFX GeForce 6600GT 256 MB

Specs: nVidia GeForce 6600GT, 256 MB GDDR3, DirectX 9.0c Compliant, Dual DVI connectors, S-Video Out

Our Verdict: The XFX GeForce 6600GT, which is based on nVidia's GeForce 6600GT chipset, features 256 MB of fast GDDR3 memory at 1 GHz. It supports Shader Model 3.0 and OpenGL 2.0, so all current games should be playable on this card at a fluid pace even at high resolutions. The 6600GT posted the highest fps scores in its category in games such as *Doom 3* and *FarCry*, and it also scored the highest 3DMark points.

This card is priced a bit on the high side for the mid-range segment, but its superb performance more than makes up for that.

Runner-Up: XFX GeForce 6600GT 128 MB

PCI Express Graphic Cards - High-End

XFX GeForce 7800 GTX 256 MB

Specs: nVidia GeForce 7800 GTX, 256 MB GDDR3, DirectX 9.0c Compliant, Dual DVI connector, ViVo Capable

Our Verdict: The core of the XFX GeForce 7800 GTX is clocked at 430 MHz. The card features 256 MB of high-speed GDDR3 memory running at 1.25 GHz. It's a card in a class of its own.

It supports DirectX 9.0c—which essentially means Shader Model 3.0—and it's also 100 per cent OpenGL 2.0 compliant. This means gaming on this card will be a veritable feast for your senses—expect lightning-fast performance even in the latest games such as Quake 4 and Call of Duty 2. This card treated the games in our tests like office applications, even with all the eye-candy turned on.

The card sports exotic features such as IntelliSample 4.0, which is an anti-aliasing technique that improves upon the older technique—IntelliSample 3.0—and yields better-quality anti-aliased textures. There's also UltraShadow II, using which the card renders highly realistic shadows for a fuller 3D experience in games such as *Doom 3*. Then there's HDR—High Dynamic Range—imaging, which is used to render real-world scenes that contain light ranges exceeding the normal dynamic range. This is visible in effects such as realistic glares in games such as *FarCry*.

Of course the XFX GeForce 7800 GTX is expensive. But if you're a hardcore gamer, go get this card right now—this is the best there is!

Runner-Up: MSI NX7800 GTX 256 MB

HARD DRIVES

Western Digital Caviar SE 250GB WD2500KS

Specs: 250 GB, SATA II, 16 MB Data Buffer, 7200 rpm Spindle Speed

Our Verdict: The WD2500KS turned out impressive real-world test scores and decent scores in the synthetic tests. Data transfer rates were good, but the drive is tailored for intra-drive transfer performance, thanks to the large data buffer.

Like the any other SATA drive, the WD2500KS has hot-plug support, but the added advantage is the high shock resistance figure. This drive is ideal if you want a capacity as high as 250 GB at an affordable price.

Hitachi Deskstar 250GB HDT722525DLA380

Specs: 250 GB, SATA II, 8 MB Data Buffer, 7200 rpm Spindle Speed

Our Verdict: The Hitachi Deskstar 250GB tied with theWD2500KS. The Hitachi Deskstar hard drives are SATA II, but they are shipped as SATA I; to enable SATA II, there's a feature tool utility—a bootable floppy to change the drive settings (if the motherboard supports SATA II). The good average read and write speeds did translate into good inter-drive transfer speeds. The Hitachi Deskstar 250GB is a performer despite the smaller 8 MB data buffer (as opposed to the 16 MB of the WD2500KS).

Runner-Up: Western Digital Caviar RE2 (400 GB) WD4000YR

Apple 30-inch Cinema HD Display

Apple this year came up with yet another one-of-its-kind product—the Apple 30-inch Cinema HD Display, which has a native resolution of 2560 x 1600, which translates to four million pixels! This top-of-the-line display is also the world's largest desktop screen. Couple it with a framework made of anodised aluminium that feels divine to the touch, and you have a product that's truly awe-inspiring.

There are just three soft-touch buttons along the right-hand side, one for power/sleep, and two for brightness control. The interface to this LCD is via a dual-link DVI connector, so there is no need for image correction control such as horizontal/vertical position and size. The broad 170-degree viewing angle and the crystal-clear hi-res images should leave you awestruck.

Considering the price, this display seems ideal for multimedia centres and such—it's out of the question for the typical home user.

EXTERNAL HARD DRIVES
Portable Hard Drives
Seagate 100 GB ST9100801U2-RK

Specs: 100 GB, 5400 rpm Spindle Speed, 8 MB Data Buffer, USB 2.0 (no FireWire), Power Over USB Interface, Blue-LED Visual Indicator

Our Verdict: An external portable hard drive with a large data buffer size of 8 MB and high spindle speed of 5400 rpm is without doubt an exceptional product. The USB interface also supplies the power needed to run the drive. The drive's splendid speed in our data transfer tests is a noteworthy mention.

Runner-Up: Western Digital Passport 40 GB

Desktop External Hard Drives
Maxtor 300GB One Touch II

Specs: 300 GB, 7200 rpm Spindle Speed, 16 MB Data Buffer, USB 2.0 and FireWire, powered externally by adapter, power button single press initiates backup.

Our Verdict: External desktop drives are targeted as backup solutions. The Maxtor One Touch II with 300 GB of storage space had everything going for it. It performs like a dream, thanks in good part to the large data buffer. The drive can be connected via USB or FireWire, and also includes backup utilities. Maxtor has also priced this product affordably.

Runner-Up: Seagate 400GB Barracuda

INPUT DEVICES
Logitech G7 Laser Cordless Mouse

Specs: 2000 dpi Laser Engine, 6 buttons, USB dongle, 2.4 GHz Wireless, Sensitivity Switching Buttons, Battery Level Indicators, 2 Lithium Ion batteries.

Our Verdict: The Logitech G7 laser cordless gaming mouse delivers extreme gaming performance and control with its 2000 dpi high precision laser engine. The bi-directional USB connection sends a blazing 500 reports/seconds over 2.4 GHz wireless. The twin "hot swappable" Li-ion battery packs help reduce "downtime".

The Setpoint software that accompanies the mouse augments the G7's performance and features by adding programmability to the various buttons and adding the option to access sensitivity levels other than the three presets available in hardware. Even without drivers, the sensitivity switching buttons offer the option of changing the mouse sensitivity in-game allowing you to quickly adapt to various situations at the press of a button. This one gets a well deserved Zero One award.

Runner-Up: Logitech MX-1000

BUSINESS NOTEBOOKS
Workhorse Notebooks
MSI MegaBook M510C

Specs: Pentium M 1.5 GHz, 256 MB RAM, ATi Mobility Radeon 9700, 15.4-inch LCD, 80 GB Hard Drive, Combo Drive, 802.11g, Gigabit LAN

Our Verdict: TThe MSI MegaBook M510C has an ergonomic keyboard and touchpad, which are desirable in a Workhorse laptop. The 15.4-inch LCD has a native resolution of 1400 x 1050, the highest in its category. This, along with the large viewing angles it provides, makes it easy to work on without straining the eyes.

The fast processor and the ATi Mobility Radeon 9700 on-board ensure that this notebook is ready for a fair amount of gaming. The ample 80 GB hard drive was the highest-capacity drive in this category. Battery life is a decent two hours.

Overall, this is a good buy, especially considering the moderate price tag.
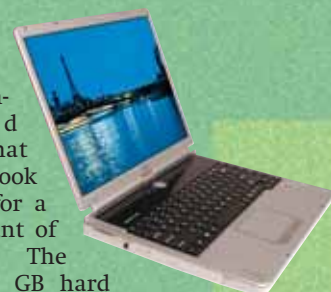
Runner-Up: ACI Emerald C2

Ultra-Portable Notebooks
Fujitsu LifeBook S2020

Specs: Athlon XP-M 2100+, 256 MB RAM, ATi IGP 320M, 13.3-inch LCD, 40 GB Hard Drive, Combo Drive, 802.11b+g, 10/100 Mbps LAN

Our Verdict: The S2020 is a good looker, with its small form factor and polished styling. The integrated graphics provide for some moderate amount of gaming. Despite being an ultra-portable, it scored decently well in most of our performance benchmarks.

This happened to be the only laptop in our comparison test with a serial as well as a parallel port, for support of legacy devices. Overall, a good, affordable ultra-portable.

Runner-Up: Dell Latitude D410
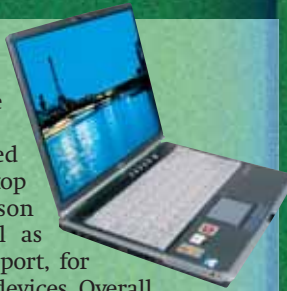
LIFESTYLE NOTEBOOKS
Workhorse Notebooks
Acer Ferrari 4002

Specs: AMD Turion 64 ML-30, 512 MB DDR 333 RAM, 15.4-inch Widescreen LCD, 80 GB Hard Drive, DVD-RAM drive, ATi X700 PCIe 128 MB Graphics

Our Verdict: The Acer Ferrari has the ultimate in flaunt value. It is literally crammed with features. The DVD-Writer happens to be a multi-writer: it can even read and write DVD-RAMs, which is a type of DVD good for applications such as video capturing because data can be directly edited on the DVD.

The 15.4-inch widescreen display powered by the PCIe ATi X700 is sure to delight, whether you're a gamer or a movie buff. And if that weren't enough, there's even a DVI connector to connect an external digital display. Connectivity options include Gigabit LAN, a 56 Kbps modem, infrared, and Bluetooth. The 4002 can also read most types of memory cards and PC cards.

Whatever was thrown at it—games, real-world or synthetic benchmarks—this laptop returned solid performance. A cool bundled accessory is a Bluetooth mouse with the Ferrari logo similar to the one on the notebook.

Now here's something that doesn't just look good—it's got plenty on the inside as well!

Runner-Up: Fujitsu LifeBook LBN3510
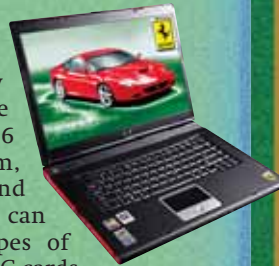
Ultra-Portable Notebooks
Sony VAIO VGN-S46/GP

Specs: Intel Pentium M 1733 MHz, 512 MB RAM, 13.3-inch widescreen LCD, 60 GB Hard Drive, Dual-layer DVD-Writer

Our Verdict: This VAIO has the elegance of a Porsche and the ruggedness of a Mustang! The 13.3-inch widescreen display is the best in its class, with unmatched picture quality and very large viewing angles.

The nVidia GeForce Go 6200 PCIe card means decent gaming capabilities. The VGN-S46/GP performed very well in all our benchmarks and emerged as a top performer. We don't have any doubts about awarding it the Zero1 in this category.

Runner-Up: Acer TravelMate 3002WTCi and Fujitsu LifeBook LBS6240
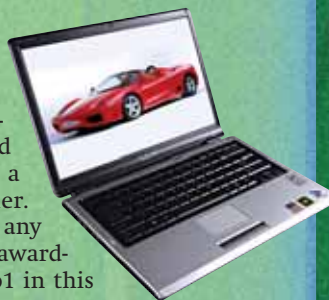
Palm LifeDrive Mobile Manager

The LifeDrive is one of those rare handheld devices to exclude cell phone features. However, it does have excellent features, so you won't mind carrying two devices in your pocket. The LifeDrive is powered by a 416 MHz Intel XScale processor, 64 MB of RAM and a 4 GB hard disk (a micro drive) running Palm OS 5.4 Garnet.

Sporting a 320 x 480 TFT LCD touchscreen, the device is sleek. The gorgeous 65k screen is a god sent for the eyes and the image quality is extremely crisp and clear. The four buttons under the screen are for music, photos, home menu and file browser, apart from a 4-way navigation key with a centre button.

In terms of connectivity the LifeDrive has it all—Wi Fi, Bluetooth, USB 2.0, no infrared though but you won't miss it. It is a brilliant organiser and portable entertainment centre which will make your life synchronised. This pocket PDA is worth the buy, though, of course, if it's only a PDA you're looking for.

Showstoppers!

MFDs

Office Inkjet MFDs
Lexmark X7170

Specs: 1200 x 4800 Optical Scan Resolution, PictBridge-Ready, Input and Output Tray Capacities of 100 and 25 Sheets Respectively, Flatbed and Sheet-fed Scanning Elements

Our Verdict: The first thing you'll notice about this printer is the great user interface. Print quality is decent; optical scan resolution, one of the highest in its segment; and scan quality, again, is one of the highest in its segment. Though this is not the top scorer across all segments, it does have an edge over the others when you take the whole picture into account. It is competitively priced, ink consumption is the lowest in its class, and it's a great performer to boot!

Runner-Up: HP PSC 2310 All-in-one

Photo Inkjet MFDs
HP Photosmart 2608 All-in-one

Specs: 2400 x 4800 Optical Scan Resolution, PictBridge-Ready, MMC Reader, Input and Output Tray Capacities of 150 and 50 Sheets Respectively, Flatbed CCD Scanner

Our Verdict: The 2608 has an MMC card reader, and is PictBridge-compliant—so you can print without the need for a PC. The print unit uses traditional Black and Colour cartridges.

The scanner unit supports scanning of A4-size media at 24-bit colour depth and resolutions as high as 2400 x 4800.

Print speeds are blazingly fast with all types of documents, without print quality being sacrificed. Scan quality is no less amazing.

Stunning performance together with very competitive pricing make the HP Photosmart 2608 a winner.

Runner-Up: None

SoHo Laser MFDs
Canon MF 3110

Specs: 1200 x 600 dpi x dpi Print Resolution, 1200 x 2400 Optical and 9600 x 9600 Interpolated Scanning Resolution, 250-Sheet Input Tray Capacity, Flatbed CCD Scanner

Our Verdict: This unit's printing resolution—1200 x 600 dpi—is the highest amongst the MFDs we tested in its category. It also boasts of the highest optical scan resolution of 1200 x 2400 dpi. The 15,000-page duty cycle, again, is the highest in its class.

The 64 MB of buffer memory means the printer can accept large and complex document print jobs at one go; it doesn't depend on the computer to send the document in chunks—which is the way complex print jobs are handled by printers with a smaller buffer.

This MFD gives decent-quality scans, and is one of the lowest-priced MFDs in this category. Canon has 130 service centres where you can avail of service and the one-year on-site warranty.

Runner-Up: Lexmark X215

Workgroup Laser MFDs
Brother MFC-8440

Specs: 1200 x 600 Printing Resolution, 600 x 2400 Scan Resolution, 250-Sheet Input Tray Capacity, Flatbed (CCD) and Sheet-Fed (CIS) Scanner

Our Verdict: The Brother MFC-8440 is one rugged MFD, which bundles in a fax unit. The printer duty cycle is huge—20,000 pages! There is a flatbed CCD scanner as well as a sheet-fed CIS scanner to handle various types of scan jobs. The presence of an ADF (Automatic Document Feeder) means you won't have to keep manually feeding in sheets to be scanned—the ADF does the job for you.

This unit has the highest print as well as scan resolutions in its category. The unit features fax with broadcasting and scheduling features, and the fax memory stores up to 600 pages.

This MFD was reasonably fast in text printing, and the print quality, in general, was much better than that of other MFDs in its class. Brother has a decent network of service centres across India and offers a three-year on-site warranty.
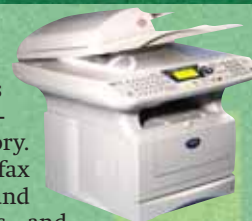
Runner-Up: Samsung SCX-4720F

MONITORS

CRT Monitors (17-Inch)

Acer AF715

Specs: 0.25 mm Dot Pitch, 1600 x 1200 Max Resolution @ 75Hz, 200 MHz Video Bandwidth

Our Verdict: The fine dot pitch of 0.25 mm, and the outstanding video bandwidth, makes this CRT the most remarkable 17-inch tube in its class. Clear colour image reproduction on a naturally flat screen with a highest resolution of 1600 x 1200 at a refresh rate of 75 Hz is not a common feature among 17-inch tubes. The anti-reflective coating reduces glare and enhances picture viewing. The good picture clarity and these excellent specifications come at an affordable price.

Runner-Up: ViewSonic E71f

CRT monitors (19-Inch)

Samsung SyncMaster 997DF

Specs: 0.20 mm Dot Pitch, 1920 x 1440 @ 64Hz Maximum Resolution, Shadow Mask, 250 MHz Video Bandwidth

Our Verdict: This Samsung 19-inch CRT showcases consistent overall performance. Graphics professionals and gamers should take a look at this one, since it did not display any ghosting or streaking in our tests. Unfortunately, there are no factory-preset colour, contrast and brightness settings for various viewing conditions such as dim ambient light.

The flat-screen 997DF is reasonably priced, and is an attractive option for those looking to migrate to a quality big-screen monitor.

Runner-Up: Samsung SyncMaster 957MB

LCD Monitors (15-inch)

Acer AL1512

Specs: 450:1 Contrast Ratio, 350 cd/m2 Luminance, 23 ms Response Time, Inbuilt Speakers

Our Verdict: The Acer AL1512 blends good performance with great features at a decent price tag. Other than the price advantage, the AL1512 sports good viewing angles. Colour reproduction is excellent, the picture is sharp, and the high luminance assures screen visibility even in bright ambient light. The 23 ms response time may not be the best for gaming and movie watching, though. Common features such as a VESA wall mount and D-Sub and stereo pin input types are present. It's also PC and Mac compatible!

Runner-Up: CMV CT-529A

Netgear MP101 Wireless Digital Music Player

Showstoppers!

If you want the music on your computer to be playing in your bedroom or living room—assuming the PC is in some other room—and you don't want to create audio CDs or MP3 CDs for your music system because your song collection is too large, then you're looking for the Netgear MP 101 Wireless Digital Music Player.

The MP101 is a wireless device that can stream music from your PC, sending the output to the speakers connected to the device. There's a large LCD panel on the front to display the song details, and no buttons; all functions are controlled via the feature-rich remote.

Setting up the device is not a problem, but you need to have a Wi-Fi card on your PC. The MP 101 comes with an audio RCA jack, stereo-in pin for speakers, and an RJ45 LAN port to connect to a LAN switch if you are using one. Set up an Access Point on your PC running server software that configures DHCP connections for its clients, and the MP101 will look for a server, and gain an IP address and subnet mask by itself... all you have to do is choose your music and hit 'Play'!
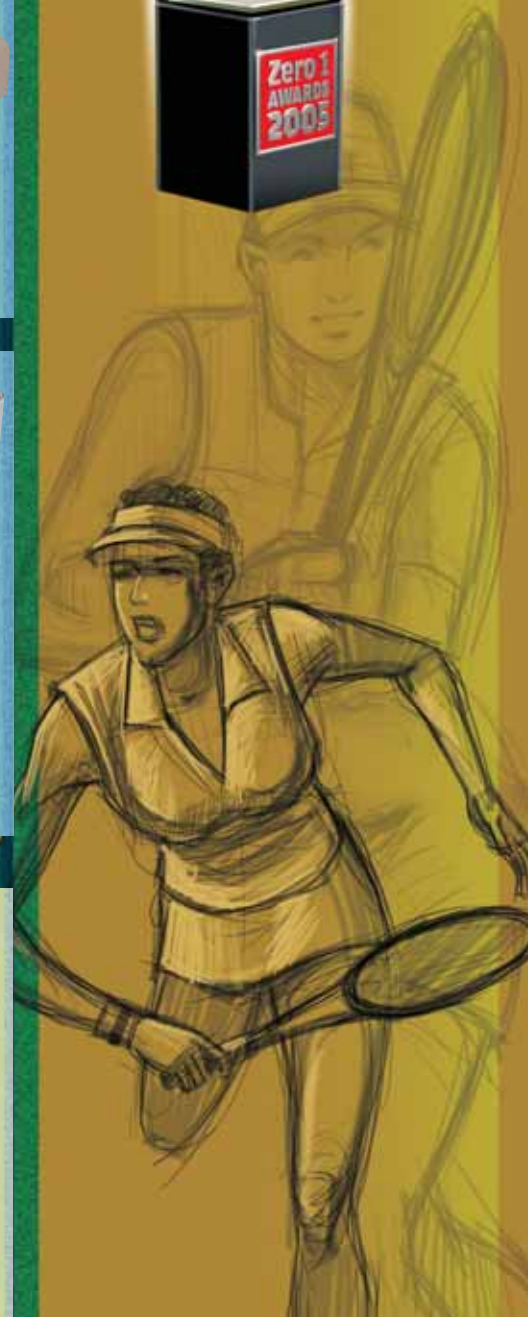
LCD Monitors (17-inch)

Acer AL1714sm

Specs: 350:1 Contrast ratio, 370cd/m2 Luminance, 14 ms Response Time, Inbuilt Speakers

Our Verdict: The combination of features and performance was just about right, but the Acer AL1714sm is also unbeatably priced. Even the response time, among other features, matches the necessary standard. The viewing angle of the screen, and the colour reproduction, are remarkable. The screen also showed low ghosting effect while playing movies—thanks to the 14 ms response time. Crisp colour repro-duction at high reso-lutions is comparable to that seen on high-end LCD screens.

The unit itself is compact with an oval base—it is approxi-mately two inches thick. Unfortunately, the inbuilt speakers are not good enough for music. We must emphasize that the Acer AL1714sm offers amazing value for money!

Runner-Up: CMV CT-712A

MOTHERBOARDS

With Onboard Graphics For AMD Processors (Low-End)

MSI RS480M2-IL

Specs: Socket 939, PCI-Express, Onboard ATi Radeon XPress 200 Graphics, 10/100 LAN, FireWire, SATA With RAID, Four USB 2.0 Ports

Our Verdict: The MSI RS480M2-IL is based on the PCIe architecture and has an x16 slot for PCIe graphics cards, but the onboard graphics is decent enough for moderate gaming. It supports up to 4 GB of 400 MHz DDR memory in dual-channel mode.

All our tests without exception saw the RS480M2-IL posting high scores. It scored well in our gaming tests as well, on account of the onboard DirectX 9 graph-ics. This motherboard is dual-core ready, and can accommodate the X2.

Though it is priced considerably higher than other motherboards in its category, its excellent features and performance fetch the MSI RS480M2-IL our Zero1 Award.

Runner-Up: TUL A480A7-VF

Without Onboard Graphics For AMD Processors (Low-End)

Winfast NF4K8MC

Specs: Socket 939, Supports AMD Athlon64 X2, PCI-Express, 8-channel Onboard Audio, Gigabit LAN, SATA With RAID, Four USB 2.0 Ports

Our Verdict: This motherboard is based on the nVidia nForce4 chipset usually found on high-end motherboards, which simply translates to high-end perform-ance. This motherboard is AMD dual-core ready. It supports 3 GB of 400 MHz DDR memo-ry in dual-chan-nel configuration.

A score of 30.3 in ZD-Bench Business Winstone 2004 means this is a motherboard that can handle office applications much better than other 'regular' motherboards can. Couple this with the fact that this is one of the lower-priced boards in this category, and we have a Zero1 Award winner!
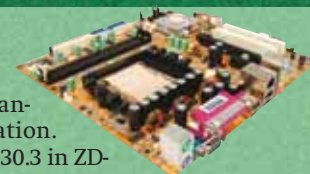
Runner-Up: Winfast NF4K8AB

For Intel Processors (Low-End)

Mercury PI915GVM

Specs: Socket LGA775, PCI-Express architec-ture, Onboard Intel graphics, Four SATA ports, 10/100 LAN, Four USB 2.0 Ports.

Our Verdict: The Mercury PI915GVM is based on the Intel 915GV chipset, and has onboard graphics in addition to the PCIe graphics slot upgrade option. It supports up to 2 GB of both DDR as well as DDR2 memory at 400 MHz and 533 MHz respectively. The six-channel onboard audio is sufficient for home theatre use, gaming or music.

The scores this board post-ed in our stock benchmarks were all very good, and it is decent for moderate gam-ing requirements and effortless handling of day-to-day applications. It is a little expensive for an entry-level motherboard, but it showed good enough all-round per-formance to win our Zero1 Award.

Runner-Up: Gigabyte GA-8TRS 350MT

For AMD processors (Mid-Range)
MSI K8N Neo Platinum

Specs: : Socket 754, AGP 8x Port, Four SATA With RAID, Gigabit LAN, Eight-Channel Audio, Four USB 2.0 Ports, FireWire

Our Verdict: The MSI K8N Neo Platinum is based on the nVidia nForce3 250Gb chipset. It has the best component layout in its class, with a processor area free of capacitors and perfectly placed storage ports.

Scoring a very healthy score of 32 in the real world benchmark Multimedia Content Creation 2004 and 3640 in PCMark04 proves the prowess of this motherboard in handling day-to-day office applications such as word processors, spreadsheets, etc. Being a Platinum series motherboard, it comes with a generous bundle of goodies in addition to its features, yet it is reasonably priced. Add everything up and what we have is the winner of the Zero One award.

Runner-Up: Asus K8N-E Deluxe

For Intel processors (Mid-Range)
Gigabyte GA-8I915G Duo

Specs: Socket LGA775, x16 PCI-Express, 4 SATA Ports, Supports DDR and DDR-II (400/533), On board Video and 7.1 Channel sound

Our Verdict: Based on the Intel 915G chipset, this motherboard is skilfully designed with pack of features – supporting both DDR and DDR2, 7.1 channel sound, Gigabit LAN and it also sported x16 PCI express slot when most AMD motherboards were reluctant to implement it. The on-board video satisfies the light gaming experience for a casual gamer; the hard-core gamers can of course add-in the fast PCI express graphic card. Since 915 chipset board use ICH6 Southbridge, the support for SATA storage media is excellent especially for I/O intensive work that needs higher data transfer rates. Although this board isn't an outright performer, it is a value for money product.

Runner-Up: Gigabyte GA-8I915G MF

For AMD Processors (High-End)
Gigabyte 8S Series GA-K8NXP-SLI

Specs: Socket 939, Supports AMD Athlon64 X2, nVidia nForce4 SLI Chipset, Eight SATA-2 Ports with Hot PnP, Dual Gigabit LAN, Dual BIOS

Our Verdict: This motherboard comes with a lot of bundled goodies such as the U-Plus DPS power system, an 802.11b+g Wi-Fi card, and lots of cables and connectors. The board posted very high gaming scores, and it returned excellent scores in the Content Creation and Business Winstone benchmark applications, which are indicative of real-world performance in office applications.

Future-proofing is the name of the game: this motherboard supports the dual-core AMD Athlon64 X2, and even has very good overclocking features if you really want to push it to the limits.

If you're looking to invest in a motherboard for an AMD processor that's packed to the gills with features and that offers top-notch performance, look no further than the Gigabyte 8S Series GA-K8NXP-SLI!

Runner-Up: Asus Proactive A8N-SLI

Showstoppers!

MSI MegaView 561

The MegaView 561 is MSI's answer to the iPods and iRivers in the media player segment. This player has a respectable 3.5-inch TFT LCD screen, and 20 GB of storage capacity. The device supports viewing and playback of the DivX, MPEG-4, WMV, WMA, GIF, TIFF, JPEG and BMP formats.

Other features include voice recording and an FM tuner programmable up to eight stations. The microphone is very sensitive; it records ambient sounds with good clarity. Using AV cables, MegaView can record from and play back to a TV.

A little more horsepower to play video of higher bitrates without stutter would have made the MegaView 561 truly impressive, but the 561 is still a very decent portable player.

For Intel Processors (High-End)

MSI P4N Diamond

Specs: LGA775, Supports Intel Dual-core Processors, nVidia nForce4 SLI Intel Edition, DDR2 667 MHz, Dual Gigabit LAN

Our Verdict: The P4N Diamond has Creative SoundBlaster Live! 24-bit on-board, an external SATA port, and a Bluetooth/Wi-Fi combo card. It aslo has MSI's Core Cell chip which allows real-time dynamic overclocking, power saving, and diagnosis of temperature and CPU fan speed.

The board returned very high scores in the ZD-Bench Business Winstone 2004, which is indicative of real-world performance in office applications.

The P4N Diamond is steeply priced, but its exceptionally good feature set and great performance make it a winner.

Runner-Up: Asus Proactive P5ND2-SLI Deluxe and MSI P4N SLI

MP3 PLAYERS
Flash-Based MP3 Players - 1 GB

Samsung YP-T8

Specs: Flash-based 1 GB, Internal Li-Ion Rechargeable Battery, 262K TFT LCD Colour Screen, Supports Audio (OGG, MP3, ASF, WMA) and Text Files, Photo Viewer, Video Playback, USB 2.0, Voice Recording, Firmware Upgradeable, FM Tuner, Direct Line-In Recording

Our Verdict: The ergonomics and ease of use of the YP-T8 is superior to that of any of the flash-based players we've seen so far. Not only is it portable, the placement of the menu buttons is very comfortable. The video playback feature makes the YP-T8

stand out as a unique solid-state MP3 player.

The 262K colour TFT-LCD screen gives vibrant video playback. Data transfer speeds between a PC and the YP-T8 is the fastest amongst the solid-state MP3 players we saw. Bundled accessories include a neck strap, a USB cable, earphones, a line-in cable, a pouch, and an installation CD.

There are many preset equaliser modes on the YP-T8, but we felt the sound quality lacked some punch. Overall, however, the Samsung YP-T8 is a feature-rich product at an affordable price.

Flash-Based MP3 Players - 256 MB

Yes YMP-910

Specs: Flash-based 256 MB, Internal Li-Ion Rechargeable Battery, 65K LCD Colour Screen, Supports Audio (MP3, MP2, WMA, ASF, WAV), Text and Photo Files, USB 2.0, Voice recording, Firmware Upgradeable, Direct Line-In, FM Tuner and Recording, 5-Preset Equaliser, A-B Repeat

Our Verdict: YES... it is a sturdy YMP-910! Longitudinal in shape, the portability of this player is remarkable, but the placement of the menu and navigation buttons is just about satisfactory.

The YMP-910 can be used as a TV remote control (IR) . Bundled accessories include a USB cable, a necklace ear-phone, a carry case, a line-in cable, an arm-band, and an install CD.

Audio quality is very good—it can play heavy bass and extreme treble without any distortion or noise. IR remote control ability is a feature unique to this player, and it also records a high battery life.

Hard Drive-Based MP3 Players

Samsung YH-J70

Specs: 30 GB, 262K TFT LCD Colour Display, USB 2.0, Supports Audio (MP3, WAV, WMA, OGG), Video, Photo and Text Files, FM Tuner and Recording, Line-In Encoding, 11-Preset Equaliser, A-B Repeat

Our Verdict: "Now watch movies on the move"—that's the message the Samsung YH-J70 is giving out, with 30 GB of storage capacity and video playback capabilities on a 262K colour TFT LCD colour screen. Samsung has not compromised on audio

playback performance; it can play heavy bass and extreme treble without noise.

Bundled accessories include a case, earphones, a line-in cable, a USB cable, a docking cradle, and the installation CD. Menu and navigation buttons are well-placed on the sleek dual-tone casing. Top all this up with dashing looks!

Runner-Up: iRiver H10
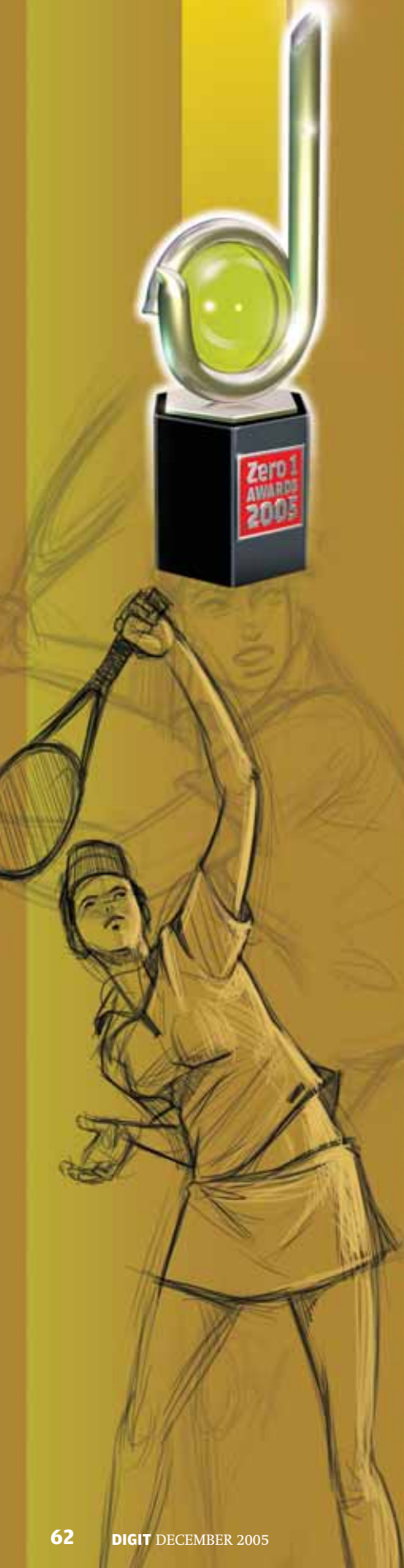
PDA PHONES
Nokia 9500 Communicator

Specs: 65K Colour TFT, Tri-band GSM, GPRS, EDGE, Wi-Fi (802.11b), Bluetooth, Infrared, VGA Camera

Our Verdict: The 9500 Communicator's 65K colour display is nice, crisp, and perfectly legible even in outdoor lighting. The screen is horizontally oriented, and is perfect for reading documents and browsing the Net. A sufficiently spacious QWERTY keyboard makes data entry a breeze. The 9500 Communicator features a full QWERTY keyboard, and includes a word processor and spreadsheet and presentation applications.

The device fares well on several fronts—contact management, calendaring, and e-mail management features. The Communicator 9500 offers features even the most choosy business executive would be pleased with. It lives up to its name, sporting the ultimate in connectivity options—even offering a proprietary Pop-Port for USB connection with a PC. All this makes the 9500 Communicator an ideal device on a business trip.

Runner-Up: O2 XDA II Mini

PRINTERS
Home Inkjet Printers
Canon Pixma iP 1000

Specs: 4800 x 1200 Interpolated Printing Resolution, 150-Sheet Input Tray Capacity

Our Verdict: The Canon Pixma iP 1000 is quite a performer. This lightweight device is capable of printing at interpolated resolutions as high as 4800 x 1200. When it comes to print speeds, the iP 1000 is faster than any other in its category. In fact, in our tests, it excelled in printing every type of document. It printed the highest number of pages in the drain test, where we print documents until all the ink from the cartridge is drained. This, along with the lowest cartridge price, meant this printer has the lowest ink consumption per printed page.

Print quality, too, is better than that of the others in its category—and the price, surprisingly, is also amongst the lowest. With everything going for it, the Pixma iP 1000 had to win the *Digit* Zero1 Award in this category.

Runner-Up: HP DeskJet 3745

Office/Photo Inkjet Printers
Canon Pixma iP 3000

Specs: 4800 x 1200 Interpolated Printing Resolution, PictBridge-Ready, Dual Paper Feed (Total Capacity 300 Sheets)

Our Verdict: This photo printer is really fast even at the default settings, making it ideal for office use. The dual-feed paper tray means paper can be fed from the top and the bottom. It also supports duplex printing, as well as CD/DVD face printing.

The iP 3000 uses the CMYK system employing four cartridges, to enhance print quality without compromising on speed. PictBridge facilitates connecting directly to PictBridge-ready cameras, so you can print photos without an intervening PC.

This printer was the best in its category in terms of print speed and quality, while also being one of the lower-priced ones. The Canon Pixma iP 3000 is, overall, the best office inkjet printer available in its class.

Runner-Up: Canon Pixma iP 4000

Showstoppers!

Sony PlayStation Portable

The glossy black exterior and the large display sporting 16.77 million colours are what first strike you when you get your hands on the Sony PSP. The package bundles quality PSP earphones, a 32 MB MS duo pro card, the AC adapter, and the PSP battery pack—apart from the case, hand strap and user manual.

Communication interfaces include USB, infrared and Wi-Fi—yes, it has 802.11b wireless integrated, which lets you play multiplayer games with another PSP! The unit is powered by a replaceable 1800 mAh Li-ion battery, which can be recharged using the bundled AC adaptor.

The PSP is somewhat bulky for a pocket, measuring 17 x 7.4 x 2.3 cm. It can play MPEG-4 movies and MP3 songs apart from the gaming action it's meant for. The gaming experience is amazing, as the PSP feels perfectly well-balanced when held in both hands; the graphics quality is so outstanding you can even see the reflection of a bridge and trees on the roof of a car! The 4.3-inch 16:9 TFT LCD screen provides you with a wholesome gaming experience.

Mono Laser Printers (SoHo)
Canon LBP 2900

Specs: 600 x 600 dpi x dpi, 150-Sheet Input Tray Capacity, Additional Paper Tray, Toner Duty Cycle 2,000 Pages, USB 2.0 and Parallel Interfaces

Our Verdict: The LBP 2900 is a small, stylish printer. It features an additional paper tray, and you have the option of adding a network card if and when you feel the need to use this printer on a network. The printer supports both Windows and Linux.

This was one of the fastest printers we'd seen, and we found the print quality the best in the category. Remember, also, that this is a Canon, and Canon has a good number of service centres all over the country. The price of this printer is amongst the lowest in its class.

Runner-Up: Lexmark E230

Mono Laser Printers (Workgroup)
Brother HL-6050D

Specs: 600 x 600 dpi x dpi, 500-Sheet Input Tray Capacity, Additional Paper Tray, Toner Duty Cycle 7,500 pages, USB 2.0 and Parallel Interfaces

Our Verdict: The HL-6050D is targeted at small- to medium-sized offices. You won't complain about the input tray capacity, nor about the additional paper tray! There is support for printing languages such as PCL6 and PS3, which means it consumes very little system resources.

This wasn't the fastest printer in its category, but it was still very fast; in terms of print quality, it was the best amongst the printers it was compared with.

A duty cycle of 7,500 pages is considerably high, and the printer yields the lowest cost per page among all the printers in its class. Throw in a three-year on-site warranty with 105 service centres across the country, and factor in the low price—and you've got a sure Zero1 Award winner in the Brother HL-6050D.

Runner-Up: Brother HL-5140

Colour Laser Printers
Epson AcuLaser C1100

Specs: 600 x 600 dpi x dpi, 180-Sheet Input Tray Capacity, Dual-Side Printing, Windows and Mac ready, Network Port, USB 2.0 and Parallel Interfaces

Our Verdict: The AcuLaser C1100 has a unique, boxy look. It supports dual-side printing, which allows you to print something like a book or a manual without the need for human intervention. There's an LCD screen that displays the status of the task being carried out. It is network-enabled, which is especially useful in offices.

This colour printer was the fastest of them all, be it text documents, combi-documents or colour photo printouts. The price is also lower than that of most in this category.

Epson has a network of 211 service centres across the country.

Runner-Up: Samsung CLP-500

PROCESSORS
AMD Athlon64 X2 4800+

Specs: 2.4 GHz, Dual-Core, 1 MB L2 Cache per Core, Socket 939

Our Verdict: Based on the low power consuming Venice core, this dual-core processor has a stock clock speed of 2.4 GHz. It supports various instruction sets such as 3DNow!, MMX, SSE, SSE-2, and SSE-3—minus the hyperthreading components, which are Intel specific. It works with all the 939-pin motherboards available, provided the BIOS is updated to recognise this new processor.

This is a 64-bit processor, but remember that to experience the extra power afforded, a 64-bit OS must be used. As you might expect, this 64-bit dual-core returned superlative performance in every single benchmark that was thrown its way. There is simply *no* other processor today that can come close to the Athlon 64 X2's lightning-fast performance!

Runner-Up: None

PROJECTORS
Desktop Projectors
Acer PD113

Specs: DLP, 800 x 600, 1600 Lumens, 2000:1 (Full On/Off), 4:3/16:9, 27.5" - 330" Projection Range, 200 Watts / 2000 Hours, 2 Kg

Our Verdict: The Acer PD113 sports a great set of features, prime amongst them being a healthy 1,600 lumen brightness and a zoom ratio of 1.2:1. It also has a high image display size of 330-inch diagonal, which is big enough to address an audience over 50.

The PD113 fared very well in our movie tests, in both 4:3 and 16:9 aspect ratios. Moreover, it sports the picture-in-picture mode, for when you need to showcase a movie presentation alongside graphs. The remote has features that afford flexibility and style. To top it all up, the Acer PD113 is priced just right.

Runner-Up: Sony VPL-ES2

Mobile Projectors
Panasonic PT-LM1E-C

Specs: LCD, 800 x 600, 1200 Lumens, 4:3/16:9, 33" - 300" Projection Range, 130 Watts / 4000 Hours, 1.6 Kg

Our Verdict: The Panasonic PT-LM1E-C—an LCD projector—returned good results in our presentation tests, with good colour reproduction and faithful animation. In our movie test, though, it only returned watchable results. Though it's not the lightest projector in its class, carrying it around shouldn't be too much of an issue.

We present the PT-LM1E-C the *Digit* Zero1 Award for 2005 because it's a great all-round performer.

Runner-Up: BenQ PB2120

SURROUND SPEAKERS
2.1 Speakers
Bose Companion 3

Specs: Acoustimass Module (Subwoofer) and Two Satellite Speakers With a Control Pod, No Bass and Treble Controls, Volume Control With Feather-Touch Mute

Our Verdict: Bose calls its subwoofers 'Acoustimass'; whatever that means, the Companion 3 definitely comes with a wonderful subwoofer, so much so that we felt the satellites didn't match up. The two tiny speakers deliver amazing sound quality when playing anything, be it MP3s, CDs, DVDs or games. The speakers can also be mounted on a monitor with speaker brackets.

The control pod houses a volume control and also provides a connection for a second audio source. If you are an audiophile, and if money is no object, you can't do any better than the Bose.

Runner-Up: JBL Creature II

Archos AV400

Showstoppers!

The 3.5-inch display may not make a spectacular impression on you, but the Archos AV400 is bundled with tons of features: video playback (including AVI and MPEG-4 in DivX format), audio playback (MP3, WMA, WAV), and image viewing (JPEG and BMP). Well, that sounds commonplace these days, but hang on: the Archos AV400 also has a CF card reader inbuilt, and it also supports a 4-in-1 adapter to read from different memory cards. And that's not all: you can use Windows Explorer to copy media files onto the device and when you unplug it, it automatically scans and classifies the files under Artist, Genre, Album, and Title! Updating a GB of songs took all of three seconds—astounding!

The Bookmark feature allows you to resume a movie or song from where you left off. Virtual dub and front-end proprietary software ensures that encoding settings are auto-corrected, so it can play a non-optimised video file without framing (jerky playback).

The AV400 also allows you to record from a TV and play back movies or images to a TV. The feature list seems to go on and on: the thing can also be used as a Dictaphone! Creating, deleting and renaming of files, folders and playlists can be done within the player itself. This is one amazing, feature-packed player.

4.1 Speakers
Altec Lansing 641

Specs: Subwoofer 109 W rms, Satellite Speakers 32 W rms, Frequency Response 27 Hz - 20 KHz, Wired Remote Control for Bass, Treble and Volume

Our Verdict: The sturdy build quality and classy looks of the Altec Lansing 641 PC speakers strike you right when you open the box! This set is power packed with tons of watts to blow you off your seat: the tall subwoofer houses dual drivers in its massive casing. The satellite speakers come with a mid-range driver and a Mylar tweeter, delivering crisp sound. The quality pairing of the subwoofer and speakers helps deliver awesome treble and bass. Even the DVD audio quality was unmatched by the other quality speakers such as the Creative Inspire 4400 and the Cyber Acoustic CA 4100. The 641s never gave up even at high volumes.

In one sentence, the Altec Lansing 641 has excellent bass reproduction, extremely good treble, and unmatched clarity. If you happen to have the money, this is the way to go!

Runner-Up: Cyber Acoustic CA 4100

5.1 Speakers
Artis X10

Specs: Subwoofer 90 W rms, Satellite Speakers 28 W rms, Frequency Response 25 Hz—20 KHz, Wireless Remote Control

Our Verdict: The design of this speaker set seems to have been inspired by Bose: the Artis X10 consists of really sturdy and top-quality speakers. In our tests, the bass and treble were both good, but the sound distorted a little at high volumes. The Creative 5.1 Megaworks 550 THX deserves a mention here: it delivered top-quality bass and treble even at high volumes, but that set is much more expensive. The X10's subwoofer system is slightly different—it encases a driver facing the ground, and has separate knobs at the back to assign output levels for centre, rear and treble. This is a feature rarely seen in 5.1 speaker systems.
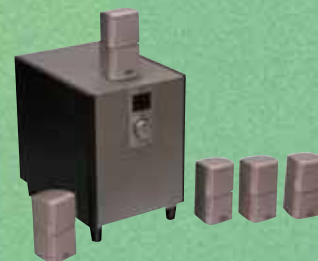
Runner-Up: Creative 5.1 MegaWorks 550 THX

TV-TUNERS
Internal PCI TV-Tuner Cards
Compro VideoMate PVR/FM

Specs: Based on the Philips SAA7134HL Chip, MPEG 1 and 2 Capture Support, FM Radio, Full-Function Remote Control

Our Verdict: Exceptional clarity in TV image quality is the biggest plus of the Compro VideoMate PVT/FM. The accompanying Personal Video Recorder (PVR) software supports capturing video in the MPEG-1 and 2 formats, and also supports the Timeshift feature.

