

November 2005

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digit

YOUR TECHNOLOGY NAVIGATOR

DNA Computing

Move Over Silicon!

The Future Of
Computing Is Organic

Is Search Engine Optimisation
The Next Big
Low-Cost-Wide-Reach Option?

Improve The Way You Manage
Your Contact Information And
Create Order In Your Life

Buy, Break, Imagine, Drill,
Burn, Join, Build. We're
Talking About Case Modding!

People At All Levels In An
Organisation Should Know
How To Secure Their Data



The Answer: Innovate



Maulik Jasubhai Publisher

“Perhaps the biggest challenge is to break the shackles of familiarity that paid-software has imposed upon its users”

LAST MONTH, IN this space, we talked about software costs being higher than that of the hardware on which it runs. The question that arose was, “Why have freeware and open source operating systems not found mass acceptance?”

The first problem is ignorance—people just do not know that options exist. People acquire tech knowledge mostly from friends and local system assemblers, many of whom know nothing about software. The billions that the bigger paid-software companies spend on advertising gives dividends: most of us have not heard of anything but Windows, Nero, Photoshop, MS Office, Norton AntiVirus and the like.

The next hurdle the free software movement faces is compatibility. With all the hundreds of Linux flavours available, the PC hardware incompatibilities of yore might have been minimised. But we now have a whole new generation of devices—mobile phones, digital cameras, thumb drives or PDAs—that should ideally work seamlessly with our freeware enabled PCs.

This isn’t happening.

Why? Because the very nature of the free software movement defies

governance! There are no procedures followed, no set team of developers, no deadlines, and no onus on developers and absolutely limited set of documentation, if at all—all of which leads to no standards.

Can this be changed? Perhaps! Recent trends have shown that even small open source projects are becoming planned affairs. Out of chaos can emerge order!

The third and perhaps the biggest challenge is to break the shackles of familiarity that paid software has imposed upon its users. Skill-sets and careers have been built upon users’ existing knowledge, and asking them to forget it all and start over is a little unrealistic. In a way, a little ambitious too. Though its fans have been screaming for years about how Linux is just as easy to use as Windows, the fact is that it’s different, and change is always tough.

Some free software projects have tried to clone the usability and interfaces of their paid counterparts to minimise the cold-turkey feeling users get when switching. Some even went as far as naming their products similarly (remember Lindows?), but this is not where the answer lies: often, users will love free clones of their favourite software—only until they stumble upon a difference or limitation. What follows generally involves some uninstalling!

The imagination and creativity of freeware developers seems to be restrained by a lack of vision and the lowly goals they set for themselves. They’re always benchmarking their products with the best paid-software available. And they never seem to go beyond existing standards to create something better.

What freeware developers actually need to do is innovate to build better software that offers more features, more power, and gets the job done faster. As soon as they do this, the world will lap it up.

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Samsung HD160JJ
Samsung SP0411C
Samsung SP0411N
Samsung SV0411N
Seagate ST3400832AS
Western Digital WD2500KS
Western Digital WD4000KD
Western Digital WD4000YR
Western Digital WD740GD-00FLA1

Motherboards

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Asus P5LD2-VM-UAYZ
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Asus Proactive P5AD2-E Premium
Wireless Edition
Asus Proactive P5ND2-SLI Deluxe
DFI LanParty UT NF4 SLI-D
ECS KN1 Extreme
ECS PF21 Extreme
Foxconn 955X7AA
Gigabyte 8 Sigma Series GA-K8NXP-SLI
Gigabyte i-DNA GA-8I945G Pro
Gigabyte i-DNA GA-8I955X Royal
Gigabyte K8 Triton GA-K8N Pro-SLI
MSI 915G Neo3-FIR
MSI 915P Neo2 Platinum

MSI 925XE Neo Platinum
MSI K8N SLI Platinum
MSI K8N SLI-F
MSI P4N Diamond
MSI P4N SLI
New and Notable
ACISecurezza
AMD Athlon 64 X2 4800+
Intel Pentium D 820
Kingston Data Traveller II plus amigo edition
MSI Mega Player 533
MSI RX1300 Pro 256 MB
MSI Sky Talk
Philips PET710 Portable DVD Player
Sony PlayStation Portable
Sony PlayStation2
Wipro LittleGenius Ultra Slim WLGCPuSL

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Enter



16 He wowed the nation with his performance in *Iqbal*. Check out Shreyas Talpade's geek quotient

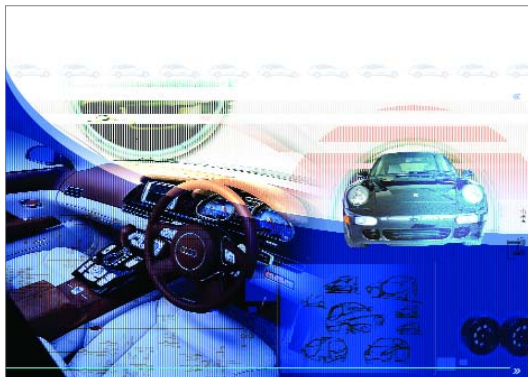
22 MSN and Yahoo! IMs becoming interoperable—it isn't a rumour!

24 Carry your apps and data with you on a smart drive, courtesy a new platform called U3

Digital Passion

25 Hybrid Horsepower

With technology playing a big part, cars are moving on from being fuel guzzlers and environmental hazards. Presenting the new breed of clean cars ☑



28 The Computer Inside You

Will computing move from silicon to DNA? We take a look how today's primitive DNA 'computers' work, and what the theoretical possibilities for DNA computing are

46 Booster Boards

The motherboard is the 'basis' of your computer—without it, no other component would work. We bring you 20 of the latest in a shootout that is sure to make you want to upgrade! ☑



40 Double Or Nothing!

The latest in the world of computer graphics technology is multi-GPUs. So how do two—or more—graphics cores work together?

Contents Magazine

Digital Tools

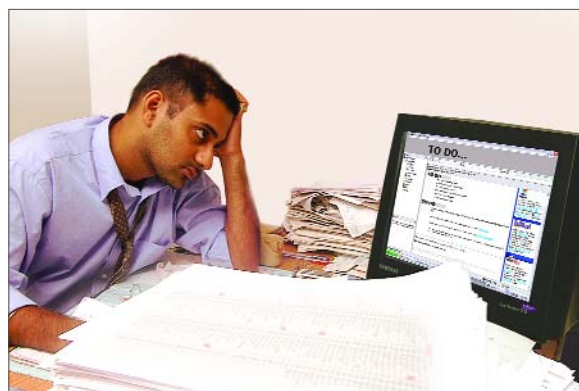
68 Driving Data

Tested: 15 hard drives, with the best features, largest capacities, and at the cutting edge of hard disk technology. Go store! ☑



76 Old Way Tech Way

With tutorials all over the Web for almost anything, is it no longer necessary to go to a coach for guitar lessons?



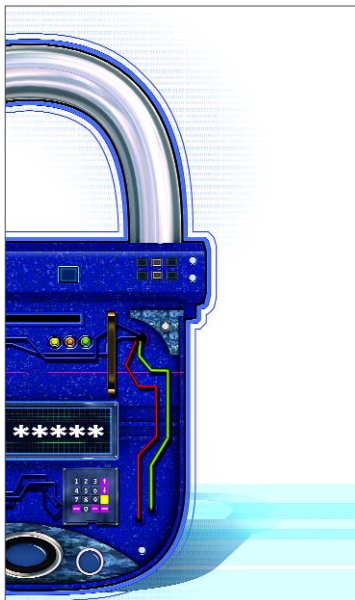
65 Order, Order! ☑

Face it: you never find a phone number or e-mail address when you need it the most. Call it Murphy's law or pure bad management. Check out how good personal information management can help

103 Agent 001

With the festive season here, Agent 001 gives you a lowdown on the best buying options for camcorders—so you can capture your memories for posterity

Digital Business

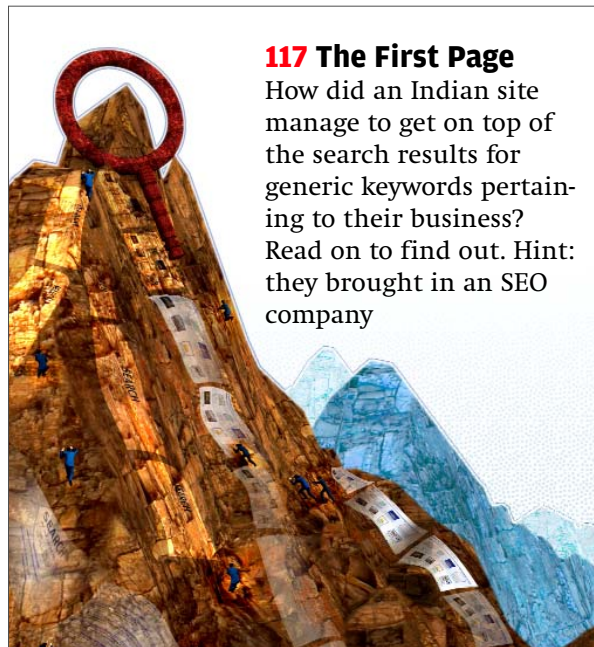


124 Insecure At Work?

In today's wired world, security is of the utmost concern, especially at the workplace. It is important that this fact be recognised at all levels of the organisation. Juniors and employees at the executive level alike need to understand how critical data security is

128 Trend

Is it better to advertise on the Internet before doing it on TV or in print? We collect some views of people in the know



117 The First Page

How did an Indian site manage to get on top of the search results for generic keywords pertaining to their business? Read on to find out. Hint: they brought in an SEO company

130 Face Off

VoIP is here to stay. But is it better than traditional telephony? Would you implement it on a wide scale across your organisation? Presenting two opposing views

November 2005

Digital Leisure

145 Make A Difference... Online

Philanthropy goes online. No more excuses for not doing your bit for society ☒



150 Tech Critique-I

Tee off with Tiger Woods for the best golf game you'd have ever played... indoors, that is



151 Tech Critique-II

We take a sneak peek at the most anticipated sequel of the year to see just how serious Sam is

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Meet Gordon Moore, the guy who formulated one of the most famous 'laws' in computing



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The gloves are off. The fight for who will control the Internet is on