This TV-Tuner could tune into most of the weak signals in our cable TV channel detection test. We found the FM tuner, too, quite powerful—it could tune into almost every station there was.

Another great thing is the full-featured, 32-button remote; an FM aerial comes bundled as well. The card is priced moderately for its features, and is therefore a must-buy.

Runner-Up: Mercury TV-Tuner Card

Mitashi DivX-999 DVD Player

Mitashi's DVD players have caught up with the gaining popularity of the DivX format. The new DivX-999 DVD player is sleek and has a trayless slot design. It can play DVDs, VCDs, audio CDs, and the MP3, WMA, XviD, and DivX formats. The playback quality and the setup menu are better than those of the earlier model, the DivX-555 player. Setup options include audio, video, and a password option to prevent kids from operating the device when the parents are away. When you insert a disk which is not a standard VCD or DVD movie, it provides a explorer-like interface that lets you browse and play compatible media files.

Did we forget to mention that the device plays HD-CDs as well? The Player also offers 5.1-channel audio through both analogue and digital connectivity. You can even connect it to a standard PC monitor. This is a great all-round player, and since it is region-free, you can play any DVD without hassles.

Showstoppers!

External USB TV-Tuners
Pinnacle PCTV MediaCenter 100e

Specs: External USB 2.0, Full-Featured Remote Control, Coaxial In, Composite In, S-Video In, Pinnacle MediaCenter Software

Our Verdict: The Pinnacle PCTV MediaCenter 100e with its cool blue LED and curved shape is the most elegant-looking of all the USB TV-Tuners we've seen. Bundled with it was one of the best PVR software we've seen, as well as the Pinnacle MediaCenter software, which gives your Windows XP PC functionalities similar to a Windows XP MediaCenter PC. The feature-rich remote allows you to exercise full control over every function of the TV-Tuner.

TV picture quality was also very good, and when we tested it, it detected 73 of 97 of cable TV channels, which is decent. The capture quality was the best in its class, and it didn't drop a single frame during our capture test.

This TV-Tuner is priced much higher than the others in its category, but it's a winner by virtue of sheer image quality and great performance.

Runner-Up: Tech-Com SSD-TV-811

External Set-Top TV-Tuners
Tech-Com SSD-TV-712

Specs: VGA In, VGA Out, S-Video In/Out, Audio In/Out, Coaxial In, VGA-to-TV Box Cable, Stereo Cable

Our Verdict: The Tech-Com SSD-TV-712 is the only no-frills TV-Tuner in this category, concentrating instead on pure functionality.

The image quality is excellent. It detected all available TV channels in our test.

This TV-Tuner gets the Zero1 Award because of its rock-bottom price as compared to the other products in its category.

Runner-Up: AVerMedia AVerTV Box 9

SOFTWARE
Accounting Software

T++

Our Verdict: The interface of the T++ package is a cross between that of a Web browser and Windows Explorer. It has a professional layout, with the menu laid out on one screen, so you don't need to hunt around for the various options.

The software's home page provides all accounting data at a glance, and this can be configured. Data entry forms are also very user-friendly. Navigation through different forms is a snap. T++ has a feature set almost identical to Tally's, with a few extras thrown in. All in all, this is an easy-to-use software rich on features, available at an affordable price.
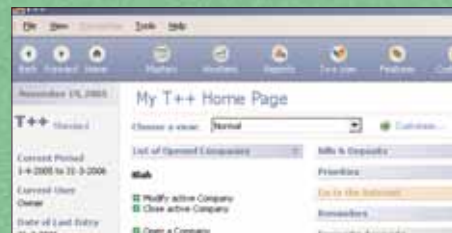
Runner-Up: Tally 6.3

D-Link MediaLounge DSM-320

Showstoppers!

The slender MediaLounge has many connecting ports at the back. Most of these are for outputs such as optical and coaxial SPDIF, S-Video, composite video and RCA stereo audio; the two input ports are for Ethernet and 802.11g (Wi-Fi) to interface with the PC. OK, there's no need to worry about so many connections: they are provided so as to support a full-fledged home theatre system's requirements, and you won't need them all. Of course, if you *do* have a full fledged home theatre system, the manual should make it clear what goes where. Connecting to a TV is very simple—just install the necessary software on the PC and configure the network to access the DSM-320 either wirelessly or via Ethernet.

Once the installation process is done you are ready to test the streaming capability. The MediaLounge can play back the MP3, WMA, AIFF and also playlist (M3U and PLS) formats; it supports five photo image formats and popular video playback formats (MPEG 1/2/4, Quicktime, AVI and XviD). There is only one button on the front panel, the On button; the remote is what you'll be using all the time. You can browse through your PC with the TV as the display, and run any supported media on your home theatre system. Now, forget about watching movies on your PC!
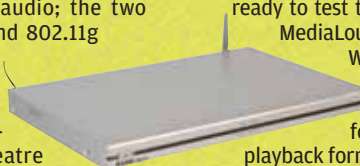
IMAGE MANAGEMENT SOFTWARE
Adobe Photoshop Album 2.0

Our Verdict: Adobe Photoshop Album 2.0 is an image manager with a neat and simple interface for importing photographs. It allows for creation of your own albums, slideshows, VCDs, eCards, calendar, and photo book. It provides you with more templates than you would need for creating that special album or calendar. Photoshop Album 2.0 does all the necessary optimisations for printing an album on your desktop printer.

Images can be hierarchically tagged and segregated into different categories, facilitating easier search and retrieval. There are many touch-up options that allow you to manipulate images and straighten out rough edges. Adobe Photoshop Album 2.0 also gives you the option to back up your photos to CD or DVD or to another machine on your network. It also has options for incremental backup.

Runner-Up: Picasa 2

LINUX DISTRIBUTIONS
Linux For Power Users
SuSE 9.3 Professional

Our Verdict: Most Linux distros have acceptable user interfaces, but SuSE has always been different. Now they have even mastered the art on X.Org, which replaces the XFree86 X-server.

The KDE of SuSE 9.3 has such a polished look and feel that even the best-looking Windows is no match. The five-CD installation pack contains everything you can dream of. You can set up various servers just as with any other power user based distros such as RedHat. Well, that's no big deal in itself, but where SuSE comes good is the way it customises individual packages to look and work better.

The notable upgrades in the distro are Linux Kernel 2.6.11, GCC 3.3.5, glibc 2.3.4, X.Org 6.8.2, Open Office 2.0 and Eclipse 3.0.1.

The new Linux Kernel plays a major role in hardware detection. We recommend SuSE 9.3 as a complete package for any user.

Runner-Up: Asus K8S-MX2

Windows Replacements
Xandros Desktop OS

Our Verdict: Linux as a desktop OS is gaining a lot of attention. The trend to make this pro server OS penetrate more and more homes as a user-friendly desktop OS has forced it to clone the Windows interface. Xandros is one such Linux distribution: it apes certain Windows interfaces so the migration becomes easier for regular Windows users.

The striking feature here is the graphical installation procedure, with a very helpful partition manager that makes sure even a novice can create successful Linux partitions without disturbing the existing FAT and NTFS partitions.

The partition manager of this distro is so good that Microsoft can probably take a lesson or two from the folks at Xandros! The elegant file manager provides the user with easy access to the PC's drives, CD/DVD drive, network shares, etc. Xandros comes loaded with the Mozilla and Firefox browsers, CodeWeavers CrossOver Office 4.1, and 'Xandros Network', which is a tool that helps you organise installed software and download newer ones.

Runner-Up: Linspire 5.0

Contour Design's Roller Mouse

Showstoppers!

Contour Design's Roller Mouse consists of a roller bar that lets you move the cursor around and click on icons. It works in conjunction with a keyboard and can also act as its base; the roller bar and button then falls within easy reach of your thumbs. The roller bar doubles as the left-click button.

Sensitivity can be easily adjusted—by tightening or loosening the knob at the base. Windows ME and later editions of Windows install the necessary drivers, so all you need is a free USB port.

If you are still wondering why this product is unique, then here's the story: a regular mouse makes you move one hand away from the keyboard, putting your shoulder in an awkward, stress-inducing position. The Roller Mouse is an innovation by which you can have the function of your mouse right under your keyboard: you won't need to move your arm any more to reach out for a mouse!
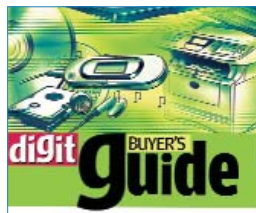
Enhance

Working Comfortably

Do you suffer from backaches? Eyestrain? Fingers hurting? No, this isn't an ad for a balm or spray! Those are the cures—we're here to tell you about prevention

Robert Sovereign-Smith

Ergonomics is the science that studies the relationship of humans to their working environment. It seeks to improve working conditions and increase efficiency.

The human body is fragile, more so as one grows older. Those of you above the age of 30 will have realised this. Those below that age will come to realise it soon—you just don't seem to be as flexible as you were when younger; and niggling aches and pains creep in.

The problem is compounded when you introduce the work factor. Today, many Indians spend more time working than doing anything else, and this is where ergonomics comes in—at least, it should.

Work Forces

It's still a popular misconception among many that only those who do manual work need to consider ergonomics. This just isn't true—a worker who daily loads heavy packages on or off a truck is exposed to the same level of risk to his or her back as is a call centre employee. And chances are, the manual worker and the call centre employee will suffer from back pain as the years go by!

The same applies to a teacher who spends hours a day grading papers, as well as the students who spend hours writing them. When it comes to ergonomics, there's no difference between a journalist writing articles for hours on end on a computer, and a gamer mesmerised by the latest title for hours or days!

Viewing angle < 25

Viewing angle 15

Viewing angle 50

90°

90°

Seat back angle 90

23"-28"

Feet on floor

3D Modelling **Vikram Kathare**
Imaging **Chaitanya Surpur**
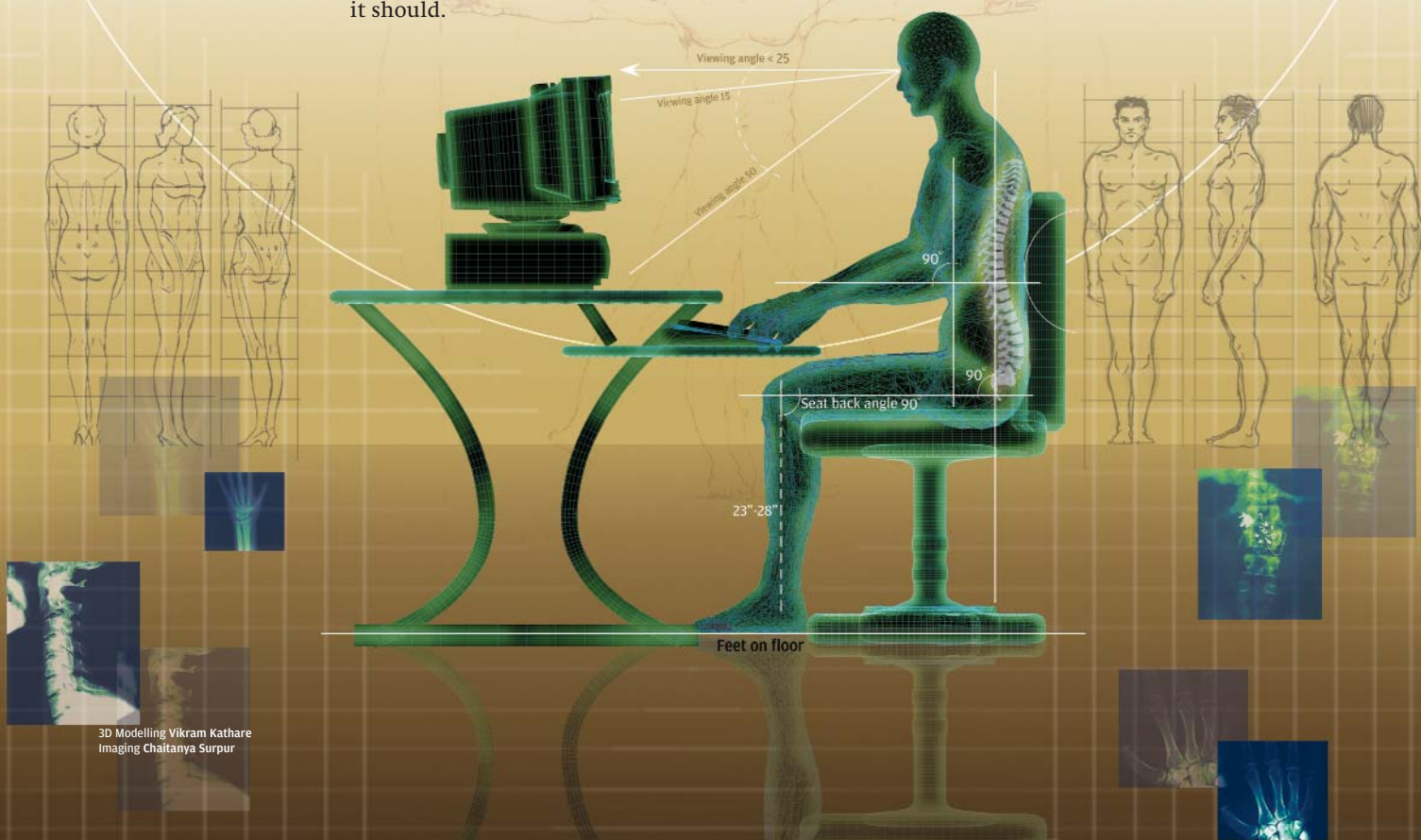
The problem lies in a condition called repetitive stress injury (RSI), where you can injure your body by doing the same thing in the same posture day in and day out. RSI can attack anyone, from the manual worker to the gamer.

In what follows, we stick to the dangers posed to us by long hours spent on the computer. To find out how to protect your body while doing absolutely any type of job, refer to the box: *The Ergonomic Web* on page 78.

The Aches

People have been known to suffer from backaches, neck pain, eye strain, finger and forearm pain after exceptionally long computer use. Of these, eye strain and finger and forearm pain are direct effects of using a computer (of course, it's the monitor, keyboard and mouse that are to blame). Backaches and neck pains are a result of the way we sit. Let's take a look at these side-effects one by one and figure out the best practice in each case.

The Back And Neck

Those of you who have suffered severe back pain or slipped discs will surely vouch for the importance of looking after your spine. This is not just another ache, and not just another part of your body: injuries to the spine can be debilitating, and even life-threatening in extreme cases. The body just cannot function without the support of the spine, so you need to make sure you take every little backache and muscle spasm in the spine region very seriously.

At work, the spine is put to risk by the type of chair you use, and how you use it. A chair that hasn't been designed with ergonomics in mind can cause back pain. But even if you have a good chair designed to take weight off your back, are you sitting the correct way? We'll soon talk about chairs with good ergonomic design.

The Eyes

Eye strain is almost always associated with the type of monitor you use, the distance and angle at which it is placed, the screen resolution you work at, and also whether you remember to blink and take focus away from the monitor from time to time. More on this later when we look at monitors.

The Fingers And Arms

Very often, discomfort in these areas is not caused by using the keyboard and mouse the wrong way, but simply by not positioning them properly. A chair can also help the arms by providing good padded arm rests, as can placing the mouse at the correct location and height.

The most common complaint is the Carpal Tunnel Syndrome (CTS), a disorder that affects a nerve in the wrists, causing tingling, pain and weakness in parts of the hand. CTS is perhaps the most well-known RSI, and is beginning to affect more people worldwide—all because of the bad placement of a mouse or keyboard!

Office Furniture

Here we show you how you can decide whether the furniture you're using is ergonomically right or wrong. Remember, just having the right furni-

ture does not mean you're safe—you also need to know how to use it.

Chairs

The major cause of back and neck aches, a bad chair can really mess up your spine, especially if you are sitting in it eight hours a day.

As a rule of thumb, a good chair is one in which you feel comfortable. This may sound vague, but our point is that comfort is a very subjective matter—one person's comfort could be another's pain. So to begin with, just make sure your chair feels comfortable.

Most chairs today have adjustable parts, so if your chair just doesn't seem right, try adjusting the height. The proper height is achieved when you can sit in the chair and comfortably rest the soles of your feet on the ground. A low height would be if you find that the backs of your thighs are raised above the chair seat, and too high would be when you cannot comfortably place your feet flat on the ground.

The next thing to look for is an adjustable seat. Since our heights differ, a shorter person would need less seat space, and may need to move the seat backwards towards the backrest. On the other hand, a tall person would need to move the seat forwards.

An adjustable backrest is also important—not just in terms of height, but also in terms of the angle at which it meets your back. The more adjustable the backrest, the more the chances of you feeling comfortable in various positions.

Leaning back on an adjustable backrest helps to take weight off your lower spine, and that's very relaxing. Contrary to popular belief, a straight-back chair is not exactly ergonomic—not unless you're strapped to it. It's better to have a chair with an adjustable backrest that allows you to bend your back a little from time to time, in order to shift the weight.

Apart from the design of the chair, you need to remember to keep shifting your weight about at regular intervals. This helps improve the blood

Well-designed chairs can make life at work much easier, and can also bring relief to your aching back

▼ Monitor Placement

Infographic Chaitanya Surpur

As shown in the figure, the monitor needs to be placed lower than the line of sight. The top of the viewable area should be at least 15 degrees below the line of sight and the bottom of the monitor's viewable area should be no more than 50 degrees below the line of sight

flow to your back and buttocks, and ensures that you do not suffer from RSI. You should try not to slouch in your chair, and take short breaks by standing up and walking about to help the blood circulate. Stretching, more so, after a long stint of sitting, is a beneficial practice.

Monitor Placement And Lighting

Lighting? Yes, even lighting is a factor when deciding monitor placement. You'll often see someone at your workplace twisting and contorting when trying to read a particular area of their monitor. So also, you may place your monitor in an equally awkward position, just to be able to view it properly.

When deciding where to place a monitor, it's best to make sure there's no light source behind the user, as this causes a glare on the screen and makes areas of the screen unreadable. Also, in larger offices where the workforce is seated in cubicles, rows and columns, such as in a call centre, diffused lighting is a good idea. This cuts out the one bright source of light and reduces the glare on the monitors.

The second most important aspect is the distance of the screen from the eyes. The closer the screen, the more the strain on the eyes. This is easily demonstrated by doing a simple test: hold up your index finger at a full arm's length from your face. Now focus on your nail and gradually bring your finger closer to your eyes. You'll notice that the closer the finger gets to your eyes, the more strain you'll feel while focussing.

So what is the correct distance at which your monitor should be placed? The answer is more complicated and involves more than a simple measurement in inches. Though it is widely suggested that you place the monitor at least two feet away from the eyes, this doesn't account for the other variables you come across when dealing with computer monitors.

For instance, placing a 14-inch monitor two feet away from your eyes is good, but what about those with 19 or 21-inch monitors? Then there's

The Ergonomic Web

the problem of resolutions. Placing a 19-inch monitor three feet away from the eyes might seem like a good idea, but when you're running at a resolution of 1600 x 1280, this could make the text on the screen look minuscule, and force you to strain your eyes anyway!

A good practice is to keep the monitor at least 25 inches away from the eyes, and adjust to the resolution that causes the least eye strain. Instead of using a 19-inch monitor running at a resolution of 1600 x 1280, placed at 25 inches away from the eyes, consider placing the monitor three feet away, and running it at a resolution of 1280 x 1024 or 1024 x 768.

The next consideration is the monitor tilt, and the height at which it is placed. Here's where your table comes into play. Since you've already decided on the height of your chair, you need to make sure the tables are low enough to keep the monitor at the correct height. Remember, it's a lot easier to increase the height of a monitor by placing something under it than it is to decrease the height.

Since heights are very subjective, monitor placement is always decided by angles. Studies have found that in order to protect the neck, a monitor's viewing area should be 15 to 50 degrees *below* horizontal eye level. This means that if you sit in your chair and look straight ahead, focusing on an object at the same height above the ground as your eyes, the top of your monitor should be at a minimum of 15 degrees below your line of sight, while the bottom of the monitor screen should be a maximum of 50 degrees below the line of sight. This is illustrated in the diagram alongside (see *Monitor Placement*).

A few other things to consider are the results of studies that have shown that white text on black backgrounds seem to strain the eyes more than black text on white backgrounds. So as a

rule of thumb, try and work with dark text on light backgrounds. Keep in mind that correct ergonomic placement of the monitor requires the monitor to be tilted away from the eyes, so that the bottom of the screen is closer to the body than the top of the screen.

To better understand why a tilt is needed, notice the way you're holding this copy of *Digit*. You'll see that the magazine is tilted away from you, just as when you hold anything else, say, a newspaper or book. This happens because we're used to objects being further away when at the eye level and closer when below our line of sight.

If you sit down and look straight ahead, you will notice that the objects at and above your line of sight are further away, and the objects in your field of vision that are below this line of sight are much closer. It's only obvious that if you tilt your monitor away from yourself to reflect a more real-world sight, you will strain your eyes less.

Keyboard And Mouse Placement

The next step towards protecting your body when working with computers is to protect your hands—your fingers, wrist, forearms and elbows. As we mentioned earlier, the most common injury resulting from computer use is the Carpal Tunnel Syndrome, caused by excessive use of a keyboard. Though a keyboard that solves this problem has not yet been invented, especially for those who have to type hundreds of thousands of words a day (data-entry operators and the like), there are models that try and reduce the risks.

Split keyboards: These are keyboards that are broken into two parts. Some designs feature a single keyboard with the keypad split in two—and each half is positioned at a different angle.

Split keyboards attempt to let you place each hand as comfortably as you want to, and at whatever angle you desire

This style of keyboard tries to solve the problem of unnatural angles for the wrists.

To illustrate the problem, look at your regular keyboard. It is flat and has the same angle towards your body for all keys. Now place your hands over the keyboard as you would when beginning to type. You'll notice that your wrists are bent slightly outwards (towards your little fingers). This posture is not natural, and we often find ourselves rotating our keyboards in one direction or the other to ease the stress on our

Taking tented keyboards even further, some manufacturers offer vertical keyboards. They claim to offer as much as 50 per cent less muscle stress, but the bigger question is what is the learning required?

wrists. This typing posture is in sharp contrast to the way we place our hands on, say, the dinner table. You'll notice that at the dinner table, your hands are placed much further apart than when at the keyboard. This is the specific problem that split keyboards attempt to solve.

Palm rests: Most keyboards today come with palm rests. The simple reason for a palm rest is that it allows your hands to be placed on a firm surface rather than being held in the air by your muscles. This reduces the strain on your muscles and helps relax your arms a lot more.

Tented keyboards: These keyboards look very funny at first, until you understand why they're made that way. Another simple experiment: stand up and leave your arms loosely by your side. Now bend your arms at the elbow and bring your hands up, perpendicular to your body. You'll notice your palms are facing each other (inwards), and not the floor. This is in sharp contrast to the way they are placed when using a normal keyboard, where your palms are resting on the table or palm rest, and facing the floor.

Even in the previous dinner table example, if you notice that when you put your hands up on a table, comfortably, the palms are never facing the table: they face each other. This is the natural position for your hands. So although split keyboards solve the problem of angles, they don't solve the problem of natural palm placement.

This is where tented keyboards try and kill two birds with one stone—the keyboard is split, and also angled like a tent, to keep your hands in as natural a position as possible when typing. Of course you will make a good many typos trying to get used to this style of keyboard, and you'll also slow down your typing speed, but as with everything else, you'll get used to it.

Tented keyboards are an option only for touch typists, for those of us who look and type, the split keyboard is as good as it gets!

Negative-slope keyboards: These are keyboards that have height-raising feet at the front, instead of at the back like most keyboards.

Here's another simple test. Hold your hands out in front of you, palms facing the floor and fingers straight. Now bend the hand downwards from the wrist so that your fingers point at the floor. Now do the same thing in reverse and try and point your fingers at the ceiling. You'll see that it's much easier to bend the hand downwards than upwards. What negative slope keyboards do is try and ensure that your wrists bend upwards as little as possible, and even favour a bend downwards.

It's widely acknowledged that placing a keyboard low is desirable so the arms can straighten as much as possible. Unfortunately, a standard keyboard placed low will cause you to further bend your wrists upwards, thus risking harm. So if you like to place your keyboard as low as possible, a negative-slope keyboard could help ease the tension in your aching wrists.

Ergonomic mice: Though many manufacturers make ergonomic mice, all of which are designed differently and can be really expensive, it's perhaps only gamers and those who use the mouse for extended periods of time without breaks, who might need them. The designs of ergonomic mice are decided in pretty much the same way as that of the aforementioned keyboards.

Here are just a few of the alternate mice available that are ergonomic

In Short

From what you've read thus far, it should be obvious that good ergonomic design means keeping your body in as natural a position as possible, reducing strain on the muscles and tendons. This is why ergonomics is often called the science of fitting a job to the person, rather than fitting a person to the job.

No matter how stressful your work or how busy your schedule, always remember to take a break, shift the body, stretch and relax—all this will help make you more productive, and also eliminate the unwanted costs of balms and sprays! If nothing else, by following these guidelines, you might just start to feel a little younger! ⊠

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Linux

Linux being an open source OS gives you the power to alter the system to your needs. But this power must be utilised with caution. As the 'root' (Administrator) user of your machine you must take care that you do not corrupt the config files and scripts otherwise you may end up with a malfunctioning system.

Speeding up boot process

Most new users install a particular distro and use it with all the default process running. Processes such as pcmcia, nfs, sshd etc. are not required on a home desktop machine; these processes are mainly used on a server and some can be used on a desktop if you have a small network running a Squid proxy. The normal boot process of Linux will start most of these unwanted processes resulting in a long wait. It is easy to turn these unwanted processes off, especially on a Redhat-based system.

Use the command **#chkconfig --list** to display the list of process and its status for levels 0, 1, 2, 3, 4, 5 and 6. Of all these levels only 3 and 5 are concerned with desktop user operation. Instead of suggesting that you disabled these processes, we would rather tell you what processes are necessary for ideal operation. The essential processes are anacron, crond, echo, gpm, keytable, network (enable this if the PC belongs to a network), random, sendmail, sshd, syslog and xfs. You may enable other process that you think are necessary, say, for instance, kudzu is a hardware detection process that takes considerable time in the boot process; most of us don't open our machines and replace the PCI cards too often so kudzu can be disabled. To disable a process you will have to use 'chkconfig' command repeatedly for every process that needs a change in its status. The complete

Tips & Tricks

SECRETS THAT KEEP YOU AHEAD IN THE RACE

command is **#chkconfig -- level <levels 3 or 5> <process name> on|off**

eg: **# chkconfig --level 5 kudzu off**

For Redhat users this task is extremely simple; thanks the nifty use of ncurses. Typing the command 'ntsysv' on a konsole prompt will list out all the process with its status indicated in '[*]' box preceding the process name; use spacebar button to remove the '*' in the box, this will disable the respective process.

Some of you may wonder what a level is. Level 3 boots the machine in text mode while level 5 is the GUI mode that directly starts X-server and the X-windows environment (KDE or GNOME).

Once the necessary processes are set, reboot the system, you will see a marked difference in the boot up time.
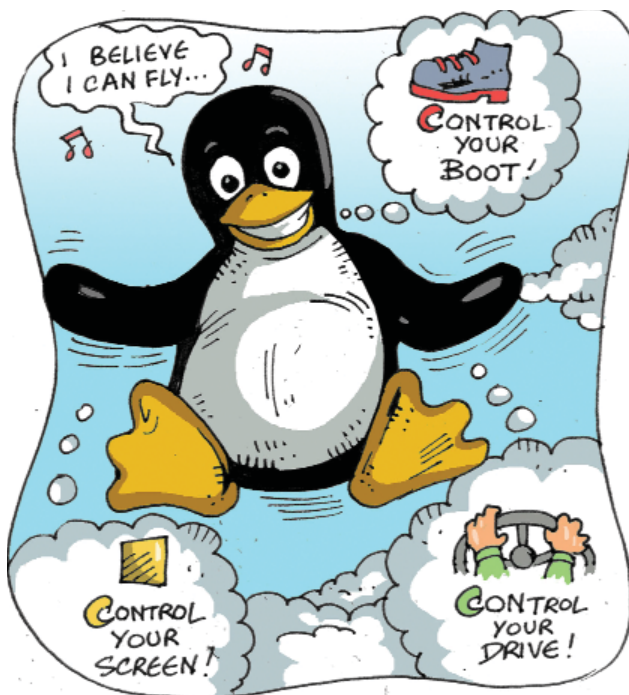
Speeding up IDE-based drives

This tip is useful for just about any Linux desktop machine using IDE-based drives. By default Linux uses conservative settings for IDE for instance the DMA mode is disabled. This is done to achieve stability at the cost of speed. But there is no cause for concern, as you can change the settings through a command line utility called hdparm. Do **#man hdparm** for details regarding this feature.

Out of the many options it suggests we will look at only a few that will help us improve performance of the system. Before we start making changes to a drive's setting we should look at its deafult setting. If you are logged in as a user, then logout and log back in as root. Now, type **#hdparm -v /dev/hda** and hit [**Enter**]. This command will display the current device setting of your hard drive. For those who are not aware: hda = primary master, hdb = primary slave, hdc = secondary master and hdd = secondary slave. On our system running Redhat (Shrike) on Seagate 40GB HDD (IDE) we got the following output:

[root@aryan rc.d]# hdparm -v /dev/hda
/dev/hda:
 multcount = 16 (on)
 IO_support = 0 (default 16-bit)
 unmaskirq = 0 (off)
 using_dma = 0 (off)
 keepsettings = 0 (off)
 readonly = 0 (off)
 readahead = 8 (on)
 geometry = 4865/255/63, sectors = 78163247, start = 0

Most of the new hard drives will display **'using_dma = 1'** which is good and that's exactly what we will do here.

To enable DMA mode on a hard drive use the **flag '-d 1'** command along with the command **hdparm**. Similarly, we will add flags viz. -a, -A, -d, -X, -m and -u. Before we continue, let us warn you that manipulating drive settings can cause problems if your chipset is not supported

or the drive doesn't support the setting fully. That is the reason for choosing only a few flags as listed above and the **-u** flag is a crucial one, use it only if you are confident that your chipset and kernel can handle it. Let's test speed of the drive:

[root@aryan 00-anup]# **hdparm -t /dev/hda**

/dev/hda:

Timing buffered disk reads: 64 MB in 24.30 seconds = 2.63 MB/sec

We got a speed of 2.63 MB/sec as the DMA was disabled. You may try the command again to recheck. Now, let's use the flags to change drive settings and then look for any performance difference. The ideal command option is: **#hdparm -d 1 -X 69 -c 1 -M 192 -A 1 -a 64 -m 16 /dev/hda** hit [Enter] to execute the command. The output of the command shows the change in settings.

For Example:

[root@aryan 00-anup]# **hdparm -d 1 -X 69 -c 1 -M 192 -A 1 -a 64 -m 16 /dev/hda**

Output:

/dev/hda:

setting fs readahead to 64

setting 32-bit IO_support flag to 1

setting multcount to 16

setting using_dma to 1 (on)

setting xfermode to 69 (UltraDMA mode5)

setting drive read-lookahead to 1 (on)

multcount   = 16 (on)
IO_support   = 1 (32-bit)
using_dma   = 1 (on)
readahead   = 64 (on)

setting acoustic management to 192

acoustic   = 192 (128=quiet ... 254=fast)

We have discussed '**-d**' flag to enable DMA earlier, so lets look at the other flags used in the above command. When enabling DMA, the '**-X**' flag is used to set the drive to a particular DMA mode. Here: the numeric value 69 means 64 plus the value of DMA mode 5 is UltraDMA mode 5 ATA100, add 6 for ATA133) and '**-c**' flag enables/disables 32 bit I/O support (the default is 16Bit). Modern hard disks have the ability to slow down

in order to reduce their noise output, so the flag '**-M**' is used to change the acoustic level of a drive, the numeric value used with this flag is between 128 and 254; the silent and hence the slowest is 128. Use 0 is disable or to use the default drive setting. We prefer a value of 192.

The flag '**-A 1**' enables the auto read-ahead feature of the drive and '**-a 64**' tells the drive how far to read ahead. The '**-m 16**' flag is a courtesy as most modern IDE drives have this feature enabled; this feature reduces operating systems overhead on a drive's I/O. Now, let's test for any difference in speed of the drive using **#hdparm -t /dev/hda command**.

[root@aryan 00-anup]# **hdparm -t /dev/hda**

Output:

/dev/hda:

Timing buffered disk reads: 64 MB in 1.67 seconds = 38.32 MB/sec

You can see from the output that the speed has gone up from 2.63 MB/sec to 38.32 MB/sec.

Changing the GRUB Splash image

GRUB (GRand Unified Boot loader) is commonly used to boot OSes by almost all Linux distributions. If you are bored seeing the same blue GRUB screen every time, then take a break—you can change the GRUB 'splash' image by editing GRUB's config file. Before we proceed to replace it with another image, let's understand the image requirements.

The image has to be 14 colours with a maximum resolution of 640 x 480, and in the xpm format. The immediate question is "how do I make such an image?" Well, some distributions like Redhat 9 have a command line utility called ImageMagick. Do **#man ImageMagick** to know more about it. Let's consider that you have an image in jpeg (*.jpg) format that you want to load as your splash screen. To change 'photo.jpg' into a splash screen image switch to root (administrator) then use

the following command in konsole or xterm **#convert -depth 8 -colors 14 -resize 640x480 /root/grub-pics/photo.jpg /root/grub-pics/photo.xpm** assuming that your image is in a folder called '**grub-pics**' under **/root**. Needless to say that convert command converts the image in the necessary format but we still have to compress it to 'gz' format; so under **/root/grub-pics** do **#gzip photo.xpm**. The output of the command is the file we need '**photo.xpm.gz**'. Now, copy the image to **/boot/grub**

#cp /root/grub-pics/photo.xpm.gz /boot/grub

The last step is to edit GRUB's config file. Open the **grub.conf** file in **/boot/grub** using any of the command line text editor such as **vi**. Look for the line '**splashimage= '** change the path of splash screen image from **/grub/splash.xpm.gz** to **/grub/photo.xpm.gz** (as in our example).

Reboot your system to see the change in GRUB's screen. You can avoid the task of converting image to xpm format by using readily available splash-screen images from the Net. Just save the image in **/boot/grub** and change the path of splash image in the **grub.conf** file. Flaunt the new look!

The Windows XP PowerToys is a set of applications you can download for free from Microsoft. They are not officially part of Windows XP, but Microsoft makes them available as enhancements to it. One could say that the functionality the PowerToys provide is something that should have been available in Windows all along, but for some reason is not. As such, several of the PowerToys could be considered essential to the OS.

The XP PowerToys site is **www.microsoft.com/window sxp/downloads/powertoys/xp powertoys.mspx**

The following is a list of the PowerToys you can download from there.

Color Control Panel Applet For Windows XP

Professional-level photographers and designers know that getting consistent, accurate colour from file to screen to print and beyond is a requirement for great results. On XP, the means to obtain great colour is built into the OS via Image Color Management (ICM) 2.0. ICM 2.0 is an International Color Consortium (ICC)-

![30 Minutes Expert]
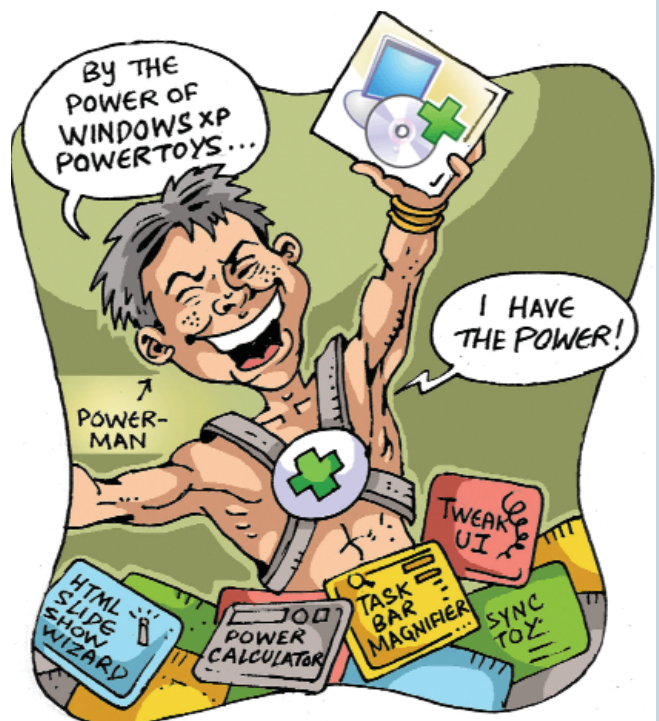
Use VirtualDub To Split Movie Files

Now, fit high-quality DVD rips on CDs!

Anup Nair

What do you do when you want to resize or cut a large movie file—say an AVI file—into two or more parts, so that they can be written onto CDs? DVD ripping tools have inbuilt splitters, but one often ends up with problems such as sound lag and low volume in the ripped output file. The ideal method would be to let the DVD ripping tool rip the entire DVD movie to a single AVI file, and then use VirtualDub, a tool for splitting such files into smaller chunks - and if need be, correct the volume and sound lag problems.

VirtualDub is freeware licensed under the GNU General Public License. You can download it from **http://sourceforge.net/projects/virtualdub.**

Choose the package named VirtualDub-1.6.11.zip (i386 type) for a computer running a Win32 OS. Unzip the package to a folder with preferably the same name. Just locate the file named VirtualDub.exe and run it. The process does not involve installation; just accept the GNU license, and the main window of VirtualDub pops up.

You can also split files of other formats using VirtualDub. If you're splitting a DivX file, note that problems have been reported with splitting older versions of DivX-encoded video (DivX version 4.02), so it is advisable to upgrade to a newer version of the codec before proceeding with VirtualDub.

STEP 1 Open The Video File

Select **File > Open Video File**, and choose the AVI video file you want to split. Click 'Open'. You'll see the movie file opened with two previews, and under it will be a timeline with a slider showing the length of the movie. The left window is the source file and the right one is a preview of the same frame of the output file. Both will be the same until you tell it to make a change."

STEP 2 Adjust Audio/Video Settings

The most important point to remember is that we're not encoding a file, so go to Video > Direct Stream Copy. Failing this, VirtualDub will re-encode the movie to its default format.
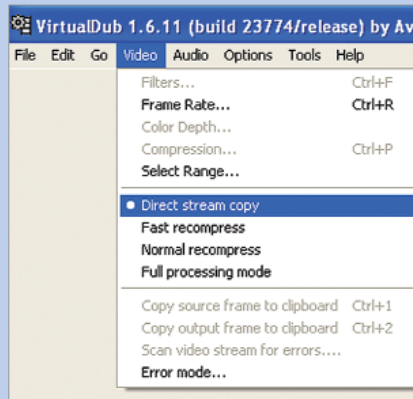
Ensure that you select 'Direct stream copy' in video menu

The default audio settings are preferred, but if the original ripped file is lacking in audio volume, you can increase the recorded volume by choosing 'Full processing mode' from the 'Audio' menu. This enables more audio settings. Now go to back to the 'Audio' menu and choose 'Volume…', enable 'Adjust volume of audio channels', and increase or decrease the volume bar as per your judgement.

If you leave the audio settings here, you'll get a rather large output file, since the audio will be in PCM format (WAV). So, we need to do a step or two more. Go to 'Compression' in the 'Audio' menu and choose 'LameMP3'. A set of formats appears on the right. Choose '44100 Hz, 256Kbps, CBR stereo' and then click 'OK'. (If this option is not available, go to 'Conversion' under the 'Audio' menu and enable 16-bit audio.)

STEP 3 Split The Movie File

The timeline has a slider that you can move along the length of the movie. While moving the slider, note that the frame count just under the timeline shows the

frame number and the elapsed time. Move the slider to the last frame, note the total number of frames, and divide it by two if you think it will result in appropriate split file sizes.

The selected length of the moive turns blue indicating part

Now move the slider back to the first frame and press [**Home**]. This will create a starting point. Keeping [**Shift**] pressed, move the slider to a frame number that is close to half the total number of frames. At this point, press [End]; the selected time length turns blue.

Click **File > Save as AVI**, and provide a file name such as **"movie_name_ part 1.avi"**. The progress indicator dialog box appears, displaying the progress, projected file size, and other related information.

For the second part of the movie, press [**Home**] to set the last frame of part 1 as the first frame of part 2. Drag the slider to the last frame of the movie (remember to hold down [**Shift**]) and hit [**End**] to select the second part of the movie. Follow the same file-saving procedure to save the second half. Remember, if the movie is very long, you might even want to split the file into three or more parts - which you can easily do using the above procedure.

VirtualDub can also be used for other audio/video editing processes such as changing a movie from portrait to landscape view and vice-versa, which comes in very handy for videos shot using a mobile phone.◙

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compliant colour management system exposed through Win32 API functions, so it is readily available to any application, device driver, device calibration tool, or Color Management Module (CMM). Windows itself, and many Windows-based software applications, use ICM 2.0 'under the covers' to improve the appearance of pictures and graphics.

Until now, Windows has lacked a central Control Panel interface for managing ICC colour profiles and ICM 2.0 colour settings across the system. The new Microsoft Color Control Panel Applet for Windows XP addresses this by adding a Color tool to the Control Panel, making it easier for you to manage Windows colour settings.

SyncToy

These days, files come from every direction: digital cameras, e-mail, cell phones, portable media players, camcorders, and PDAs. Increasingly, computer users are using different folders, drives, and even different computers (such as a laptop and a desktop) to store and retrieve files. Managing hundreds or thousands of files is still largely a manual operation. In some cases it is necessary to get copies of files from one place; in other cases there is a need to keep two storage locations exactly in sync.

SyncToy is a free PowerToy that provides an easy-to-use, highly customisable program that helps users to do the heavy lifting involved with the copying, moving, and synchronisation of different folders. Most common operations can be performed with just a few clicks of the mouse, and additional customisation is available without added complexity.

SyncToy can manage multiple sets of folders at the same time; it can combine files from two folders in one case, and mimic renames and deletes in another.

RAW Image Thumbnailer and Viewer

If you're a serious photographer, you can now organise and work with digital RAW files in Windows Explorer, much as you can with JPEG images. This tool provides thumbnails, previews, printing, and metadata display for RAW images.

[Alt] + [Tab] Replacement

If you constantly run several applications, the [Alt] + [Tab] application switching functionality in Windows would be one of your most often used key presses. This PowerToy replaces that functionality using a thumbnail preview of each window in the task list, displayed in a manner consistent with XP's look and feel.

Here's how it works. Once you have two or more applications running, hold down [Alt] and press [Tab]. This displays the first application window in the task list, using an attractive thumbnail image. Release [Alt] and [Tab] to select that application, or hit [Tab] repeatedly until you find the application to which you'd like to switch.

This PowerToy could be a pain to use. The problem is speed—generating and displaying the thumbnails could bog down the system.

CD Slide Show Generator

This tool is great if you're into digital photography. It generates a slideshow of digital photos or other images. The CD Slide Show Generator integrates into XP's CD Recording Wizard, providing an extra step when you're trying to burn image-only CDs. There's even an option that asks whether you'd like to add a picture viewer to the CD; if you choose 'Yes', you can bring the CD to a non-XP PC and still view the slideshow!

ClearType Tuner

One of the biggest usability improvements in Windows XP was the inclusion of ClearType
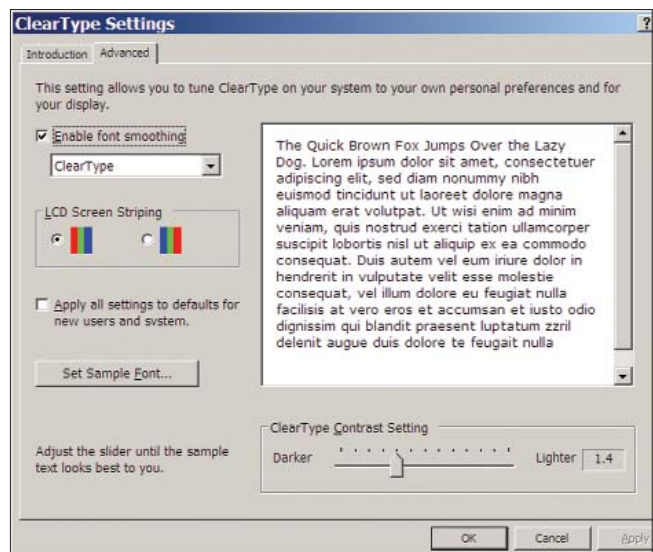
XP has always lacked a way to fine-tune ClearType, which is a necessary feature, since different displays and different people's eyes prefer different types of text display. Now, ClearType Tuner gives you the freedom to do this successfully
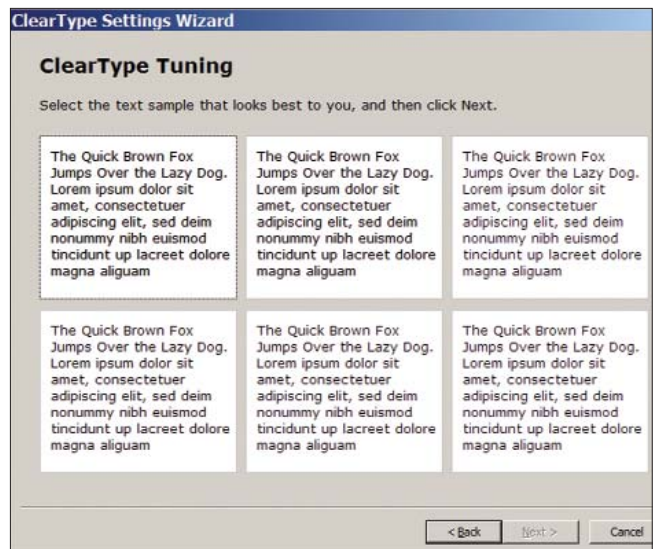
technology, which effectively triples the horizontal resolution of text displayed on your LCD display. However, XP has always lacked a way to fine-tune ClearType, which is a necessary feature, since different displays and different people's eyes prefer different types of text display. With the addition of the ClearType Tuner, XP users can get OS-level ClearType tuning capabilities.

ClearType Tuner installs as a Control Panel applet called ClearType Tuning (the applet itself is called ClearType Settings). You can run it in two modes—either as a wizard that steps you through the process, or in an

Advanced mode where you modify sample text until you get the effect you desire.

This PowerToy is even more recommended if you're using ClearType on an LCD display.

Slide Show Wizard

The Slide Show Wizard— previously called the HTML Slide Show Wizard—is a standalone application that generates a Web-based slideshow. You can add individual pictures and folders—though the 'Browse for Folder' dialog it uses begins in 'My Documents' rather than 'My Pictures'.

In the next step, you can name the slideshow, provide

an optional author name, determine the location to which it will be saved (by default, it saves your slideshow to a folder named 'My Slide Show' under 'My Documents'), the picture sizes, and so on. You can choose between a simple slideshow and a more advanced one that offers thumbnails. You can also determine whether the slideshow plays in a normal browser window or in full-screen mode. The finished product is good, but with two serious flaws:

First, you must be running IE to display the slideshows correctly. Second, if you've upgraded to SP2, then the slideshows you create with this tool generate a lot of Active Content Protection errors.

Image Resizer

This little PowerToy allows you to resize a picture or group of pictures without changing the originals. It works in a manner similar to the 'Send Pictures via E-mail' functionality that's inbuilt into Windows XP, but with easier control over the sizing options, and with the batching functionality for resizing multiple images at the same time.

To use this PowerToy, select any image or group of images, right-click, and select 'Resize Pictures'. The 'Resize

Pictures' dialog will appear, giving you options to resize the images at 640 x 480 (Small), 800 x 600 (Medium), 1024 x 768 (Large) or 240 x 320 (Handheld PC-sized, for Windows CE-based Pocket PC and other handheld devices). When you resize the images, new versions are created with slightly different file names by default. For example, if you resize an image called "Digit Magazine" to Large, it will be renamed "Digit Magazine (Large)".

There is also an 'Advanced' button you can use to enable more options. This includes a choice to make images smaller during conversion, but not larger, and one that will replace the original rather than make a copy.

Command Window Here

This PowerToy adds an 'Open Command Window Here' item in the right-click context menu. You just need to right-click a folder and choose 'Open Command Window Here', and a DOS command window will open in that folder rather than in the root, which is the default. This PowerToy is a must-have if you use the command line often!

Power Calculator

The calculator app that ships with Windows XP is adequate for basic maths
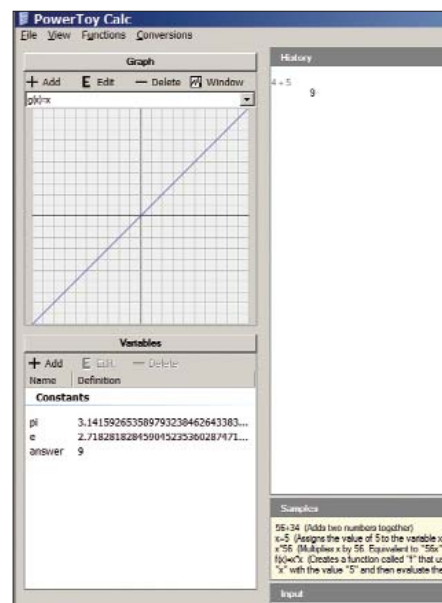
The Power Calculator gives you many more options than the standard Windows calculator

calculations, but you might often find yourself looking for additional functionality. The Power Calculator provides those additional features including functions, graphing, precision settings, and basic but useful conversions.

Virtual Desktop Manager

Windows NT has always had the ability to generate multiple desktop displays. Now you can get one free for XP. The PowerToys version of this tool lets you work with up to four virtual desktops, each of which contains a copy of the Start Menu, Desktop, and Taskbar—each virtual desktop can be running different applications. So if you're a serious power user, you might separate groups of running applications into their own Desktops.

To launch the Virtual Desktop Manager, right-click the Taskbar, choose Toolbars, and then Desktop Manager. This will add a new toolbar to the Taskbar that lets you switch between the virtual Desktops, numbered 1 through 4. It also provides a button that

lets you manage the Desktops.

Taskbar Magnifier

This is similar to the Magnifier tool that comes with XP (Start > Programs > Accessories > Accessibility), providing screen magnification capabilities. The difference is that the PowerToys version sits in the Taskbar and, as a result, offers a smaller viewing area. To activate this PowerToy, right-click the Taskbar and select 'Taskbar', then 'Taskbar Magnifier'. If you right-click the PowerToy, you get options for following

The magnifier helps those with vision problems to clearly make out text and icons

the mouse cursor and keyboard focus, and a setting for the zoom level (1x to 8x; 2x is the default).

TweakUI for Windows XP

The XP version of TweakUI is the best version yet (it was a standard Control Panel applet that came with Windows 95). Basically, TweakUI for Windows XP brings up a user interface for numerous system settings that are not normally exposed through the default XP interface. Most of these options would have previously required you to edit the Registry.

The Image Resizer will let you easily resize images into predefined sizes such as 640 x 480 or 1024 x 768

Keep Your Registry Clean With RegCleaner 4.3

30 Minutes Expert

You don't have to know what the registry is and what it does... just use RegCleaner4.3!

Anup Nair

Many Windows users are not aware of the Windows Registry. Even if you've heard about it, you may not know what it does and why one needs to get rid of unwanted entries.

Windows maintains a log, in the form of the Registry, which records an entry for every software installed and being used. It even stores information such as each user's profile and hardware devices. This information is continuously referred to by Windows.

If you regularly install and uninstall applications, you'll have a lot of unwanted entries in your registry that will adversely affect the functioning of your PC. RegCleaner4.3 helps you with the task of cleaning the registry by scanning for irrelevant entries.

STEP 1 Download and install

RegCleaner4.3 is freeware. It can be downloaded from http://www.worldstart.com/weekly-download/archives/reg-cleaner4.3.htm/.

Double-clicking the executable file will start the installation process. You can deselect 'Language
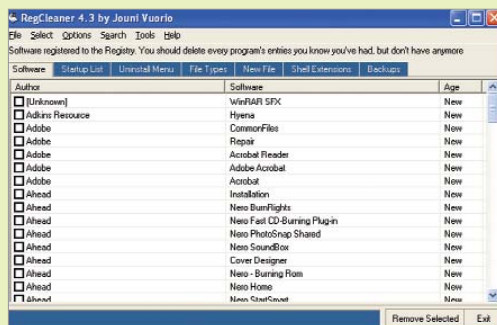
The RegCleaner4.3 with various tabs displaying the action to choose from

Packs' from the setup options. When the process says 'complete', there's still something left: you need to double-click the desktop 'RegCleaner' icon to finalise installation. Accept the disclaimer, and RegCleaner4.3 pops up.

STEP 2 Cleaning The Registry

The task of cleaning the Registry has never been this easy. Just go to Tools > 'Registry Cleanup'; this will display four options - 'OLE cleaner', 'Orphan file reference finder', 'Automatic Registry Cleaner' and 'Do them all'.

'OLE cleaner' cleans unused and invalid Object Linking and Embedded entries. (Object Linking and Embedding allows objects from one application to be embedded within another, for example, taking
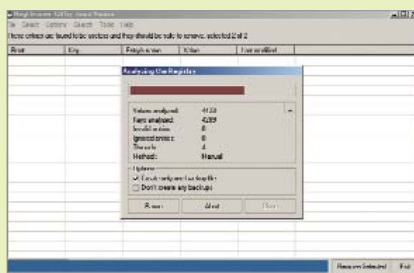
Choosing 'Do them all' option in 'Tools' registry cleanup will scan the registry for irrelevant entries

an Excel spreadsheet and putting it into a Word document.) Entries pointing to non-existing files are removed by the Orphan file reference finder. 'Automatic Registry Cleaner' scans the registry for old and invalid entries.

All the options display a list of invalid entries that you can select and remove. If you want to clean the entire Registry at one go, select 'Do them all'. This option scans the registry for irrelevant entries and lists them out. You can now select them all, and then click 'Remove Selected'. Make sure you've enabled 'Create only one backup file' before you remove entries without checking each one.

STEP 3 Using The Uninstall Tab

The main menu of RegCleaner shows up tabs - 'Software', 'Startup List', 'Uninstall
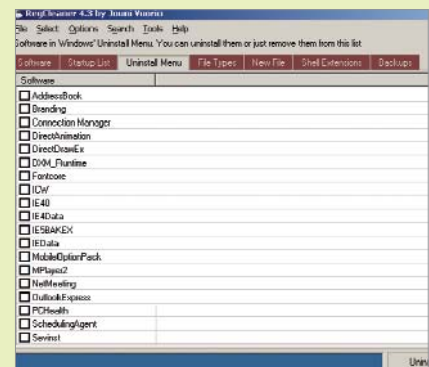
You can use Uninstall menu to display those applications that are not listed in Add Remove program

Menu', 'File Types', 'New File', 'Shell Extensions' and 'Backups'. 'Uninstall Menu' can be used effectively to remove unwanted applications not listed in 'Add and Remove Programs' in the Control Panel.

Clicking on the 'Uninstall Menu' tab will display a list of the software installed on your system. Drop down the 'Options' menu, go to 'Uninstall...', and select 'Show only hidden software'. This will display only hidden applications such as NetMeeting, Outlook Express and so on, programs that are not visible in 'Add and Remove Programs'. Just select the ones you don't need and click 'Uninstall'.

Be careful when you click 'Remove Selected', as this will not uninstall the software - it will just remove the entry. This option is useful only when a software is already uninstalled but the entry is still there in the 'Add and Remove Programs' list.

We've talked only about cleaning the Registry and getting rid of unwanted software. RegCleaner has additional utilities that can alter file types. It can also remove unwanted shell extensions. We do not, however, want to get into that, as deleting an extension without knowing in detail about what you're doing can crash your PC! ⊠

anup_nair@thinkdigit.com
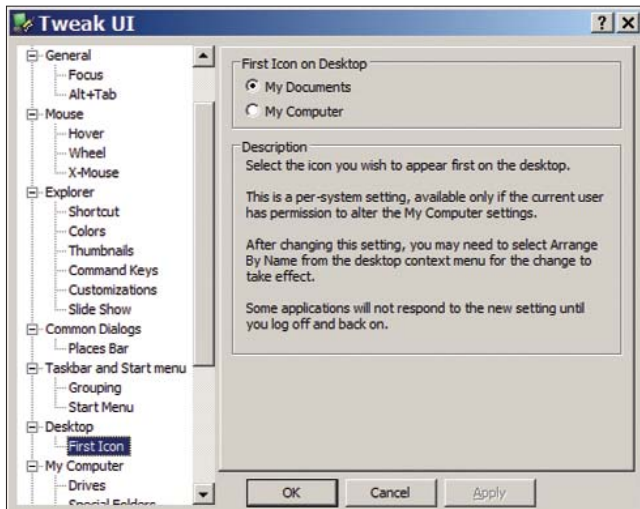
TweakUI has hundreds of hidden tweaks that you would never come across when working normally with Windows XP. You have to install it to believe the customisability that it offers

Unlike previous versions of TweakUI, TweakUI for Windows XP is a standalone executable. This means you should delete any old copies of TweakUI before installing this version. The PowerToy features a cascading tree view of options on the left, and selecting any option will display configuration options on the right.

You can do all kinds of things with this PowerToy. You can configure various UI effects, such as menu fading, error beeping, cursor shadow, and the like. You can configure the mouse, the taskbar, and the desktop. You can edit common dialogs, and determine the location of special shell folders, such as the CD burning cache. You can also do things like preventing drives from showing up in Explorer.

TweakUI for Windows XP is definitely something that should have been inbuilt in XP!

Webcam Timershot

This is a good Web camera tool that offers a lot of functionality. It can capture images from the camera at specific intervals and automatically save it to a location, even an FTP or Web site. The sheer number of options is impressive: when you hit the expand button, the window opens up four-fold, with options for choosing the picture-taking interval,

whether to resize the images, the local or Internet destination for saving the files, and other options.

Windows XP General Tips

Change The Start Menu Speed

You might want to change the delay you notice when you click the Start menu. The default speed can be adjusted with a quick Registry hack. Go to the Registry key **HKEY_CURRENT_USER \Control Panel \Desktop\MenuShowDelay**. The default value is **400**. Set it to **0** to remove the delay completely, but if you do that, it will be nearly impossible to move the mouse fast enough not to activate 'All Programs' if you mouse over it while going to your selection. Pick a number that suits you, make the change, and test it until you find a good compromise between speed and usability.

Place The Windows Kernel Into RAM

Anything that runs in RAM will, of course, be faster than something that has to access the hard drive and virtual memory. Rather than have the kernel that is the foundation of XP using the slower Paging Executive

functions, use this hack—but only if your system has 256 MB or more of RAM. Change the value of **HKEY_LOCAL_MACHINE \SYSTEM \CurrentControlSet\Control \Session Manager\Memory Management\DisablePaging Executive** to "**1**" to disable paging and have the kernel run in RAM. Set the value to "**0**" to undo the hack). Exit the Registry and reboot.

Alter Prefetch Parameters

Prefetching (the reading of system boot files into a cache for faster loading) is a commonly overlooked component that can have a significant impact on system boot time. This tweak allows you to select which components will make use of the prefetch parameters. To see which files are gathered using each setting, clear the prefetch cache located at **C:\Windows\Prefetch**, and then enable one of the settings listed here. Clear the cache and repeat for each setting.

Set the Registry key **HKEY_LOCAL_MACHINE \SYSTEM \CurrentControlSet\Control \Session Manager\Memory Management\PrefetchParam eters\EnablePrefetcher** to "**0**" to disable prefetching, "**1**" to prefetch application launch files, "**2**" to prefetch boot files, or "**3**" to prefetch as many files as possible.

Disable 8.3 Name Creation In NTFS

Files that use the 8.3 naming convention can degrade NTFS drive performance. Unless you have a good reason for keeping the 8.3 naming convention intact (such as if you're using 16-bit programs), a performance gain can be achieved by disabling it.

Set the Registry DWORD key **HKEY_LOCAL_MACHINE\SYS TEM\CurrentControlSet\Co ntrol\FileSystem\NtfsDisabl e8dot3NameCreation** to "**1**". Exit the Registry and reboot.

Perform A Boot Defragment

There's a simple way to speed up XP startup: make your system do a boot defragment, which will put all the boot files next to each other on your hard disk. When boot files are in close proximity to each other, your system will start faster.

On most systems, boot defragment should be enabled by default, but it might not be on yours, or it might have been changed inadvertently. To make sure boot defragment is enabled on your system, run the Registry Editor and go to **HKEY_LOCAL_MACHINE\SOF TWARE\Microsoft\Dfrg\Boo tOptimizeFunction**. Edit the "**Enable**" string value to "**Y**" if it is not already set to this. Exit the Registry and reboot.

Don't Empty The Prefetch Folder

Many people recommending a way of speeding up boot times that might in fact slow down the amount of time it takes to boot up, and will probably slow down launching applications as well: the tip recommends going to your **C:\WINDOWS\Prefetch** directory and emptying it every week. Windows uses this directory to speed up launching applications. It analyses the files you use during startup and the applications you launch, and it creates an index to where those files and applications are located on your hard disk. By using this index, XP can launch files and applications faster. So, by emptying the directory, you are most likely slowing down application launch.

Hack Your BIOS For Faster Startups

Most people don't realise that you can also speed up the time your computers to get to Windows. ▶ **Quick Power On Self Test (POST)** When you choose this option, your system runs an abbreviated POST rather than the normal, lengthy one.

▶ **Boot Up Floppy Seek**
Disable this option. When it's enabled, your system spends a few extra seconds looking for your floppy drive, a relatively pointless procedure, especially considering how infrequently you use your floppy drive.

▶ **Boot Delay**
Some systems let you delay booting after you turn on your PC so that your hard drive gets a chance to start spinning before bootup. Most likely, you don 't need to have this boot delay, so turn it off. If you run into problems, however, you can always turn it back on again.

Fine-Tune Your Registry For Faster Startups

Over time, your Registry can turn bloated with unused entries, slowing down your system startup because your system loads them every time you start up your PC. Get a Registry clean-up tool to delete unneeded Registry entries and speed up startup times.

After you clean out your Registry, you might want to try compacting it to get rid of unused space.

Shutting Down Faster

For security reasons, you can have XP clear your paging file (pagefile.sys) of its contents whenever you shut down. Your paging file is used to store temporary files and data, but when your system shuts down, information stays in the file. Some people prefer to have the paging file cleared at shutdown because sensitive information, such as unencrypted passwords, sometimes ends up in the file. However, clearing the paging file can slow shutdown times significantly, so if extreme security isn't a high priority, you might not want to clear it.

To shut down XP without clearing your paging file, run the Registry Editor and go to:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\Memory Management. Change the value of

ClearPageFileAtShutdown to "**0**". Exit the Registry Editor and restart your computer.

Whenever you turn off XP from now on, the paging file won't be cleared, and you should be able to shut down more quickly.

Windows Keyboard Shortcuts

You know of the obvious keyboard shortcuts, such as [**Ctrl**] + [**V**], and [**Alt**] + [**Tab**]. You probably don't know them all, however. Experiment with them all - most of them which we've listed here - and see which ones you'd like to adopt!

[**Windows**] + [**E**] opens My Computer in Windows Explorer

[**Windows**] + [**Pause/Break**] opens the System Properties dialog box

[**Windows**] + [**U**] opens the Utility Manager

[**Windows**] + [**R**] opens the 'Run...' prompt

[**Windows**] + [**F**] opens the 'Search for Files and Folders' window

[**Windows**] + [**Ctrl**] + [**F**] opens the 'Search for computers on the network' window

[**Windows**] + [**M**] minimises all windows

[**Windows**] + [**Shift**] + [**M**] maximises all windows (after you've minimised them)

[**Windows**] + [**D**] minimises all windows to the desktop, and then restores all Windows

[**Windows**] + [**L**] locks the computer

[**Windows**] + [**B**] selects the first item in the System Tray; use the arrow keys to cycle through the items and use [**Enter**] to open a selected item in the System Tray

[**Alt**] + [**Enter**] opens the 'Properties' page of a selected item

[**Alt**] + [**Esc**] cycles between open programs in the order they were opened

[**Alt**] + [**Spacebar**]: in the active window, this brings up the corner dialog box for Move, Size, Minimize, Maximize, or Close

[**Ctrl**] + [**Shift**] + [**Esc**] Opens the Windows Task

Accessibility Options

Keyboard | Sound | Display | Mouse | General

StickyKeys
Use StickyKeys if you want to use SHIFT, CTRL, ALT, or Windows logo key by pressing one key at a time.
☐ Use StickyKeys   Settings

FilterKeys
Use FilterKeys if you want Windows to ignore brief or repeated keystrokes, or slow the repeat rate.
☐ Use FilterKeys   Settings

ToggleKeys
Use ToggleKeys if you want to hear tones when pressing CAPS LOCK, NUM LOCK, and SCROLL LOCK.
☐ Use ToggleKeys   Settings

☐ Show extra keyboard help in programs

OK   Cancel   Apply

Manager

[**F2**] will rename an item

[**F3**] opens the 'Search for files and folders' window

[**F6**] cycles through the different types of elements that can be selections on a screen or window

[**F10**] selects the menu bar in the active program (usually 'File') so you can use the arrow keys to navigate through the menus and [**Enter**] to select

[**Shift**] + [**F10**]: for a selected item, this does the same thing as a right-click with the mouse

[**Ctrl**] + [**Esc**] opens the Start Menu

Clicking [**Shift**] five times turns StickyKeys On or Off

Holding down the right [**Shift**] for eight seconds turns FilterKeys On or Off

Holding down [**Num Lock**] for five seconds turns ToggleKeys On or Off

StickyKeys, FilterKeys, ToggleKeys

StickyKeys: This feature changes the way modifier keys work. Normally, keys like [**Shift**] and [**Ctrl**] are only 'active' while they're held down. When you release them the system forgets they were ever pressed. This causes problems for some users who can't, for example, hold down three keys at once to enter certain combinations like [**Ctrl**] + [**Alt**] + [**Tab**].

When enabled, this function causes modifier keys to 'stick' until they are either manually released, or until a keystroke combination is complete. In other words, it makes modifier keys behave more like locking ones. There are a number of settings to allow options like confirmation sounds, to automatically turn it off when no longer needed, and so on.

FilterKeys: This feature can be considered the opposite of the typematic feature; it causes Windows to suppress or ignore bursts of keystrokes that are sent too quickly - either fast streams of the same key or clumps of different keys sent all at once. Such bursts might, for example, be made by someone who does not have perfect control of his or her fingers due to a tremor. A number of settings let you control how long a key must be held down for it to register, set audible confirmations and other options.

ToggleKeys: This feature causes Windows to provide an audible indication when any of the permanent (locking) modifier keys is pressed. In essence, this is like an audible version of the indicator LEDs on the keyboard. ⊠

Reading A Book Physically vs Reading It Online

Renuka Rane (renuka_rane@thinkdigit.com)

The one book I have read in physical form and also online is *Wuthering Heights* authored by Emily Brontë. This novel is one of the greatest masterpieces of English literature. Why did I read the same book online as well as offline? Just to see which of the two offered me a better reading experience—honestly, just for kicks!

The Physical Book...

... And The Softcopy
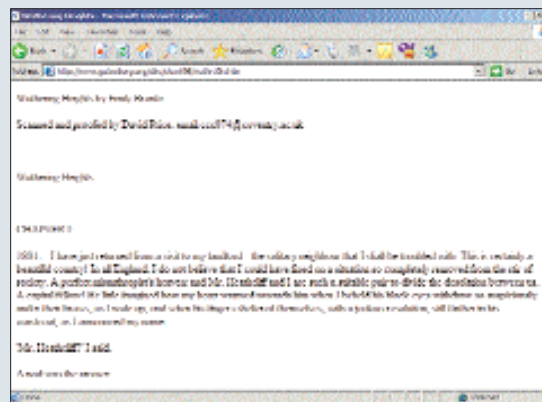
	The Physical Book	The Softcopy
1	First of all, I had to get my hands on a copy of *Wuthering Heights*. I dropped into the nearby bookstore that I usually frequent. And there it was—the complete, unabridged version. Published by Rupa Co., it cost just Rs 70. I could scarcely believe my luck! And the book was truly delightful—its cover, design and layout had a singular Victorian charm. **Time taken: 20 minutes**	To get *Wuthering Heights* online, I straightway headed to the Mecca of free online text downloads on the Internet—Project Gutenberg. I nailed it in no time. To be precise, it was at www.gutenberg.org/etext/768. Of the two choices offered, the HTML and the plain-text version, I chose the former. I could now read the text in the font I like! **Time taken: 3 minutes**
2	The book had it all—an introductory note, the prologue, and the pages filled with the story of the doomed lovers, Heathcliff and Catherine Earnshaw. I curled up in bed, picked up a packet of munchies and started reading. As the story unfolded, I read the first half late into the night. **Time taken: 2 hours**	After a couple of hours of reading, I realised that reading your favourite novel on a computer is not such a good idea. Unless you can deal with a stiff neck and watery eyes. Somehow, I managed to finish a third of the novel. **Time taken: 2 hours**
3	The next day, I carried the book with me as I had to go out of town. The to and fro journey took nearly two hours. And there I was, reading in the train, oblivious to the world. As the journey ended, I only had some 50-odd pages left. Hurrah! **Time taken: 2 hours**	I proceeded with my reading online. One good thing was that whenever an unfamiliar word cropped up, I quickly looked up the online thesaurus (I prefer Hyperdictionary.com). It's quite tiresome to lug the heavy Oxford Dictionary around! **Time taken: 2 hours**
4	As I read the last few pages, I re-read certain passages in the text. No distractions here! I completed the book, finally! **Time taken: 1 hour**	Being online, it was easy to locate a precise word or para. Also, I couldn't help visiting other Web pages to read reviews and other studies. Lots of distraction online, nevertheless, very informative. **Time taken: 2 hours**
	Total Time Taken: **5 hours, 20 minutes** Total Cost: **Rs 70**	Total Time Taken: **6 hours, 3 minutes** Total Cost: **Rs 0**

And The Winner Is...

Despite the extras the Tech Way has to offer, I have to say that for me, the Old Way was infinitely better. In terms of portability, I could read the book wherever I wanted—like I did on the train. And it's still some time before I can afford a laptop or a handheld!

While reading e-books is becoming more commonplace, nothing beats the experience of reading a book the way it should be read—the good old-fashioned way. The feel of paper is indeed a tangible thing!

DVD Burning

Lots of people have started buying DVD-Writers, but problems abound

Robert Sovereign-Smith

Making the *Digit* DVD every month, we come across problems we never knew existed. Some we're able to solve, some just leave us perplexed. We also get a lot of questions from our readers. Let's take a look at a few.

Problem: The drive says it can burn at 16x, yet if a DVD is burnt at anything above 4x, the drive spits out a coaster.
Solution: This sounds a little like the following joke:
Patient: Doctor, it hurts when I do this.
Doctor: Well, don't do that then!
The simplest solution is to burn at slower speeds. The problem is generally caused by bottlenecks in your hardware—a slow CPU, older and slower hard drive or too little RAM can cause problems when burning at higher speeds. Yes, new generation drives are supposed to use error correction and caching to avoid producing coffee-cup coasters, but they're only machines! You can't seriously expect a drive to burn at 16x on a system configuration of a 700 MHz CPU, a 5400 rpm hard drive and 256 MB of SD RAM. 1x would be the safest option in this case!

Problem: This actually happened when we were burning the current month's *Digit* DVD master! The Windows XP Auto-Update feature rebooted the computer when no one was looking, and there was a DVD being written!
Solution: There are quite a few solutions to this problem, and none of them involve the DVD drive or your burning software. It's a Windows problem. There are two types of reboot warning bugs that appear—the one that asks for a confirmation and pops up every 10 minutes, and the one that automatically reboots in five minutes. Both are just as deadly, because if you are typing something when the first one pops up, hitting [Enter] or [Y] will reboot your computer, and you will lose anything you didn't save—DVDs or CDs currently being burnt will be of no use except to adorn auto-rickshaw rear-view mirrors! The
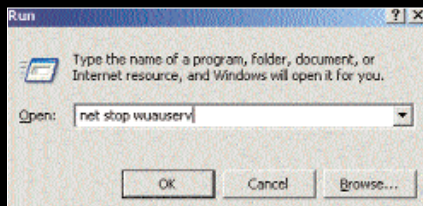
Run the "net stop wuauserv" command to stop the Windows Update service

second one is the one that will reboot your system automatically, so leaving your system unattended when burning discs is a no-no.

You could just turn off the Auto-Update feature, but then you might miss out on something critical. We don't recommend this.

You can temporarily disable the restart option by going to Start > Run, and typing in "net stop wuauserv". This is a good temporary solution, as it enables the Windows Update service at next reboot. This solution is the only choice Windows XP Home users have.

Windows XP Professional users can use the Group Policy Editor: go to Start > Run, type in "gpedit.msc" and press [Enter]. Find your way to Local Computer Policy > Computer Configuration > Administrative Templates > Windows Components > Windows Update. Here you will see many options that should be self-explanatory. The most important ones are: "No auto-restart for schedule Automatic Updates installations", which can be set to "Enabled", or set "Re-prompt for restart with scheduled installations" to something like
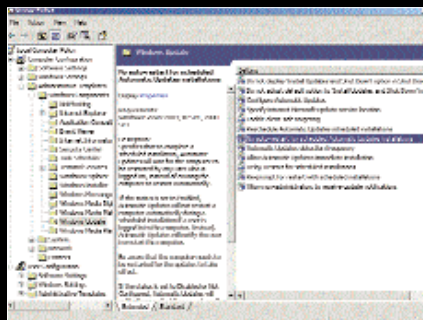
You can permanently disable the restart feature

1440 minutes (24 hours). Now you can leave your computer unattended while burning DVDs or CDs.

Problem: You use your DVD drive to back up important system data. Even though you burnt the data successfully, you find a lot of it is corrupt when trying a restore.
Solution: This problem is common with older DVD-Writers. As the lens gets dirtier and the laser weaker, errors start to creep in to your discs. Burning a DVD with Nero, you might see the "Burn completed successfully" message and think all is well, but this isn't always the case.

The problem lies either in an underpowered system, or a faulty DVD drive. Try and close all other applications when burning a DVD. If your computer has been on for a long time, turn it off for 15 minutes and then start it. Then end all unnecessary applications and burn the DVD. If you are on a network and have a lot of frequently accessed shared folders, you might want
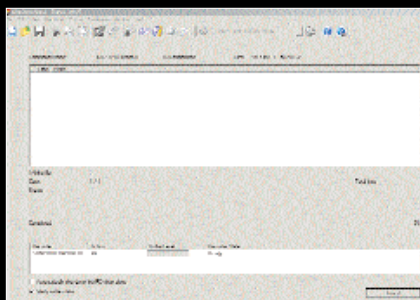
Check the 'Verify Written Data' checkbox

to disable the network connection while you burn.

For important data, it is imperative that you check "Verify Written Data", which is at the bottom left when you start the burning process. This function is available on all major DVD or CD burning software, but may be named differently. What this option does is match the data written on the DVD, byte by byte, with the data on the hard drive that you burn. If the data verification succeeds, you have successfully written the DVD without corruption. ∎

robert_smith@thinkdigit.com

MSI NX7800 GTX 256 MB

The NX7800 GTX is a spanking new graphics card from MSI. It is based on the nVidia GeForce 7800 GTX. The card has 256 MB of GDDR3 RAM and dual DVI outputs. It is also ViVo capable. It performed on par with the 7800 GTX-based card from XFX which we had tested earlier, but fell a little behind in 3DMark03 and 3DMark05. Still, the card is blazingly fast—faster than almost all cards currently available.

The card supports Shader Model 3.0 and has 24 pipelines—the highest yet in the graphics industry—so all the latest games can be played on this card in their full glory. The bundled game is *Chronicles of Riddick: Butcher's Bay*. At Rs 36,000, this card is out of the reach of most, but die-hard gaming addicts should start saving!

Company **Micro-Star International**
Price **Rs 36,000**
Phone **011-51758808**
E-mail **info@msi-india.com**
Web site **www.msi-india.com**
Rating

Kodak EasyShare V530

Little Wonder

The V530 is a shiny little 35 mm digicam. It's not tiny on features though, and boasts of 5 megapixels with 3x optical and 4x digital zoom and auto-focus. What's more, it can even record video at 640 x 480.

The Kodak EasyShare V530 connects to a Kodak EasyShare dock for file transfer and printing. It uses USB 2.0 for PC transfer, and features PictBridge. The photographs we took were crisp, and the colours perfectly reproduced. Thanks to the powerful inbuilt flash, the photographs were just as brilliant even when we shot in total darkness.

Unfortunately, internal memory is a paltry 16 MB—which means that the cost of an SD or MMC card should be added to the price tag.

Company **Kodak India Pvt Ltd**
Price **Rs 15,999**
Phone **1600-224949**
Web site **www.kodakindia.com**
Rating

New&Notable

Logitech G7 Laser Cordless Mouse

For When You Want To Win

The G7 mouse, which is the top-of-the-line mouse from Logitech right now, is a remarkable product. It is arguably the only gaming mouse with features that make ordinary mice look like relics.

The G7 features a super-high resolution 2000 dpi laser engine that processes an astounding 6.4 megapixels per second. To add to precision, it features a full-speed, bi-directional sampling rate of 500 reports per second.

A 2.4 GHz RF USB dongle connects the mouse to the PC, and it can plug into either a USB port or a battery charging station that in turn connects to the PC's USB port. The instant access to the three sensitivity levels of 400, 800 and 2000 dpi while gaming allows easy shifting between pixel-precise targeting and fast-twitch manoeuvres. The cool thing is that all this is done without any need to install drivers! The polytetrafluoroethylene (PTFE) gaming feet facilitate smooth gliding, which add to the ergonomics.

The sleep mode in this mouse has been deliberately disabled to avoid even a split-second delay between the mouse switching On from the Off state, which can make a difference between fragging and getting fragged. This obviously means that the batteries drain quickly, and here is where the bundled twin Lithium-ion battery packs come in handy. We found that the batteries drained in two days, which consisted of eight hours of daily use, of which three were specifically for gaming at 800 dpi. There is a five-level battery indicator which lets you know when the ammo, umm, the battery, needs to be reloaded.

The only patently bad thing about this mouse is that the middle mouse button, which also has side-scrolling, is particularly hard to press and can cause fatigue. The workaround for this is to use the Setpoint software from Logitech to program the thumb button as the middle button and get used to it. Another weakness is that it is aimed at right-handed people: left-handed people will have a hard time getting comfortable with it.

Even with these weaknesses, the G7 is a formidable weapon for gamers, who will probably not mind the price tag of Rs 6,495. After all, the mouse, like we said, can make all the difference in a deathmatch!

Company **Logitech Electronic India Pvt Ltd**
Price **Rs 6,495**
Phone **022-26571160**
E-mail **kavita_nath@ap.logitech.com**
Web site **www.logitech.com**
Rating

Samsung SGH-E530

In keeping with its lifestyle image, Samsung has introduced the SGH-E530, a clamshell GSM phone targeted primarily at women. Sporting lavender pink shades and an extremely compact, elegant oval design, the phone will fit perfectly even in skin-tight jean pockets. It weighs just 85 grams and measures 86 x 43 x 26 mm, so it can also be strung around your neck.

The internal LCD is 262K, while the external OLED screen is 65K. Other key features include an integrated 1-megapixel camera with flash and 4X digital zoom, an MP3 player, 64-polyphonic ringtones, 1-hour video recording, and a phonebook capacity of 1,000 contacts. Connectivity options include GPRS and Bluetooth. The internal 90 MB memory is shared between applications and, sadly, there is no option to expand this. Another feature lacking is FM radio.

Other aspects that will appeal to women are calculators for biorhythm and height/weight ratio, a calorie counter, a pink scheduler, and shopping list functions.

The screen is extremely crisp and vibrant. Voice clarity is clear, but network reception needs improvement. Images captured in good light turn out pretty decent. Overall, the E530 will surely appeal to the fashion-conscious.

Company **Samsung India Electronics Pvt Ltd**
Price **Rs 15,299**
Phone **011-51511234**
E-mail **vikas.tagra@samsung.com**
Web site **www.samsung.com/in**
Rating

Apple iPod nano

Thinner Than Thin!

Here comes another iPod—the iPod nano. It uses Flash memory, is available in 2 and 4 GB versions, and comes in black as well as white. Measuring 3.5 x 1.6 x 0.27 inches (yes, it's a quarter of an inch thick!) and weighing *42 grams*, the nano is something like a credit card. Pictures just do not do it justice—you have to hold it to believe it!

Features include a 1.5-inch backlit colour 176 x 132 LCD, touch-sensitive click wheel, and support for a variety of audio formats. It also supports photos, but no video, FM or voice recording.

The interface is typical iPod—extremely intuitive. As with the other iPods, the audio is excellent. The bundled ear buds produce crystal-clear music with good bass and almost no distortion at high volumes.

The colour screen is brilliant for menus, but too small for viewing photos. The battery is great—it lasted us about 12.5 hours of continuous playback at full volume.

Overall, there is really no need to upgrade to the nano if you already have a Mini, but it's a great buy otherwise.

Company **Apple Computer International**
Price **Rs 15,200 (2GB), Rs 18,200 (4GB)**
Phone **1600-4254683**
E-mail **indiainfo@asia.apple.com**
Web site **www.apple.com**
Rating

Adobe InDesign CS2

A Fabulous Package!

One of the biggest advantages with using this package is how well it integrates with Photoshop and Illustrator, which, for all practical purposes, are the *de facto* tools of graphic designers today. PSD files can be directly imported into page layouts, and although Quark Xpress 6.5 has the same feature, InDesign seems to do this better. Its toolbar closely resembles Adobe Illustrator's, so veterans of these programs should feel right at home from the word go.

InDesign's flexibility can be experienced by the way you can create your own keyboard shortcuts to quickly access commonly used tasks. As an added bonus, users switching from Quark can opt to use the latter's shortcuts in InDesign, greatly easing their transition time.

Other notable features include a full-fledged implementation of layers, including letting you set the transparency of each layer to give you a whole new degree of control over your layouts. The ability to add effects such as drop shadows and feathers straight from within the program further adds to the feeling of completeness.

Talking about depth of user control over the page layout process leads us to the Separations tool, which lets you see the CMYK components of your page without having to undergo the pain of creating a PDF file and viewing the output separately. The icing on the cake, though, would

have to be the Ink Manager. By specifying the maximum percentage of ink your printing paper can absorb, you can scan your entire layout to see which areas will have excess ink, thus preventing the glossiness it causes. Control freaks have never had it better.

The package comes with a video workshop CD that quickly takes you through the steps of creating a document and using the salient features.

Before you grab a copy, however, make sure you have a powerful PC, because the system requirements on the box are a blatant lie. To avoid pulling your hair out in frustration while you wait for the program to do its thing, make sure you have a CPU upwards of 2 GHz, and at least 512 MB of RAM. Not to mention, bucketloads of money for the program itself!

Company **Adobe Systems**
Price **$699 (Rs 32,000)**
Phone **0120-2444711**
E-mail **sheraz@adobe.com**
Web site **www.adobe.com**
Rating
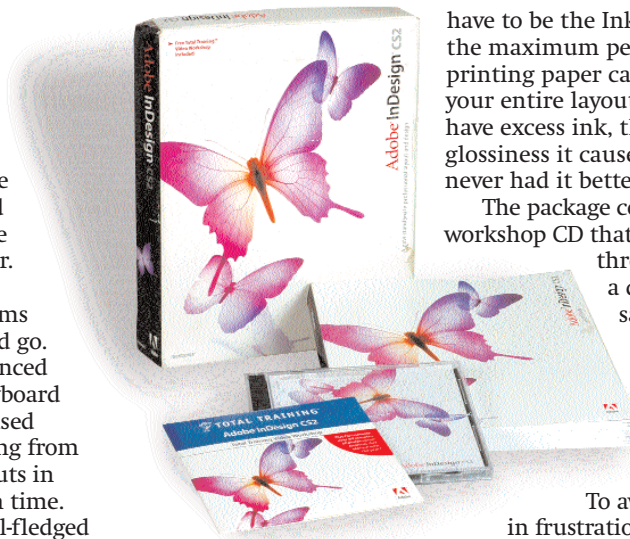
Q&A

Your Questions, Our Answers

Mandrake Black Magic

Q My system has 768 MB of RAM, a Hitachi 40 GB SATA hard disk and a Samsung DVD drive. I tried to install Mandrake Linux 10.1 which came on the *Digit* February 2005 DVD. After booting from the Installation CD 1, I get a message: "Detecting USB Devices." After this, an error pops up—"No CD-ROM device found." When I click 'OK', a notice comes up—"Please insert the Additional Drivers Floppy." I don't have any such floppy. However, all the devices work fine in Windows XP.

Sandeep Rohtak, via e-mail

A The most probable cause of your problem is that your installation CD has not been burnt properly. Burn the CD again and this time, make sure the written data is verified.

Age Of Problems

Q I am running Windows XP. I tried to install *Age of Empires 3* from a CD, but the installation stopped midway and I had to restart. Now whenever I start my computer, the Windows installer starts up and tries to install *Age of Empires 3,* and asks for CD 1. Why does this happen?

Ashmit, via e-mail

A The program launches itself when Windows boots because it's been placed in the Windows startup. The reason could be a corrupt installation CD, and this problem can be easily solved once you install the game again from the original CD (assuming you made one legal copy). If the original CD is damaged, you can probably get it replaced.

If you just want to get rid of the program being loaded at startup, run "msconfig". Go to the 'Startup' tab and look for entries that pertain to the *Age of Empires 3* setup, and uncheck those entries. The problem should not occur the next time you boot up.

F-r-a-g-m-e-n-t-e-d

Q I was using Windows XP SP2 with O&O Defragmenter 4.0 Server Edition. Now that I have uninstalled it, I am not able to use the Windows defragmenter. When I press "Defragment now" after right-clicking my hard disk icon, I get the error: "There is no defragmenter. Please

install it using Add/Remove Programs > Install/Uninstall tab". How do I restore my Windows disk defragmenter?

R Vivek, Assam

A This problem is caused because O&O Defragmenter set itself as the default Windows defragmentation tool when it was installed. After it was uninstalled, the default disk defragmenter was not re-instated. To correct this problem, open the Registry Editor and navigate to HKEY_LOCAL_MACHINE\ SOFTWARE\Microsoft\Windows\CurrentVers ion\Explorer\MyComputer\DefragPath". In the right pane, double-click the string 'Default' and set its 'Value Data' to "%systemroot%\system32\dfrg.msc %c:". The Windows defragmenter should now be restored as the default disk defragmenter tool.

Mad Monitors

Q I bought a new PC with a Samsung SyncMaster 591s 15-inch monitor. My problem with the monitor is, it starts flickering in no time; sometimes it works fine, but sometimes it starts to flicker at random. I tried changing the resolution, but it doesn't work. My PC is just two months old.

Imtiaz Khan, via e-mail

A First check if you have loaded the latest drivers for your display adapter as well as for your monitor. If the problem you're experiencing is limited to Windows, then it's likely that your monitor's refresh rate is not optimal. You can set this using 'Display Properties' in the Control Panel. Go to the 'Settings' tab and click 'Advanced'. Now click 'Monitor', set the refresh rate at anything above 70 Hz, and click 'Apply'.

If the selected refresh rate is not supported by your monitor, wait for 15 seconds, after which your earlie refresh rate will be restored. Then choose another refresh rate to see if it is supported. This way, set the highest refresh rate supported by your monitor for the resolution you're using, and the flickering should go away.

In addition to this, degauss the monitor using the controls on the monitor, and move any items that have a magnetic field (such as speakers) some distance away.

If the flickering persists and if it is not limited to Windows, then the problem is most probably that the monitor is faulty and needs to be replaced.

Hibernating Mouse

Q I have Windows XP installed. Whenever I try the hibernate or standby feature and then restart my computer, my mouse doesn't work.

Aman Jain, Rourkela, via e-mail

A Your mouse with its current drivers doesn't support the power management

features of Windows XP. The solution to your problem is to download and install the latest drivers for your mouse, and if the drivers support power management, your mouse should work after hibernation or standby.

Please send us the full configuration details of your system when writing in to us so we can be of more help.

Camera Prefers 98

Q I am using an icam Robo - 351 Web cam. I have Windows 98 SE and Windows XP (dual-booting). In Windows 98 SE, the cam works fine, but in XP, when the cam is started, the video stops within 10 seconds. Then I get an error message: "Error 80070450: cannot preview graph." I tried re-installing the driver from the Web site, but the problem persists. I also happen to have a Pinnacle TV-Tuner card.

C S Laxmi, via e-mail

A First, install the latest version of DirectX for your version of Windows. You can get this from the Microsoft Web site or from one of the *Digit* DVDs. You will also need to install the latest drivers for your TV-Tuner card from **www.pinnaclesys.com**.

Swap OSes

Q I have installed Windows XP Professional on both my hard disks. Can I reverse the order in which the OS choice is displayed in the OS option menu?

Hemant Sahi, via e-mail

A All you need to do is edit the boot.ini file, which resides in the root of your system drive. Enter "%systemdrive%/boot.ini" into the Run dialog box. Boot.ini will open in Notepad. The file is divided into two sections—"Boot loader" and "Operating Systems". The two OS options for your PC will be mentioned under "Operating Systems", in two lines. You can edit this and reverse the order of how the OSes are displayed. In order to change the default OS, change the text in the line next to "default=" to that which matches the OS into which you wish to boot first.

Codec Issues

Q I used Windows MovieMaker 2 to create some movie files. When I copied the files to a Compaq Presario laptop, the files I'd created played on the laptop as audio files instead of as videos. All I could view were some visualisations. They'd worked perfectly on my computer. The Compaq laptop had Windows Media Player 9 installed on it.