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DIGITAL PASSION

Call of Duty 2 Demo



As part of the British infantry, you are tasked with eliminating the German artillery crews at the docks

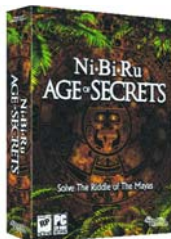
Nexuiz



A 3D deathmatch game made entirely over the Internet. The purpose of the game is to bring deathmatch back to the basics, with perfect weapon balancing and fast-paced action

Nibiru: Age of Secrets demo

A dangerous and thrilling mystery, where murder, deception and the deep, dark secrets of the Nazis take you into the heart of an exhilarating adventure



BattleCruiser 3000 AD

A universe simulator—worlds to explore in a large starship that carried several smaller, faster fighter craft



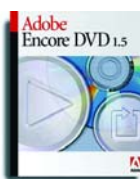
DEVELOPER TOOLS

- ▄ Excelsior JET 4.0
- ▄ Amzi Prolog + Logic Server with Eclipse IDE and Java 7.2.5
- ▄ Servoy 2.2
- ▄ DigitalWeb InstallWizard Professional 4.6
- ▄ XMLSpy Home Edition 2006
- ▄ IDA - The Interactive Disassembler 4.8.0.847
- ▄ HyperNex for Windows 2.0
- ▄ PHPTriad 2.2
- ▄ ASP Express DotNet Edition 4.1.2
- ▄ MSDE Manager 4.11
- ▄ HTMLPad 2005 Pro 6.3
- ▄ JDebugTool 3.9

DIGITAL TOOLS

Adobe Encore DVD 1.5

A creative authoring tool for professional DVD production, Adobe Encore takes DVD authoring to a new level of creativity with a streamlined workflow, a comprehensive set of design tools, and smooth integration with other Adobe software



MULTIMEDIA

- ▄ K-Lite Mega Codec Pack 1.3.8
- ▄ AVOne Video Converter 2.05
- ▄ The FilmMachine 1.4
- ▄ Matroska 1.1.1
- ▄ Picasa 2.0
- ▄ Audacity 1.2.2
- ▄ XnView 1.8
- ▄ Webshots Desktop 2.2
- ▄ dBpowerAmp Music Converter 11.5
- ▄ Media Player Classic 6.4.8.4 for Win2k/XP
- ▄ VirtualDubMod 1.4.13.1
- ▄ IrfanView 3.97
- ▄ GSpot Codec Information 2.21

INTERNET

- ▄ Kerio Personal Firewall 4.0
- ▄ AVG Anti-Virus Free Edition 7.289
- ▄ Eudora 6.2
- ▄ Avast! Home Edition 4.6
- ▄ ZoneAlarm 6.0.667.000
- ▄ Sygate Personal Firewall 5.6
- ▄ Kerio Personal Firewall 4.0
- ▄ AntiVir Personal Edition 6.27
- ▄ MSN Messenger 7.0
- ▄ Proxy Workbench 1.2 build 64
- ▄ Mozilla Thunderbird 1.0.6
- ▄ Spybot - Search & Destroy 1.4
- ▄ POPFile 0.21.2
- ▄ Mozilla Firefox 1.0.7
- ▄ Pegasus Mail 4.12a
- ▄ ICQ 5.04
- ▄ CleverCrypt Lite1.5
- ▄ Opera 8.5

SYSTEM

- ▄ AutoPatcher XP September 2005
- ▄ Ashampoo PowerUp XP Platinum 2.2
- ▄ File Backup Watcher 2.7.2R1
- ▄ Yahoo! Desktop Search
- ▄ ZipGenius 6.0.2.103
- ▄ SyncBack 3.2.8.40
- ▄ Copernic Desktop Search 1.6
- ▄ PowerZip 7.06 build 38
- ▄ ALZip 5.52
- ▄ EndTask Pro 3.0.36

DIGIT IN PDF

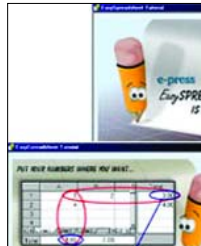
By popular demand, archives of the past 12 months are back!



DIGITAL BUSINESS

EasyOffice with PDF Filter 9.0

EasyOffice + PDF Filter is an office suite compatible with Microsoft Word and Excel in addition to Adobe PDF files



OpenOffice.org 1.1.3

A multi-platform office productivity suite with a word processor, spreadsheet program, presentation manager, and drawing program



602 PC Suite

An integrated solution for creating, editing and viewing documents and spreadsheets, compatible with Microsoft Word and Excel



AbiWord

A free word processing program similar to Microsoft Word, suitable for a wide variety of word processing tasks



PRODUCTIVITY TOOLS

- ▄ SmartLaunch 4.0.465
- ▄ Portable OpenOffice.org 1.1.4
- ▄ TRVProtect 7.2
- ▄ Visual Importer Enterprise 7.1.7
- ▄ ShareCalendar 2.15.34
- ▄ AbiWord
- ▄ EAuthentix Outlook Plug-in 1.2.3
- ▄ Microsoft Reader 2.1.1
- ▄ MCEAuction 1.0
- ▄ SimpleMail 2.0.2
- ▄ DynAdvance Notifier 1.1.85 beta