Swathy Sudarsanan, via e-mail

A Windows MovieMaker 2 uses Windows Media Codec 10. The Compaq laptop which had WMP 9 installed could not play your files because these codecs were not installed. In

order to play the videos you created, you need to install Windows Media Player 10, which includes Windows Media Codec 10.

Access Gone Awry

Q I was working on Microsoft Access when there was a sudden power failure, and all my data got deleted or corrupted. Is there a way to restore data from corrupted Access files?

Sajan Mishra, via e-mail

A There are several utilities that attempt to recover corrupt MS Access files. One such utility is AccessFIX from Cimaware Software, which can restore damaged database files and rebuild table data even if the files are password-protected. You can download a free demo from **www.cimaware.com**.

Sticky Windows

Q I've got keyboard problems. When I press [D], all open windows get minimised. When I press [M], the active window is minimised. When [U] is pressed, the utility manager opens. On pressing [L], my computer gets locked. I have these problems even when several applications are open. I even formatted my hard drive and re-installed Windows, but I'm still facing this problem!

Bhabatitdev Das, via e-mail

A The only possible cause of your problem is that the Window key of your keyboard is stuck. This happens because of dust accumulating in the keyboard, and the keyboard getting dirty in general. Try to release the key, and if possible, clean and service your keyboard because this problem may occur with the other keys as well.

LAN Woes

Q I have a Pentium IV on an Intel 915 motherboard with onboard LAN (Intel Pro VE 10/100), and I'm using Windows XP SP2. The drivers for the LAN were successfully installed from the motherboard's driver CD, but XP always shows that the network cable is unplugged.

Rajiv Chopra, via e-mail

A This can happen when there is a link speed mismatch between that set for the network adapter and that available on the network. If you do not know what the speed of your local area network is, you can try setting various speeds for your network adapter. To do this, open 'Network Connections' from the Control Panel. Right-click on the network

Set the link speed of the network adapter

Use Gimp 2 For Windows

The Gimp is advanced image software for Unix/Linux. Here's how to use it on Windows

Anup Nair

Most of those who work on a Windows-based machine use Adobe Photoshop as their primary photo editing software, while others are satisfied with simple editing software such as IrfanView. Those who use Unix/Linux-based OSes use 'The Gimp'—GNU Image Manipulation Program. This software on a Windows machine can mean the power of Photoshop for free!

The Gimp is free, so anyone can download, install and use it. The source code is also available for those keen on recompiling the software. Let's not dig into the intricacies of open source and recompilation, and concentrate on getting The Gimp to work on a Windows machine!

This workshop will also introduce you to the Gimp's *nix interface. We can't cover the entire process of editing an image, but we're sure you'll be able to do it yourself once you've understood the purpose of the tools in The Gimp.

STEP 1 Why Do I Need GTK+ When Installing The Gimp?

Every operating system has its own native graphic library. For example, Windows is based on the Win32 API, Linux's KDE is based on the Qt graphic library, and Gnome is based on Gtk+. It therefore becomes difficult to implement a software that will have the same user interface on different operating systems.

Keeping this in mind, many software such as Gaim, Dia, OpenVPN-Admin, etc. are compiled to run with Gimp Tool Kit (GTK+), which is a multi-platform tool kit for creating a graphical user interface. GTK+ creates a runtime environment for such software so that they can run on Linux and Windows-based OSes with negligible changes to its compilation.

It is important to check which version of GTK is ideal for the software you want to install. You can download both GTK and The Gimp for Windows from **http://gimp-win.sourceforge.net/stable.html**.

After downloading the two executables, install GTK first and then proceed with the installation of The Gimp. The installation wizard will guide you through a simple installation procedure, but make sure you've selected 'Full

Installation' under 'Select Components', and do not associate any file type with The Gimp. Both the above-mentioned choices are the default.

After the installation is done, Gimp will start a customisation process by which it will create a temporary folder for its files and a swap space—just follow the instructions and you are done with setting up The Gimp 2.

STEP 2 Familiarising Yourself With The Gimp

A regular Photoshop user will get accustomed to The Gimp in no time. The Gimp starts by loading two floating windows—one is the main 'The Gimp' window and the other for 'Layer, Channels...'

Closing the main 'The Gimp' window will close all other associated windows, but you can close the 'Layers, Channels...' window without affecting any other Gimp windows. Do [Ctrl] + [N] to open a new file, or [Ctrl] + [O] to open an existing file. The workspace with a new file or a chosen one opens in a separate window; as all these windows are detached from each other, they appear to be floating on your desktop.

The folder browser of The Gimp is new to Windows users, but it's not complicated. The left section shows the root (the parent folder); the central section displays all the files and folders present under a selected root partition/folder; and the right section shows a preview of an image if any is selected.
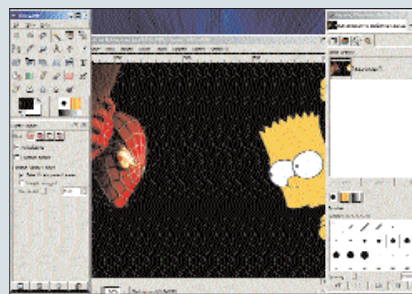
The Gimp windows are detached so they appear to be floating on desktop

STEP 3 A Demonstration

Let's move on to the tools section. 'The Gimp' window contains the main 'Gimp tool' panel and the 'Tool options' panel. The 'Tool options' panel allows a user to change a tool's set-
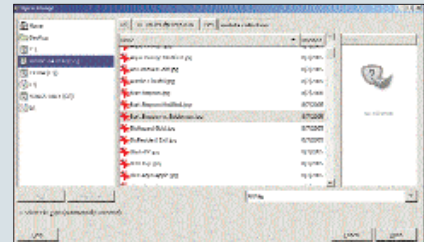
The folder browser of Gimp is unlike Photoshop

ting such as brush size, opacity, colour etc. if the paintbrush is selected. The tools can be categorised into 'Selection tools', 'Sizing tools', 'Content tools' and 'Other tools'.

The 'Hand-drawn' selection tool is similar to Photoshop's Lasso tool. Choose this tool from the Gimp tool panel and, keeping the left mouse button pressed, draw a selection on the working image. The selection is marked as a dotted border.

Many other tools such as 'Fill with paint/pattern' (identical to Photoshop's Paint Bucket tool) can be used in conjunction to alter the selected area.

The Gimp tool options

Using 'Fill with paint/pattern' and opting for pattern fill from the 'Tool Options' panel, you can change the black background to a pinstripe pattern. Almost all the tools work similar to those of Photoshop, making a migration to this free and powerful utility a cakewalk.

STEP 4 Saving an image

To save an image, use File > Save in the image window, and then choose 'Save as' or 'Save'. If the image is being saved for the first time, select a destination folder to save your work to. By default it saves in the current location; notice the 'Browse for other location' and 'Select file type' options, expand boths options and experiment.

Now that you have a brief idea about 'The Gimp' for Windows, let loose your creative talents to explore this free software! ■

My Computer Is Deaf!

Q While recording a program on a TV-Tuner card through cable on my PC, it only records video and not audio. However, while watching TV, both video and audio work properly. My PC configuration is as follows: Windows XP with SP2, P IV 3.2 GHz, 1GB of RAM, a Samsung 160 GB hard disk and an Asus TV FM Tuner card. I use InterVideo WinDVR to capture.

Dipak Pimple, Via e-mail

QUESTION OF THE MONTH

A While using video capture software such as InterVideo WinDVR, you need to specify the audio source if it is not automatically detected. To do so, open InterVideo WinDVR, right-click anywhere in the video window and click 'Setup'. Navigate to the 'Record' tab. Here, you will be able to select the audio source. Select 'Line-In' as the audio source.

The second thing to check is whether the Line-In volume of your sound card might be set to zero, or it might even be muted. Before you use any third-party PVR software, ensure this is not the case. To find out if this is the problem, double-click on the volume icon in the system tray. See if the Line-In is low or muted. Now click **Options > Properties > Recording** and click **OK**. Check the box next to Line-In, and raise the volume to a comfortable level. Close it and launch the PVR program, and under Options, check if Line-In is selected as the audio source. Also check its volume level there, if it exists.

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adapter and click 'Properties'. Now click 'Configure'. In the window that opens, click 'Advanced'. Against 'Link Speed/Duplex Mode', select different speeds one by one to see which works. Set the highest speed at which the network adapter works.

BIOS Gone Boom

Q I got the latest BIOS for my motherboard—an Asus P4S800-MX/s—from the Asus Web site, and used the Asus EZ Flash utility to flash it. Everything during the flashing process went well, and the computer said it was successful. But when I tried to reboot, I was unable to, and I had to use my support CD to try and recover my BIOS.
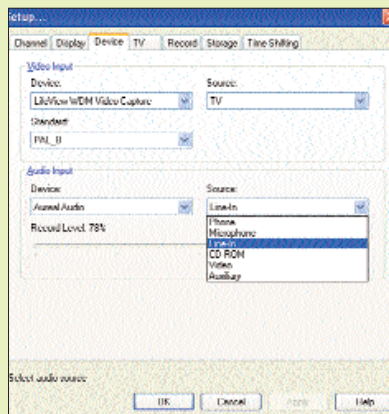
After erasing the BIOS while flashing it, it suddenly said there was a "data compare failure", and it stopped. I tried even older BIOS versions, but the same problem occurs. I used the Aflash utility, but nothing seems to work. Do I actually have to get a new motherboard? The error message that shows up on my screen is "BIOS ROM CHECKSUM ERROR."

Vinay Krishna, via e-mail

A Though this is a rare case, chances are your BIOS chip has developed a fault, and it needs to be replaced. If your motherboard is under warranty, you may avail of this, or else you can try to get the BIOS rewritten by a BIOS writer. Rest assured, there is no need to buy a new motherboard!

Sessions, Volumes, Tracks

Q My system is running Windows XP Pro (SP2). I want to know how I can access different volumes/tracks on a CD—that is, after creating a multisession CD, how can I access a previous session on the disk? I know the method in Windows 98, but that method doesn't work with XP.

Nishank Gupta, via e-mail

Get Help Now!

E-mail us about your computing problems along with your contact details and complete system configuration to **sos@jasubhai.com**, and we might answer them here! Since we get more mails per day than we can handle, it may take some time for your query to be answered. Rest assured, we are listening!

A Download the Windows 2000/XP version of Multimounter from **ftp://ftp9.nero.com/attach/Multimounter_2k_xp.zip**. Run Multimounter, and open the properties of your CD drive. Select the 'Volumes' tab. Each burn session will show up as a separate volume, with a checkmark indicating the volume presently active and accessible.

Select the volume or session you want to access, and click 'Apply'. You may need to refresh your Explorer window before the change shows up. You'll only be able to access one session at a time, not all the files at once.

Password Prompts

Q I have Windows XP Pro installed. Every time I log into Windows, I get a username and password prompt even though I haven't set a password. As a result, I need to press **[Enter]** every time I boot into Windows. Is there a way to eliminate the username and password prompt?

Ashish Rana, via e-mail

A You will need to edit the Windows Registry. Proceed only if you know what you are doing, because one wrong step could make Windows unbootable.

In the Registry editor, navigate to "HKEY_LOCAL_MACHINE\Software\Microsoft\WindowsNT\CurrentVersion\WinLogon". In the right pane, double-click on the string "DefaultUserName" and change the Value data to your username. (If the string is not present, create it.) Similarly, change the strings "DefaultPassword" and "DefaultDomainName" to your password and domain name respectively. Finally, delete the string "AutoLogonCount".

The next time you start Windows, you will not be asked to enter a username and password. ∎

The Display Dilemma

When it comes to monitors, CRT or LCD is the biggest decision, but there are tonnes of brands and models out there too. So what did Agent 001 settle for?

There are two things on my office desk I absolutely adore—my Eizo monitor and my Creative 4.1 speakers. Both these have a special place in my heart because of their antique value and the performance they deliver despite their age.

That monitor has been on that desk for nearly 10 years now, and is probably the only 17-incher I've come across that scales up to 1600 x 1200 @ 60Hz. Unfortunately, age is catching up with the Eizo, and much as I hate it, I have to switch to a newer monitor before the display artefacts render me visually challenged.

You've got to put a lot of thought and research into buying a monitor, because once bought, it tends to stick around on your desk for a really long time—and also because there are so many choices. And with just Rs 15,000 in my pocket, which was alotted by the accounts department, I had to make an informed choice.

I was tired of using a 17-inch monitor, so my initial thought was of going in for a 19-inch CRT, since I was sure of finding one within my budget. However, with LCD prices falling, I was also somewhat sure of getting a nice LCD at around the same price...

Samsung and LG over the years have grown to be the most popular brands, followed by Philips and Acer. After a period of dormancy, View-Sonic has again made an appearance. Sony monitors are difficult to find; so are NECs. BenQ is coming up with some good models in its TFT line-up.

No matter what shop you enter, you're sure to be presented with a Samsung or an LG when you ask for a monitor. Samsung seems to be the standard with almost all vendors; their CRT range starts from Rs 4,500 for the 15-inch model, and goes up to Rs 25,000 for the 21-inchers, the most popular ones being the 17-inch SyncMaster 793 S/DF that retails for Rs 5,500/6,500 (DF models offers the full-flat tube). The 19-inch SyncMaster 997DF was Rs 14,500, and I was tempted for the first time.

LCDs from Samsung still sell at a premium, and a 15-inch LCD will set you back by Rs 18,500; similarly, a 17-inch Samsung LCD retails for Rs 26,000.

Samsung and LG are the most popular brands, followed by Philips and Acer. ViewSonic has made an appearance. Sonys are difficult to find; so are NECs. BenQ is coming up with some good models

LG has an expansive line of monitors. The 15-inch 500G CRT retails at Rs 4,300, whereas the 17-inch 700E retails at Rs 5,200. (If you're looking for a 19-inch LG model—well, they're not available any more.) The full-flat CRT models cost nearly Rs 500 to 1,000 more. LG has some value LCD monitors too—their 15-inch L1515s is at Rs 10,500, and their 17-inch L1720B retails for Rs 14,750. LG doesn't have any models in the 19-inch LCD category, either.

ViewSonic has both CRT and TFT monitors ranging from the 15-inchers to 19-inchers, and as expected, they looked splendid. The 15-inch E50 CRT retails for Rs 4,400, and the 17-inch E70 goes for Rs 5,600. The 19-inch E90, too, looks stunning. Do look out for sub-models in the 19-inch series—they're priced according to features; for example, the base model retails at Rs 12,000, and the flat-screen model goes up to Rs 16,000.

In the LCD panels, you can get a 15-inch LCD for as little as Rs 10,250. A 17-inch retails at Rs 14,500, and a 19-inch will set you back by Rs 21,500. (Availability of ViewSonic monitors, however, can be a problem in smaller cities.)

Philips and Acer compete in the value segment, and offer great value if you are on a shoestring budget. The 15-inch CRT from Philips—the 105s—and the Acer AC511 retail at Rs 4,500 and Rs 4,299 respectively. Similarly, the 17-inch CRTs, the Philips 107s and the Acer AC711, come for Rs 5,200 and Rs 5,299 respectively. 19-inch CRTs will set you back by Rs 11,000 and Rs 12,999 for the Philips 109E and Acer AC915 respectively.

Acer's 15-inch AL1500 LCD comes at a palatable Rs 10,500; so does Philips' 150s. When it comes to 17-inch, Philips beats Acer on the pricing front by a small margin—the 170s from Philips retails for Rs 14,500, Rs 500 less than Acer's AL1900.

Keeping in mind my limited desk space, I opted for a 17-inch LCD. This offers nearly the same viewing area as a 19-inch CRT, but I won't be able to run it at very high resolutions. I wasn't able to wangle a deal, though, and settled for the list price of the Philips 170s. ⊠
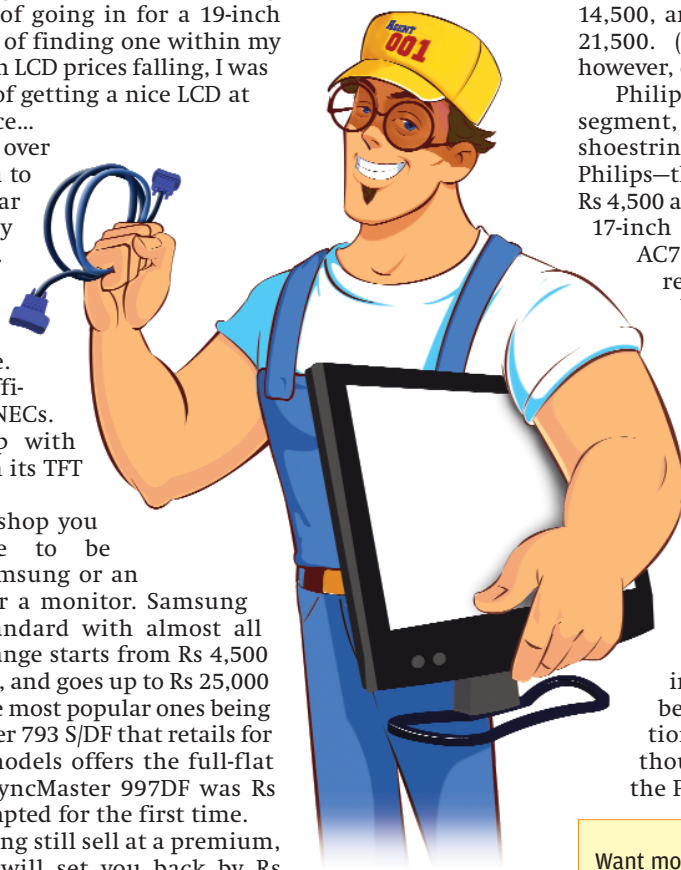
Illustration **Pradip Ingale**

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

Pondering Printers

Q I'm planning to buy a laser or economic inkjet printer. Can you suggest one? The printer should have a card reader and networking capabilities.

K Mugilan

First ascertain the role of the printer. Do you need a high-volume printer or a casual printing solution? Laser printers will keep running costs down, but they're devoid of features such as card readers and LCD screens. You will, however, find network capabilities on laser printers.

A mono laser printer will cost you anywhere between Rs 10,000 and 15,000 depending on the features it offers. Look for the Canon LBP-2900 or Lexmark E230. A colour laser will set you back by at least Rs 40K; we suggest the Samsung CLP-500.

Card readers allow you to print photographs without the need for a PC; however, they are available only on photo printers, which in my opinion won't suit high-volume printing needs. If you do want one, we'd suggest the Lexmark P915 or the Epson R310.

The Cheapest Possible PC?

Q I need a PC just to run tutorial software for an exam, and I want to assemble the cheapest possible PC for this purpose. Configuration, please...

Sidharth Sen

You might want to consider a Celeron 2.53 GHz processor, a Foxconn 865M01-G-6LS motherboard, 256 MB of DDR RAM, an 80 GB hard disk, a 15-inch monitor, a Sony CD-ROM drive, a Logitech keyboard and mouse combo and an ATX cabinet. This configuration will cost you around Rs 19,000 while giving you decent performance.

If you need the *cheapest* deal, I'd suggest the Mercury PVCLE266M-L, which has a VIA C3 Samuel 2 CPU onboard. It supports DDR RAM and has on-board graphics, sound and even LAN. I would like to remind you, though, that you'll get very low performance from this system—so buy this only if you want to spend not a penny more than necessary. This motherboard-CPU bundle, along with the other components I've mentioned, will cost you about Rs 15,000.

Have Money, Will Upgrade

Q I have a Celeron 1.7 GHz CPU with 128 MB of DDR RAM. I want to upgrade. Should I go for a DVD player and 256 MB of RAM, or for 2.1 or higher speakers with 256 MB of RAM? I have to choose from one among these two options.

Rocky

Your PC just doesn't have enough memory. You should first go for the 256 MB memory upgrade—a single 256 MB DDR memory module will cost you about Rs 1,450. As for the option between a DVD drive and a 2.1 speaker set is concerned, it depends entirely on what *you* want! A good 2.1 speaker set from Creative or Artis would cost Rs 2,000, and a DVD drive would cost Rs 1,700.

> As far as ergonomics is concerned, mechanical keyboards cannot be said to have any advantage over membrane keyboards

MP3 Player: Flash Or HDD?

Q I want to buy a MP3 player with a minimum capacity of 1 to 2 GB from a reputed brand. My budget is a modest Rs 10,000. Also, please give me some general information on MP3 players.

Shantanu Mishra

There are two types of MP3 players available—Flash-based and hard drive-based. Flash-based players are compact and have a maximum capacity of around 5 GB. Hard drive-based MP3 players offer larger capacities, but are generally more expensive and won't fit your budget.

The iRiver iFP-799 is a 1 GB Flash MP3 player that retails for around Rs. 11,000. Samsung's YP-C1 will set you back by Rs 7,900 for 1 GB.

Apple has officially phased out the iPod mini, but these are still available in the market. If you're lucky enough, you might get one for a good price.

Too Much Typing

Q I've been experiencing a lot of pain in my wrists, and I think it's because of the eight hours of typing I do daily. I'm using a Logitech membrane keyboard; I want to know what keyboard suits my work best. Do mechanical keyboards have an advantage over membrane keyboards as far as ergonomics is concerned?

Toney Jacob

You should first mend your sitting position. Your arm—starting from your fingers to the elbow—should rest on a flat table so that the wrists are not strained. Have a look at the *Towards Comfort* article in this issue for more on ergonomics.

As far as ergonomics is concerned, mechanical keyboards cannot be said to have any advantage over membrane keyboards.

Try out the ergonomic keyboards from Microsoft—they might just ease the wrist pain.

In Quest Of The Latest Games

Q I want to buy gaming titles such as *UT 2004*, *Chronicles of Riddick: Escape from Butcher Bay*, *Swat 4*, and more. Planet M stocks quite a few titles, but not all. Where in Mumbai—apart from Planet M—can I find new gaming titles?

Mandar

You can purchase gaming titles from the Crossword stores, which are spread across the suburbs. You could also try online stores such as fabmall.com, rediff.com, and indiatimes.com.

Here are the names and contact information of the big game distributors in India. ∎

Indian Game Distributors

Name	Phone	Web Site
Milestone Interactive	022-28203319	www.milestoneinteractive.com
Sujata Softech	022-22846574	www.sujatasoftech.com
Worldwide CD-ROMs	022-56973894	www.wwcdrom.com
Gayatri Impex	022-56973895	www.gamemasti.com
E-Xpress	022-28870017	www.e-xpressindia.com

Righttoinformation.gov.in

Before you head to a Public Information Office to exercise your right, visit the homepage of the Act to gain a better perspective

Renuka Rane

The enactment of the Right to Information (RTI) Act was a turning point in the history of Indian public life. It came into force on 12 October, 2005.

RTI Act gives citizens the right to access information held by or under the control of any public authority. This includes a right to inspect public authority's work, documents, records, and take notes, extracts or certified copies of documents/records and certified samples of the material, and also electronically stored information.

Any citizen can request such information by making an application in writing or via electronic means in English or Hindi, or in the official language of the area, and paying the prescribed fees. The application has to be sent to the concerned Regional Head—the Public Information Officer of the region to which the information pertains, and who shall dispose off the request within 30 days of its receipt.

Your Right To Information

Now, when you actually want to visit the RTI Act's Web site, understandably, you can't expect a jazzy site loaded with graphics. The home page is choc-a-bloc with numerous links such as 'Home', 'Appeal Rules', 'Circulars', 'Feedback', 'Disclaimers', Notification', and 'List of Public Information Offices', among others. Simply access each link and you're bombarded with information.

The body of the page displays what appears to be six prominent speech bubbles that deal with RTI in detail—'What does RTI mean?', 'Who are the Officers and what are their obligations?', 'What information is available?', 'How to request for information?', 'What are the information Commissions?', and 'What is the role of the Central/State Governments?'.

As an example, if you click on the 'Information Commissions' link, it will take you to a page with a list of FAQs. These range from the constitution of the Central Information Commission, their service conditions, functions and reporting procedure.

Useful In Its Entirety

All the above is just what the user would be looking for. You can also download the complete Act in HTML of PDF (English as well as Hindi). This certainly earns the GOI brownie points—the site lives up to its name!

Righttoinformation.gov.in has comprehensive information on the RTI Act

The left side of the page is interesting—it has 10 or so links. These are 'Preliminary', 'Public Authorities', 'Central Information Commission', 'State Information Commission', 'Powers And Functions', 'Protection of Actions', 'First Schedule', 'Second Schedule', 'Circulars', 'GOI Dept/Offices', 'States of India' and 'Districts of India'. If you were to click on 'States of India', you will straightaway be taken to the online directory of the GOI.

In the FAQ section are 30-odd questions that deal with reporting procedures, penalty provisions, jurisdiction of courts and so on.

On The Whole

If we were to focus on the layout, and other aesthetic details, the less said the better. Seen in that context, this site seems a very amateurish attempt; even in terms of other nuggets of information scattered across the site.

But, we're looking at the bigger picture here. Perhaps, streamlining all the facts and details would have made it easier on the users. Well, let's not forget that the site has been recently launched and will improve.

But the fact is that despite this, the information you'll find is comprehensive and extremely useful to all citizens. This is what makes a visit to Righttoinformation.gov.in worth the while. ■
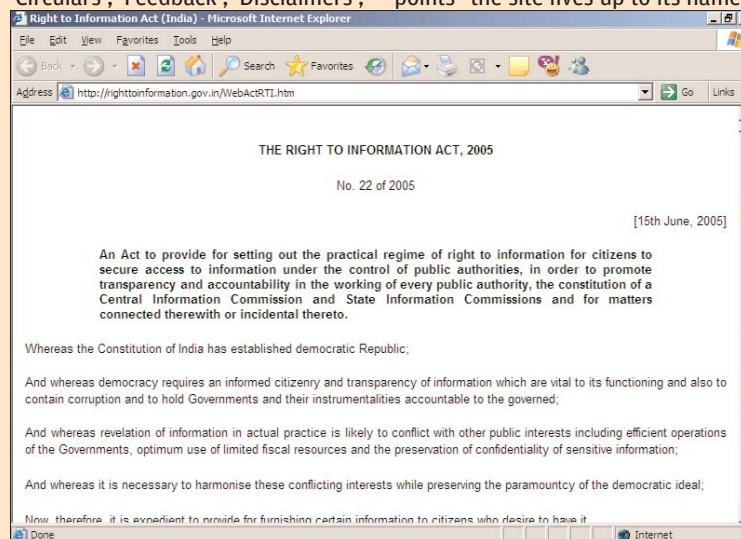
Users also have the option of downloading the RTI Act in HTML format

renuka_rane@thinkdigit.com

How Disk Defragmentation Works

One platter of a hard disk expanded here to show a sector, the smallest unit of storage (in **red**). Several sectors taken together (in **yellow, orange, green and blue**) form a cluster, the smallest unit addressed by the filesystem.
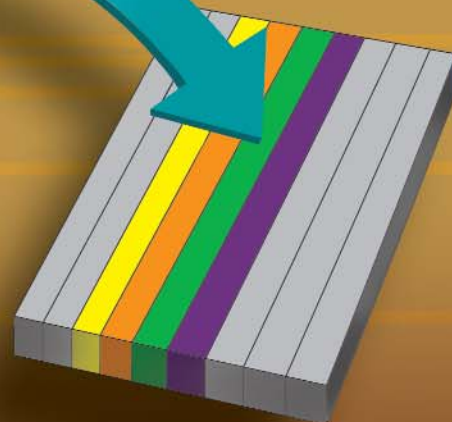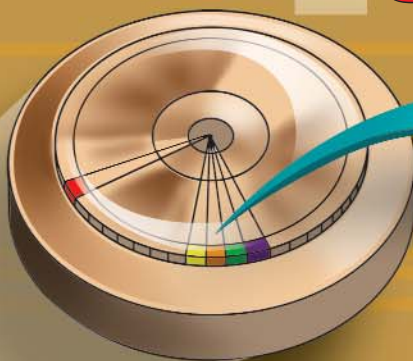
A 2D view of the cluster

1

1. When you freshly install your OS, your files are arranged nicely, starting at the beginning of the drive. The blue and orange areas are occupied. The grey area is free space.
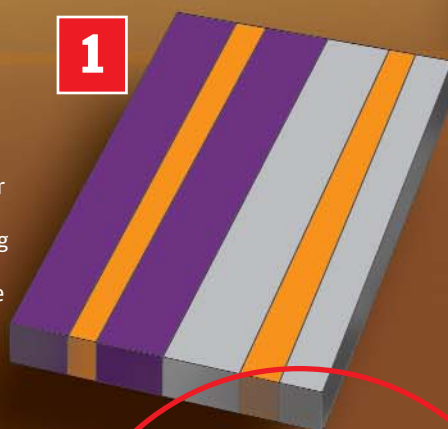
2. When you add a file (represented by the green space above) the OS places it wherever it finds space. The OS could have placed it contiguously, but it didn't.

2
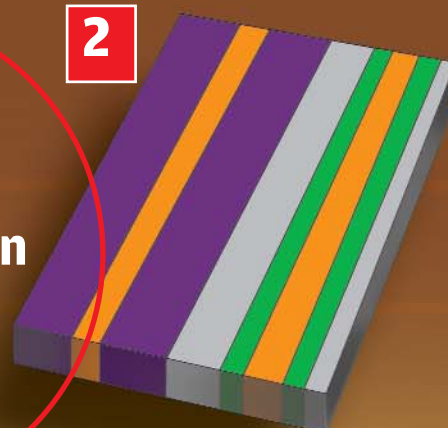
Fragmentation

3

3. Over time, this is what your hard disk begins to look like, with files scattered all over the place, placed non-contiguously.

Imaging **Chaitanya Surpur**
Text **Ram Mohan Rao**

1

1. We have a blue file and an orange file. Both are fragmented. The first part of the orange file has data in it that points it to the next part, and so on. The OS can thus figure out how to access the entire file.

2. When you begin defragmenting the drive, the defrag program calls the filesystem API (Application Program Interface) to move the first part of the orange file to a different location. It makes a best effort to place it such that the orange file will eventually become contiguous.

2

Defragmentation

3

3. The OS knows which part of the orange file belongs where, as mentioned in step 1. Eventually, all of the orange file is accessed and placed contiguously. The same happens with the blue file. There needs to be enough free space for this to happen successfully.

The earlier example showed what happens with, say, Windows defragmenter. Better defragmenters such as PerfectDisk would arrange the orange and blue files this way, beginning at the start of the drive—so they can be accessed faster.

digit BUYER'S guide

A Complete lowdown on 22 categories to help you make that crucial buying decision

ACCOUNTING SOFTWARE

Every entrepreneur has productivity in mind and using technology to achieve it is definitely a not a bad idea—but if the choice and implementation is not done wisely, the same idea can be detrimental to business goals.

Use of accounting software to enhance your business is one such implementation. There are many software available in the market for this purpose, but it is not necessary that a particular package meets your needs. For example, a package could lack expandability. Similarly, the most expensive package may not be the right choice either. There are several questions you need to ask the software vendor before you decide on a software.

Questions to ask the dealer

I want to employ access control to prevent certain users from editing and/or viewing financial data. Is such a feature available?

This can be very important, and will help you prevent unauthorised access to financial information of your company. Access control can only be applied if the package supports it. A dealer and the manufacturer's support staff are the right people to ask about this feature.

Can the new accounting software import data from the existing software?

While migrating to a new accounting software, you cannot afford to waste time copying reports and data manually from your existing software. Hence, confirm with the dealer, and if possible, verify with experts or the manufacturer's support team about this feature. This can save you a lot of time.

Ensure that the product you buy is 'VAT ready', as this will be a very important inclusion. VAT has been enforced in the Indian market, and you will probably check for it yourself when you get the bill for the new software!

Will the software run on my current hardware, or will I need an upgrade?

Enquire if any kind of additional hardware or software is needed for the accounting software you want to buy. This need can be upgrading the operating system from Windows 98 to Windows XP, or a hardware upgrade for better processing capability. ∎

Points To Ponder

What are the features or factors of accounting software that I should assess before making the decision to purchase one?

You are expected to have good idea of your business accounting needs, based on which you can analyse the capability, flexibility and expandability of a package. If you are selling a product, it is important that your software be able to track inventory. If you are selling services, the software should have a good client tracking system.

Other than basic accounting required to monitor sales and balance sheets, the rest of the package should include tax reporting, invoicing and pay roll needs. Similarly, the software should also have the feature of expanding with the future needs, for instance, adapting to VAT. Keeping this need in mind, some software manufacturers design their products to include support for upgradation. Features such as supporting ASCII dot-matrix printers, or exporting data/reports into Microsoft Excel and Adobe PDF formats would be the icing on the cake. An Indian-style accounting software could make your accounting experience easier.

I have a dotcom business. Are there any packages that have 'Web store' integration?

Most packages support offline business structures, and there are a few that facilitate integration for a dotcom business. This feature will help you keep track of your online business transactions and generate the necessary reports with absolute ease.

Are there enough professionals proficient in the software?

People involved in this kind of work are trained to use the most popular software packages—those that are installed in most companies, and tutorials for which are easily available at your nearest computer education centre. So, if you are migrating to a package by another manufacturer, first cross-check the availability of professionals for it, or just be sure that the learning curve for the new package is not too steep.

Interface usability... how important should that be?

If you are very dependent on the user interface and want everything at the click of a mouse, you should check demos of the product before you buy it.

Should cost be a criterion?

As a businessman, this can be one of your main concerns. There may be a battalion of cheap and perhaps free accounting software available, but they may not support your needs. Compromising on this means compromising on your productivity. It is advisable that you spend the money that your needs demand. Most feature-rich accounting software cost approximately the same, so you can decide based solely on your needs.
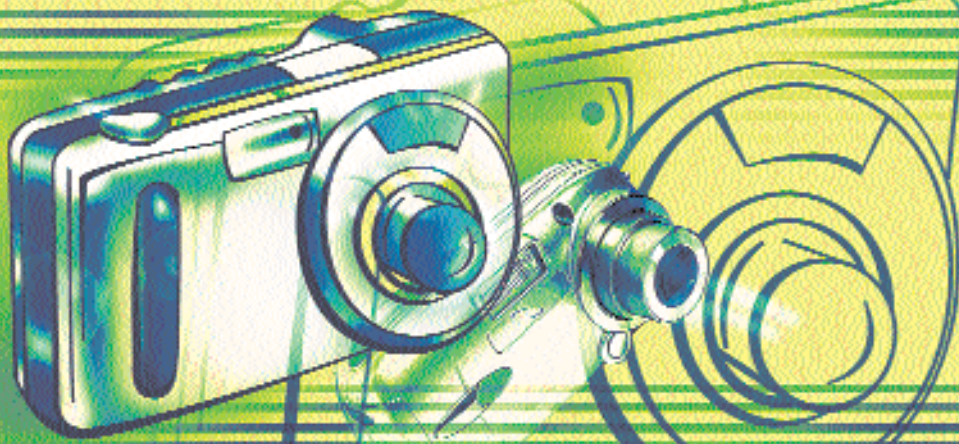
DIGITAL CAMERAS

The digital camera was developed after the invention of the CCD (charge coupled device) which replaces replace film as the light sensor. A CCD is much more sensitive to light than film is, though it lacks the ability to accurately capture the entire range of the electromagnetic spectrum. Digital cameras give you the convenience of clicking away without worrying about film, and the ability to print directly to a printer is sheer convenience.

It's easy to be overwhelmed by the sheer range of digicams available today, but you need not be. What you really need to do is to thoroughly familiarise yourself with the details common to all digicams, such as optical zoom, megapixel rating, and so on.

Questions to ask the dealer

What is the maximum resolution supported by the camera?
The higher the megapixel rating of the camera, the higher the resolution the camera supports.

How much optical zoom is available?
Optical zoom is especially important outdoors to be able to take close-ups of faraway subjects.

Does the camera support manual mode?
The ability to manually set the exposure and shutter speed means more control over the quality of the photograph, which you might sometimes need.

What memory card formats does the camera support?
Try and avoid cameras that support proprietary memory card formats. These usually tend to be expensive. They're also usually hard to obtain. Prefer cameras that support popular formats such as SD, MMC, and CF (Compact Flash).

Does it support recording of video?
Video recording capability is fairly common now. Check for this.

Interesting Facts
Prior to 1973, Texas Instruments had designed a filmless but analogue-based electronic camera, but that, of course, cannot be categorised as a digital camera.

In 1973, Steven Sassoon developed the first solid state digital camera. The camera weighed in at eight pounds and had a sensor in the form of a digital cassette tape at 0.01 megapixels. CCDs had only just appeared at that time, and their application in this field hadn't been explored.

Sassoon's digital camera consisted of an analogue-to-digital converter, a movie camera lens, and CCD chips. 1981 saw the launch of the first commercial digital camera.

Usage Tips
▶ Do not expect too much from digital zoom; the photo quality deteriorates when you start using it.
▶ When using zoom, see if you can mount the camera on a tripod, because even mild shakes are amplified when taking a zoomed shot.

▶ Always remember to carry extra batteries with you while travelling.
▶ While photographing with a long exposure time, use a tripod to steady the camera.
▶ Turn off the flash when not required to conserve battery power.
▶ Remember that often, shooting at the highest quality is not necessary, and a lower-quality photo will look just as fine—and it will occupy less space. This, of course, translates to more photographs before you need to do a transfer.
▶ In many cases, you should do fine using the viewfinder instead of the LCD screen for previewing. This will conserve battery charge.

The Future
Film is on its way out, and it has been predicted that by 2008, digital cameras will completely replace film cameras. CCD technology, which is currently used in most consumer digital cameras, is being challenged by CMOS (complementary metal oxide semiconductor) technology. ∎

💡 Points To Ponder

Should I consider a high-end camera?
Select a high-end digital camera only if you are very serious about digital photography - an amateur might never use some of the features of such cameras.

Is the weight of the camera important?
If you travel a lot with your camera, you might want to get yourself a light-weight camera. On the other hand, a heavier camera is steadier to hold and reduces the problem of camera shake.

How much memory should it have?
There should be at least 16 MB of memory to accommodate a decent number of photos. Of course, this depends on the resolution at which the photos are shot.

What about connecting directly to a printer to print photos?
Look for a digital camera that supports standards such as PictBridge—this standard allows you to print photos directly to a compatible photo printer without using a PC.
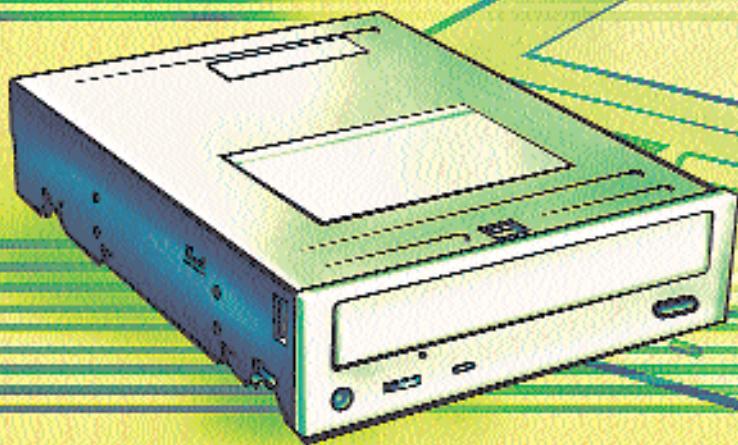
DVD-WRITERS

The fastest growing segment in the storage industry today is, without a doubt, the DVD-Writer segment. In fact, they're the best thing to have happened to the storage industry after CD-Writers a few years ago.

DVD-Writers have raised the optical backup capacity of desktop PCs to a minimum of 4.7 GB from the 700 MB of a CD. Users can now create high-res digital video content using DVD-VR technology, which allows the capturing of video to a DVD on the fly.

Though there were a lot of initial compatibility issues between the DVD formats supported by various companies, the differences have since mostly been ironed out.

Questions to ask the dealer

What are the different formats supported by the drive?

Look for drives supporting DVD+R, DVD-R, DVD+RW, DVD-RW, DVD+R DL, and DVD-R DL. An older-generation drive may not support anything double layer, since they existed at a time when DL was only on the drawing board.

What is the form factor of the drive?

Most optical drives today are available in the half-height form factor. Such a drive is much shorter than a traditional full-height drive. Installing such a drive is easier as it fits in almost any cabinet and is less likely to interfere with the motherboard. This also leaves the interior of the PC with more breathing space.

What accessories come bundled?

Many manufacturers bundle writing software with the drive. Some also bundle data cables and bezels.

Usage Tips

▶ Make sure that the PC is not over-clocked before you plan a CD/DVD burning session. Overclocking affects the speed of IDE devices too, and this may lead to the DVD not writing properly.

▶ Some media have capacities above the standard. In order to write to such media, the DVD-Writer as well as the writing software must support overburning.

▶ Videos from a DV-Cam can be captured directly to certain DVD-Writers, but for this, the DVD-Writing software must support the DVD-VR format. This is available on the DVD+R specification, so drives supporting DVD+R can be used for this.

▶ Some DVD-Writer manufacturers specify that certain brands of media may have some problems with their drives. Referring to the DVD-Writer's manufacturer's Web site is a good thing to do.

▶ Check if DMA mode for the drive is enabled in Windows XP. This will enable quicker data transfers at minimal load to the CPU. Instead of a 40-conductor cable, use an 80-conductor one.

▶ Check for firmware updates for your optical drive on the manufacturer's Web site. These can contain bug fixes and address other issues.

Interesting Facts

The analogue optical disk was developed way back in 1958 by David Paul Gregg and it was primarily meant to record video. The Laserdisc standard for movies was later developed from this standard in 1978, and suddenly Laserdisc video players started appearing in the market.

SAMSUNG

The world saw the launch of the CD drive in 1982, which was a milestone, and the CD drive became a piece of household equipment. DVD players made their appearance in 1996 in Japan and in 1997 in the US. Creative Labs, Diamond Multimedia and Hi-Val released PC DVD-ROM drives bundled with hardware decoder cards in 1997.

The Future

The DVD was thought to be humongous, capable of storing a minimum of 4.7 GB and up to 17 GB of data. As technology manages to squeeze in more and more data into the same dimensions, the hunger for storage space only seems to have increased! This has driven the development of newer standards such as Blu-ray and HD-DVD, which are a hot topic of discussion these days.

Few people doubt that one of these two will dominate the optical disc storage industry in the near future. The only question is, which of the two will it be? It's difficult to say. Refer *The Battle Of The Blue* in this issue for more on HD-DVD and Blu-ray. ■

💡 Points To Ponder

Does my PC meet the minimum system requirements for a DVD-Writer?

A DVD-Writer will work with any PC with a minimum of a 400 MHz processor, 32 MB of RAM, and hard drive space enough to store the data to be written. In addition to this, there should be a free IDE connector, unless you're buying an external drive.

Should I buy an internal drive or an external drive?

For a home user, an internal drive is the best choice from every angle, be it cost, performance or features. An external drive is useful for people such as PC hardware professionals.
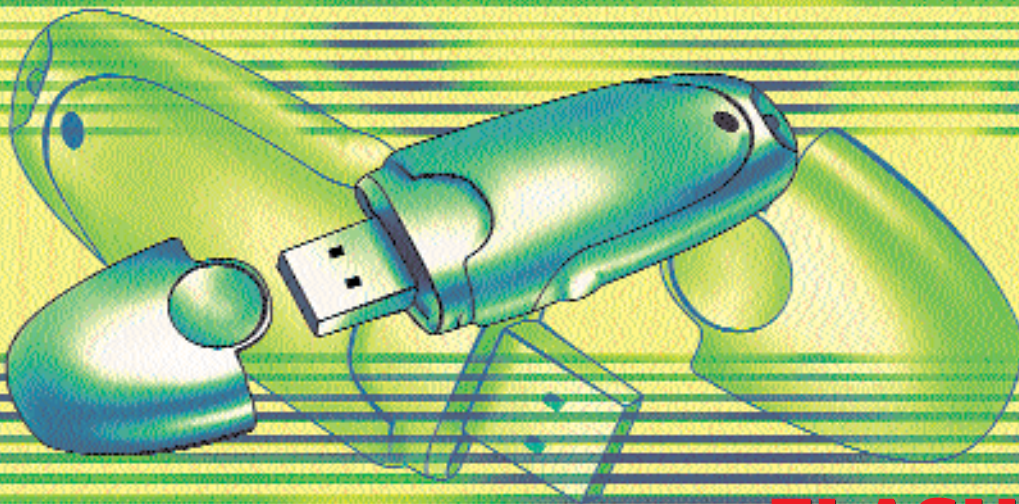
FLASH DRIVES

How many of us use floppy drives and floppies? We wouldn't be too presumptuous in saying that people don't even think of buying one today. People mostly transfer files via the Internet using e-mail. If you do not have an Internet connection, you should consider investing in a Flash drive instead of using floppies or even rewritable CDs.

Flash drives are not only convenient to use, but also much faster, more reliable, and have far greater capacities than floppies. 'Chewing gum stick'-sized pen drives are durable (if used properly), and large capacity drives (1 GB and above) can be used to store personal information when using a shared computer. Current generation BIOSes also support booting from a USB Flash drive.

Questions to ask the dealer
Will the Flash drive work on Windows 98 and Linux?
Flash drives require a mass storage class driver. This driver class is included in Windows ME, Windows 2000 and Windows XP by default. So, users will have to download the driver for Windows 98 from the manufacturer's site. The USB Flash driver will work in the Linux operating system running kernel 2.4.6 and above. You may have to mount the partition if it is not auto-mounted.

Is the Flash drive bootable?
For booting through a Flash drive, the BIOS must have the option to boot such a device—check your motherboard manual. Moreover, the device itself should support 'bootability'; consult the dealer before you assume this support. If this option is supported, the manufacturer will provide the necessary tools to make the drive bootable.

What type of warranty, if any, is preferable?
Warranties differ between manufacturers. Local manufacturers may or may not provide a warranty, but the known brands do. If price is not an issue, opt for a good brand that offers a replacement warranty of at least one year.

Interesting Facts
A USB Flash drive is made up of a NAND-gate circuitry-based Flash memory (a form of EEPROM) integrated with USB 1.1 or 2.0 interface. A Flash drive derives the power for its operation from the host USB port. A USB Flash drive has several names, including "Pen drive," "Thumb drive," "USB key," and more.

IBM invented the Flash drive way back in 1998 as a replacement for floppy drives in their ThinkPad line of products, but they never patented it! In the year 2004, WIZO (pronounced Vee-Zoh), a German punk-rock band, was the first artist to release music in MP3 format on a USB drive titled the "WIZO Stick-EP".

Usage Tips
▶ Always cover the USB connector of your Flash drive with the cover provided

by the manufacturer in order to protect it from damage.
▶ When removing the Flash drive from the USB port, always un-mount the drive, that is, use the 'Safely remove device' option that Windows provides.
▶ Use write-protect, if available, with your drive to avoid accidental overwrite or deletion of data.
▶ If you are using some kind of security tool, be careful not lose your password.

The Future
In order to reduce the overall cost of Flash drives, semiconductor corporations are working on integrating many features into a single chip. Lower capacity Flash drives are being phased out.

The U3 platform has been designed to transform a simple Flash drive into a USB smart drive; for this, the applications used also have to be U3 compliant. A U3 smart drive enables a user to carry not only his or her data, but also applications that can be used on any machine, without the need to actually install those applications. ∎

💡 Points To Ponder

Do I need a Flash drive?
Flash drives are meant for those who work regularly on two or more computers. These drives come in a variety of capacities. The primary need of a Flash drive is to transport data from one PC to another. Choose one considering the maximum size of data that you may have to carry around. If you only need to carry around a few small documents, you could, of coure, e-mail them back and forth between, say, work and home. Again, if you don't have a reliable Net connection, consider buying a Flash drive!

Are there many manufacturers for this kind of product?
Yes. Of the companies that sell Flash drives, there are some who contribute to the development of the technology, and some are local marketing companies. It is advisable to buy a Flash drive from a recognised brand.
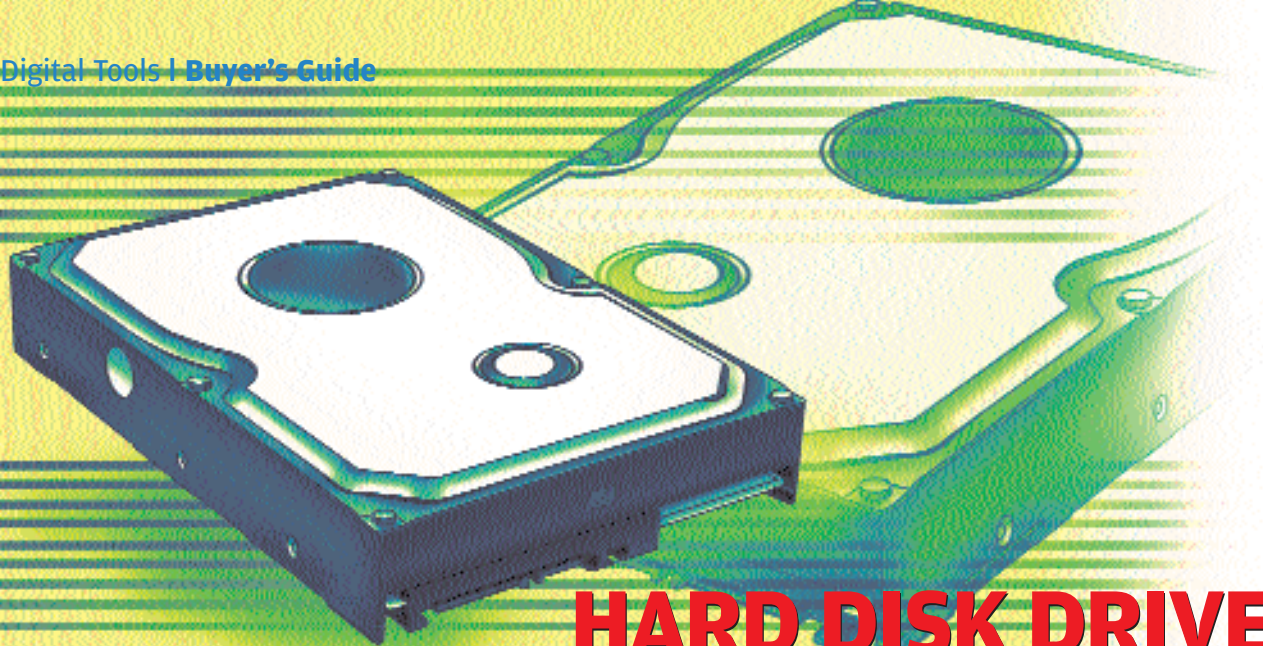
HARD DISK DRIVES

Those who have been associated with computers for the past decade would recollect the 32 GB limit—an indication of how early motherboard manufacturers underestimated the development of storage media. Since then, storage capacities seem to have skyrocketed; even the speed of data transfer has increased steadily. The interfacing technology between the motherboard and the disk drive has seen a major improvement as well.

Questions to ask the dealer

What models do you have?
Although you have a model in mind, you should ask the dealer for any new models that have arrived, and compare the features with the one you've decided on.

Is the drive brand new?
Don't let the dealer con you with a used product. Many users are not aware of bad sectors and they use the drive with the defect—some dealers may try their luck. So check the disk at the dealer's outlet by attaching it as a slave to their test machine and see that the drive is unpartitioned. If possible, perform a disk check using a drive-check utility.

What is the warranty type?
Prefer drives that come with a replacement warranty.

Interesting Facts
IBM's 'Drum' epitomises the amount of research that has gone into developing what is probably the most important component of a PC—the hard disk. You can replace your processor; all it takes is money. But if your hard disk were to crash, what happens to your data?

IBM's Drum was a rotating cylindrical device on which data was stored as magnetic patterns. It was replaced with hard drives that resemble the ones we use today, except that they had much lower capacities and slower speeds.

Usage Tips
▶ Internal hard drives are fragile and are not designed to be repeatedly attached and detached from a system. It is advisable that you be extremely careful when transporting your hard drive.

▶ Do not keep the hard drive loose or vertical within your cabinet. Tightly screw in the drive to the cabinet, and do not cover it with any insulating material such as plastic. A hard drive, like most other components in a PC, needs to dissipate heat and needs ventilation.

▶ Only use cables that are recommended by the manufacturer to interface the hard drive with the motherboard. For instance, if an ATA133 hard drive is interfaced using an ATA66 IDE cable, data transfer speeds are affected.

▶ If you are using Windows, an occasional disk defragmentation would not only clear cluttered data, but will also improve the performance of the operating system.

The Future
The growing need for space and speed, especially at server levels, has brought researchers back to the drawing board. The need of the moment is, quite simply, higher data densities.

The single most exciting development we see happening is Perpendicular Recording (PR). PR offers much higher storage capacities. In PR, data bits will be stored "one above the other" as a stack of bits, rather than "side-by-side" as they are today. We're keen to get our hands on a drive that uses this technology—and we're sure you are, too! ∎

💡 Points To Ponder

How large a hard drive do I need?
A good way to decide this is to see the amount of times you have burnt CDs to shift data off your drive. If you do not have a CD-Writer, try and remember how many times you wished you had one, and buy a hard drive accordingly. This question, though, is often decided more by the budget than by space requirements. Still, if you can afford it, buy the largest hard drive you can afford—you won't regret it!

What do I look for in a hard drive?
Currently, hard drives are available in two different interfaces—Parallel ATA (PATA) and Serial ATA (SATA). If possible, buy the newer SATA drives, provided your motherboard supports these, of course. SATA drives are faster than PATA, and are generally available in much larger capacities—as much as 500 GB. The rpm factor is very important as well, as is the buffer/cache size. Look for a hard disk with a buffer/cache size of 8 MB or more, and an rpm speed of at least 7200.

What type of hard disk will my system support?
Understanding your system is the most important requirement, because if you buy a SATA hard drive and your system doesn't support it, you will be forced to upgrade your motherboard or exchange your drive for an older PATA one.

Read through your motherboard manual for SATA support, or open up the cabinet and look for the model number and then search the Internet for the model specifications.
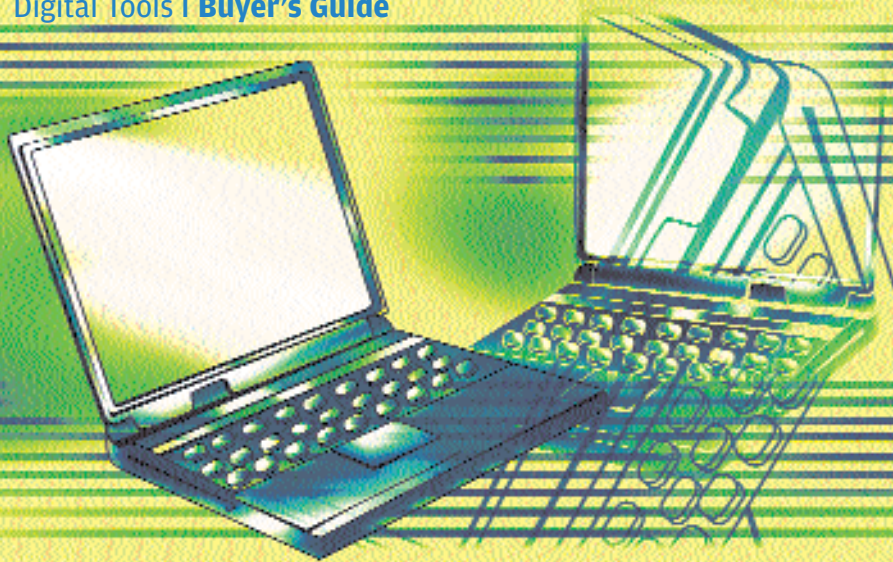
LAPTOPS

Laptops today are powerful enough to take on their desktop counterparts. They come with features such as Wi-Fi and Bluetooth, and sport fast processors—some even come with 64 bit processors. Battery life is increasing. And the price gap between desktop PCs and laptops is reducing at a quick pace.

Questions to ask the dealer
Is it upgradeable?
Though not all the components in the laptop will be upgradeable, some major components such as the CPU and RAM should be. A hot-swappable drive bay will allow you to upgrade the optical drive.
What is the battery life, and is there an extra battery pack?
Ask the dealer if the stated battery life is accurate, in his experience. An extra battery pack is a big plus.
What connectivity options are there?
Look for USB 2.0, FireWire, a memory card and a PC card reader.

Interesting Facts
The laptop computer was invented by Adam Osborne of Osborne Computers, a book company, in 1981. It was called the Osborne 1 and cost $1,795 (Rs 18,000 in those days). It weighed 24 pounds. Epson later released the HX-20, which had a 20-character by 4-line LCD display and an inbuilt printer. In 1989, the NEC Ultralite was released. It weighed just five pounds, and this is considered by many to have been the first notebook-style laptop. The Macintosh Portable was also released that year by Apple Computer, which later evolved into the Powerbook.

Usage tips
▶ Laptops have air outlets to let out heated air. Place the laptop in such a way that there is no obstruction to this outlet.
▶ When you're using the laptop at home or office, consider using a USB mouse and keyboard—these are more ergonomic than the touchpad and the laptop keyboard.

▶ Use the power-saving features of the laptop and of the operating system to extend battery life.
▶ Viewing the laptop's small screen for prolonged periods can be very taxing on the eyes. Consider using a monitor while working in office or at home - many laptops come with a D-Sub connector to connect a monitor.

▶ To conserve battery charge, turn off the Wi-Fi when you're not using it.

The Future
nVidia has introduced MXM modules, which are replaceable graphics cards. Future laptops will use this approach to upgrade the graphics subsystem, just like in desktops. Laptops with OLED displays are not far off. This will result in an improvement in battery life—OLEDs consume much less power as compared to LCDs.

64-bit processors have already made an appearance in the laptop segment. Dual-core processors, too, are making their way into laptops, guaranteeing considerably higher performance than their single-core brethren.

Laptops capable of playing multimedia content off CD and DVD without booting into the operating system are already available.

With the price difference between laptops and desktops fast closing, you shouldn't be surprised to soon see laptops entirely replacing desktops! ■

💡 Points To Ponder

What kind of a notebook do I need?
Home users and students should opt for moderately powerful laptops paying less attention to the portability factor. Business professionals should look for connectivity and removable drives in a moderately powerful laptop that is not only portable but also rugged. Power users such as gamers and multimedia enthusiasts should get a laptop with the fastest possible processor and a 3D graphics card, ignoring portability.
How much battery life should it offer?
If you will be using the laptop while on the move, high battery life should be given prime importance. Two hours is the minimum you should be looking at. Also, look for an additional battery pack.
Is the hard drive capacity enough for me?
Most people should be happy with 40 GB.

Do I need a processor with power saving features?
The latest processors from both Intel and AMD come with power saving features. These have better battery lives.
Do I need DVD reading capabilities?
DVD reading has become a must: DVDs have become fairly common, and many programs will soon be available only on DVD. In fact, look for a Combo drive or a DVD-Writer.
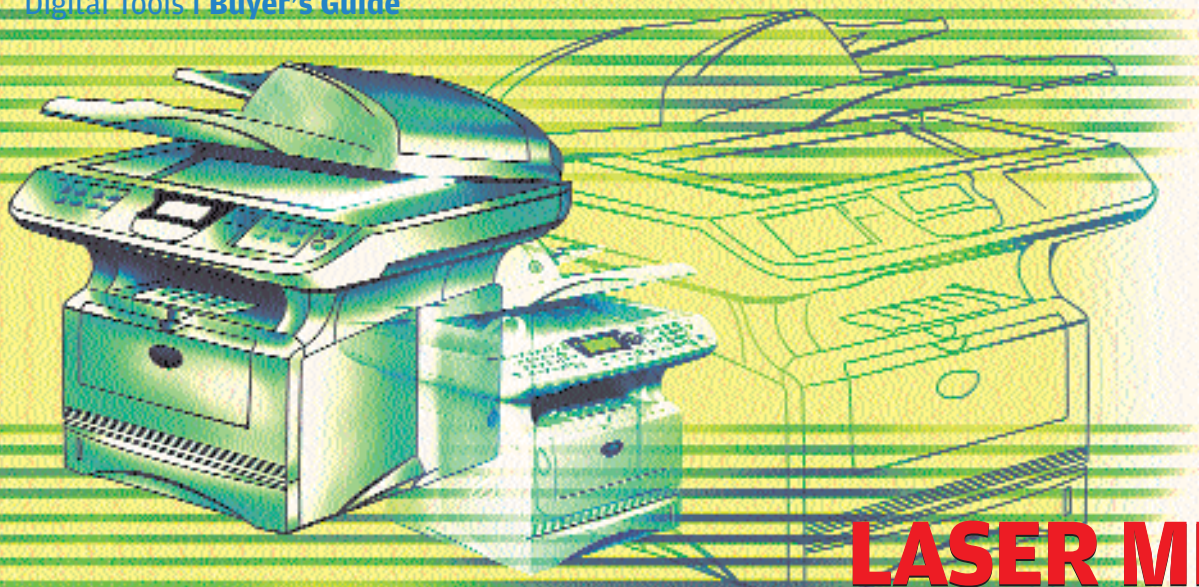### What communication options should I look for?
You should look at Wi-Fi, Bluetooth, infrared, Ethernet, and a modem.
What kind of pointing device should it have?
Choose the pointing device you're comfortable with. While a touchpad is preferred by some, some swear by the pointing stick.

LASER MFDS

An MFD or multifunction device combines the features of copying, faxing, printing and scanning into a single unit. This is a sought-after commodity by small and medium offices because space is of prime importance, and since an MFD packs in the functionality of so many devices in a single unit, it saves that much space and cost.

Laser MFDs are more expensive than their inkjet counterparts, but they offer superior print quality and are much faster. They also require lower maintenance, and boast of a very low cost per printed page. As a result, the popularity of laser MFDs is on the rise. These are basically printer-based MFDs, and hence have a higher cost per page and lower page per minute than copier-based MFDs. But they cost a lot lower than their copier-based counterparts.

A copier-based MFD is nothing but a digital copier with added functionality, and has a separate toner cartridge and drum—whereas a printer-based MFD is less complex, and has these two integrated into a single toner drum.

Questions to ask the dealer

What type of PC interface does it have?
Most laser MFDs support the USB 2.0 interface. However, if you are going to connect it to an old PC, you should look for a parallel interface, which will most likely be the only interface available on that PC.

What is the toner and printer duty cycle?
The printer duty cycle is the number of pages the printer can print in a month at default quality settings. The toner duty cycle is the total number of pages that the toner can print. Needless to say, look for a higher number.

Does it support duplex printing?
Duplex printing means the ability to print on both sides of the paper. This eliminates the need for manually flipping the paper and putting it back in. This is useful for printing booklets, manuals and such.

Does it have networking support?
Small and medium businesses generally have a network consisting of a small number of computers, so you should look for an MFD with network support.

Is the MFD upgradeable?
Pay attention to upgradeability and scalability. Upgrade options will extend the functionality of the device as your needs grow.

What type of warranty is being offered?
Laser MFDs are heavy—lugging them

around is not feasible; make sure your model is covered by an on-site warranty.

Usage Tip
Not all MFDs have the fax feature. If you're not planning on using fax, or if you already have a fax machine, you can save a little by investing in an MFD without the fax feature.

The Future
The next few years will see a lot of exciting innovations in the laser MFD segment. LEP (liquid electro-photographic) technology used in high-end digital printing presses has the potential to revolutionise office and home printing alike. Other innovations such as printing over wireless are already on their way to market. Direct printing from cell phones is another possibility that is being explored. Similarly, there are advancements being made in the field of scanners. And with Wi-Fi gaining popularity in offices, Wi-Fi capable MFDs are something to look forward to in the near future! ■

Points To Ponder

What are the advantages of a laser MFD?
Laser MFDs print at the most economical rate and have the lowest running cost. They are very fast and their print quality is also very high.

Are there any disadvantages of an MFD over discrete devices?
Yes. If, for example, the scanner of the MFD stops working for some reason, the copier also will not function since it depends on the scanner.

What type of an MFD should I buy?
Consider your usage pattern. If you print less and copy more, choose a copier engine-based MFD. If you print more and copy less, opt for a

printer engine-based MFD. If fax is your main concern, opt for a specialised laser fax, which doubles as a laser printer and scanner.

What other features should I look for?
Look for features such as paper capacity, buffer memory, duplex printing, toner save, etc. Make sure the MFD can print on the kinds of paper products you use, such as envelopes and index cards.

Does it have a user friendly interface?
Try the console interface to figure out how to operate the device. Check out the control panel. It should have a good LCD panel to display status messages and warnings.

LCD MONITORS

LCD monitor prices have dipped in the past few months, and now even budget home users can afford one. Apart from the cost of the LCD, there has been remarkable improvement in the quality of colour reproduction. Manufacturers are introducing screens with lower response times, wide-screen displays, anti-glare coatings, etc. However, choosing an LCD over a CRT monitor must be done after understanding the advantages of each.

Questions To Ask The Dealer

What is the native resolution?
LCD screens, unlike CRT monitors, have a fixed maximum resolution called the native resolution, which is set by the manufacturer. This resolution will vary depending on screen type (such as SVGA, XGA, WXGA etc) and screen size (12 inch, 15 inch etc).

Does the LCD monitor support wall-mounting?
You can mount an LCD on a wall using certain wall mount patterns and brackets that are compliant with the VESA mounting standards. Enquire if the LCD you are buying has this feature or if you need to spend extra money to get it done.

Can I connect a VCD/DVD directly to my LCD?
Some LCDs have an S-Video connector, which allows you to connect VCD/DVD players directly to your screen.

Can I use the LCD on both Mac and PC systems?
There are some LCDs that support both Mac and PC systems.

Does the manufacturer support the product with warranty and service centres?
Make sure that the manufacturer supports their product with a good warranty period, and also check for service centres close to your home.

Interesting Facts

Not many of us are aware of dead pixel phenomenon in liquid crystal displays. A dead pixel is a pixel on an LCD screen that doesn't light up when it should be active and displaying some colour.

Dead pixels are normally manufacturing defects, and usually go unnoticed.

Usage Tips

▶ Do not keep an LCD monitor On when the system is idle—this will reduce its life.
▶ An LCD screen is made up of fine crystal sheets, and you may notice a change

in colour as soon as you touch it. Use non-static cloth or cotton cloth to clean your LCD screen. Protect the LCD from any kind of jerks, because any damage of the liquid crystal alignment is permanent.
▶ Some LCDs have memory card readers using which you can run movies or clips or see photos without having to start your PC.
▶ If open windows do not fit properly on the screen, you can use the auto resolution set button—which is available on most LCDs—to automatically resize the screen to fit within the LCD.

The Future

Usage of LCD is gaining popularity—LCD TV entered the Indian market some time ago and is now making its presence felt with 17- and 21-inch screens. There is still a long way to go for them to enter every household. Just like the LCD monitor, LCD TVs are expensive to begin with. These new sets can be interfaced with a PC, VCD/DVD player etc. and also sport memory card slots. Before it can challenge plasma TVs, LCD technology is yet to overcome poor viewing angles! ■

💡 Points To Ponder

Will LCD monitor suit all PC users?
The technology involved in CRT is different from LCD; each has its own advantages. The LCD immediately impresses an onlooker or buyer for its sleek 'lifestyle-like' look, power consumption and the soothing effect it lends to the eyes of a user. Therefore, LCD suits users who are into documentation, programming, and other non-moving graphics-intensive work. CRT is a better option for gamers and frequent movie goers since LCDs do not respond fast enough when displaying moving graphics.

What are the important parameters to consider when buying a LCD?
Contrast ratio is the measure of light intensity between the brightest white and darkest black; it is simply an indication of the colour representation of LCD. A contrast ratio of 400:1 and above is a good choice.

Luminance is an indicator of how bright a surface—here, the LCD Screen—will appear when looking at it from a particular angle. For a PC, an LCD screen with a luminance factor between 320 cd/m^2 and 400cd/m^2 is ideal.

Response times give us an idea of how fast an LCD can respond to fast-moving images. An LCD with a high response time results in the streaking effect, which is, basically, slight blurring of the image. To avoid this, look for low response times. The recommended response time for gaming and movies is 10 milliseconds.
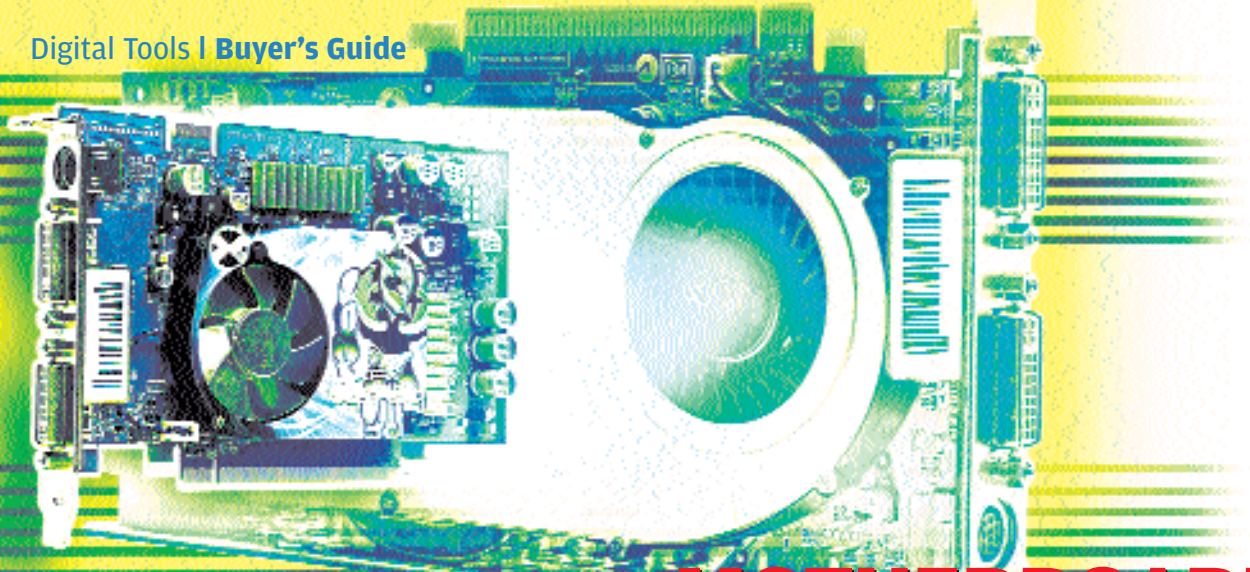
MOTHERBOARDS

The motherboard is one of the most important of all the PC components—it handles all the components and their interactions with each other. System performance depends to a large extent on the motherboard. Today, we see motherboards that come with a host of features such as RAID, SATA, WiFi, SLI, etc., to name a few. The architecture has also evolved from the slow ISA bus to the faster PCI bus and now on to the even faster PCI-Express bus.

Questions To Ask The Dealer

Does the motherboard have dual-core processor support?

This can be usually determined from the chipset on which the motherboard is based. But certain chipsets are known to partially support or require a BIOS update to support dual-core processors.

Is the motherboard graphics upgradeable?

If the motherboard you're looking at purchasing has onboard graphics, check if it has a PCI-Express graphics slot. This will enable you to upgrade to a faster PCI-

Express graphics card at a later date.

Does the motherboard have overclocking features?

While most motherboards have overclocking features of some sort, some manufacturers offer extensive overclocking features on their premium boards.

Does the motherboard support faster CPUs and memory?

You should verify that the motherboard supports faster processors than what you are currently purchasing. It should have support for memories with speeds faster than what you have right now. This is important for upgrades in the future.

Interesting Facts

Motherboards have been available in a variety of form factors designed mainly keeping the size of the computer cabinet in perspective. IBM created the PC/XT for the IBM PC in 1981, and soon it became the *de facto* standard for motherboards. Then came the AT form factor—also known as full AT—which succeeded the PC/XT, and this form

factor gained prominence duding the era of the Intel 80386 processors. The ATX form factor, a miniaturisation of the AT, was next, and this was again miniaturised into Mini ATX and Micro ATX which are in use today.

The architecture of the motherboard evolved from the ISA to PCI and now to PCI-Express.

Usage Tips

▸ Check the motherboard manufacturer's Web site periodically for updated BIOS, chipset and other integrated component drivers. These updated drivers provide bug fixes and enhance system performance.

▸ If you are overclocking, use a power supply of at least 400 watts for stability.

▸ CD and DVD writers are likely to produce coasters when a system is overclocked, so you should not overclock if you need to do tasks—such as disc buring—that are dependent on the system's FSB.

▸ While mounting the processor on the motherboard socket, take care to properly align the notch on the CPU with that on the socket to avoid damage to the processor or motherboard.

▸ A motherboard needs housekeeping, and you should periodically clean it to remove the dust that gathers. This reduces accumulation of heat and static electricity, and lengthens the life of the motherboard along with that of other components. ∎

💡 Points To Ponder

Should I opt for a PCIe- or AGP-based motherboard?

AGP is all but obsolete. PCIe has almost replaced it. And if you plan to upgrade the graphics of your PC at a later date, PCIe would be your best bet.

Is the onboard graphics capable of running Windows Vista?

In order to be able to run Windows Vista, the motherboard's onboard graphics must be DirectX 9 compliant.

What form factor should the motherboard have?

If you are upgrading, buy a motherboard with the form factor that can fit inside your PC cabinet. If you have a small cabinet, a Micro ATX motherboard should be purchased rather

than a full ATX motherboard, which will not fit. It should be noted that a full ATX motherboard generally comes with better features, and is priced higher.

What type of power supply connector does the motherboard require?

There are two types of power supply connectors—20-pin and 24-pin. Make sure that you check this if you are upgrading the motherboard.

What are the frills that I should look for in a motherboard?

Buy a motherboard that has features such as FireWire, USB 2.0, SATA, RAID, and support for 64-bit processors and dual-core processors as well as dual graphics card configurations such as SLI and CrossFire.

MP3 PLAYERS

Portable cassette players became history when MP3 players were introduced. Initially, there were only a few models to choose from, but now they're crawling out of the woodwork!

Questions To Ask The Dealer

What is the storage capacity, and are there any additional features?

Even if you know what the capacity of a particular model is, it is better to cross-check with the dealer. Also bear in mind your growing music collection—you certainly don't want to be disappointed about your purchase a few months down the line. Ask about additional features in a model. These additional features include video playback, varied format support, and the number of colours the LCD screen supports.

Does it record?

If your job requires you to record voice when at meetings or press conferences, you will need this feature. If the player has FM radio, you should ask if it can record FM as well.

How long will the battery last, and what type of battery is it?

Most people like rechargeable batteries, while some prefer AA or AAA cells. Make sure you confirm that the battery is user-replaceable!

Does the manufacturer have service centres and how long is the warranty period?

It is important to check for warranties. Also, confirm that the manufacturer has service centres across the country.

Interesting Facts

Digital Audio Player (DAP) is the 'formal' name of MP3 player, but due to the ubiquity of the format, the name 'MP3 player' still exists. Early DAPs were CD players and mini disc players. The first non-mechanical DAP was introduced in the summer of 1998, and had 32 MB of memory. The second DAP was released in September 1998 and was a big hit; the popularity of the player was followed with lawsuits that were won by the manufacturer. The lawsuits, however, alleged that the device aided illegal copying of music.

This victory was almost the turning point; more and more companies came up with products... competition rose, and the rest is history.

Usage Tips

▶ Quite often, the earphones bundled with the player may not be top-notch. If

you think the sound quality isn't great, try changing the earphones before returning the player.

▶ Some manufacturers provide special casings for their players to protect them from scratches and dust; if you have something like this, use it.

▶ Some players need specific applications to transfer music files to and from the player, whereas some are just plug and transfer (via the USB port).

The Future

Mobile phones have started including the MP3 playback feature. This, as a matter of fact, has pushed MP3 player manufacturers into a corner, demanding more out of them at affordable costs. Flash-based drives will come with higher capacities of up to 8 GB by the end of 2006, and 16 GB by 2007.

More and more MP3 players are turning to video playback capability to gain a market advantage. In the future, we'll see almost all portable players playing back video—even DivX—and perhaps then we'll have to drop the 'MP3 player' name tag! ■

💡 Points To Ponder

What are the types of MP3 Players?

There are two basic types of MP3 players, Flash-based and hard drive-based. Flash-based players have memory made up of solid-state semiconductors, while hard disk drive-based players, as the name suggests, have memory units mostly made of 1.8-inch hard disks.

Which type of player suits me?

Hard drive-based MP3 players are usually more feature-rich than Flash-based ones. They normally have larger screens and a larger capacity. If you among those who listen to music while jogging and such activities, hard drive-based players are not for you. Flash-based players are very robust. They are,

however, expensive if cost per MB of storage is considered.

Which one fits the bill?

It's just a matter of the right combination of features. The supported audio formats may not be too important to you, but if you have files in other formats, say OGG, then you have to look at the supported formats very carefully. Once you've narrowed the list down to a few players that have the features you're looking for, it's time you chose a player based on your favourite brand. Brand name becomes a factor because certain manufacturers have attained popularity based on the excellence of their products, and so you are assured of quality without a doubt.

MULTIFUNCTIONAL COPIERS

The multifunction copier is an MFD based on a copier-based engine. Being copier-based implies that the cost is much higher than that of a printer-based MFD, but the duty cycles are much higher. The multifunction copier is very rugged, and its cost per page is also much lower compared to that of its printer-based cousins. It is also capable of standalone operation.

The multifunction copier usually caters to corporate users such as enterprises, DTPs and the legal industry, where high-volume output is the need.

Questions to ask the dealer

What is the maximum possible scan and print size?
Look for a product that can scan and print documents large enough for your particular needs.

What are the toner and printer duty cycles?
The printer duty cycle is the number of pages the printer can print in a month at default quality settings. The toner duty cycle is the total number of pages the toner can print. Needless to say, look for a higher number.

What are the additional upgrades available with multifunctional copiers?
Some of the upgrades available are as below:

Puncher: This enables punching of holes in the print medium after printing. This is useful for binding purposes.

Binder: Sheets of papers can be transformed into booklets using this feature.

Duplex Automatic Document Feeder: Most MFDs come with an ADF, but a duplex ADF can also be added to some MFDs.

Stacker: If you need additional output capabilities, a stacker augments the output paper capacity.

The above features and more are available on some models, but these can be added any time after purchase to most of the models that don't come with these frills.

What is the warranty offered?
Given the heavy-duty usage of this class of products, warranty is of the utmost importance. Every player in this arena offers on-site warranties. Therefore, what you need to for is how good the service network is, in addition to, of course, how many years the warranty is for.

Usage tips

▶ Power users or high-production departments should be put on a separate network segment to minimise LAN congestion in case of networked devices.

▶ Use the software tools provided with the device to manage printer resources

Canon
Delighting You Always

across the network and reduce support time and maintenance expenditure.

▶ Certain devices provide clustering capabilities, where the print job is spanned across multiple devices, thus increasing the page output per minute.

The Future

Quite a few innovations are underway in the field of multifunction copiers. Some already have features similar to computers, such as a CPU, RAM and hard drive.

Upcoming technologies include Canon's Multifunctional Embedded Application Platform (MEAP) J2ME Java-based technology, which enables customised business applications to be created and installed on the device. These can be controlled via the MFD's user interface. As an example, using an MEAP application installed on a device, a bank could train the device to differentiate between a home loan, personal loan and credit card application, and the device could electronically route scanned paperwork for processing. ■

💡 Points To Ponder

Why should I buy a multifunction copier in the first place?
Opt for an multifunction copier when:

▶ You wish to save office space, and/or want to replace your copier with a better solution

▶ Your print volumes are very high

▶ You want to be able to purchase add-ons as your needs grow

▶ You require advanced features such as advanced document management

▶ You wish to eliminate the time lost in moving documents from one device to another—such as printer to fax

What are the advantages of a copier-based MFD?
Copier-based MFDs have a separate toner and drum. This means that when one of them is exhausted, you need to replace only that. This reduces the overall running cost as compared to printer-based solutions, where the toner—which is not separable from the drum—has to be discarded and replaced when it's exhausted.

In addition to this, the printer duty cycle is very high, and print speeds are also very high.

OCR SOFTWARE

Optical Character Recognition (OCR) is the process of translation of optically scanned bitmaps of written or printed text into character codes such as ASCII—meaning you scan a newspaper clip (or anything else) and extract the text from it. OCR software is used to convert a scanned document into a document understandable by a word processor.

Such software is not limited to offices; it can even be used at home. As an example, you can scan a form, use OCR to convert it to a document, and fill it in electronically, thus eliminating the need to fill in a new form in case you make a mistake. Or, say you want to send someone a newspaper clip. Instead of cutting up the newspaper and then relying on snail-mail, you could scan the paper and send off the content as an e-mail attachment!

OCR software really does seem amazing the first time you use it—good OCR software will recognise fonts, pictures, formatting, and much more.

Questions to ask the dealer

Does it save in a variety of formats?
Most OCR software save documents in Word format. Apart from this, look for support for saving in other formats such as PDF, HTML and Excel.

Does it support batch processing?
The batch processing feature is very useful when there are a large number of documents to be scanned. Using this feature, you can just stack up the documents in the ADF (a scanner with an ADF is necessary in this case) instead of sitting in front of the scanner and feeding in one paper at a time.

Interesting Facts

David Shepard, a cryptanalyst at AFSA, the forerunner of the National Security Agency of the USA, along with Dr. Louis Tordella and Harvey Cook, built 'Gismo'—a machine that could convert printed messages to machine language for computer processing, in 1951. Shepard then founded the Intelligent Machines Research Corporation, or IMR, and went on to deliver the world's first OCR systems used in commercial operation. The first IMR scanner was installed at the Readers Digest in 1955. Postal departments around the world have been using such equipment for a very long time now.

Usage tips

▶ The document to be scanned must be free of wrinkles, ears, smudges or creases in order to increase accuracy.
▶ Keep a white paper sheet behind the document to be OCRed, especially when you are scanning a newspaper or thin paper.
▶ Keep the edges of the document aligned with that of the scanner in order to increase the OCR's accuracy.
▶ While scanning text documents, use 300 dpi, and scan in line art mode. This will greatly reduce the size of the scanned file without any loss in accuracy. The scanning speed will also be faster.

▶ If the OCR software allows you to control the threshold (brightness), try using different threshold levels to scan a document that's giving you a high number of errors. You could be able to improve the accuracy.
▶ Keep the glass pane of the scanner clean—this, too, improves the OCR accuracy.

The Future

Advances are being made in the field of OCR, such as the Predictive Optical Word Recognition algorithm from Scansoft Inc. Research is being done on document recognition in which the software will use knowledge of parts of speech and grammar to recognise individual characters. OCR software today offers an accuracy of 90 per cent, but with the introduction of software being able to train, this is expected to improve. Similarly, efforts are underway to improve script and handwritten recognition. Improvements are not only being done on the software algorithms, but also in the hardware aspect, using better quality CCDs in the scanner elements. ■

Points To Ponder

Is it accurate enough for me?
This will depend on the importance of the documents you are OCR-ing: if you will not be OCr-ing critical documents, go for a cheaper OCR software.

Does it have a learning mode?
Many OCR software come with a learning mode. In this, the software learns from its mistakes during previous OCR sessions, and adapts so as not to repeat the same mistakes.

Is the price justified?
In OCR software, very often, the price doesn't correlate with how good the software is. You'll need to get an informed opinion on this. Try and ask those in the know, and don't rely entirely on what the vendor says.
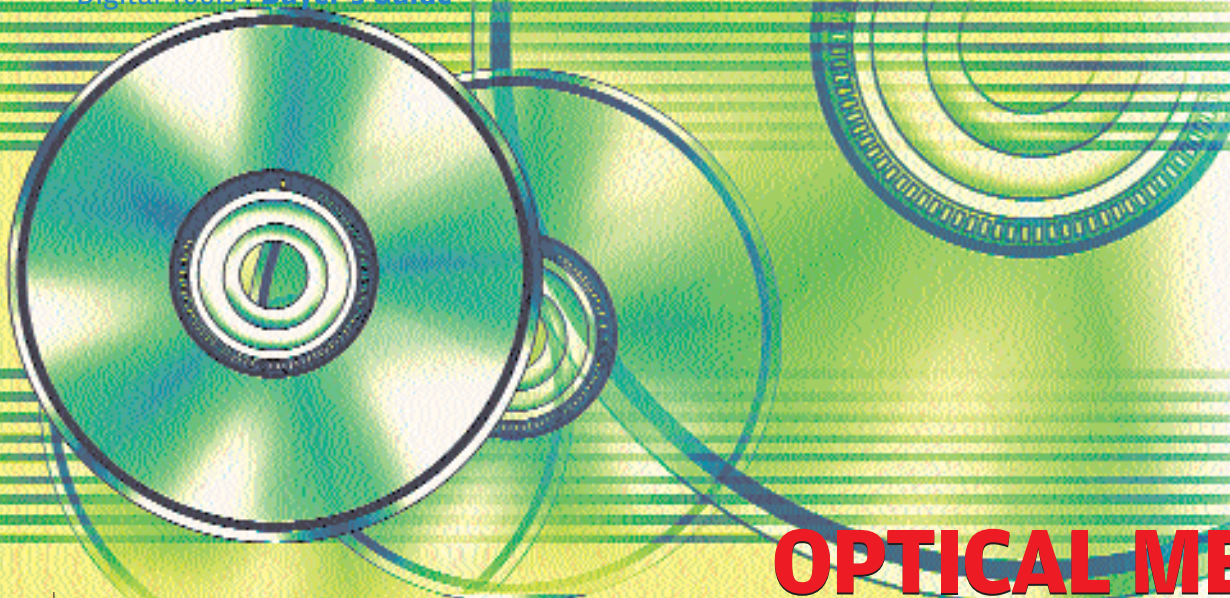
OPTICAL MEDIA

Computers rely on optical storage media such as CDs and DVDs to back up and store data because of the sheer speed, the huge storage capacities, and also convenience and cost. The booming video CD, audio CD and movie DVD industries are testimony to the success of the optical storage medium. As important as the optical media writers may be, the optical storage media is no less important.

Questions to ask the dealer

Is the media compatible with all optical drives?

Some brands of CD and DVD media have known compatibility problems with certain brands of CD and DVD drives. Some encounter problems burning in a specified brand of optical writer, whereas other media can be burnt perfectly in the same writer. Such problems are usually specified on the drive and/or media manufacturer's Web site, and before purchasing the media, you should do some research about whether it will work in your optical drive.

Is it certified to burn at a specified speed?

Every optical media is certified to be able to be written to at a certain maximum speed. Check this, and buy the one that supports the highest speed.

Is it scratch-resistant?

There are some media available which have a protective coating that reduces its susceptibility to getting scratched. Though such media come at a premium, go for them if the data you are writing is very important.

What is the maximum capacity of the disc?

There are some discs available whose sizes are a cut above the regular media, for example, 800 MB CDs. These can be useful if you have files whose sizes exceed 700 MB. Again, your CD/DVD writer should support writing to such a disc.

What is the warranty, if any?

Some manufacturers provide a replacement warranty for their media, and you should check which manufacturers do so.

Usage tips

▶ While labelling on the CD/DVD media face using a marker pen, use the lowest possible pressure so as to avoid damage.
▶ If burning at the maximum speed almost always produces a coaster, try lowering the speed.
▶ Avoid touching the surface of the disc.
▶ While cleaning a CD/DVD, use a soft lint cloth. Do not clean the CD/DVD in a circular motion—clean across the radius, moving from the centre towards the edge in a straight line.
▶ Store optical media in a cool place away from direct sunlight and other sources of heat, as this is likely to damage the medium.

▶ While creating an audio CD, burn it at a slow speed, such as 8x, so that older CD players with poorer lasers will be able to play the disc thus created.
▶ Do not rely solely on optical media for data storage and backup, as they tend to degrade over a period of time and become unreliable.

The Future

Optical media have evolved from CD to DVD and now to Blu-ray and HD-DVD. This has been possible with technological advances that make it possible to use lasers of higher frequency and shorter wavelength, which makes it possible to store a larger amount of data on a disc of the same size.

Blu-ray, with storage capacities of 25 or 50 GB, and HD-DVD, with capacities of 15, 30 or 45 GB, are almost here, and are set to replace DVD. These make it possible to record over two hours of HDTV—or, for us, over 13 hours of standard TV broadcast. Some way in the future is 3D Volume Optical Storage Nanotechnology, which promises to be able to cram 100 terabytes of data onto a single disc! ∎

Points To Ponder

Will the particular type of media work in my drive?

This problem is regarding DVDs. There are many different types of DVDs, including DVD-R, DVD+R, DVD-RW, DVD+RW, DVD-R DL, DVD+R DL and DVD-RAM. Most drives support almost every type of media these days, but there are some media such as DVD-RAM which very few drives support. Also, some drives may read dual-layer DVDs, but may support writing only to DVD+R dual-layer media. Also find out if the specified media capacity (such as 800 MB CDs) is supported by your optical drive.

Are there compatibility problems with various DVD formats?

There are certain incompatibilities in certain types of DVD media. As an example, a DVD+R/RW drive can't write a DVD-R or DVD-RW disc, and vice versa.

Does it support overburning?

Overburning is the process of writing to an optical disc beyond its specified capacity. As an example, using overburning, 715 MB of data may be written to a 700 MB disc. This has to be supported by the media as well as the drive, and also by the CD/DVD writing software.
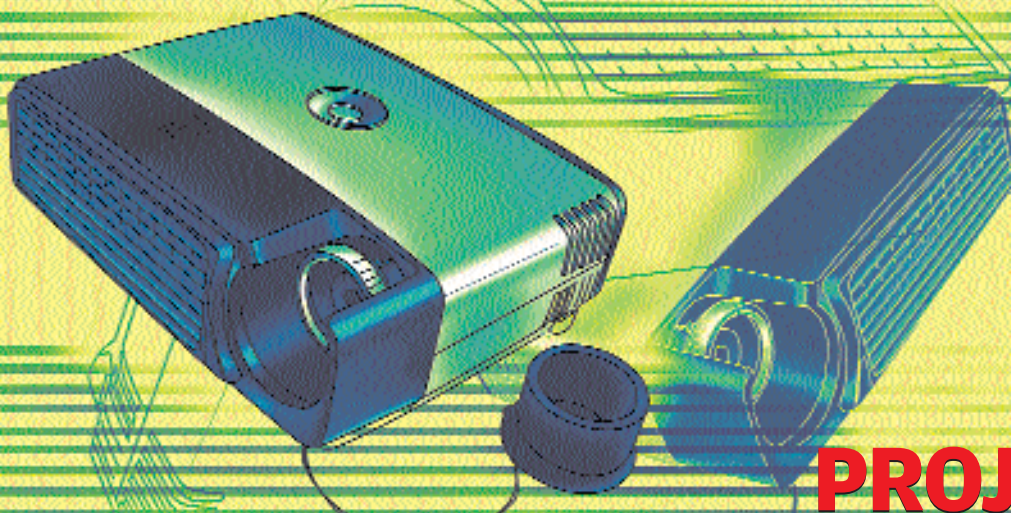
PROJECTORS

Video projectors come in two flavours—tubed and LCP (Liquid Crystal Projection). Tubed projectors are widely used in cinemas and public displays. The LCP type of projectors are again classified as standard LCD, polysilicon LCD and DLP (digital light processing)—the latter is fast gaining prominence. The image quality of tubed projectors is better than that of LCP, but tubed projectors are much heavier.