MOBILE

- ▄ MobTime Cell Phone Manager 5.3.2
- ▄ ImageExpo 3.1.16
- ▄ Hot Games Pack 5.2
- ▄ Championship Spades 6.2
- ▄ MP3 To Ringtone 1.28
- ▄ WAP Proof 1.2
- ▄ mVoice 3.6
- ▄ Mobile High Speed 5.3.1
- ▄ SmartRss 2.1.2077
- ▄ Farkle Dice 1.1
- ▄ PocketOne StopWatch 1.4.1
- ▄ BDicty 5.7
- ▄ The Insurance Dictionary 1.0

DIGITAL LEISURE



America's Army 2: Special Forces

In order to combat the low sign-up rate in the American army, someone came up with the brilliant idea of making a game that depicts the life of a US army soldier

Hidden And Dangerous Deluxe

You control four British Special Air Service (SAS) soldiers. You have to lead them behind enemy lines to complete numerous missions



GAMES

- ▄ America's Army 2: Special Forces
- ▄ Hidden And Dangerous Deluxe
- ▄ Wolfenstein: Enemy Territory
- ▄ Code Red: Alien Arena
- ▄ Cube
- ▄ Machines Of Destruction
- ▄ Soldat
- ▄ Tux Racer
- ▄ Frozen Bubble
- ▄ LinCity
- ▄ .kkrieger



VIDEOS

- ▄ North Country
- ▄ Kiss Kiss, Bang Bang
- ▄ The Greatest Game Ever Played
- ▄ Dreamer: Inspired by a True Story
- ▄ Running Scared

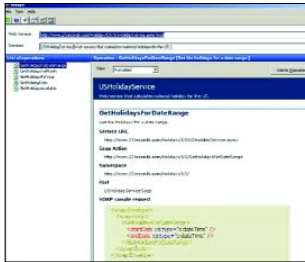
50 WALLPAPERS



DIGITAL PASSION

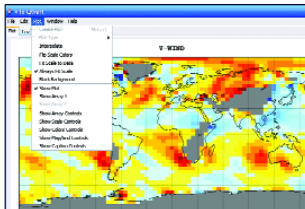
WSSpy 1.0

Web Services are becoming the standard for communication between disjoint applications. As a developer, you need a tool that allows you to test and analyse Web services



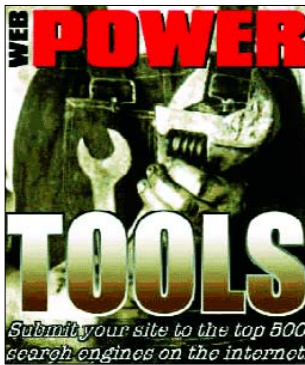
Panoply 1.6.4

Panoply is a Java application that enables the user to plot raster images of geo-gridded data from netCDF datasets. Depending on the data, it can draw global longitude-latitude images or pole-to-pole latitude-vertical images



PowerWebTools 2.0

A new design interface with a collection of scripts for Webmasters, to help enhance their Web sites



DEVELOPER TOOLS

- Code Stylist IDE 1.0.1
- OceanTiger Developer 3.2
- BigSpeed File Sharing Library 1.0
- Search Engine Builder Pro 2.1
- Selteco Flash Designer 5.0.2.1.1
- AstroGrav 1.2.1

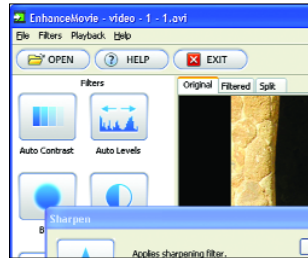
LINUX

- Crypto Tools 1.01
- ksudoku 2.0
- Krio 1.2.0
- Form2PDF 2.0
- mp3riot 1.3
- Mp3Tools 1.5

DIGITAL TOOLS

EnhanceMovie 2.0

A comprehensive yet easy-to-use video quality improvement tool



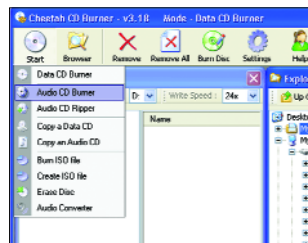
McFunSoft Audio Editor 2.6.4

An authoring editor that gives you access to every aspect of audio editing



Cheetah CD Burner 3.29

Burn audio and data CDs, burn or make ISO files, and view thumbnails of photos



MULTIMEDIA

- AV MP3 Player-Morpher Basic 2.0.102
- AutoGK (Auto Gordian Knot) 2.20
- WMV to AVI MPEG DVD
- WMV Converter 1.4.6.1003b
- Easy CD-DA Extractor 8.2.3
- Ultra Video Splitter 3.4.4
- Ultra Video Joiner 3.3.8
- Allok Video Joiner 1.4.4.1003b
- MOV Converter 1.4.6.1003b

INTERNET

- Message Server Communication Suite 6.0.2.0
- DKMessenger 4.2.8
- Newsman Pro 2.1.0.0
- v-Phone 1.03
- CoffeeCup Flash Blogger 4.0
- Mail Them Pro 8.0
- JBuddy Messenger Pro 2.0.0921