Questions to ask the dealer

Does it have a zoom lens?
A zoom lens allows you to adjust the size of the projected image, which is very convenient and allows you to project on screens of various sizes and at varying distances.

What are the video formats supported?
The projector should support a minimum of three video formats—NTSC, PAL and SECAM.

Does it have ceiling mount support?
Verify if the projector can be mounted on the ceiling, and also if it is capable of projecting images upside down.

Can it be used with a Mac?
PC and PC compatibles should not have much of a problem in this regard, but if you are using a Macintosh, it requires a separate connector or adapter. Ask about this connector.

What extra features are available?
Look for features such as power zoom, a remote control, and input ports such as DVI, BNC, and S-Video and audio.

Usage tips

▶ Avoid using an LCD projector at a stretch for more than 10 hours. The heat will cause the quality of the LCD to deteriorate, and may even cause permanent damage to the LCD.

▶ In order to achieve optimal viewing quality, increase the brightness of the projector in places where total darkness cannot be achieved.

▶ Always remember that the projector will do its job best when its resolution matches that of the computer you're connecting it to. So, if you're using a projector with SVGA resolution, set your computer to 800 x 600 resolution.

▶ Never rely on the Internet connection for presentation of a Web site! Download the pages beforehand, or take screenshots of the Web pages and make slides from these.

Interesting Facts

DLP technology is based on an optical semiconductor chip known as the DMD (Digital Micromirror Device), which is made up of millions of tiny mirrors that can rotate at an angle of 10 to 12 degrees. These mirrors can be switched on and off thousands of times per second, and direct light towards and away from the pixel space.

DLP projectors are generally believed to provide smoother images and better colour accuracy, and have lower power consumption as well as higher contrast and brightness than LCD projectors.

CRT projectors aren't very often used, and we haven't even mentioned them thus far. As it happens, the image quality offered by a CRT projector is tough to beat! The problem here is that the cost is very high, the projector is too large, and the calibration needs expertise.

The Future
Various new types of projector technologies are being developed or are nearly available. LCOS (Liquid Crystal On Silicon wafer) is a combination of the LCD and DLP technologies. It has high pixel density, which results in high-resolution projectors that are especially good for multimedia applications. LCOS resolution starts at SXGA. Then there is holographic projection, in which a projector shines on a thin holographic screen attached to a semi-transparent surface such as plexi-glass—and the image appears to float in mid-air! ■

💡 Points To Ponder

How bright should the projector be?
The brightness of a projector is specified in ANSI lumens. Typically, small conference rooms or classrooms require less than 1000 lumens. Large conference rooms, say, may require 2000 to 3000 lumens, whereas auditoriums, theatres and the like require projectors with a brightness above 3000 lumens.

What should the resolution be?
The various resolutions available are SVGA (800 x 600), XGA (1024 x 768), SXGA (1280 x 1024) and UXGA (1600 x 1200). SVGA is perfectly OK if presentations are what you are going to use the projector for. XGA is suitable for projecting finer images such as spreadsheets, where numbers and letters need to be legible. For very fine images such as engineering drawings, and high-resolution maps, you might need SXGA or even UXGA, depending on the resolution of the image to be projected.
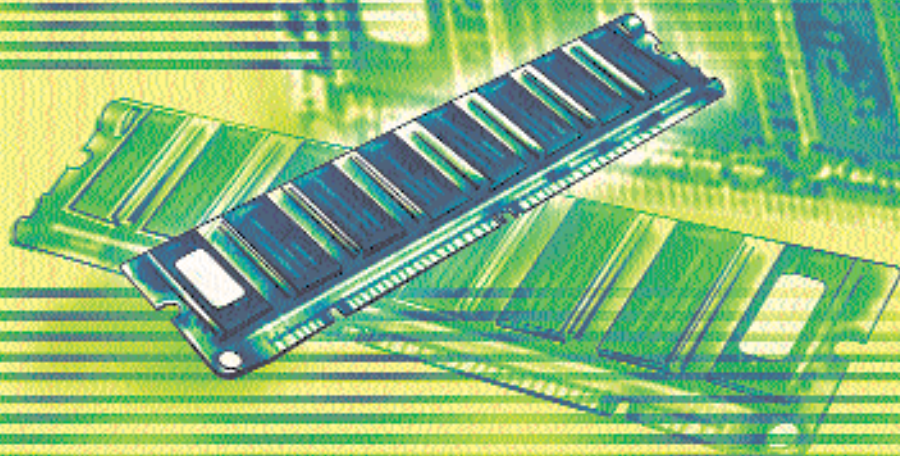
What about the weight and portability?
If you travel, and make presentations on the go, the projector should be light enough to carry around. If you only intend to make presentations at your office, for example, a heavier projector should be just fine.

RAM

This era belongs to DDR RAM. DDR started with a speed of 266 MHz, and now has clocked speeds of 1066 MHz (DDR2). The market has recently witnessed changes such as the implementation of dual-channel RAM.

Questions to ask the dealer

What type of packaging does the module come in?

Prefer RAM modules that come in tamper-proof packages. Also check with the dealer about the hologram, if any, to verify the originality of the RAM module.

Does the RAM come with a warranty? If so, how long is the warranty period?

The warranty is manufacturer-dependent. Some manufacturers give a three-year warranty, and others give only one year. It's therefore important to ask the dealer about the warranty.

Interesting facts

Static RAM maintains its data for as long as the memory chip is supplied with power. Dynamic RAM needs continuous re-writing of data so as to maintain its content. Static RAM is faster than Dynamic RAM for this reason, but is very expensive.

DRAM is used for fabricating system memory as it is cheap. The RAM we use today is an evolution of DRAM. The earliest of this family was FPM DRAM (Fast Page Mode DRAM); it was designed to enhance system performance when reading or writing bursts of data. Later came EDO (Extended Data Out) RAM, which had a feature by which it could start a new access cycle while maintaining the data output of the previous cycle.

The demand for more speed and performance led to the development of SDRAM (Synchronous DRAM). DRAM is asynchronous; SDRAM synchronises with the clock pulses when responding to the incoming commands. This changed the method of functioning of DRAM by enabling more complex patterns of operation. But the pipelining involved here led to a slight delay termed latency, which means that data is accepted even before it is actually written to the address. Similarly, requested data is read a few clock pulses after issuing the read command.

SDRAM, like most logic circuits, responds only to the low-to-high transition of a clock pulse. This led to the evolution of DDR (Double Data Rate) RAM, which reacts to both the low-to-high and high-to-low transitions of the clock pulse—so it can read/write data twice in a single clock pulse.

Usage Tips

▶ In the BIOS, select the highest clock setting supported by the system. Prefer a low-latency memory module if you intend to overclock it for a better gaming experience.

▶ A lower CAS latency setting leads to a slight improvement in performance.

▶ While inserting a RAM module, match the notch on the RAM chip with that on the motherboard RAM slot. Hold the RAM at the ends and use your thumb to push it into the slot. You will hear the lock on the motherboard slot snap, which indicates that the RAM is fixed. If you are not able push it in, don't force the module—instead, cross-check the position of the notches and also make sure you have opened the locks of the slot.

▶ When cleaning a RAM module, do not use cloth—especially artificial fabric such as nylon—because it causes static charges that may damage the module. Use an eraser to clean the system bus interfacing pins. ■

Points To Ponder

What type of RAM is supported by my system?

You need to first figure out what basic type of RAM (SDRAM, DDR RAM or RDRAM) is supported by your system. This information is available in your motherboard's manual. Second, find out the speed of the RAM supported by your motherboard. The speed may be 266, 333 and 400 MHz for DDR, and 533 or 800 MHz for DDR2. For RDRAM the speeds are 533 and 800 MHz, and the older SDRAM's clock ticks at 66, 100, 133 and 166 MHz.

How much memory do I need?

Our answer is "as much as you can afford." If that doesn't make sense, look at your needs. If you use your system mainly for Internet browsing and such, you shouldn't need more than 256 MB. Graphics professionals should look for at least 512 MB of RAM. 512 MB will also result in a slight performance increase for those with moderate computing requirements. Gamers, of course, should start with nothing less than 1 GB.

What should I consider when upgrading RAM?

It is very important that the new RAM module match the older module(s). That is, if the clock speed of the new RAM module is different from that of the older one(s), the mismatch will result in frequent reboots. The POST screen displays the clock speed of the RAM below the memory count.
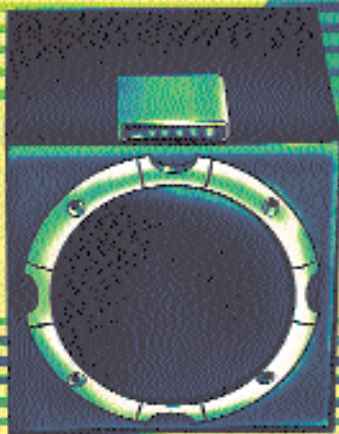
SPEAKERS

Remember when a branded PC came with two speakers with a simple On/Off button and a volume control knob? Today, most branded PCs bundle sub-woofer speaker systems. The reason is mainly because newer motherboards feature onboard sound with up to 7.1 channels. This means we've moved into an era where the PC has become an affordable alternative to a home theatre system—thanks to the advancement in the technology of PC sub-woofers and speakers.

You will find multiple and affordable choices for PC sub-woofer systems in the market, and most often, you're not sure which one would be the right choice for your machine.

Questions To Ask The Dealer
Can I listen to the system?
Ask for a demonstration and test the sample sub-woofer system using music you're familiar with. To test the bass output, turn the volume high and play a song that produces bass (drum beats and bass guitar); listen carefully to the sound from the sub-woofer and check for cracking or jarring.

If it passes this test, play a song that has stringed instruments such as violins or lead guitar and check the output from the speakers at high and low volumes. If the sound doesn't crack at high volumes then the speakers have passed the test. Finally, if at low volumes the sound is clear and distinct enough for you to be able to distinguish every note variation, you have a real winner.

What sort of warranty do I get?
Don't forget to ask the dealer about replacement warranties because woofers are delicate things to repair. For instance, if the cone of the sub-woofer is not fixed properly by the engineers, it will result in poor sound output. Thus, a replacement warranty is preferred.

Usage Tips
▶ It is appropriate to place the sub-woofer below ear level and on a solid platform. If the woofer fires in horizontal

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direction, with the hole on the woofer being parallel to the ground, place it facing a wall for good bass.

▶ If the room is large, angle the speakers towards yourself, and if the room is small, face them towards the walls to get uniform surround sound.

The Future
Computer accessories are getting a lifestyle angle, and so are speakers. Big brands in sound system technology have entered the computer speaker market, challenging the big companies by providing high-quality Dolby Digital systems.

The future will see more advancements in THX technology, and the development of separate, powerful amplifiers that can be interfaced with a PC sound card producing output in excess of 150 watts rms.

Now is perhaps not the right time to invest in a home theatre, especially if you're buying a top-of-the-line PC and speaker system! Also look for wireless speakers with THX certification. ∎

💡 Points To Ponder

What are my requirements?
The type of music you listen to is a crucial parameter: it helps you decide on a two-speaker or sub-woofer system. If you are not very particular about the quality of sound output, and the music you listen doesn't produce too much bass, you can settle for a two-speaker system; otherwise, you will need a sub-woofer system.

What else should I know before I buy?
Check if your sound card or on-board sound supports more than two channels. If the sound card is two-channel, then a 5.1 sub-woofer will not produce actual 5.1-channel output. You can override this problem by employing a good sound card with 5.1-channel (or above) sound. This will add to the overall cost of a sub-woofer speaker system. A speaker set's manufacturer specification is all-important. Most manufacturers specify the output as PMPO (Peak Music Power Output),

which is not a true measure of the amplifier, and so you must check the RMS power rating. Any rating above 20 watt RMS is very good. Also, prefer a speaker set with a wired or wireless remote control for the sake of convenience.

Are there any physical considerations?
Yes. Wood is an ideal material for sound systems, and so a sub-woofer with a wooden casing is a good choice. Gold-plated connectors are preferred because gold plating eliminates oxidisation of connectors and provides low resistance, thus improving the output quality; the heat dissipation also improves due to gold plating. Gold-plated connectors may not be part of the pack, so you may have to buy them separately. The size of the sub-woofer should be proportional to the RMS power; small size and high output power will result in cracking of sound due to quick and multiple sound reflections.
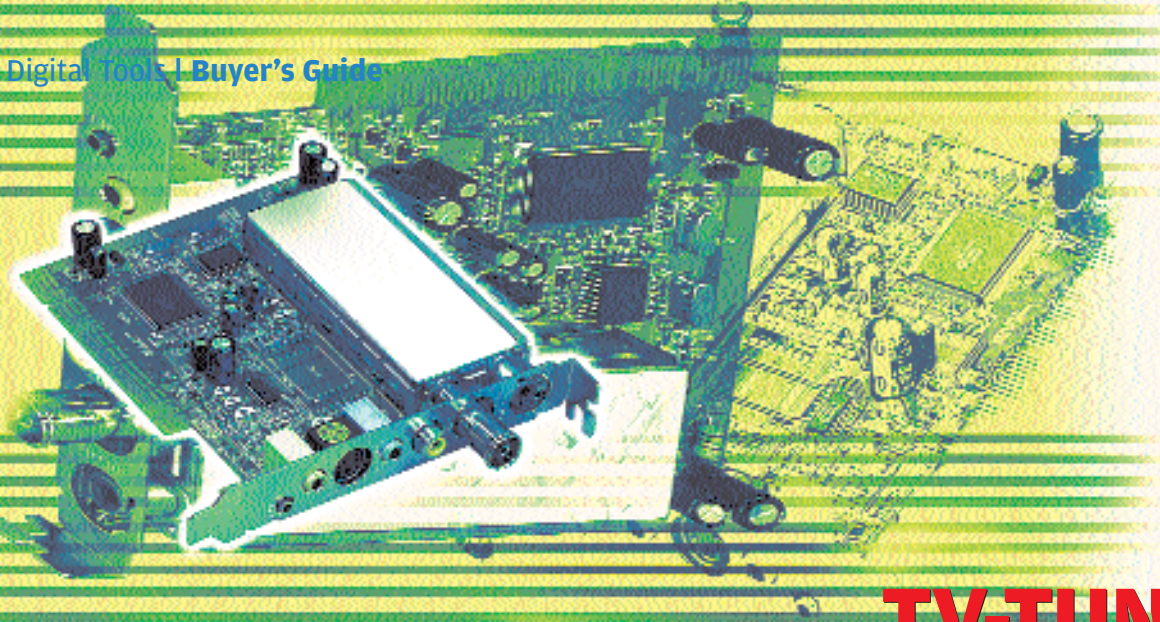
TV-TUNERS

Consumers expect their PCs to not just be a computing machine—they increasingly want it to perform as an entertainment device. The TV-Tuner is one of the prime components that add this functionality to the PC. Feature-packed TV-Tuners these days are giving TVs—or for that matter, standalone home theatres—a run for their money, given their extremely low prices.

There are three types of TV-Tuners available in the Indian market—internal PCI cards, external USB 2.0, and external set-top tuners. While the first two support recording in addition to viewing, the latter connects directly to a monitor, and does not support recording.

Questions to ask the dealer
Does the card come with a remote?
A TV-Tuner with a remote control will offer you the same convenience your TV remote offers you, and much more!
Does it have the 'Pause live TV' feature?
Many TV-Tuner cards allow you to pause live TV and continue where you left off!
Do I need to install any drivers for the TV-Tuner?
For set-top TV-Tuners, there is no need to install any drivers to be able to view TV.
Will it work at my place?
You should check the TV standards the TV-Tuner supports. It should support the PAL standard to be able to receive TV

broadcasts in India. If you happen to have encrypted cable services such as DTH, then you will need a digital TV-Tuner, which might not be available.
Does it feature FM radio?
FM radio is a feature is not worth missing, considering the little extra you'll have to pay.
What kind of driver support is there for the particular model of TV-Tuner you intend to buy?
Driver support is very important for a TV-Tuner in order to keep up with newer operating systems. Considering this aspect, buying a TV-Tuner card from a known brand is advisable.

Usage tips
▶ Check for updated drivers for your model on the manufacturer's Web site because newer drivers generally contain many bug fixes.
▶ In many cases, you might want to install third-party PVR software for better functionality and features than what comes bundled.
▶ While capturing, background programs including the Anti-Virus program should be shut down, as these may affect the capture process.
▶ Minimise the number of joints in the co-axial cable that brings the signal to your TV-Tuner card. Each joint causes a drop in the magnitude of the signal, dete-

riorating the quality of reception.
▶ For optimal quality reception, select the proper TV system for your region in the PVR software.
▶ Install third-party codecs such as DivX, because videos in this format offer good quality in smaller file sizes than formats such as MPEG 1 and 2.

Interesting Facts
In 1989-90, VCA frame-grabber cards were launched. These were capable of single-frame capture. Shortly afterwards, the IBM M-Motion Adapter was launched on the IBM PS/2 workstation, and this was later replaced by the IBM Action Media II card, which could capture video at 30 fps. It was in 1992 that Animation Studios (LifeView) and Hauppauge introduced the first TV-Tuner cards for the PC

The Future
Microsoft's launch of the Windows Media Centre PC, of which the TV-Tuner is probably the most important component, signals the beginning of the transformation of the PC into a full-fledged entertainment centre.

Much of India can only receive analogue television signals, but with the appearance of digital encrypted services such as DTH starting to make their presence felt, this will change.

Many countries are already shifting to Digital Terrestrial Transmission. Digital TV-Tuners will become commonplace in the near future. ∎

Points To Ponder
Will the TV-Tuner be able to capture TV broadcasts with decent quality?
This depends more on your system configuration and the video format in which you intend to capture than on the TV-Tuner itself. A 2.0 GHz processor, a 7200 rpm hard drive with enough free space, and 512 MB of RAM will generally yield good quality video capture. Capturing in MPEG2 is more taxing on the system than capturing in DivX or XVID.

What does a TV-Tuner need in order to capture content from any video source?
Check for ports such as S-Video and Composite In, which facilitate capture from video sources. Some TV-Tuners have a FireWire port, and so can even capture video from digital video sources. A TV-Tuner can capture video at a decent quality, but you should consider getting a dedicated capture card for professional-quality capture.

UPS

With the power situation in India showing no signs of improving, it's the UPS market that's getting better! The UPS (Uninterruptible Power Supply) provides a PC with a grace power backup time in which open applications can be saved and closed and the PC shut down normally. More home users than ever before are investing in UPSes.

While there are many different types of UPSes, the common ones are Standby UPSes, which become operational in the event of a power failure; Online UPSes, which power the PC all the time; and Line-interactive UPSes, which are the same as Standby UPSes, but which provide limited voltage regulation.

Questions to ask the dealer

Does the UPS feature any sort of voltage regulation?

Some UPSes come with AVR (Automatic Voltage Regulation), which reduces the damage caused by brownouts. A brownout is a period when the electrical voltage is reduced below normal level—you see this when the lights get dim.

Does the UPS feature modem and surge protection?

Most UPSes—but not all—come with modem and power surge protection, which can be a lifesaver for your PC in extreme scenarios such as thunderstorms.

What kind of warranty does the dealer provide?

You should look for an on-site warranty for the UPS, since the UPS is likely to be heavy. Similarly, look for UPSes from manufacturers that provide a support number and have a good support network.

Does the UPS produce a sine wave output?

Generally, cheaper UPSes produce a square wave output, and those producing a sine wave are more expensive. A sine wave UPS is much more efficient than the square wave type, and the power it supplies is closer to normal AC power.

Does it have a manual bypass switch?

With a bypass switch, the UPS allow will pass power to through it to your equipment if it is broken or being serviced. This reduces PC downtime while the UPS is dysfunctional.

Usage Tips

▶ Periodically check the UPS by deliberately stopping the power supply.

▶ Completely discharge the batteries about once a month—this enhances the

life of the batteries and increases the time for which they stay On when powering the PC.

▶ The monitoring software that comes bundled with the UPS can automatically shut down the PC when there's a power failure and the battery charge becomes critically low.

▶ Do not overload the UPS by connecting equipment such as laser printers which draw heavy power, unless the manufacturer has specified that you can do this.

▶ Don't subject the UPS to temperature or humidity extremes, dust, or static electricity. Keep the area around the UPS clean.

▶ Make sure the UPS is properly earthed all times.

▶ Never mix new and old UPS batteries. This will cause more power to be drawn from the new battery, and will reduce its life.

▶ Sealed Lead Acid batteries contain live electrical current and can be extremely dangerous. When changing the UPS battery, never touch the battery terminals directly or with metal objects! ■

💡 Points To Ponder

What type of UPS do I need?

A Standby UPS is the most commonly available type. This type of UPS charges when the AC power supply is on, and springs into action in the event of a power failure.

The issue here is that when the power goes out, the switch to battery power happens almost instantly, but not quite; and though it's rare, there's a chance that the switching might not be fast enough, in which case the PC could get reset. An Online UPS powers the PC all the time, even when AC power is on, and so doesn't do any switching when the power goes off. It charges on the AC power.

A Standby UPS is less expensive, and is preferred by home users. Corporations prefer the more reliable Online UPSes.

How should I decide on the power rating of the UPS?

To decide on the power or VA rating of the UPS, you need to take into account the power rating of your PC's power supply, the size of the monitor, and any extra accessories connected to the PC that you may want the UPS to power. As a simple rule, multiply the power rating of your PC's power supply in watts by 1.4, and add it to the product of the volt and ampere ratings of the monitor, to decide on the power rating of the UPS.

For home use, how long should the UPS battery backup last?

The UPS battery backup time should be at least 10 minutes, so you can save your work and properly shut down the PC in case of a blackout.
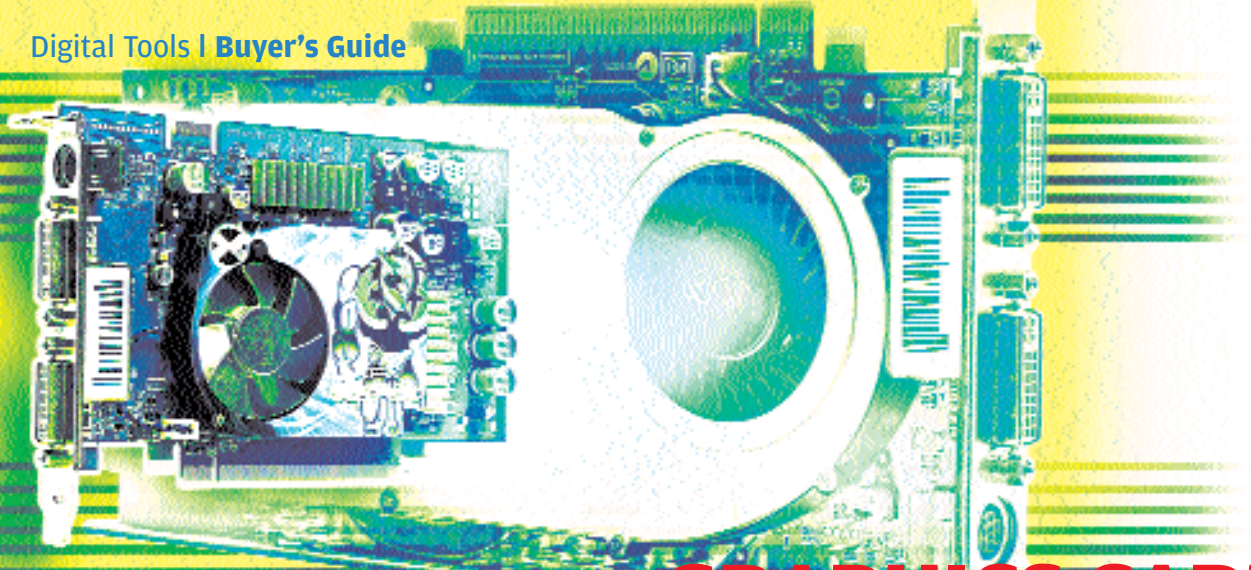
GRAPHICS CARDS

The graphics card (aka display card or video adapter) plays a very important role in bridging the communication gap between a computer and the user by helping display the computer's output information on a monitor. At least that was what graphics cards were meant to do when they were first invented. Today, though this is the primary function of a graphics card, there are many other things that depend on it, such as 3D capabilities, multiple displays, TV-out, etc. A graphics card today can be one of the most expensive components of a PC.

Questions To Ask The Dealer

How many years is the warranty period?
While most vendors offer a three-year warranty, some don't. Check for this.
What interface does the card have?
There are two types of interfaces available, AGP and PCIe. You should make sure what type of graphics card you need.
What accessories come with it?
Some graphics cards have a video capture facility, whereas some are bundled with a TV-Tuner. Such extra features require extra accessories such as cables, a remote control, etc., and you should check if the necessary accessories are bundled. Most graphics cards also bundle a free game.

Is there proper driver support?

Proper driver support will keep the graphics card in tune with the latest applications and operating systems. Certain vendors provide special features in their drivers such as support for 3D goggles, which are not available in generic drivers.

Usage Tips

▶ Check for updated drivers periodically on the manufacturer's Web site. These address many bugs, and sometimes provide such a performance boost that you may liken it to a free upgrade.
▶ Keep the graphics settings to the defaults to improve system performance.
▶ Change the display settings in-game where possible.
▶ Keep the space near the air intake of the graphics card clear of obstacles to facilitate efficient cooling.
▶ There are many utilities available to overclock graphics chips and memories. This will give a small performance boost in 3D games.

The Future

It is an undisputable fact that today, the gaming industry is the driving

force behind the graphics card industry. Graphics cards have evolved into much more than display adapters. Already, there are systems with multiple graphics cards—the technologies for this are SLI from nVidia and Cross-Fire from ATi. These claim to almost double 3D graphics performance. Then there are some who put two graphics chips on the same graphics card to achieve similar results.

Looking at the many similarities with the CPU, GPUs, as graphics chips are known today, will move on to newer fabrication processes, and more transistors will be packed onto the chip. The chip will therefore consume less power, and will run at cooler temperatures. Newer cards will ship with the amazingly fast GDDR6, which will provide a humongous bandwidth increase.

Microsoft will soon be moving on to DirectX 10, and Shader Model 4 will be the next frontier that graphics chip makers will keep in mind when designing their next-generation chips. ■

Points To Ponder

What type of graphics card will my system support?
Consult your motherboard manual to find out if you need an AGP or a PCIe card.
What type of applications do I run?
If you primarily run 2D applications, any graphics card will be good enough, but for 3D applications and gaming, a 3D graphics card will be required.
How powerful a graphics card will my computer support?
A high-end graphics card will work with any compatible system, but in order to get the most juice out of it, a powerful CPU and a good amount of memory has to complement it. Similarly, a low-end card will not give great performance even when used with a high-end system. Also, some high-end graphics cards consume a great deal of power, and the system's power supply must be powerful enough to cope with its power needs.
**What should be the compliance requirement of the 3D graphics card?**
Newer games require an OpenGL 2.0 or DirectX 9.0c compatible graphics card to run. Buy a graphics card that supports the highest version of OpenGL and DirectX.
What type of outputs should the graphics card have?
If you have a digital display, the graphics card should ideally have a DVI-Out. Similarly, if you are keen on big-screen gaming, you'll need a TV-out.
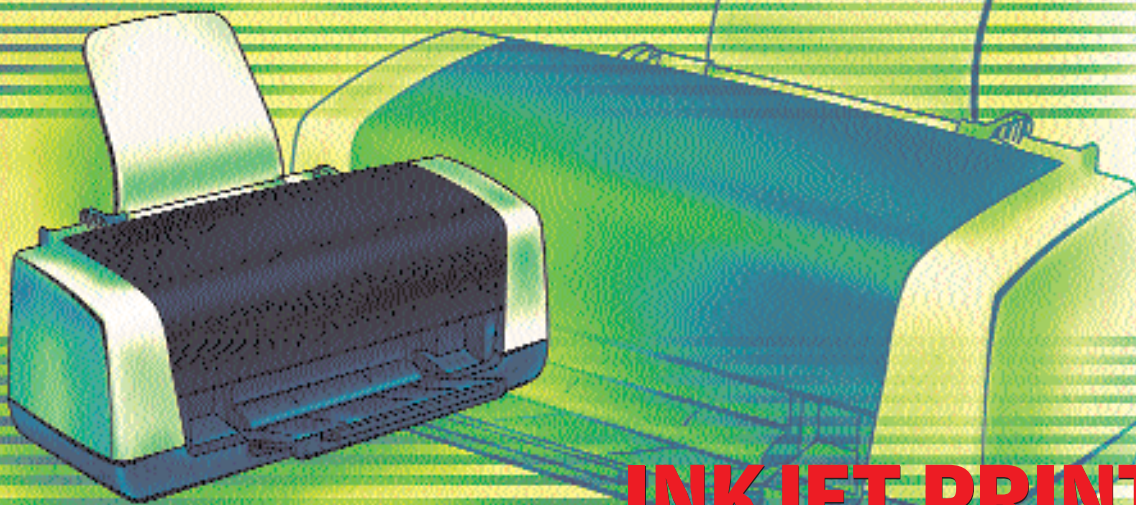
INKJET PRINTERS

The newer inkjet printers we've tested have surprised us with their compact sizes, feature-rich printing and affordable prices, which wasn't the case until even a year ago. This hints that the printer market is becoming even more competitive—the big players are waging price wars, while still maintaining quality control.

Questions to ask the dealer

Can I print a test page?

Never assume the quality of a printer without testing it. Stats on paper might not reflect true values. Carry a document that you made yourself and demand a test page print. The document should contain simple text of different font sizes, graphs ,and a quarter-page colour photograph. Trust your eyes—what you see here is what you're going to get.

What about the cartridges?

It is crucial that you have an complete picture of the costs you are going to incur. It's the running cost of a printer that matters, and you need to find out how long a cartridge lasts and how much a new one is going to cost. Remember, entry-level printers can actually be cheaper than the cartridges themselves.

What else do I get?

Confirm the accessories that you will get along with your printer; these may include printer cables, a power cord and even some photo paper. Make sure to check the package contents mentioned on the box before you leave the store.

What about warranty and service?

Don't forget these details—such peripherals often need expert attention.

Usage Tips

▶ Do not print on an empty cartridge— this may damage the printer. The ink in the cartridge also acts a coolant for the heat sink of the print head.

Points To Ponder

When do I choose an inkjet printer?

Inkjet printers are typically suited for home users and small offices. They are cheaper and have enough features bundled for home users, such as PictBridge support to print photos directly from a camera. Some printers also include memory card support and an LCD display, which allows the printer to work without connecting it to a PC.

What options do I have?

inkjets may be classified as general purpose and photo inkjet printers. Do not confuse photo inkjets with photo printers: the latter are designed specifically for printing 4 x 6 (or smaller) photo-quality prints.

What specs should I look for?

Print quality can be inferred from the resolution, which is given in dots per inch. If a printer can print more dots per inch, it will print a sharper picture. But with the precision and increase in resolution, the speed will be compromised. If your purpose is to print photos, then you should consider a good-quality inkjet printer with a high resolution, even if it is more expensive and slower than other printers. The ideal resolution for a photo printer is between 1200 x 1200 and 4800 x 1200 dpi.

The speed of printing will be a factor for those who aren't bothered about the quality of the printer output. The manufacturer will have listed ppm (pages per minute) figures in their specification sheet, but remember that real- world performance is always a little lower. A printer with a resolution of 600 x 600 to 1200 x 1200 dpi and 20 pages per minute for a draft printout is a decent buy.

If your printer is shared on a network and you expect the printer to be accessed by many users at once, then a printer that has more memory and a good processor is preferable. For a single user, a processor-based printer isn't an important criterion.

Paper can be fed from the top or from the bottom of the printer. It is up on the user to decide what suits him, but a bottom (horizontal tray) feed is generally preferred, since papers can be left in the tray without worrying about paper folds.

▶ You can refill an ink cartridge, but this is not advisable. Stick to manufacturer-produced cartridges as far as possible. Some manufacturers also have provisions to collect used cartridges for recycling. Also, visit the manufacturer's Web site to find out how to identify original cartridges, as you may get ripped off by dealers selling refilled and repackaged duplicates. This happens a lot in India—so beware!

▶ Do not keep your printer idle for too long (over two to three months)—the ink may dry up inside the cartridge!

▶ Some printer drivers can automatically optimise a printout by detecting the content type for printing. This helps save ink—use it!

▶ Windows XP users can use the print wizard to print pictures—the wizard lets you choose different layouts and album sizes (such as 4 x 6) with an embedded preview window.

▶ You can print images onto iron-on-transfer sheets and then iron them on to any clothing. Make sure you print in Best mode when doing this. ∎
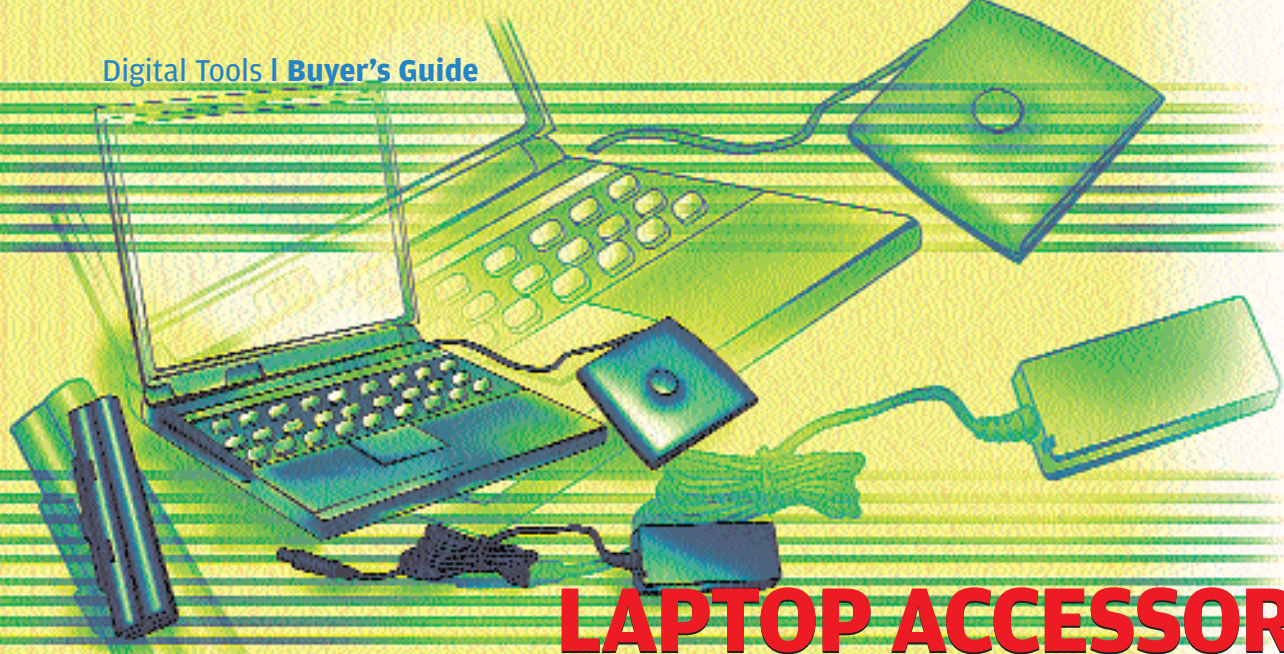
LAPTOP ACCESSORIES

Desktop computers today happen to be some of the most powerful computers ever made! Unfortunately, they aren't portable! But laptops are now rivalling desktop computers in terms of processing power. And we're not just talking about working with spreadsheets or word documents; it's also about multimedia and gaming.

However, since laptops are meant to be carried around, there are some issues they all have to contend with. These include issues such as cooling, battery life, and more. With rising laptop sales everywhere, manufacturers have been made to sit up and take notice. This has brought about interesting innovations that improve your laptop computing experience—which is what we'll talk about here.

Questions to ask the dealer
Does the product come from a well-known company?
There are plenty of no-name companies in the market that make laptop accessories; the quality of these isn't great, and some can actually harm your laptop.

What is the warranty available on the product?
Some dealers are reluctant to give any warranty at all on products such as Bluetooth dongles, USB hubs, cheap headphones, etc.
If the product goes bad, will it be replaced, or will it be repaired?
Replacement is the option you should be looking at.
What is the turnaround time for the product if it has to be repaired?
Will you be provided with a stop-gap solution during this period? Most dealers will be reluctant to answer this question.

Usage tips
Accessories available for the laptop range from batteries to exotic-cooling systems that keep a laptop running cool for hours on end.
▶ **Extra Batteries:** If your work involves a lot of hours with the laptop, you should definitely consider getting yourself an extra battery pack.
▶ **Laptop Cooler:** This is a must-buy for any laptop user. Irrespective of how long they are used, laptops have a tendency

to get warm. Those with poor ventilation can run really hot. Laptop coolers generally consist of large cooling fans that run really quiet and provide efficient cooling. Power consumption is very low, at a max of 110 mW, with the cooler drawing power from the laptop's USB port.

▶ **Connectivity dongles:** In today's age of Bluetooth and FireWire, it is a drawback to not have these connectivity options on your laptop. Off-the-shelf USB devices are available that connect to the USB port on the laptop, and offer you the power of using both Bluetooth and FireWire devices on the go!
▶ **Speakers:** So you're in this hotel room far away from home, and want to listen to some music. But you'd rather listen to silence than your tinny laptop speakers! Well, there happen to be speakers available for just this kind of situation. Laptop speakers connect to the laptop's sound card, and in most cases are self-powered. Some manufacturers also offer USB connectivity, where the speakers connect to the laptop using the USB port and draw power from the port.
▶ **USB mouse and keyboard:** Not many people are comfortable with the touchpad, or with the pointing stick for that matter. Laptop keyboards are cramped in most cases, and are un-ergonomic. A USB mouse and keyboard can provide considerable relief. ■

💡 Points To Ponder

We're here assuming you already have a laptop and are looking to purchase accessories for it. Now, it's only you who can determine your usage pattern and identify issues related to it. Here's a list we think should be foremost on your mind when you're buying an accessory for your laptop.
What is the number of hours you use your laptop for at a stretch?
As you've probably experienced, laptops have a tendency to generate a lot of heat, more so with poorly-designed laptops that have little or no room for ventilation. Also, are you doing yourself harm by working so long at the laptop?

Does your laptop consume a lot of power?
Calculate the amount of time your laptop battery runs. If it doesn't run long enough for you, consider a battery pack.
**Does your laptop have the necessary connectivity options for you to remain truly mobile?**
By connectivity options, we mean Bluetooth, FireWire etc.
Do you use your laptop mostly for work and for some entertainment, or vice-versa?
This is important since if you are looking for entertainment on the move, your priority of laptop accessories will be different from that of users who use the laptop solely for work.
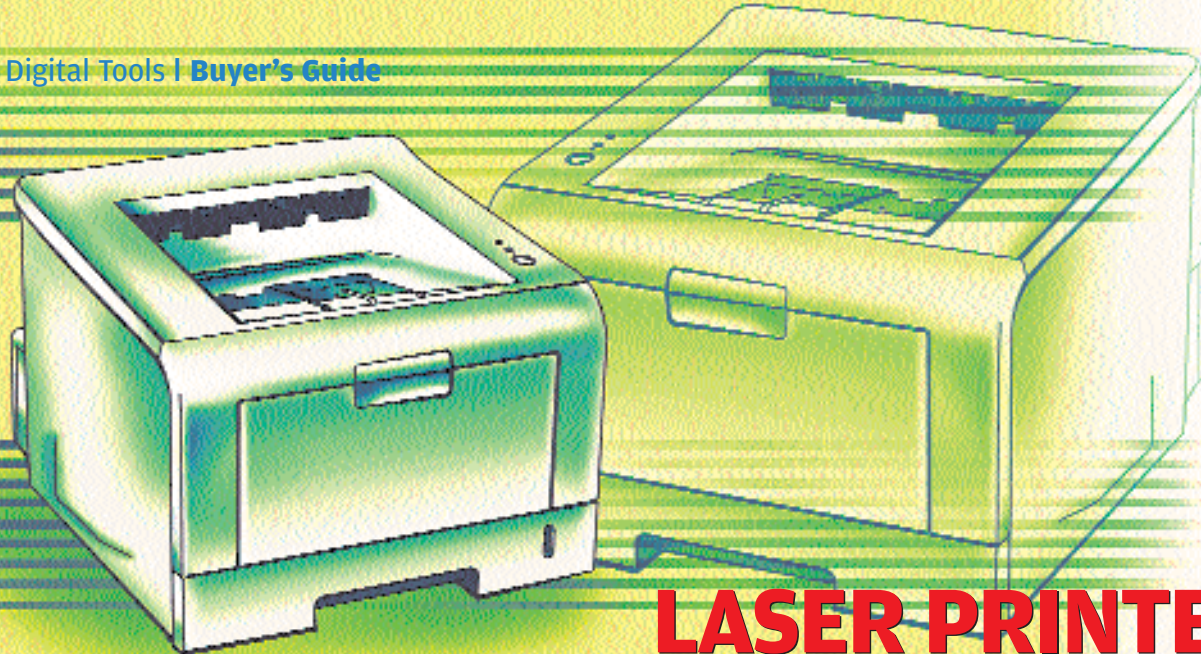
LASER PRINTERS

Prices of laser printers have fallen significantly over the past few months, but they are still more expensive than their inkjet counterparts. Laser printers have the advantage of speed and running costs over inkjets, but it is still a considerable initial investment.

The technology involved in printing is different in the two cases, therefore the nature of output and media type for printing will merit some consideration.

Consider your needs, features and specifications, the volume of usage and the content you need to print—after all, you're buying the printer to print!

Questions to ask the dealer

Can I test the printer?
You know what you need to print the most, so take a typical document that you would print and test the printer's output before you lug it all the way to your home or office. If you like what you see, buy it; if you don't, remember that this is the output when it's new—it's only going to get worse with time.

What is the duty cycle for the bundled toner as well as a new toner?
The bundled toner normally has a lower duty cycle than a new toner. Also enquire about the cost of toner cartridges, as they vary between printer brands.

Is the printer network-ready?
Some printers are network-ready and can be directly connected to a LAN. Some printers offer optional networking capability, allowing you to add a network card later.

What interface and operating system support is available?
Almost all printers support USB 2.0, but you should check for additional connectivity options such as parallel and FireWire. Also check the operating systems supported by the manufacturer, and whether they provide the drivers for all supported OSes.

Points To Ponder

Does a laser printer suit my purpose?
Laser printers are fast and give crisp text and graph printing. They can print page after page with ease and accuracy. This suggests that laser printers are great for high-volume output with their high speed and low cost per page. If you are a photographer and your work involves printing on photographic sheets, stick to inkjet printing. If you are in a business that requires a large number documents to be printed on a daily basis, laser printers would be a good choice.

What type of laser printer should I buy?
Mono and colour are the two basic types of laser printers. If your work involves more of B&W text, opt for a mono-laser printer.

What are the specifications for a laser printer?
Let us not discuss specs that are available on the leaflets of every printer. Let's look at those that are present in one printer and not in the other; the ones that make all the difference.
Automatic duplex printing prints on both sides of the paper. You do not have to stand next to it to flip the page. This saves a lot of time and also printing costs, as you can utilise both sides of a page.

Networking is a very important option for business and SoHo environments, where multiple uses access the same printer. You can share the printer directly on the network and allow users to directly print on it!

It is good to have an **LCD display** on the printer; this helps you better interact with the printer. In some situations, the printer just doesn't act as you would like—this is when an LCD comes to the rescue and tells you that the printer is low on toner or that the paper is jammed!

If you are looking for a network printer, ensure that you have enough **memory buffer**. Sufficient memory buffer means speeding up of the printing process, because many users will access the printer simultaneously.

Although **size** is not as important as the above features, it does matter if your office is small and space is at a premium. Bigger devices handle more workload; so decide what is more important.

Interesting facts

The laser printer's roller pulls in a sheet of paper from the tray; the charged roller causes the paper to stick. The printing drum is given the opposite charge. A laser scans the surface of the drum and discharges it, leaving only those points that correspond to text and graphics charged. The charged toner particles on the drum stick to the oppositely charged paper. Finally, the fusing rollers heat the paper and melt the toner, permanently fusing it onto the paper's surface.

Usage tips

▶ Occasionally turn the printer Off to reduce the downtime and provide cooling time to the heating elements and laser.

▶ To share a printer on a network, attach it to a computer that acts as a server. Provide an alias and auto installation of drivers on the remote computer.

▶ Do not use special media such as iron-on transfer sheets and thin photo-quality paper—these may cause severe damage to the printer. ∎

Case Study

Shifting Spaces

Preethi Chamikutty

Online businesses also need to engage in offline activities to supplement their business and facilitate growth

I n a cutthroat market, it's essential for businesses to think of different ways to hold their own. As the Web space sees increasingly ruthless competition, businesses that were hitherto exclusively online, are now establishing an offline presence to ensure their survival and growth. In fact, Web sites such as Monster.com, Timesjobs.com and Shaadi.com among others are now vigorously supplementing their business with offline activities.

Shaadi.com attributes as much as 60 per cent of its growth to its offline initiatives. Timesjobs.com attributes its tagline—"fastest growing jobsite"—to its offline activities as well. The media plans of most large online businesses now include offline advertising and promotions as an integral part. However, this is not limited to advertising—offline events, too, play an important part.

In what follows, we have tried to analyse why companies that were once entirely dot-coms are focussing on offline areas of work as well? And why do they feel the need to look at offline methods at all.

The Need For Change

Over the past couple of decades, methods have been developed to precisely rate the effectiveness of various marketing platforms. And marketing on the Internet is not the same as marketing offline.

JuxtConsult, a research firm based in New Delhi, conducted a survey in April 2005 of Internet usage in India. They found that Internet penetration in India stands at a mere 2 per cent. The Internet in India is, for the most part, limited to the metros, with the percentage of rural Internet users being practically negligible. Also, over 50 per cent of Web users in Indian metros are between the ages of 19 and 30, and another 22 per cent between

Illustration **Chaitanya Surpur**

the ages of 31 and 40. "Young and urban", therefore, is quite accurately the demographic of the Internet user in India.

If, as an online business, you limit your marketing to the Web, you restrict yourself from reaching prospective customers who are mostly patrons of traditional media—those who are not young and do not live in urban areas. Offline advertising helps reach out to people who may not be Internet-savvy. While, newspapers have been the preferred medium to advertise, exhibitions and TV advertisements are also being used.

Methods Of Promotion

Dhruvkanth Shenoy, VP, marketing, Monster.com, says, "Offline activities, especially TV and newspapers, help us build a stronger brand salience over a long period. Actual results in terms of visits to the site are faster through Internet advertising, though, as we are an Online brand. Apart from newspapers, we have exclusive alliances with some popular magazines."

Timesjobs.com, too, uses a blend of offline mediums. R Sundar, director corporate and head, Internet initiatives of Bennett Coleman and Company Ltd, says, "Each medium, offline or online, has its own strengths, and any media plan is incomplete if both are not taken into account. We aim to reach the audience in every medium. There are millions of highly-skilled unemployed or underemployed youth across India. Like any FMCG marketing company, we'd like to reach our target audience through an effective combination of various media."

It's clear that ignoring offline media is no longer an option. Even a dot com has to think like any other brick-and-mortar company for effective market.

Apart from job portals, matrimonial sites such as Shaadi.com and Timesmatri.com are also increasingly concentrating on offline promotions and events. The former holds Shaadi Point, which has been a great success. While, Timesmatri organises the Timesmatri.com *Swayamvar*. In these events, prospective brides and grooms can meet each other along with their parents.

However, the primary objective of these *Swayamvars*, according to Sundar is, "to build the Timesmatri.com brand and increase usage of the site." While these events were not designed to be purely offline undertakings; the need to cement the presence of the site is an important factor.

For instance, Shaadi Point is a network of centres—retail outlets—across India. Every Shaadi Point is connected to a central database of prospective brides and grooms through a specific proprietary technology. This creates a pool of all prospective brides and grooms all over India, and is available to Shaadi Point members from any Shaadi Point Centre.

Shaadi Point Centres offer people the facility to add their bio-data to the central database, search for a suitable match, and communicate with them, regardless of their location.

> "Our presence in the newspapers is a result of relationships built over the last few years, which provides offline readers as well as online users more choice in job search"

Dhruvkanth Shenoy
Vice President, Marketing, Monster.com

Omprakash Hassanandani, business head of Shaadi Point, says, "In India, even today, parents are the decision makers, and they tend not to use the Internet. So apart from the Web site, we had to come up with an idea to reach this segment. Shaadi Point enables us to do that. We also conduct three to four *Swayamvars* monthly in different cities. This gives a platform to people to see, meet and talk with each other in person."

Fropper.com, a People Interactive (I) Pvt Ltd initiative, is a friendship, dating and networking site all in one. Started in 2003, Fropper.com has a one million-strong member base, and it also has a gamut of offline activities to supplement its online presence.

Navin Mittal, business head, Fropper.com, says, "Conducting offline, live events is challenging. Apart from online promos, we hold public events such as shows, concerts, and exhibitions that are open to the public, and advertised in other media. We also promote Fropper.com by sponsoring college festivals, as the youth are the main target audience."

Sign Of The Times

Offline media events encourage customers to go online, become members and then avail of more benefits. As with Timesmatri.com, the idea is not to branch out into some kind of offline enterprise. However, in the case of Fropper.com, people who attend their offline event need to eventually go to its site—which helps to cement the online brand.

Shaadi.com plans to increase the number of franchises for Shaadi Point to 500 across the globe. International expansion, prospect grooming programs, pre-marital workshops, wedding planning and lots more is on the cards. Fropper.com wants to enable people to connect to each other in every possible way. Brand building in the form of promotions on mobile phones, hiking trips, singles-night-out programs etc. is what Fropper.com has planned for.

Offline Is Essential In India

Only when the majority starts looking at the Internet as an alternative to newspaper classifieds, will there be a real breakthrough for online businesses in India.

Internet use is mainly limited to the metros—so while Monster.com, Shaadi.com, Timesjobs.com, Fropper.com are primarily online businesses, they need to ensure that people also see them elsewhere—at least for the coming decade. Offline activities act as value-additions for online businesses by building brand awareness, and encouraging people to go online.

Physical presence, for these businesses, helps them gain the credibility and trust of the masses. By and large, Indians still prefer a touch-and-feel approach when it comes to buying, investing or match-making! So, for online businesses, offline activities—be it setting up shop in remote areas to organising glitzy events—are here to stay. ⊠

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Wiki At Work

A lot of businesses today spend good amount of money on software that offer basic information sharing, but we're here to tell you how a Wiki can do the same thing for free!

Mithun Kidambi

O ne of the key processes in any office is that of managing knowledge resources. It could be a small publication or Web site with a bank of articles and features to manage, or a BPO that takes care of client information. It has become imperative to come up with an easy solution for knowledge management (KM), courtesy its growing awareness among companies. The solution would be perfect if it were to feature a high degree of transparency while being collaborative.

Looking at this growing demand, companies are churning out software that fulfils this need. There is a catch, however—that of price. Nevertheless, wherever there is proprietary and expensive enterprise software, you'll find open source and freeware replacements. Many a time, these work better and offer far more flexibility than their pricey counterparts.

Collaborative software is something that allows several users to concurrently create and manage information on a Web site or network of pages. A wiki is a strong example of such software. Everyone associates the word 'wiki' with Wikipedia.org, the most well-known user of this tool, and this connection often results in people assuming that 'wiki' and Wikipedia are synonymous. As a matter of fact, 'wiki' in Hawaiian means 'quick' or 'fast'.

In computing terminology, it is the revolutionary tool that is talking matter from Atlanta to Zambia. Over time, the 'wiki' definition has come to mean the act of creating a wiki as well. By Wikipedia's own definition, the wiki is a simplification of the process of creating HTML pages. This results in a very effective way of exchanging information.

How does this happen? A wiki can be used to co-author documents on the Web, documents that will eventually look and act as a Web page. And this will not need any programming or dabbling in any code from your side. All you'd need is the software and a Web browser. The flexibility afforded by the tool makes it easy to maintain records or any form of database.

To quote again from Wikipedia, "A single page in a wiki is referred to as a 'wiki page', while the entire body of pages, usually highly interconnected via hyperlinks, is 'the wiki'; in effect, a very simple, easier-to-use database.'
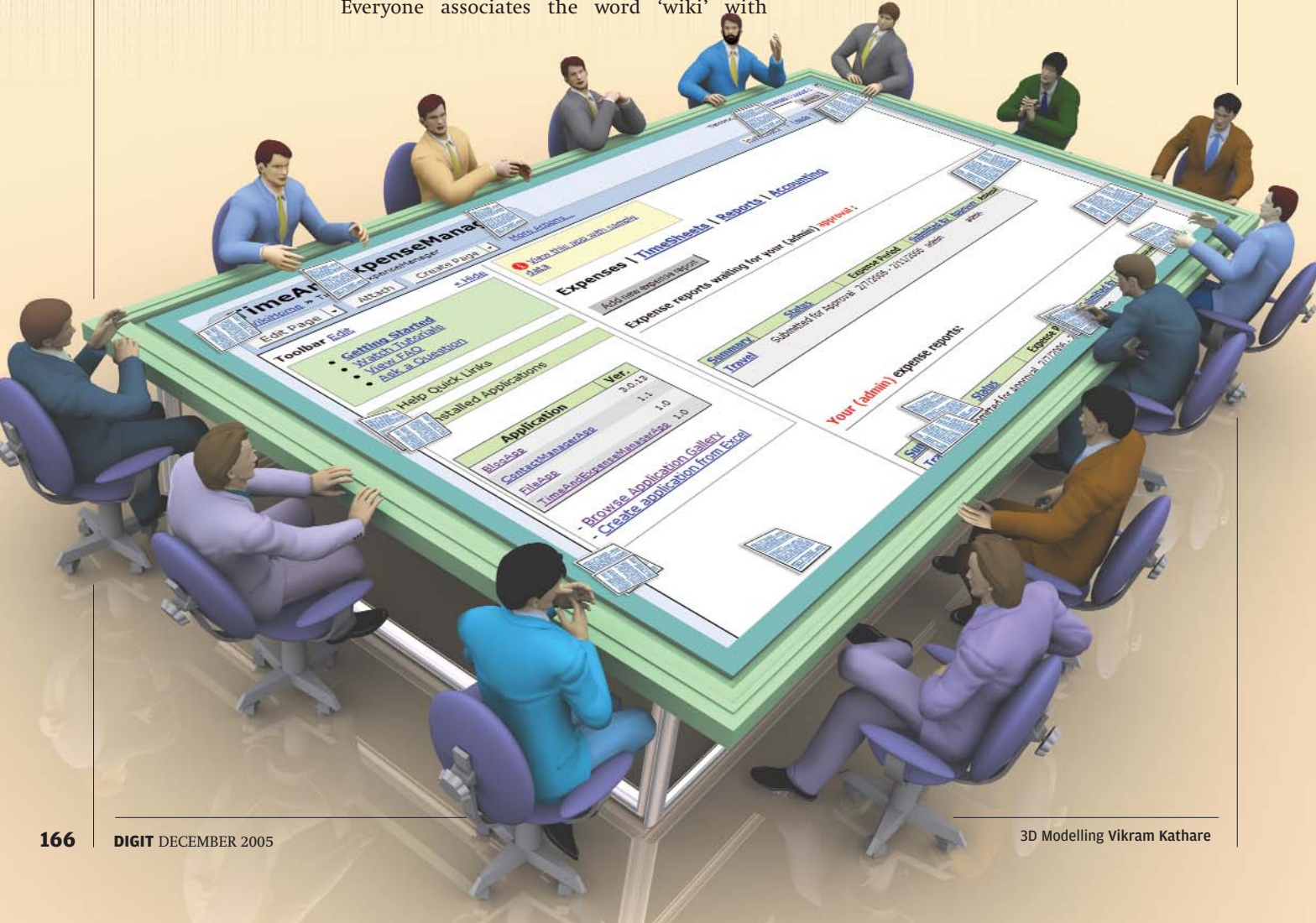
In layman's terms, a wiki can create a Web page for you without you having to fiddle around with any code

The Origin Of The Wiki

The first wiki site was developed by Ward Cunningham, who received a Master's degree in computer science from Purdue University in 1995. He was working at the Portland Pattern Repository, and he called his idea the WikiWikiWeb.

In the late 1990s, wikis were seen as a very efficient way to develop and maintain both public and private knowledge bases. This lead to a number of online collaborative ventures opting to use this tool. Most notable among these was Wikipedia.

Enterprises soon followed suit, looking at the advantages provided by the tool. Very soon, tasks, project schedules and documentation, office intranets and other forms of internal communication in offices were managed using wikis. The spurt in the use of wikis saw commercial versions of the tool being offered.

The most widely used wiki software was SocialText, by a company by the same name. Based on the Kwiki software, it was one of the earliest enterprise wikis, and was available as a hosted service from the company's server, or as a package that could be installed on the client server.

Free, open source downloads of wiki software, too, were available. A few of them, such as MediaWiki, were customised to handle specific tasks including hosting video clips and audio files. Others such as Twiki and Kwiki could be customised to a large extent and worked much like a Content Management System. These tools, when installed on an office intranet, would be sufficient to take care of all resource management and knowledge management needs.

Wikis: The What And The Why

Now what exactly does a wiki do, and why is it beneficial to implement it on an office network? Putting it simply, a wiki is a tool that allows anyone to contribute, edit, and browse through content on a network or Web site. In layman's terms, a wiki can create a Web page for you without you having to fiddle around with any code. All you need to do is enter the required text after selecting the template format (just like in a blog), create links, and you have a site ready.

To create a new page or a link, most Wikis have an "Edit" or "Create" tab at the top. You click on this tab and enter the link name. Most wikis require you to enter the link as a WikiWord.

▼ The Advantages Of Collaborative Tools

Collaborative management tools facilitate and manage group activities. These include:
▶ Electronic calendars (also called time management software)—schedule events and automatically notify and remind group members
▶ Project management systems—schedule, track, and chart the steps in a project as it is being completed
▶ Workflow systems—collaborative management of tasks and documents within a knowledge-based business process
▶ Knowledge management systems—collect, organise, manage, and share various forms of information
▶ Social software systems—organise social relations of groups
Collaborative software can be either Web-based, such as UseModWiki and Scoop, or desktop systems such as CVS or RCS.

Creating a new page in WYSIWYG, HTML or XML format

Newer search engines such as MetaWiki allow users to search across a number of wikis

WikiWords are two or more words written in title case without any space between them, for instance, NewLink. The Wiki recognises these as links and no HTML is required to link to these words.

Alternatively, you can also use normal words and hyperlink it to the required URL. This however is just a roundabout way of doing things. Creating a link in Wiki using WikiWords is a two-step process. After you finish entering the link name in the template and saving it, you have created what is called a place holder. This is essentially a link to an empty page.

These place holders (see screenshot on the right) are shown as a link with a question mark at the end. To convert them to full links all you need to do is click on them and type in the required text in the template provided. This converts the place holders to links like any other link on the Web. This ensures that adding a new section on a wiki or scheduling a new task which requires creating a new page is as easy as editing content. This mechanism of creating pages by using links makes sure orphan pages (pages that lead to and from nowhere) are not created.

The links could be within the body of the text, or the section heads on your site could be links as well, just as with any regular Web site.

Wikis For Free!

Name of Wiki	Website	Type
TWiki	www.twiki.org	Download from the Net
JotSpot	www.jot.com	Hosted on the Net
Xwiki	www.xwiki.com	Hosted on the Net
TiddlyWiki	www.tiddlywiki.com	Hosted on the Net
Quake Wiki	www.wiki.quakesrc.org	Download from the Net
MediaWiki	www.mediawiki.org	Download from the Net
SeedWiki	www.seedwiki.com	Hosted on the Net

Most wikis on the Web have a non-linear navigational structure, which means that the links to other areas in the wiki are found in the body of the text. This leads to massive cross-linkages, and can be too confusing at times.

In the case of an office wiki, however, a hierarchical navigational structure is preferred. This looks and acts in the same way as a Web site with sections and sub-sections.

Links and place holders are differentiated by their colour

Searching for content on a wiki is similar to doing so on any other intranet. Because of the nature of most wikis—that of being a repository or database of knowledge—search is a very important aspect. The basic search options of title search and full text search is the norm in most setups.

Newer search engines such as MetaWiki allow users to search across a number of wikis. This comes in handy if each department in your workplace were to have its own wiki.

Unlike regular intranets, which require a large amount of installation on the internal server, a wiki can run efficiently with minimal installation on a server or even on individual computers. The content in any wiki is stored on the server as plain text. This makes sure that very minimal server space is needed to store any data.

The wiki engine is the only code that is stored on the machine. The wiki thus acts as a very basic HTML server that translates plain text into a page that can be accessed over any network with all the required formatting. Because of this minimal use of hard-disk space, the wiki can be setup on any computer connected to a network and not just a server as with other Web sites. Thus the Wiki can be classified into two different types as per their installation: server-side wiki and client-side wiki.

Most establishments prefer a server-side wiki, as it makes sure the content is located on

A wiki can handle a number of different tasks

The biggest hurdle in implementing a tool like the wiki is convincing people about the feasibility of the software

a central server and not spread across a number of terminals. Also, centralised handling and storage of content makes sure no data is lost if one of the local terminal crashes.

The most common operations on a wiki, such as editing and creating pages of content, and managing schedules including the control functions on a wiki page, are on the server. The engine that forms the core of the software—also called a wiki engine—renders the content in the same way a Web browser renders pages.

In a client-side wiki setup, individual computers act as servers, only the data files are located on the central server, which acts as a database. All the execution needed to convert the wiki text into a normal display page is found in the browser used by each terminal.

Similarly, all the tools for creating, editing, saving and managing documents and schedules, or for taking any other action, are present in the browser as a plugin. Such plugins are available as downloads for most browsers such as Mozilla and Firefox; other browsers such as Flock have these plug-ins bundled with the installation files.

This flexibility afforded by the application makes it highly customisable. You can decide where to host the application, depending on the size of the wiki and the number of users.

The Change Challenge

According to Cunningham, wikis are designed with the philosophy of making it easy to correct mistakes, rather than making it difficult to make them. The most common grouse against the use of wikis is also its biggest plus—anyone can open and edit or create a page in a wiki.

To keep vandals away and to verify the validity of an addition or editing, wikis provide for a 'Recent Changes' link. This gives a list of all the additions and changes done to a particular wiki within a certain timeframe.

Some wikis can also filter this list and remove minor edits as well as changes made to the document by bots that crawl the Web. This feature is very useful when your wiki is open to the Internet. A typical case would be for documentation of software or program development with developers strewn across the globe, as is the case with development of most open source tools and application software.

In addition to the 'Recent Changes' link, every wiki has a Revision History, which shows previous page versions, and where the differences between the two versions are highlighted. This enables any person accessing a particular page to make note of the change, and this comes in handy for processes that change frequently and need to be documented.

A regular wiki user can view the differences in an edit listed on the 'Recent Changes' page and, if something is an unacceptable edit, he can consult the history and restore a previous revision.

Apart from this, the tool has various other in-built customised filters, that provide high levels of content control. Some Wikis use login and password authentication and can thus track which user made changes and when. This type of Wiki is used in offices. Other tools include ones that monitor a page quality, and send alerts to the administrator whenever modifications are marked on a page. This feature is useful for pages that detail a particular method to do a process or to house case studies, where changes are not frequent.

The Collaborative Game

The biggest hurdle in implementing a tool like the wiki is convincing people about the feasibility of the software. Training and incentives are very important to get people accustomed to, and contribute to, the system. A major shift in the mindset of the company, however big, is necessary to implement the wiki; the move will have to be from corporate to co-operative. ⊠

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The Easy Wiki Way

Wiki Syntax	HTML	Rendered Output
A simple *WYSIWYG* format makes typing out a text in a wiki so easy. What are the advantages? Using Wiki does away with the cumbersome *HTML* codes.	A simple WYSIWYG format makes typing out a text in a wiki so easy. What are the advantages? Using Wiki does away with the cumbersome HTML codes.	A simple *WYSIWYG* format makes typing out a text in a wiki so easy. What are the advantages? Using Wiki does away with the cumbersome *HTML* codes.

Enterprise Servers: Linux vs Windows

**The common perception is that Linux is more secure than Windows.
How does that translate for enterprise servers?**

The Linux server makes for a stable and robust choice

An FMCG (Fast Moving Consumer Goods) company, Eveready Industries India Limited has a portfolio comprising dry cell batteries, flashlights and packet tea. The world's third-largest producer of carbon zinc batteries, Eveready sells more than a billion units a year. In India, Eveready's carbon zinc batteries dominate the market, with a complete range for all equipment types.

"We chose a Linux server due to many factors. The primary reason being our ERP package, which is the Oracle e-business suite. Since Oracle also supports

> "One factor that put Linux hugely in our favour was the issue of security"

Arup Choudhury
GM, IT
Eveready Industries Ltd

Linux, we felt it would be ideal for us to use a Linux server. Also, as opposed to Windows, Linux offers better security and stability.

"It cannot be denied that Linux servers are certainly affordable vis-à-vis Windows servers. In our case, we have been using Linux for more than a year. And so far, we haven't encountered any difficulties with its functioning. Moreover, we are yet to experience any downtime with it! Even the cost of usage for the Linux server is considerably lower than that of Windows.

"Another major factor that put Linux hugely in our favour was the issue of security. As opposed to Windows, it cannot be denied that only a few viruses have cracked the Unix kernel till date.

"We have a very convenient setup when it comes to maintenance and support. As a matter of fact, we have a three-tier support. We are using the Advanced Server 3.0 provided by Red Hat, which also takes care of implemeting new concepts. Our performance issues are handled by Oracle, and our day-to-day downloads by Tata Consultancy Services.

"From experience, we can declare that a Linux server makes for a stable and robust choice. Moreover, due to its affordability, Linux enjoys a huge popularity in the Asia-Pacific region. It is a sign of times to come."

Performance-wise, Windows server is one of the fastest

SatNav develops hi-tech, computer-aided facilities management (CAFM) products, and provides facilities management to industries. It conceptualised an in-car navigation system, an in-house routing engine, and a vehicle tracking system amongst others.

"While developing our business infrastructure management system, we decided to go for a server that had a user-friendly interface and would be easy to deploy and administer. We didn't want to compromise on the reliability, scalability and performance of the server. We found the Windows server to be suitable for our requirements.

> "Microsoft IIS 6 is the platform of choice for business-critical enterprises"

Selvamuthiah Somasundaram
Associate VP,
Business Development, SatNav

"The Windows server is one of the fastest, and also an industry leader in performance and scalability. Be it file-server throughput or serving static or dynamic Web content, Windows servers are fast and reliable.

"Microsoft IIS 6, the Web server for Windows Server 2003, is the platform of choice for business-critical enterprises. It provides the sophistication vital for today's Web server. With it we could build a highly secure environment, manage application pools and create clusters to achieve maximum uptime.

"As far as site hosting capabilities of the Windows server are concerned, sites developed using different technologies such as ASP, .NET, and PHP can be hosted. The Windows server includes Enterprise UDDI (Universal Description, Discovery and Integration) Services and a dynamic and flexible infrastructure for XML Web services. This standards-based solution enables companies to run their own UDDI directory for intranet or extranet use, making it easy to discover Web services and other programmatic resources.

"Our intranet is developed on .NET and with an MS SQL Server backend. And as regards service, being members of the MS Empower Program, we could access the support team for any technical queries. The support we get is excellent, with an unbelievable turnaround time."

As told to Renuka Rane
*renuka_rane@thinkdigit.com*

Cisco's security approach stems from its self-defending network strategy. Essentially, we integrate security in every aspect of the network to create an end-to-end integrated system. This helps the network identify threats, react accordingly as per risk levels, isolate infected endpoints, and reconfigure the network resources in response to an attack or anomalous behaviour. This enables networks to deal with threats on their own, with minimal human intervention.

All enterprises look at lower total cost of ownership (TCO) for any product or solution. Security is no exception. Comprehensive security solutions are cost-effective and easy, as opposed to separate security devices that are resource-hungry, and difficult to manage.

Comprehensive security solutions integrate various functionalities like IDS, VPN, anti-virus and authentication into a single device, with provision for scalability and compatibility.

Jagdish Mahapatra
Regional Manager,
Channels,
Cisco India and SAARC
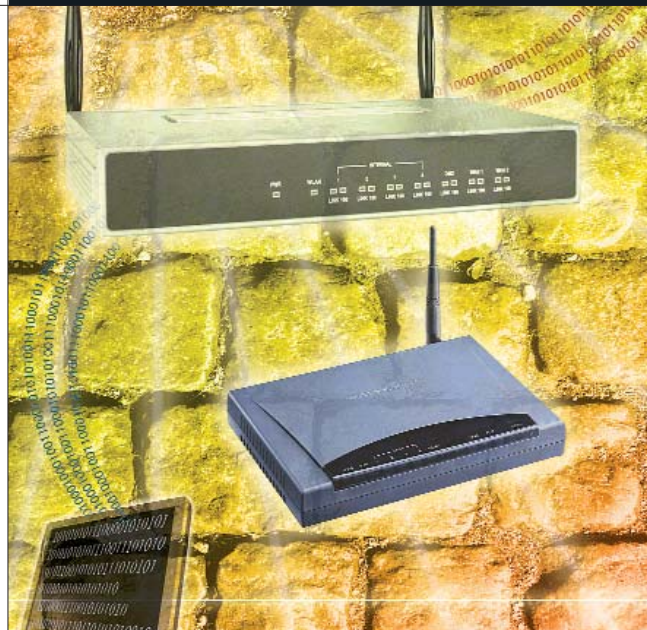
INTEGRATED

Companies are increasingly opting for integrated security solutions *vis-à-vis* varied point-to-point options. *Digit* tries to examine the reason for this trend...

Imaging Vikram Khatare

Ajit Pillai
Country Manager,
WatchGuard
Technologies Inc

Our integrated security solutions comprise Firebox X Edge, a line of firewall and VPN endpoint security appliances. They deliver network protection to small businesses, remote offices and telecommuters. For instance, the Firebox SSL Core VPN Gateway is a product designed specifically for growing enterprises that allows authorised users to connect through an auto-updating, Web-deployed client, among other features.

Customers are fed up of piece-meal solutions and would like one vendor to take care of all the threats, and hence would prefer an integrated appliance. We also provide Live Security Service (LSS) to registered customers. This includes software maintenance, technical support, hardware warranty, LiveSecurity E-mail Alerts, Broadcasts, and related editorial content.

We mostly cater to the growing enterprise segment, which would have anywhere between 100 and 2,000 users. Earlier, different vendors offered different solutions. Now, customers get an integrated appliance and can hold one vendor responsible for the complete solution. We have been able to eliminate a lot of compatibility issues as well. Even globally, organisations are increasingly using integrated security solutions.

Subhasis Gupta
AVP, Dept of IT,
UTI Technology Services Ltd

Basically, a mix and match of various products make up our integrated security solution. We use WatchGuard's firewall products, McAfee's anti-virus solutions, Trend IMSS is our e-mail scanning product and so on. We use the best and integrate them all at a common place that's centrally managed.

Earlier we used point-to-point solutions. We shifted to using integrated security solutions around 16 months ago. And in retrospect, it was a good decision for us. Ever since the implementation of the integrated solution, performance has improved considerably. There has been a phenomenal increase in the uptime of systems, and the loss in man-hours has declined. Other related problems have also been solved (up to 95 per cent) as compared to the point-to-point solution.

An integrated solution is better than a point-to-point solution as the latter has innumerable points of failure. Moreover, the maintenance cost of each and every node is rather high when compared to an integrated solution. The future of integrated security solutions is promising, as they offer customers a good bargain.

SPELLS SECURITY

John Cumming
Senior VP and CIO, TWS
(Tracmail, Webhelp &
Spherenomics)

TWS doesn't use a fully integrated security suite. We use an integrated security platform incorporating the best of breed components from Cisco, Symantec, F-Prot, Foundry Networks as well as Open Source solutions such as Spam Assassin, Snort and Nagios. TWS's integrated security platform covers firewalls, all intra-site traffic via private line or IPSec IP VPN, inbound and outbound e-mail for both viruses and SPAM, and more.

When TWS's primary business was related to dotcoms in the 1990s, we focussed on external threats. As we entered the BPO space in early 2000, we started to look out for internal threats. This system will continue to evolve and is a central pillar of our IT infrastructure. By leveraging the best of breed commercial solutions with Open Source, we delivered significant value in terms of cost-effectiveness for IT security. We've never faced a violation on any of our core servers, routers, firewalls or telecom equipment.

In the future, integrated security solutions could be integrated considering site-specific needs, as opposed to the current one-size-fits-all approach. As interoperability increases, the costs will also decline.

Sascha Beyer
Managing Director,
Pointsec Middle East & India

Pointsec mainly deals with endpoint security. We develop secure encryption solutions to protect enterprise information on computers and mobile devices against intrusion and data theft.

For organisations who want to store confidential or classified information on mobile computing devices, we have a solution for automatic data encryption that extends enterprise security to the end-points of the network.

We cater to a wide range of customers ranging from Wipro, ITC Infotech and Syntel in India to Ericsson, TeliaSonera, Telenor, Astra Zeneca and CapGemini abroad.

We think it is important for companies to concentrate on securing enterprise data, more so, considering the increasing requirements for enterprises to comply with security regulations such as the India Information Technology Act, and globally, the Sarbanes-Oxley Act, the Gramm-Leach-Bliley Act and the EU Data Protection Directive.

As told to Preethi Chamikutty
(preethi_chamikutty@thinkdigit.com)

Touched By Tech

Accelerating IT Literacy

Tech-savvy teachers make for tech-savvy students. Project Shiksha brings technology to the masses

Renuka Rane

A class of 50-odd students is eagerly listening to their biology teacher explain the action of photosynthesis. She uses a PowerPoint presentation with numerous images to elucidate the synthesis of compounds. Sound like a typical elite English-medium school? Well, the teacher is interacting with the students in Telugu, and the location is the Government Boys High School at Mustaidpura near Hyderabad.

The teacher, Sunita Yadav, claims that ever since she started using technology in the classroom, learning has become accelerated, more enjoyable, and more interactive for students. She says, "Earlier, I would require a minimum of three lectures to explain photosynthesis; now, with computers, I can do it within 20 minutes! And the students' attention is guaranteed!"

Project Shiksha

Yadav is one of the 42,000 teachers who have undergone IT training for teachers as part of Microsoft's Project Shiksha, which aims at "Empowering the future."

Project Shiksha is part of Microsoft's Partners in Learning Programme, which includes empowering students, educators, the developer community and IT professionals by providing greater access to the latest technologies and locally tailored training content.

Launched by Bill Gates, chairman and Chief Software Architect of Microsoft, during his visit to
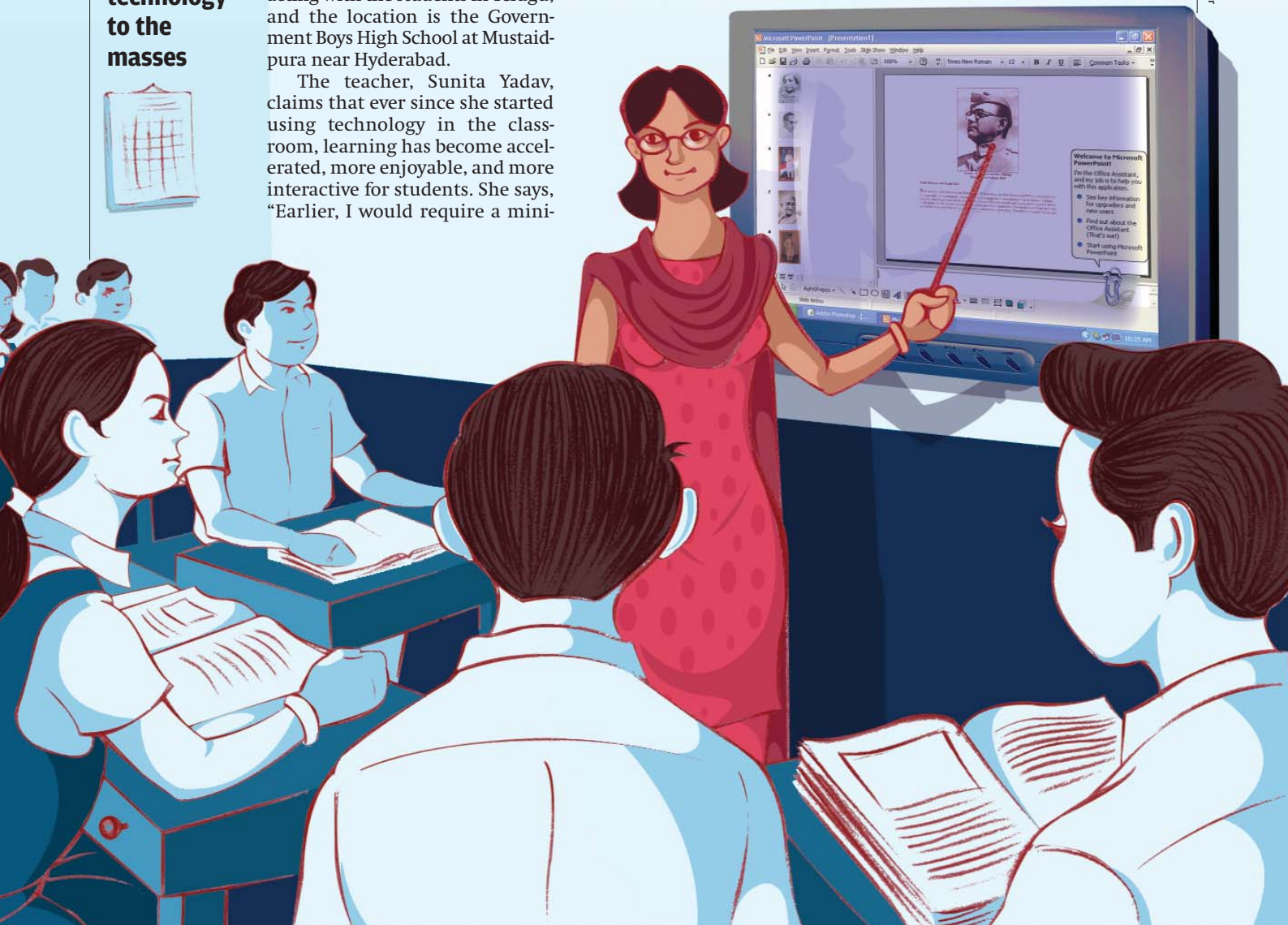
Illustration Chaitanya Surpur

India in November 2002, the project addresses critical challenges of Information and Communication Technology (ICT) access in education in India.

Project Shiksha is designed to deliver affordable software solutions, and comprehensive training and curricula—for students as well as teachers—in the Indian government schools.

The Project entails an investment of $20 million (Rs 92 crore). It seeks to reach out to over two lakh school teachers and one crore students—within a period of five years. The key deliverable of the project is, indeed, the teacher training programme.

Thus far, Microsoft has signed Memorandums of Understanding (MoUs) with the State Governments of Andhra Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Tamil Nadu, Uttaranchal, and West Bengal to implement the Project Shiksha programme.

Bridging The Tech Divide

Rohit Kumar, Country Head, Public Sector, Microsoft Corporation India, says, "Project Shiksha is a nationwide initiative, wherein Microsoft is collaborating with state governments across India to reach students and teachers.

"We have a comprehensive India education programme wherein we are working closely with academia, universities, the developer community, as well as the education departments of the State and Central Government, to ensure IT adoption in the education process at various levels."

Microsoft also has a tie-up with the Navodaya Vidyalaya Samiti (NVS) schools, which are under the Ministry of Human Rerource Development. In addition, Microsoft is also extending the reach of IT to students and teachers in the schools that come under the Municipal Corporation of New Delhi.

Kumar mentions, "Our objective is to take IT to the grassroots level. We believe that early access to technology for students can contribute significantly towards creating an IT-proficient next generation."

Ensuring Tech-Savvy Pedagogy

Under Project Shiksha, teachers are trained at Microsoft IT academy centres in Andhra Pradesh, Karnataka, Maharashtra, Uttaranchal, Lakshwadeep, and even in the Andamans. The Project has helped build an online community for teacher collaboration, best-practice sharing, and honing of skill sets.

Yadav says, "In June of 2004, I underwent ten days of intensive

> **Early access to technology can contribute significantly towards creating an IT-proficient next-generation**
> **Rohit Kumar**
> Country Head Public Sector, Microsoft Corporation India

training at the Microsoft IT academy at Banjara Hills. We were coached on many aspects—right from learning how to operate a computer to using it for academics and administration. This has helped me tremendously."

Yadav further shares, "The students in my school come from underprivileged backgrounds, and work in their spare time. Learning with, and about technology instils a great measure of self-confidence in them. In fact, they now complete most of their assignments online. Knowledge of computers has improved their overall grasp of the subject, and they now do better in exams."

Promoting IT Know-How

So far, Project Shiksha has reached out to over 21 lakh students. Under the programme, the Innovative Teachers Leadership Awards were announced in 2004. This year, 15 teachers were selected from a nationwide contest; who will now attend the Microsoft regional event in Korea. This will help Indian educators get exposure to global teaching methods.

Kumar adds, "In an Internet-dominated era, we have to ensure that the younger generation has the ability to access, use, and adapt to the tools of our time, to enable them to compete at a global level. This has to be across the spectrum of population, no matter what part of the country they live in. We believe educators are essential to making this happen, and they need to be recognised for this."

Technology, it is clear, facilitates the enhancement of teacher and student skills. Hence, it is essential that technology becomes an innate part of the learning process for students in all corners of India—not in A and B grade cities alone. Such initiatives are the need of the hour, and may help turn India into a nation of computer literates. ☒

A teacher training class in progress. The subject—*Computers*!
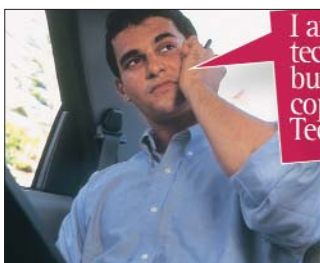
renuka_rane@thinkdigit.com

Sony Handycam DCR-DVD403

This Sony Handycam looks like any normal MiniDV camera; the only difference is that it records directly on to a DVD. Superior video quality, a 5.1 surround sound recording and amazing still photography capabilities make this a very good buy. As is typical for Sony camcorders, most functions are accessed via menus on the LCD touch screen. The menu is programmable, so you can put your most-used functions on the first screen. For casual shooters, there is an "Easy mode" that puts the camera in a fully automatic mode. All you need is a rewritable DVD, and you're ready to go and shoot your first DVD film. The camcoder's Rs 50,000 (approx) price tag seems affordable for all the jazz!

über Cool

Here's a look at the latest gizmos—*droolmaal* that's out of your reach. But, it never hurts to know!

Krell HEAT

If you thought Bose made the most expensive home theatre systems you need to refine your search criteria. Krell, a home theatre manufacturer from Louisiana, US, is known for their super-expensive high-fidelity equipment. The latest from their stable is HEAT or the High End Audio Theatre. The set of 16 speakers contains 2 tower speakers, 7 amplifiers, a center speaker, 4 surround speakers and 2 sub woofers. If its watts that you're looking out for, then hold your breath, the output is an earth shattering 11,500 watts! Now comes the hard part. The Krell HEAT would set you back by around Rs 1.5 crore. Talk about home theatre systems costing more than your house. Time to turn on the HEAT!

Alienware Aurora ALX

Every self-respecting gamer knows that apart from the specs of his beefy machine, the looks also count. Most would go in for a special gaming case to hood their system, but there are those who would just pick up an Alienware.

This computer manufacturer specialises in high-end, nay, extreme desktops and laptops. Take a look at the Alienware Aurora ALX, this machine is powered by an AMD 64 processor, 1 GB RAM, dual nVidia GeForce 6800 GT 256 MB DDR3 graphics cards, a Creative Sound Blaster Audigy 2 ZS 7.1 audio card that supports HD Audio.

In addition, the system also has a 250 GB hard disk. Alienware also offers to customise your system. And just so that you don't hear the sound of the system fans Alienware did away with them altogether and instead opted for liquid cooling. Just for the record the Aurora costs around $4,500—roughly Rs 2 lakhs.

Touch&Glide

The following product isn't exactly what you'd call a gadget. At least, it isn't something any geek would drool over. Still, the Oliso-Touch&Go is an iron with a difference, or rather an iron that can carry its own weight. It's one smart iron that won't let you burn your shirts even if you leave it switched on and unattended. The Touch&Glide has a sensor in the handle that can sense whether it is being held or not. The moment you leave it unattended, two heat resistant plastic stilts extend and lift the iron over an inch clear off the cloth. If you want to get back to ironing just grab the handle and it drops back on to the cloth. It costs around $130 (Rs 6,000 approx).

Sony KDE-P61MRX1

The Sony KDE-P61MRX1 is sure to rivet your attention. Take the sheer sheer size of this Plasma Panel TV—at 61", it is one of the largest televisions available today. This high-end marvel is integrated with all the latest media features. These include a Memory Stick recording device, a PC input so that you can watch the latest Internet TV episodes on your widescreen at a resolution of 1365 x 768. And of course, it is HD-TV enabled. The sound department is well equipped with a Virtual Dolby surround sound and BBE digital sound processing. Of course that size needs adequate support so Sony gives you a choice of either a wall mount or a stand.

Now, you may wonder why would Sony give any accessory as part of the unit? Here's the answer. This flat panel wonder costs £14,000 a piece. Converting it into rupees doesn't quite cut the ice as the price would double with all your taxes and duties. Suffice to say, could buy a Mercedes for the same price.
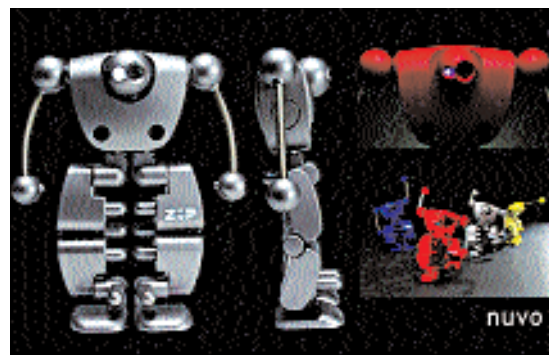
Nuvo

Is a made-to-order robot the hallmark of a futuristic society? If you think so, then be glad for the future is here. Meet Nuvo, an English speaking humanoid robot for home usage. Designed by the same person who designed the Ferrari Enzo, Nuvo is a formidable piece of technology with four sensors, a dual-microphone, speaker and wireless LAN. It can understand and respond to many different verbal commands and can be controlled via any Web browser. It can walk up and extend its hand when meeting someone, play MP3s on demand. Because these babies are made to order it is sure to burn a hole in your pocket. Drool worthy indeed!

Countries, Companies, And Cellulose

1 What is the online term for books that originate from Web logs?
a) boogs
b) blogbooks
c) blooks
d) webooks

2 Which of the following has *not* been offered as an explanation for the origin of the term 'bug'?
a) The cellulose in early computers attracted larvae, which attacked the storage media
b) A certain programming pioneer had the habit of exclaiming "I'll be buggered!" whenever an error came up
c) In the 19th century, telegraphy keyers had a graphic of a beetle on them
d) A moth was responsible for the Harvard Mark II computer being shut down for a while

3 How many English pages do Google, Yahoo! and MSN respectively index, based on a search for the word "the"?
a) 8.5 billion, 11 billion, 2.5 billion
b) 20 billion, 11.5 billion, 8.5 billion
c) 86 million, 120 million, 2 billion
d) 10 billion, 1 billion, 500 million

4 Which country has the highest per capita rate of broadband connectivity—70 per cent?
a) Norway
b) South Korea
c) The UK
d) The US

5 Which of the following is *not* reported to be amongst the list of the most common passwords?
a) "Love"
b) "Sex"
c) "Hate"
d) "Lucky"

6 Which country recently expressed concern that the United States could cut off its Internet access anytime it wanted to?
a) Iraq
b) Iran
c) Iceland
d) Ireland

7 Name, in order, the top three players in the international hard disk market.
a) Samsung, Maxtor, WD
b) Samsung, WD, Seagate
c) Seagate, WD, Hitachi
d) Seagate, Hitachi, Fujitsu

8 What is an 'Easter Egg' in software?
a) A hidden virus that emerges when the user executes certain keystrokes
b) A fun, hidden feature that can be unlocked by a variety of mechanisms
c) An undocumented bug
d) A bug, a fix for which the developers are willing to pay

9 Which is the first country that has allowed its citizens to vote over the Internet in national elections?
a) Estonia
b) Finland
c) Germany
d) The UK

10 Which of the following is *not* known for being a microprocessor manufacturer?
a) Transmeta
b) SiS
c) Logitech
d) Centaur Technology

Got an interesting question? Send it in with the answer to **tq@thinkdigit.com** Mark "TQ" in the subject area.

I BM's first hard disk, introduced in 1956, was the RAMAC. It had a capacity of about 5 MB. And the storage cost per MB—mind you, not GB—was about $10,000!