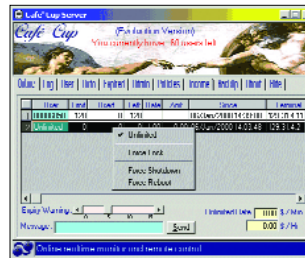
SYSTEM

- DiskTriage 8.1.0.9
- WinSSHD 4.06a
- ClickRepair 1.1.1
- CDMenuPro Personal Edition 5.0
- Tunnelier 4.06a
- HDDLife Pro 2.5.74
- Fresh RAM 3.3.0

DIGITAL BUSINESS

MyCafeCup 2.140

A software for operating an Internet café, cyber-café, game centre, gaming café or PC rental café shop



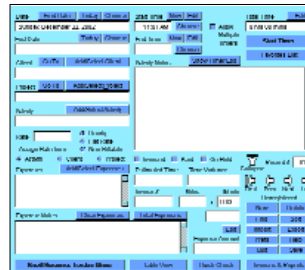
Hardware Inspector 2.0

Track PCs, their configuration, installed hardware, serial numbers for IT equipment or their parts, and other critical IT inventory data



Activity & Expense Tracker Plus 1.7.8.1

A Time Management tool that helps you track all your projects and their related tasks and expenses. Generate invoices and reports and print or export them to a word processor or spreadsheet



Agama Web Buttons 2.54

Create professional quality, unique Web buttons in a matter of minutes



PRODUCTIVITY TOOLS

- MyCafeCup 2.140
- Hardware Inspector 2.0
- Net Monitor for Employees 2.3.1
- Agama Web Buttons 2.54
- ViArt Shop 2.2.9
- Activity & Expense Tracker Plus 1.7.8.1
- Omega Enterprise Manager 1.5.1
- Excel Compare 2.1

WHITE PAPERS

- UDDI Technical White Paper
- WAP 2.0

DIGITAL LEISURE



Serious Sam 2

The most awaited game sequel of the year, Serious Sam 2 makes killing hordes of monsters more fun than ever before

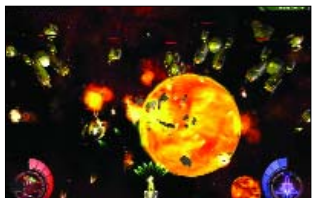
Zap 1.1.0

Save a powerplant from exploding



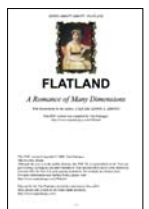
AstroAvenger 1.55

Cool graphics and sound effects, and a great soundtrack

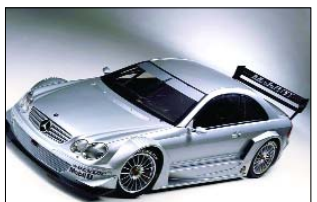


E-BOOKS

- The Security Guide Lite 1.0
- Johnny Bullet 3.0
- Electronic Story Collection 2004.3
- Flatland 1.0
- Jane Austen Collection 1.0



50 WALLPAPERS



By Demand

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

Call Of Duty 2 Demo

Opera 8.5 Free



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Which FREE browser will you use for the next 6 months?

IE 6
IE 7 Beta
Firefox
Opera
Others

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Thank You

Two articles from the latest issue to whet your appetite

→ The Race For Speed

For years, Intel and AMD spread the gospel of speed. They're now pushing dual-core processors. We look at the why and value of dual-core.

→ An Online Coder Of FINE

A journalist took up the task of writing on all things IBM (dubbed Natural One). He now has a commercially successful Web site and global clientele.

Previously Published

August 2005

→ Biometrics

Biometrics is touted to be the future of security. Of course it is. But not about the technology behind it all.

→ The Future Of Search

We search online all the time. Search engines are our entry point to the Net. Where is search headed? What will the ideal search engine be like?

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Digit Reader Poll

This Month's Question

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

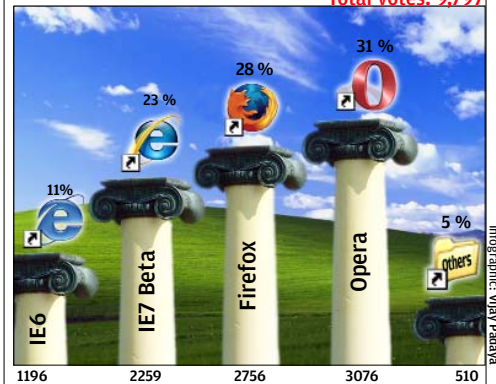
- ☐ Games
- ☐ Linux Software
- ☐ Office Software
- ☐ System Software
- ☐ Videos/Wallpapers
- ☐ Developer Tools

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Last Month's Question:

Which free browser will you use for the next six months?