Did You Know?

Answers
1. c) blooks 2. a) A certain programming pioneer had the habit of exclaiming "I'll be buggered!" whenever an error came up 3. a) 8.5 billion, 11 billion, 2.5 billion 4. b) South Korea 5. d) "Lucky" 6. b) Iran 7. c) Seagate, WD, Hitachi 8. b) A fun, hidden feature that can be unlocked by a variety of mechanisms 9. a) Estonia 10. c) Logitech
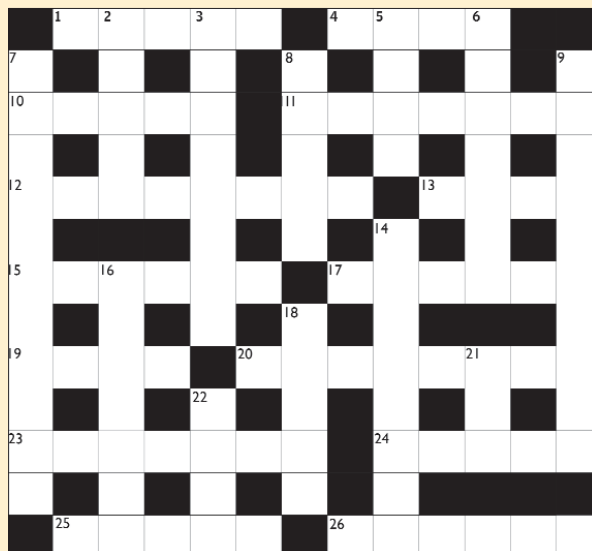

Crossword

ACROSS
1. E—— sending and receiving of messages(5)
4. —— Vista-search engine(5)
10. Bug-free code(5)
11. Tanatos virus worm(7)
12. Unicode and double-byte —— software modification(8)
13. —— or credit card(4)
15. 'S' in 'bps'(6)
17. ASCII character '='(6)
19. Chat acronym 'Oh No, Not Again'(4)
20. World's largest mobile company(8)
23. European Forum for Open Systems(3,4)
24. To enter data in a computer(5)
25. Alternate or pen name(5)
26. Alignment of text inside the margin(6)

DOWN
2. —— Multimedia-a division of Aptech Institute(5)
3. Traditional wired telephone service(4,4)
5. Company emblem(4)
6. 'A' in 'AOL' (7)
7. User passwords (6,5)
8. Short for Active Backbone(5)
9. Two edges of a graph next to each other(10)
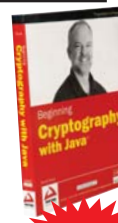14. Maths statement using equals sign(8)
16. 'Ctrl'key(7)
18. Audio or —— card(5)
21. Order Code Processor(abbr)(3)
22. Data Processing Management Association(abbr)(4)

Crossword by **Nitta Jaggi**

Send in your answers to the crossword with complete contact details to **TQ@thinkdigit.com** on or before **December 15.** One lucky participant will win **Beginning Cryptography With Java** by David Hook published by Wiley Publishing
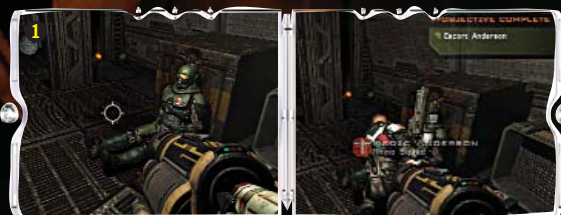
Win!

November 2005 Solution

Across: TROJANHORSE, ENTRY, BEEPERS, IAO, TRAP, FIRE, REJECT, BULLET, URGE, ADLC, SEAT, VIEWERS, IDAPI, DOMAINNAME

Sushant Kumar of Allahabad wins the prize for the November 2005 crossword

QUAKE 4 ™

Quake 4 is the latest id software release; we take a look at what all the hype is about

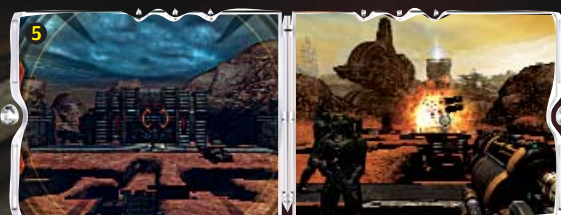You start off having to accomplish tasks—get a medic

Then the monsters attack Kane...and die

You get a lot of help from fellow marines

You help them too—stay away from my friend freak!

Use a cannon to blow stuff up, then blow up the cannon

Software's *Quake 4* is the follow-up of the popular multiplayer deathmatch game *Quake III Arena*. However, the single-player campaign story is a direct sequel of the older *Quake II*. The story is simple: you are Matthew Kane, a corporal fighting alongside a human army against aliens called *The Strogg*. This alien race reminds us of the *Borg* from *Star Trek*, but are much uglier looking.

Although majority of the gaming world was waiting for *Quake 4* mainly for its multiplayer gameplay, since that's what *Quake* has become, personally, I'm not a big deathmatch fan. I need a story, and some purpose to want to run around for hours on end, shooting everything in sight! Sure, perhaps ridding the solar system of alien scourge isn't exactly new or exciting, but it's reason enough to pop in a game that needs GBs of space and boasts of the best graphics to date!

There's a shock in store for those who even think of running this game on 'Ultra High' quality! I used a FX-53-based system with 1 GB Corsair RAM and an XFX 7800 GT and it played at 12 FPS! I had to select a saner resolution of 1024 x 768 with 2x AA and the 'High Quality' graphics setting to be able to get an acceptable 35 FPS!

It was a little annoying to see the Autodetect function choose 640 x 480 with no AA and the Low Quality setting! "I have a 7800 GT for *christsakes*," I screamed!

Anyway, it was all worth the wait and initial frustration. The game has good gameplay, decent AI and an entertaining story line. The graphics were amazing, even at the *mere* High Quality mode.

I decided that rather than write a long review of the game, saying all the things that have already been said before by gaming magazines and Web sites, it would be better to show you how the game looks, courtesy loads of screenshots! We hope you like our take on *Quake 4*. Our Recommendation: buy it! The multiplayer rocks, and the single player will remind you of *Doom 3*—not as scary, but just as entertaining!

robert_smith@thinkdigit.com

6 You return to your mothership for new orders

7 Then it's back to making scrambled Strogg

8 Some good lighting effects

9 Marine Technicians will help improve your firearms

10 Then you ride in a tank, and kill some spiders on the way

11 Look! Better lighting

12 Spider attacks; spider eats BFG shell and chokes

13 Captured! A laser anally probes me, and, voila, I'm Strogg!
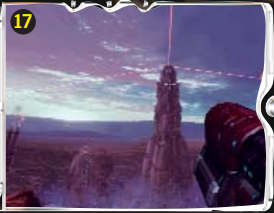

14 Strogg women still hate me

15 I take a tram ride and solve a few puzzles

16 That's a big monster flying; then a big monster dying
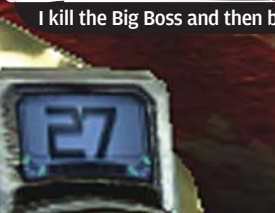

17 Strogg's such a pretty place!

18 I kill the Big Boss and then blow up the controller brain

19 Thank's buddy; Earth is safe

20 Hey... wait... who the hell is going to date me if I look like this?

The Rise Of The Body Bots

EXOSKELETONS ARE STRUTTING out of the lab—and they are carrying their creators with them. Erico Guizzo and Harry Goldstein of the IEEE Spectrum give us an insight into this future possibility

Science-fiction fans have long become accustomed to the idea of steely commandos clad in robotic exoskeletons taking on huge, vicious, extraterrestrial beasts, shadowy evil cyborgs, or even each other. Supersoldiers encased in sleek, self-powered armor figure memorably in such works as Robert A. Heinlein's novel *Starship Troopers*, Joe W. Haldeman's *The Forever War*, and many other books and movies. In *A Good Old-Fashioned Future*, for example, Bruce Sterling writes of a soldier dying after crashing in his "power-armor, a leaping, brick-busting, lightning-spewing exoskeleton."

Today, in Japan and the United States, engineers are finally putting some practical exoskeletons through their paces outside of laboratories. But don't look for these remarkable new systems to bust bricks or spew lightning. The very first commercially available exoskeleton, scheduled to hit the market in Japan next month, is designed to help elderly and disabled people walk, climb stairs, and carry things around. Built by Cyberdyne Inc., in Tsukuba, Japan, this exoskeleton, called HAL-5, will cost about 1.5 million yen (around US $13 800).

Meanwhile, in the United States, the most advanced exoskeleton projects are at the University of California, Berkeley, and at Sarcos Research Corp., in Salt Lake City. Both are funded under a $50 million, five-year program begun by the Defense Advanced Research Projects Agency, or DARPA, in 2001. During the past several months, each group has been working on a second-generation exoskeleton that is a huge improvement over its predecessor. Little information about the new models had been officially released by press time, but IEEE Spectrum has learned that the Berkeley unit was successfully tested in a park near the campus this past summer and the latest Sarcos model was demonstrated to a panel of military observers at Fort Belvoir, VA., last April.

http://webench.national.com

HAL-5, in Japan, and the systems by Berkeley and Sarcos, in the United States, appear to be the first of a platoon of considerably more capable exoskeletons aimed at real-world uses that may soon, quite literally, be walking near you.

Most of these systems are designed to help physically weak or injured people gain more mobility or perform rehabilitation exercises. But researchers are quick to mention other commercial possibilities for their creations: rescue and emergency personnel could use them to reach over debris-strewn or rugged terrain that no wheeled vehicle could negotiate; firefighters could carry heavy gear into burning buildings and injured people out of them; and furniture movers, construction workers, and warehouse attendants could lift and carry heavier objects safely.

Battling Bugs: A Digital Quagmire

HOW EFFECTIVE ARE our computer bug battling techniques? Why is it that we slip up in the same areas all the while? This article by Simson Garfinkel tries to find the reasons

In 1976, computer pioneer Edsger W. Dijkstra made an observation that would prove uncanny: "Program testing can be quite effective for showing the presence of bugs," he wrote in an essay, "but is hopelessly inadequate for showing their absence."

Thirty tears later, Dijkstra's words have the ring of prophecy. Companies like Microsoft and Oracle, along with open-source projects like Mozilla and Linux, have all instituted rigorous and extensive testing programs, but bugs just keep slipping through. Last month, Microsoft's monthly drop of bug patches included fixes for 14 security holes that escaped prerelease testing, four of them rated "critical."

On Tuesday, the company fixed three more Windows bugs, and all three were the same basic genus of bug—the "buffer overflow"—that helped spread the first Internet worm in 1988. It seems programmers and software architects manage to make the same mistakes generation after generation. Even back in 1988, many of the bugs that haunt us today were already old hat.

"We solved buffer overflows and the Y2K problem with Multics in 1975," says Peter Neumann, a senior scientist at SRI International who has been researching bugs and their impact on society for more than two decades. But while Multics—the first secure multi-user operating system—addressed some thorny problems, bug history keeps repeating itself.

The reasons for that are both simple and complex, experts say, having to do with the programming languages themselves or with programmer psychology and the environment in which software is developed. To understand why bugs occur, it helps to start by looking at the general classes of faulty code.

Bugs can be broadly divided into two categories. Typographical bugs and errors in reasoning are one type. Then, there are the deep, conceptual bugs that make a program malfunction even though all the code is more or less correct.

Memory misdeeds

Buffer overflows and race conditions are examples of the first kind of bug. A particularly tenacious beast, the potential for a buffer overflow is created when a programmer allocates a certain amount of memory to hold a piece of information—for example, nine characters to hold a Social Security number. But then the program tries to store more data in that space when it actually runs. The rest of the data overflows the pre-allocated buffer and overwrites something else in the computer's memory—frequently with disastrous results.

The 1990s saw buffer overflows reach near-epidemic proportions in programs written in the C and C++ programming languages, because these languages require coders to manually manage the memory used by their programs. Like driving a performance car, control of the memory might let a skilled programmer eke a bit more out of the computer, or accomplish neat tricks and stunts. But the danger of a stall or a crash is ever present.

From Megs To Riches

MULTIPLAYER GAMES ARE taking off, and with them a vast and unexpected new market. People are trading imaginary things in imaginary worlds yet making real money. Roger Parloff of *Fortune* analyses this fast growing trend

"Paul" and I are seated on a plush couch in the atrium-style living room of his starter mansion north of Dallas. A 71-inch flat-screen HDTV dominates the far wall. His Porsche 911 Carrera and his wife's Lincoln Navigator nestle in the garage. It's a good life and would not be a surprising one for a 33-year-old corporate litigator like Paul, except that he quit his law partnership two years ago. Since then, he's been self-employed at an even more lucrative calling: He plays a medieval-themed online videogame called *EverQuest*.

Because so many young people now spend so much of their lives immersed in the simulated 3-D worlds of games like this one, the noncorporeal emoluments they accumulate in these environments—virtual swords, cloaks, gauntlets, in-game currency etc—acquire real value to them, and they will pay real US dollars and euros, yen, won, and yuan to acquire them. So Paul buys and sells virtual items and currency for a living. "The valuation is always difficult," he concedes. "When you think about people paying real cash for something you can't even touch, smell, taste-that's tough."

Launched in 1997 and now owned by Sony Online Entertainment, *EverQuest* is one of the increasingly popular computer games called massively multiplayer online role-playing games (MMO for short). Though *EverQuest* has about 300,000 player-subscribers worldwide, a 2004 entry into the market called World of Warcraft (made by Vivendi subsidiary Blizzard Entertainment) has become the industry's transformative, breakthrough blockbuster. WoW, as it's known, has already garnered 4.5 million subscriptions worldwide and is expected to gross $500 million this year alone-more than most hit movies ever earn at the box office.

Paul is one of a growing number of people who either make their living or supplement their income through businesses catering to needs that arise only in virtual worlds. Anshe Chung, for instance, is the in-game character, or "avatar," created by a German woman who teaches school near Frankfurt. Since March 2004, Chung has accumulated more than $200,000 worth of in-game currency and "land holdings" by conducting businesses inside a serene synthetic world called Second Life. Chung buys "land" there, builds communities using tools provided by the game developers, and then rents or resells plots to other players. Second Life is a world simulated by 1,400 servers run by a San Francisco company called Linden Lab. The money Chung earns is convertible to dollars over an exchange run by Linden Lab.

Estimates of the size of the nascent market in virtual property range widely-from about $200 million to $1 billion worldwide-but most industry observers agree that it is increasing at a breakneck pace, possibly 100% year over year. Because it involves commerce between imaginary worlds and the real one (known to some gamers as "meat space"), it raises knotty questions. The things Paul and Anshe trade, for instance, are merely the graphical manifestations of data entered into spreadsheets owned by Sony and Linden Lab. Do they constitute "property" recognizable by US courts? If so, whose?

▲ **Sony's Fan Club**
Sony would like to rub its competitor's face in grime. "We've got the superior technology", they'd say. But is the superior technology restricted to just high-end televisions and are the rest still part of the Wege Fan Club?

▲ **Reverse Engineering**
Really, why change things from the way they were easy and simple? All you had to do was holler for anything. In fact, some people think that getting down from the trees was a big mistake in the first place!

Escape

HE DIDN'T EVEN DO IT!

The MPAA Strikes Again

When will the RIAA (Recording Industry Association of America) and the MPAA (Motion Picture Association of America) stop suing innocent people? No, we mean *really* innocent people—those who haven't even downloaded illegal stuff at all?

There was a case some time ago of a grandmother being sued for downloading music, but there, well, you could have pinned it down to something like "ignorance of the law is not sufficient grounds for pardon." This time it's a grandfather who doesn't even "like watching movies." He's been sued because his grandson downloaded all of four movies on their home computer over the P2P service iMesh.

The MPAA filed a federal lawsuit for copyright infringement in early November against 67-year-old Fred Lawrence, seeking $600,000 (Rs 2.64 crore) in damages. This was after Lawrence refused an offer back in March to settle the matter by shelling out $4,000 (Rs 1.76 lakh).

Lawrence said his grandson, who was then 12, downloaded the movies in December 2004, "out of curiosity," and that he had deleted them immediately. He also said the family already owned three of the four titles on DVD.

Now, we're guessing that's what his lawyers told him to say—why should the grandson have deleted them immediately after downloading them? And why would he have downloaded movies they already had on DVD?

In any case, the $500,000 suit is, of course, in order to set an example. Kori Bernards, VP of corporate communications for MPAA, claimed illegal downloading costs the movie industry an estimated $5.4 billion a year.

It would be interesting to find out how they come up with such figures. Would someone who downloaded a movie necessarily have bought it if they hadn't been able to get it for free?

What about people who actually go to the theatre after seeing what they liked on their PC screens?

The $5.4 billion figure probably assumes that movie pricing is correct and fair: what if it's not, and it turns out people think DVDs are priced too high?

The debate will rage for some time. Only two things are for sure: first, P2P is here to stay, and second, that suing a 67-year-old grandfather for something his 12-year-old grandson did is plain stupid.

UNUSABLE!

The Firefox Plug-in Finder Service

Firefox is a good browser. Still, there are instances when one would be better off using good old IE (or any other browser for that matter). So what do we have here? An awkward situation of having a single 'great browser' installed, and at the same time the necessity of resorting to another browser for certain sites.

No embedded video in Firefox!

OK, some sites aren't coded with Firefox in mind, but we also have the situation of missing plugins. For instance, check **http://snipurl.com/digitdec1**, a typical blog. Try it in IE and everything's fine. You cannot say the same for Firefox.

Moreover, Firefox talks about a missing plugin, offers to find a plugin, and then says it isn't able to find one. Worse still is the case with **http://snipurl.com/digitdec2**.

There's an embedded video on the page, and Firefox shows up *nothing*, not even the video Window! The plugin finder doesn't even pop up. To activate the plugin required (Windows Media Player), and to make the video window appear, you need to mess around with a .dll file.

Even after that, the plugin finder service doesn't detect WMP as the missing plugin! And we're talking about the latest version of Firefox–1.0.7! As you might expect, the same site works just fine in IE.

DigiPick
of the month

Triple-core?

This month's winner is
Manju Nath
JP Nagar
Bangalore

He wins
**SAMS Teach
Yourself EJB**
by Ragae Ghaly
and Krishna
Kothapalli
Published by
Pearson
Education, Delhi

WIN!
Send in your entry and you could win an exciting gift just by sharing an amusing picture with a tech angle to it. The picture should be shot by you, and should not have been published anywhere earlier. E-mail your picture with the subject **'DigiPick'** and your postal address **on or before 15th of this month** to **digipick@thinkdigit.com.** One prize-winning picture will be published each month.

MOBILE TV COMING SOON?
Emmys For Mobile Content

The US National Academy of Television Arts and Sciences, which gives out the annual Daytime Emmy Awards, has introduced a new category to reward creators of content for mobile phones and other portable media devices such as the Video iPod and the Sony PSP.

The new category will recognise "outstanding achievement in content for non-traditional delivery platforms." To be eligible for the awards, the shows have to be created specifically for mobile devices, and cannot be spin-offs of existing TV shows. The shows must be less than 20 minutes in length.

"What we are seeing is a burgeoning rise in this type of programme making," Peter Price, president of the Academy told the *BBC News* Web site. It certainly does seem that way.

Apple has inked a deal with ABC, the largest broadcaster in the US, and Disney, to offer legal downloads of TV hits such as *Lost* and *Desperate Housewives* for the Video iPod. In addition to this, Apple is also planning to offer brand-new animation content from Pixar.

Rupert Murdoch's News Corporation that owns the Fox network, and a number of Hollywood studios—including Twentieth Century Fox—is also putting up a mobile-only version of their hit TV show *24*. Other channels and networks such as MTV are also developing content for this platform.

STAMP OUT THE SMUT!
The Pixels Say It All

PixAlert is an Irish smut-busting firm, and the name, as you'll see, has rhyme and reason to it.

It has developed technology which, it claims, "completely prevents pornographic images being displayed and viewed on computer screens" by blocking "illegal or inappropriate images as they are rendered."

PixAlert says they manage to do it using "high-speed image analysis software" that can detect "images actually being displayed on any screen and originating from any computer source."

Understandably, there's a good market for the technology, because as PixAlert marketing manager Andy Churley explains,

ER...FOR THIS AWARD I WOULD LIKE TO THANK...

Illustration: **Harsho Mohan Chattoraj**

The Searchmeisters

Larry Page and his partner Sergey Brin have changed the way people use the Internet—they co-founded Google.

Page and Brin were just computer science grad students at Stanford when they came up with a search algorithm. That was back in 1995. The two were not a made-for-each-other pairing: their first meeting was anything but cordial, and has become part of Google lore. Their opinions differed so much they frequently had showdowns. One thing they did agree on, however, was technology—technology that powered searchability.

Page and Brin

By early 1996, Page and Brin had begun to collaborate on a search engine called BackRub. Their algorithm created a buzz at the Stanford campus, and the duo decided to put their PhDs on hold to set up Google and take it mainstream. There was one problem though—money. But soon enough, they were in talks with Andy Bechtolsheim of Sun. Bechtolsheim was impressed and wrote a $100,000 cheque to "Google, Inc." Google didn't exist yet, so Brin and Page promptly incorporated their company.

Page and Brin managed the company until it grew to more than 200 employees in 2001. They then handed over the CEO position to Dr Eric Schmidt. Page still plays an important role in running the company, along with Schmidt and Brin.

After Google's IPO in September 2004, Page and Brin have become multi-billionaires: Forbes Magazine ranks Page as the 55th-richest man in the world. But the two still haven't earned their PhDs—they're both still technically on leave from the doctoral program at Stanford!

Bluff
YOUR WAY THROUGH

Apple Mac OS X Tiger

There are operating systems and then there's Tiger. In its latest avatar, Mac OS X is faster, better and as graphically appealing as ever. Chances are, though, that you've never used it. There are times when you want to stand out of the crowd and throw jargon, but with a Mac, it isn't straightforward. But that's what we're here for!

Tiger includes a lot of new additions such as *Widgets* and the *Spotlight*. Spotlight is the lightning-fast search technology that displays results as fast as you can type them! You can search everything on your system—files, e-mails, contacts, images, movies, calendars, and even applications. Just say "I'm throwing the spotlight on some files" when you want to talk about searching your desktop!

The new Dashboard (a.k.a. Expose) hosts a ton of mini-applications called Widgets, which appear instantly and keep you up-to-date with information from the Net. View stocks, check weather forecasts, track flights, convert currencies, even look up businesses in the phone book. Think of it as the inbuilt Google Deskbar. Usage: "Let me check the Dashboard for the latest price of *Digit* stock". Of course, there *is* no *Digit* stock—so substitute for that wisely!

And since we'll be bluffing anyway, remember that the Mac OSes are built around the UNIX platform. Here's some worthwhile info you could pass along as you make small talk: "Under the hood, the easy-to-use interface and rich graphics are powered by Darwin, an open source, UNIX-based foundation built on technologies such as Mach and FreeBSD."

Also, Tiger has significantly improved support for dual-processor performance when reading and writing files to disk and when using Mac OS X with NFS file servers.

A suggestion: memorise!

All In A Month's Work

Each month—this month being no different—the story idea meeting is where it all begins. Brainstorming soon gets us locking horns. Substitute 'man' with 'idea' in "May the best man win!" and you'd know what we're talking about! To give you an example, just try and point fingers at Opera—it brings out the gladiator in Raaabo.

And receiving the 'Loudspeaker of the Year' award at our Diwali party has only reinforced ed Deepak's resolve to use his lung power to get us all cracking!

Then follows the story board meeting, where we tell the design team about our stories. The design team—Pillaiji, Solomon, Vijay, Pradip, Chaitanya, Vikram and Brother Zivalal (real name: Zony Ericsson)—have made life here more colourful, literally! They've put up lifelike sketches and caricatures of *Digit* team members on their pin-up boards. And indeed, passers-by do gaze, admire and even smirk!
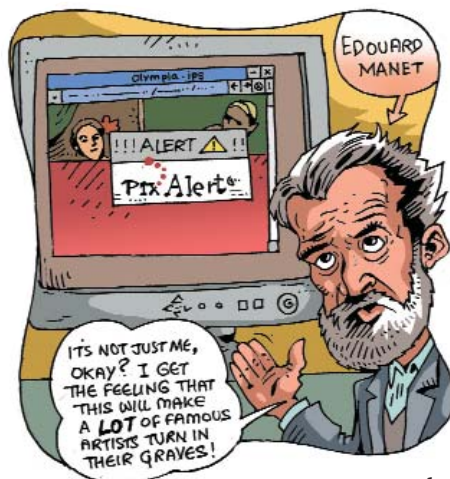
And then before we know it, issue-closing has already crept upon us. It's during those late nights that we all turn into armchair theoreticians, raving and ranting about all things under the sun over icy-cold cola and hot pizzas dripping with mozzarella! Such a perfect setting!

For Raaabo and Ram at this time of month, *Digit* is a home away from home. Ram, hypochondriac that he is, keeps his pill-box handy, not to forget his beloved pillow—apart from a jar of powdered caffeine and a ladder of cigarette packs. And you can safely trust Mithun to juggle tasks, big or small—the nearer the deadline, the faster he delivers!

Film aficionado Renuka will share all that she's learning in her script-writing course with anyone who will lend an ear! Sadly, it was also Preethi's last month—with the *Don* of *Digit* gone, it's time we get someone to fill in her shoes!

In fact, we're eagerly awaiting the new members soon to come on board. Watch this space for more on them next month!

DIGIT DIARY

ITS NOT JUST ME, OKAY? I GET THE FEELING THAT THIS WILL MAKE A **LOT** OF FAMOUS ARTISTS TURN IN THEIR GRAVES!

EDOUARD MANET

"Inappropriate images in the workplace are becoming a real threat to business operations. Their presence on corporate PCs and dissemination through a network can have severe consequences for an organisation and its officers, including exposure to civil litigation, brand and reputation damage, financial loss and breach of corporate policies."

Now for the burning question: how does it work? They won't tell, but we can make a good guess. It doesn't take an Einstein to figure what all pornographic images have in common: skin, and lots of it. And when it comes to porn movies, there's skin-coloured textures that move, without the overall amount of the colour changing much.

According to PixAlert.com, "PixAlert Auditor's Image Analysis Engine has been proven to provide results which are 95-98% accurate. The software has been tested on millions of images." Actually, the FAQ itself provided us with quite a few laughs, including, as it does, stuff like the following:

"Can PixAlert (also) detect illicit cartoon images?"

"PixAlert Auditor is designed to detect all images but is optimised to detect pornographic images. As a result, PixAlert Auditor will detect life-like cartoon images as being of an illicit nature."

Splogs: Spam Reaches Blogs

It had to happen sooner or later, and now it's upon us. Spam has reached the blogosphere, and in a big way. As always, it's all about money, of course.

Since there are so many blogs around, there must be spam-related ways to make money off the idea—and spammers seem to have found at least three such.

"Splog" doesn't have a concrete definition yet, but think about them as spam blogs, or spam postings on blogs, or as anything that's a combination of spam and a blog. Splogs push the same kind of stuff most spam does: Viagra, organ enhancement products, get-rich-quick schemes... you get the idea.

It's a relatively new phenomenon, and most people who visit blogs don't expect anything irrelevant—so there's been a lot of confusion amongst those

whatweretheythinking.com

That '70s Show!

The late '70s and early '80s were a tumultuous time and one when not many knew what was happening. This fact is also reflected in "The Past Passes By". '

This, of course, we're guessing, is the title of this site, since 'Crystal Machine info' is the title of the page.

"In 1971 Tim Blake met the French Light show artiste PATRICE WARRENER.

When Tim left GONG in 1975, they formed the "CRYSTAL MACHINE".

Who these folks are is explained in the text that follows: they were "The first group in the world dedicated to electronic music and light show, featuring, Lasers, for the first time ever". Our point of concentration, though, is their site, which is as colourful as their shows perhaps were. With each line of text in a different colour, it's indeed a visit back in time to the days of Web page design in the early '90s and the spirit of the '80s.

Some of the group's achievements include shows in Spain, Japan, Holland and Gladstonbury Festival. For some reason, we decided we should Google that last, and it turned out they'd actually performed at the *Glastonbury* festival–although there does exist a Gladstonbury festival too!

Did we mention the blue background on which a fuzzy, blurred, pink-tinged photograph is placed? That is the only visual relief on this entire page. There are all of three links–one of which displays no text–and these lead to some photos. Very 1976! Let's just keep it in its time–accept our apologies for bringing this site to your notice!

moonweed.free.fr/crystal_intro.html

who encounter splogs. Search results have been dramatically affected, especially on services such as Technorati's, which focus on blog tracking. "It's the #1 problem for search engines," says Matt Mullenweg of WordPress, a blog-software service.

The first way to make money off splogs is this: find a topic—say Servers—that draws consumers who may be valuable to advertisers on big search engines. Then, register for the programs that let those search companies place ads on the blog.

Next, set up a blog that takes in news items via feeds about that subject. If all goes well, the search engines will identify your blog as a prime place for ads. Now all you need to do is find (and pay peanuts to) someone who'll keep clicking the ads!

Programmes such as Google's AdSense pay out each time someone responds to an ad, so a splogger could make big money this way.

The second form of splogging involves creating a fake blog filled with links to other sites. People using a search engine to find a blog on, say, breast cancer, would get to a site full of ads for, and links to, porn sites.

And third, you could use blogs' feedback fields. Sploggers can post totally off-topic comments, including a sales pitch.

Jason Goldman, Product Manager for the Blogger division of Google says they've tightened up the blog-creating process— Google now offers a quick way to report bogus pages so they can be blocked from the search engine.

Other blog hosts and search engines are fighting splogs. Goldman admits that like with spam, splogging could take on the "arms-race" aspect, with the baddies always trying to be one step ahead. Well, we've got used to spam—and if you read blogs, you'd get used to splogging as well. ∎

Compiled by Aditya Kuber, Mithun Kidambi, Ram Mohan Rao and Renuka Rane

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Blog WATCH

This time round our selection is all about the IIPM blog controversy, which began with a story written by Rashmi Bansal in the *JAM* magazine

India Uncut
http://indiauncut.blogspot.com/2005/10/question-of-principles.html

A Question Of Principles
A few months ago Jam Magazine, edited by Rashmi Bansal, did a story exposing some of the claims made by IIPM, the educational institute run by Arindam Chaudhuri. After that happened, some of the IIPM staff barged into the Jam office. They "did not offer any new or material facts, other than argument." Then Rashmi got a legal notice from them.

A number of blogs sprung up overnight defending IIPM and defaming Rashmi and Gaurav Sabnis, a popular blogger who had linked to Rashmi's article...

Desipundit.com
www.desipundit.com/2005/10/08/lies-damned-lies-and-fake-blogs/

IIPM Blog Wars Redux
This time it is personal. Rashmi Bansal has been attacked by so-called IIPM graduates. Gaurav has been served a legal notice (via e-mail) asking him to retract his statements against IIPM. Couple of days later, another blogger Varna got an identical legal notice from IIPM. More importantly, this attempted suppression of freedom of speech shall not be tolerated. Kaps has issued a call to join the fight against IIPM. Bloggers all around the world have responded magnificently.

Don't trust the Indian media
http://presstalk.blogspot.com/2005/10/ponytail-and-legal-notice.html

The Ponytail And The Legal Notice!
Really like Desipundit, not only because they have brought a whole lot of new readers to this site—even though few of those new readers leave comments—but also because these guys can sometimes uncover some gems of hilarity from the Indian blogosphere. Blogger Gaurav Sabnis has been served a legal notice by the ponytailed management (maybe) guru (joke) Arindam Chaudhari. Now, I know giving space to this person is a waste of server space. But this letter is too hilarious! *Digit note: The letter—at the Blogspot page mentioned above—is worth a read!*

Vantage Point
http://gauravsabnis.blogspot.com/2005/10/update.html

An Update
I have resigned from IBM.

I got a call from a Senior Executive of Lenovo. Apparently, IIPM called him up, complaining about my posts... The next day, I got a call from him again. Apparently, the Dean of IIPM wrote him a mail saying that the IIPM Students Union had decided that if my blog posts were not deleted, then they would gather all the Thinkpads they had been given by the institute, and burn them in front of the IBM office in Delhi. Yes, that's right. Burn laptops!

Can you legally Download TV Serials?

crazybutt
Analogue Novice
Location: The 5th dimension
I am a Beri Beri Big follower of d Simpsons, I would desperately like to get the episodes. Is it legal?

****

Nemesis
Digitized Moderator
Location: New York
Let's say you missed a couple of episodes of *Lost* when they were aired. Would it still be legal to download them? You didn't even see them so how would you claim any rights to the content?

As far as I see, recording and keeping copies is perfectly legal–TiVo wouldn't have existed otherwise. But it is the distribution that I think is illegal. Especially since DVDs of entire seasons and recently single episodes for the iPod Video are being retailed, I wonder if there is any way downloading episodes can be legal.

****

iinfi
Digitized!
Location: Navi Mumbai
I think its is illegal to download/save using PC (with TV tuner card), even if u have paid ur cablewallah for viewing the serial or movie on TV...

Coz u have paid only to see the serial or movie once i.e when it was aired on the TV at that particular time and not whenever you please.

I feel once you record it LIVE, no one can stop u from distributing it.

****

netarget
Analogue Novice
Location: A small room in a big house in a small street in a big city
I wholly accept there is a hairline difference between legality and illegality such is the case in most questions of law. The exact study of this is called Jurisprudence. No wonder lawyers (like me) interpret it as they want to claim Justice. It is upto the Court to interpret it, which of course would be final.

****

KHUBBU
Resident Techie
Every Music channel airs video songs. One can simply record it, save the sound from the file, convert it to MP3 and u have a good MP3 collection of your fav songs–no need to buy or download. Now is this legal? Of course if one shares it then its illegal.

****

srijit
Analogue Novice
Very important point in all this is that Microsoft is coming out with the Media Center PC. So even if it is illegal to do these things the companies might not want to be in a legal battle with MS who is promoting Media Center PC left and right.

Idea: get a Media Center PC and blame everything on MS :)

Registry Fast Track?

Your Fast Track is "paisa wasool"! Tips & Tricks has made me popular amongst my friends. Why don't you bring out a fast track that gives comprehensive knowledge about Registries?

Arnab Kumar Mondal
Allahabad

Dear Arnab,
I am glad to know that Fast Track is proving to be a good knowledge resource for you. Regarding an entire Fast Track on 'Registries', well, let us see whether there is enough material for it to merit a book. Otherwise, we can definitely carry a series of articles on it.

–Associate Editor
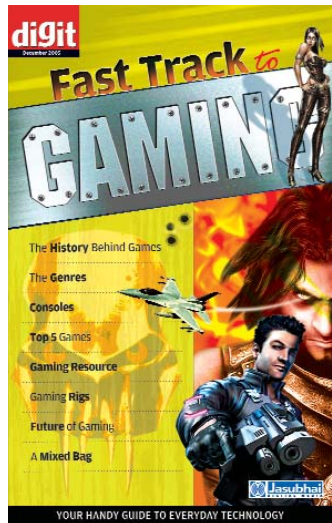
More About Mobile Phone Technologies

I have been a keen reader of *Digit* for the past two years, and find it the best computer magazine, enlightening us on the knowledge of science and technology in a very simple way. The most interesting part is the cover story of the month, covering GPS, comparisons of motherboard and cell phones, etc.

It would be great if you were to cover mobile technologies in detail, such as GSM, CDMA, TDMA, 3G, etc. You could also answer questions about the various spectrums, tell us something about WAP, and so on. I feel that your magazine believes in spreading and sharing knowledge, and it does have the potential to change people's lives!

Hitikant Sahoo
Cuttack

Dear Hitikant,
Thanks for your appreciation; it is such words that motivate us to work hard and give you the latest and the best technology news and analysis month after month. Regarding in-depth information about mobile technologies, well, we have been writing about them from time to time in different articles for the last few years. But yes, we could do one big story on it, or even a Fast Track. Thanks for your suggestions–keep them coming!

– Associate Editor

In Love Since 7th grade

I have been reading *Digit* since I was in the 7th grade. Now I am in the 10th. *Digit* has convinced me that I should build a career as a software expert. I would like to thank you for inspiring us young readers. It's only due to you that I'm the most tech-savvy person in my class. Your hardware and software tests have helped me and my dad a lot while deciding on what new hardware to buy. My collection of past *Digit* issues and CDs help not only me when I need certain software, but also my friends.

Amritanshu Kar
Delhi

Dear Amritanshu,
Back in 7th grade, you were probably one of the youngest readers of *Digit*! It is avid learners like you who will further the fame of our IT industry, and on whose shoulders rests our nation's IT potential. I am glad that *Digit* has been your choice to step up your technology quotient. Keep reading and giving us your feedback as well!

–Associate Editor

Philippines Calling

Your mag is one of the few I keep on buying not only in India but also in my country, the Philippines. In that country, where there are many techies, and where software and Internet proliferation is common, I find a big vacuum on Indian Internet hi-ways! Can someone tell me what the official Web site of India is? I asked for help from Mr Genius Yahoo! and the tech-savvy Ms Google, but they can't figure it out. It seems that India, a country I consider an oasis of techies, is left far behind on the Net. Someone told me the Indian site is yet to be launched.

Noel Arellano
The Philippines

Dear Noel,
It makes us feel proud to know we are being read and appreciated as far as in the

Inbox

Philippines. As far as the "official Indian site" is concerned, it is www.india.gov.in, which is the official portal of the government of India. It has recently been completely revamped and spruced up to tell you all you need to know about India.
—Associate Editor

Searchable Index On CD/DVD

I am a regular reader of *Digit* for the last two years, and have all the CDs and DVDs. One day I wanted to locate a specific software—Advanced Notepad. I knew it was on one of the DVDs, but which one? I had to insert all your DVDs and CDs one by one, which was quite frustrating—the whole operation took two hours! Please include a searchable index of the CD and DVD contents, so that we do not have to physically search through our collection—and please don't ignore this letter!
Nitin Kumar
Patna

Dear Nitin,
We do not, and never will, ignore any of our reader's letters! On the point of a searchable index, we certainly are working towards developing a search program that will give you a database of not just the existing, but also of all our past CD/DVD software. This will take some time, but once done, I assure you it will save you lots of time and effort.

—Associate Editor

Fast Track On PDF?

First off, I would like to congratulate your entire team for the fine work they do for *Digit*. We eagerly wait for the next issue, every time. But I have some suggestions and a complaint.

One, how about dividing each issue into separate areas of IT information? Second, how about putting up PDF versions of Fast Track on your special issue DVD or even a separate CD? Now for my complaint: my copy of the November issue came with cracked CD/DVD pack. Please send me an additional pack and tell me what I need to pay.
Sehaj Kang
Hoshiarpur

Dear Sehaj,
We cannot separate our articles merely on the basis of the information they contain, because there are umpteen categories that these articles can be slotted into. Fast Track on PDF… well, we are currently debating on that; maybe once a quarter or every six months we can give you the past issues of our Fast Track on PDF.

And no, you don't need to pay to get your faulty CD/DVD replaced. Just send it back to us

quoting the 16-digit patron code mentioned on the last page of your November issue, and we will replace it for free. It should take less than two weeks to reach you.
—Associate Editor

Faulty DVD

I'm a regular newsstand reader of *Digit* for the last four years. I think there's something going wrong with your DVD. For the last three years I have never received a faulty CD, but I did get a faulty DVD five or six months ago. I've again received a faulty CD this month. Could you do something about this? Also, in terms of content, your DVD has more demo games and Linux software than regular software. Please give us more of system software, multimedia and system essential software, since not many of us use Linux or have the latest configuration to play intensive games.
Shatrughan Prasad
New Delhi

Dear Shatrughan,
Regarding faulty DVDs, yes, we are taking definite steps to ensure this doesn't happen. There have been a few cases when our DVDs have either got damaged in transit or have been stolen en route. We have since laid down stringent measures to track the culprits and also to further improve upon our transportation means. Still, if you do get a faulty CD or DVD, please feel free to return them, quoting the 16-digit patron code on the last page of that month's copy of *Digit*, and ask for a free replacement from our customer service help desk.

Coming back to your request for more software, we always need to balance increasing demands for game demos, Linux software and system software. Satisfying everyone does become a difficult task. But yes, we will bear your request in mind.
— Associate Editor

Games Companies Play

Let me congratulate your team on their superior performance! I'd like to share some issues with you.
▶ I installed the *Serious Sam 2* demo on my Compaq PC with Intel Northwood 2.4 GHz, 1 GB RAM, DVD-Writer, GeForce 4 MX etc. But the demo didn't work. The readme file recommends GF 5900 and even GF 7800 for optimal performance! I tried out the demo on my friend's PC (GF 6600), and frankly, even two year old games like *Unreal Tournament 2003* or *Painkiller* easily rank ahead in terms of graphical quality. What is more surprising that my GF 4 MX (highly overclocked) can play *UT 2003*, *Painkiller*, and *Call of Duty 2* (on the latest Digit DVD) at 1280 x 1024 with 4X AA very easily.

We might have a lot of firepower today, but are we getting enough productivity in return? Especially considering the 1 lakh+ cost of high-end PC, which soon turns out to be obsolete?
▶ I really liked the article on modding the PC cabinet. Many of us have never handled such high-speed tools and expensive lights, fans etc., so a detailed guide from *Digit* is highly welcome.
▶ One more suggestion is, people at *Digit* always play with the latest gizmos, and we're excited too. Why don't you give a live video (on the DVD) about the actual testing procedure, installation, etc. done at your Test Centre? You could also give demo recordings the games you test for your readers.

I hope the *Digit* team is listening!

Bhavesh N Momaya
Jalgaon

Dear Bhavesh,
Serious Sam 2 is one of the latest games, and requires a DX9.0c-capable card. The review of the game in the same month pointed out that this game *does not* have *Doom 3*-like graphics, and is known for funny- looking characters and bosses.

Some card vendors have had problems with DirectX and OpenGL games, but all that is slowly being resolved.

As for the videos, we have planned this, and you should see it happen in the next few months.

LETTER OF THE MONTH

Tabloid TECH

Kelly Brook's Pics From *Three* Leaked Online

Explicit images of Brook from her upcoming film are already online

Brit actress Kelly Brook is getting free publicity for her upcoming movie *Three*, courtesy the Web site What Would Tyler Durden Do? (WWTDD). In public, however, Brook is acting furious. Apparently, the site posted nude scenes from *Three* for the benefit of the general public.

WWTDD said, "Kelly is suing because she felt certain scenes were too explicit and she didn't want them to be seen." The scene we're talking about shows a topless Kelly in the ocean writhing around with some dude, with a tom-peeper in the bushes watching them.

Brook has objected strongly to the "explicit" nature of the scene, but the actual reason, according to commentators at WWTDD, is because it is pure "crap".

The site has also remarked, "If that second dude was there to judge the bikini contest, he's gonna be pretty disappointed."

An Online Funeral To Mourn A Gamer's Death

Chinese players of the MMORPG hit World of Warcraft (WoW) held an online funeral service last month after a gamer—a young girl—died playing the game. 'Snowly' died in October after playing WoW for many days during a national holiday, in preparation for a particularly difficult stretch of the game, in which she would have to kill the Black Dragon Prince.

Members of the online community remember her to be "a diligent and dedicated player."

So what exactly is an online funeral? Do members get on a chat board and offer condolences to the bereaved? No way! An "online funeral" is just what it sounds like—people get on the game, come towards each other, and sit with their heads bowed for a while. OK, if you still don't get it, check out the picture at http://snipurl.com/digittabloid1.

On that page, Joi Ito, another avid WoW player, writes: "Players often play until they pass out, especially when they are questing in a group, where their participation is required... There is also a lot of pressure to catch up if you drop behind in order to play your role."

This comes just a little while after another gaming-related death, and the Chinese government is planning to introduce monitoring tools that will prevent players from logging on and gaming for long hours. Gamers are already protesting, of course.

IT Firm Bans Whinging!

Germany-based IT company Nutzwerk Ltd has added whinging (informal disapproving) to a list of things that can get an employee sacked: employees have to constantly be in a good mood as part of their employment contract!

Manager Thomas Kuwatsch said, "We made the ban on moaning and grumpiness at work official after one female employee refused to subscribe to the company's philosophy of always smiling."

Employees who wake up grumpy need not come to office and can stay at home rather than spoiling the work ambience. However, employees who take too many leaves may also be sacked!

The First Amendment, Now For Schoolkids

When Ryan Dwyer built his Web site in 2003, little did he know it would become a profit-making venture! His school in New Jersey has promised to pay $117,500 (Rs 5.17 lakh) as compensation for punishing him on critical statements about his middle school. One of the entries in the guestbook section of his site, too, was considered unacceptably critical by school authorities.

Dwyer was suspended for a week, banned from playing baseball for a month, and even barred from going on a class trip.

And the school didn't even have a rulebook with such disciplinary action—or any guidelines to handle such cases—mentioned. OK, the amount might seem too much, but remember that the First Amendment is taken, well, very seriously in America.

For any queries regarding the Digit Patron programme, e-mail us at digitpatron@jasubhai.com