Total votes: 9,797



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Forum	Topics	Posts	Last Post
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Digitized Interact with Team Digit members. Tell us what you think about the magazine (articles / sections), DVD contents and Web site. What you liked, what you didn't, and what you expect to see in the future... Moderators: Moderators, Administrators	41	2843	Sat Oct 22, 2005 6:18 pm chamrock
News			
Latest News This forum is for members to share the latest technology news with others. Make sure to post the SOURCE at the beginning of every post. Moderators: Moderators, MemberMods, Administrators, Trusted Members	105	1044	Sat Oct 22, 2005 12:19 pm zhu
In General... Anything that doesn't fit into the other sections—from upcoming technology to personal anecdotes—should be posted here Moderators: Moderators, MemberMods, Administrators, Trusted Members	928	17496	Sat Oct 22, 2005 6:49 pm infra_red_dude
Across The Board			
Open Source A place where you can talk to like-minded people about the fastest growing software movement today! Moderators: Moderators, MemberMods, Administrators	928	6702	Sat Oct 22, 2005 12:00 pm samleo103
QnA This is the place to share what you know, and learn what you don't. The questions which does not go in hardware or software should go here. Moderators: Moderators, MemberMods, Administrators, Trusted Members	8294	55853	Sat Oct 22, 2005 6:47 pm pula222
Software Troubleshooting Issues related with your OS, applications, system security, configuration of network, browsers, customizations, driver support, tweaking, audio-video playback problems and programming can be discussed here. Moderators: Moderators, MemberMods, Administrators, Trusted Members	33	319	Sat Oct 22, 2005 4:54 pm alib_j
Hardware Troubleshooting Discuss basic Hardware problems, find solutions to your hardware queries, upgrade blues. From Hardware Overclocking to Cooling and Case Modding all queries, howtos, solutions go here. Moderators: Moderators, MemberMods, Administrators, Trusted Members	31	1451	Sat Oct 22, 2005 6:31 pm harish_21_10
Member Reviews			
Reviews A forum to discuss/review ONLY software and hardware products. All your queries about the same go into Respective Troubleshooting Sections and QnA. Your views and first-hand experiences on any software or hardware from OSes to Graphics cards are all welcome here. Note: The views/reviews contained within this section are purely the opinions of the posters Moderators: Moderators, MemberMods, Administrators, Trusted Members	5664	46944	Sat Oct 22, 2005 6:29 pm deadman
Tutorials This section offers tutorials and How to's on just about anything related to computers and IT. Note: All tutorials are courtesy the posters and not verified by Digit Moderators: Moderators, MemberMods, Administrators, Trusted Members	381	3226	Sat Oct 22, 2005 3:21 pm deadman
Mobile Monsters All threads related to cell phones, laptops, PDAs, MP3 players, and other assorted mobile gizmos... Strictly for the geeky! Moderators: Moderators, MemberMods, Administrators, Trusted Members	483	3663	Sat Oct 22, 2005 6:34 pm infra_red_dude
Gaming			

Racing Robots

The Defense and Advanced Research Projects Agency (DARPA) is organising a robot car race in the desert outside Las Vegas. The 150-mile desert course will test the skills of the machines along mountain switchbacks, gullies, dry lake beds, tunnels and manmade obstacles.



An Underwater Cable System

NEC Corporation has signed a contract with Bharat Sanchar Nigam Limited (BSNL) and Sri Lanka Telecom (SLT) to provide a submarine cable system which help provide broadband network to both countries. The Bharat Lanka Cable System is expected to be completed in the second quarter of 2006.



Enter

Shreyas Talpade

Actor

A well-known face on TV, actor Shreyas Talpade has hit the big league with his performance in *Iqbal*. From his comic role in the popular Marathi play *All The Best* to *Iqbal* and onward, Talpade is keen on new avenues in acting. Here are his views on technology.

What does technology mean to you?

I think technology makes life much simpler, easier and better.

How do you use technology in your daily activities?

In this day and age you cannot be oblivious to technology. There are new innovations frequently taking place. My day starts with the morning alarm on my mobile, which I think is one of the finest technological inventions. I also surf the Internet, check e-mails and generally read up. I largely resort to Wikipedia and Google for information.

What gadgets do you own?

I have a cell phone and a PC. I am very interested in still photography, and I have a Sony HC 40E camera.

How has technology influenced your career?

It's due to technology that my performances have reached a wide audience. Had it not been for the medium of cinema, my work would not have received the same recognition. The post production tools help us enhance our work before it is delivered to viewers. Technology is an integral part of my career!

CONSTANT INNOVATION

It's A Google-Mad World

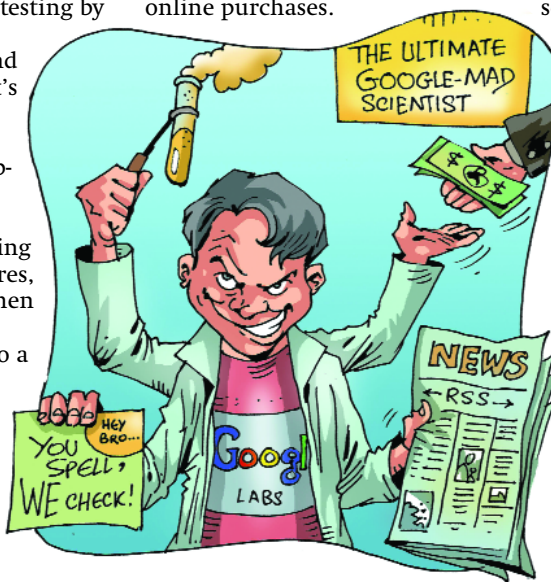
Almost every second day we see something related to Google in the news: first it's Photoshop experts fooling the world into believing that Google's "Internet OS" is already in Beta testing by sending fake screenshots around the world. Then it's Google-crazy bloggers testing every URL and sub-domain combination of google.com, hunting for any new features, getting excited when one such sub-domain resolves to a different error page than is considered normal!

Yes, it's a Google world, and the company's popularity is on the up. However, it's not just all rumours. Google really is doing a lot to put out some great new features and tools.

Recently, Google's 'robot.txt' file was updated to reflect some new directories: /gwt and /purchases. Basically, a robots.txt file tells search engine bots where they can and cannot navigate in a directory structure. Since you do not need to add directories that do not exist, the fact that Google added these directories to their own robots.txt file tells us that these directories

indeed exist, and search bots are not allowed in!

This, say Google-fans, is damning evidence that "Google Wallet" is almost here. What's Google Wallet? Think PayPal, think of online purchases.



Google has not had anything to do with this lucrative section of the Internet thus far, and it's only obvious that sooner or later, they will. Changes to the 'robot.txt' file suggest that this change is already in the pipeline.

Google also recently launched their Google Reader, which is a simple RSS reader. The difference is that instead of residing in your system tray, this reader is online. All you need is a Google account to get access, add your favourite RSS feeds, and then access your news from any Internet connection in the world.

There's also another unpublished feature that fans have stumbled across: www.google.com/webhp?complete=1&hl=en/. What? Basically, Google is testing a feature that will suggest search terms as you type, and even give you the approximate search results available for that particular search term. Take a look at the site to better understand what we mean.

So that's an online feed reader, a spell checker, and a rumoured "wallet" solution all happening in a short span of time. Looks like Google Labs is working full steam to revolutionise every aspect of our lives on the Net.

We're not complaining now, are we?

XP STARTER EDITION

A Cheaper Windows... Does India Care?

With hardware prices falling left, right and centre, it was only a matter of time before Microsoft paid heed to all the unsatisfied muttering happening in this part of



Security Watch

The Microsoft COM+ Vulnerability

The Problem

On October 11, Microsoft released nine new security updates; three rated critical. All current versions of Windows are affected by some of them. One of the vulnerabilities covered by this alert, MS05-051, is being rated by Microsoft Support as "Extremely Critical". They recommend that all machines running Windows 2000 SP4 and Windows XP Pro SP1 install the MS05-051 patch immediately.

This is because of a "local privilege elevation" vulnerability that exists in the Microsoft COM+. Microsoft COM+ is used to handle resource management tasks, such as thread allocation and security on Windows OSes.

The Damages

Some of the vulnerabilities reported and addressed can result in system-level compromise without direct user interaction. Others can result in compromise if the user opens a maliciously-constructed HTML e-mail message or Web page.

Precautions

You can use Windows Update to download and install the current patches. You can also visit www.stanford.edu/services/securecomputing/alerts/windows-ms05-oct.html. The Microsoft page for the most crucial of the issues is at www.microsoft.com/technet/security/bulletin/MS05-051.mspx.

the world. It's an established fact that India is one of the largest contributors to software piracy, percentage-wise. Though it's debatable whether this has actually hurt Microsoft or just meant less profits over the years, Microsoft has finally decided that enough is enough!

Microsoft's Legal Affairs Head, Bradford Smith, announced early in October that the Windows XP Starter Edition would, for the first time, be now available in English for Indian users. Though Microsoft has thus far only provided regional language Windows XP Starter Editions to various countries, India will get this "special privilege" due to the high penetration of English-literate users.

The company hopes to reduce piracy levels by pricing this product at around Rs 1,000, which

might actually make a complete, Windows-based, sub-Rs 10,000 PC a reality. Another reason for this move could also be the fact that, thus far, sub-Rs 10,000 PCs have always included Linux as the OS of 'choice'!

Yes we applaud Microsoft for taking the initiative but it still remains to be seen whether the computer savvy populous India will settle for a Windows XP that has terribly low resolutions and a limitation of a maximum three open windows or programs—especially when the "full, (ahem) free version" is available, just by dropping in at the neighbourhood geek's house with a blank CD!

The gradual increase of 'broadband/always-on' connections in India has also spelt disaster for most software firms, not just Microsoft, as cracked versions are just a download away.

Though this move by Microsoft might increase the number of paid software subscribers in India, we doubt it's going to budge stubborn pirates. Now what would really be nice is to see a full version of Windows XP that doesn't cost the same as two or three month's salary!



Illustrations Harsho Mohan Chatteraj

HOT

Wi-Fi Digital Camera



What could be better than being able to transfer your pictures directly from your camera to a PC? It sounds like great news for the Papparazzi, because now they don't have to worry about film and memory cards being snatched by celebs!

Digital Camera

NOT



Wi-Fi is the way to be and if you're not moving forward, you must be going backwards! The same can be said of ordinary non-Wi-Fi digicams. They're still very good but with not concurrent with the flexibility Wi-Fi offers.

WE WERE EXPECTING THIS

Apple's 'Video iPod Launch'

The iPod may have invaded the world, but the geeks complained about better players offering video playback as well. As far as portable music went, iPods ruled, as far as portable media players went, the iPods stood idly by.

Well, Apple's not been known to let anyone beat them in terms of coolness for long. So, as expected, the Video iPod was put in the pipeline, and was recently launched.

The new iPod avatar comes in 30 and 60 GB



One Silly Question "Where is the Internet stored?"



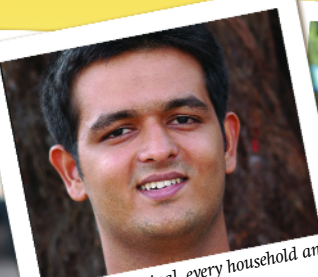
"In the brain of every computer-literate person!"

Saumil Gopani, Mumbai



"In cyberspace!"

Ami Shah, Mumbai



"On every terminal, every household and every office."

Nishant Kaushik, Ahmedabad



"It isn't stored anywhere—it comes alive through servers."

Priya Patel, Mumbai

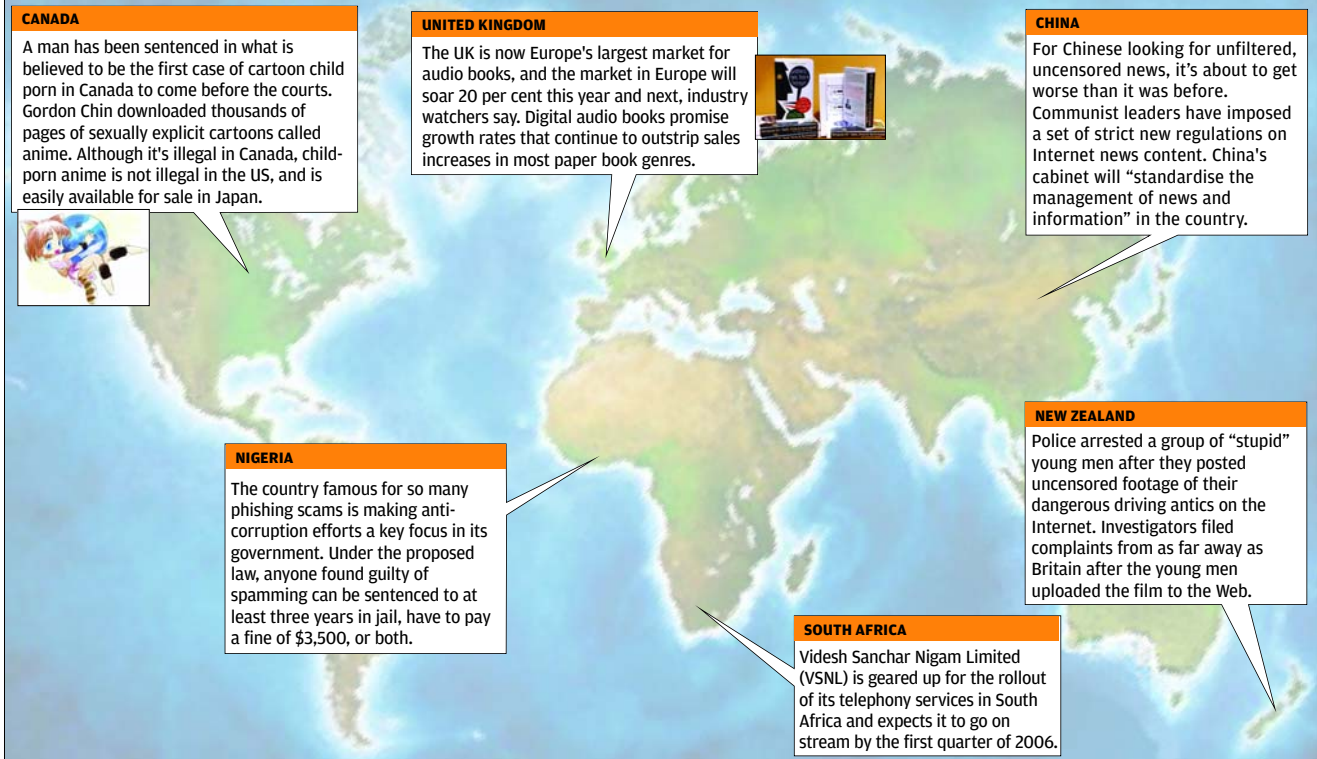


"In an Internet café!"

Ashok Upadhyay, Nagpur

The Digital World

A Round-up Of Technology News From Across The Globe



versions, which are even slimmer and sleeker than the older 20 GB versions. The biggest change is in terms of colour: the new device is a sleek metallic black colour, which will make it stand out in the crowd of older white iPods.

The recent slew of smaller and more portable devices was leading us to believe that Apple wanted to focus on the smaller and cheaper micro, personal audio devices segment, rather than tackle the increasing needs of the portable media player segment. The launch of the new avatar with a 2.5-inch LCD screen has laid those fears to rest.

The company also is expected to feature music videos and TV serials for download via their now-famous iTunes Web site and service—perhaps a renaming of the service might be in order if they start full-blown movie downloads sometime later. Apple has already tied up with Disney and ABC to provide some TV episodes for download at \$1.99 (about Rs 85) an episode.

The new iPod is expected to be priced at \$299 (Rs 13,455) and \$399 (Rs 17,955) for the 30 and 60 GB models respectively, though how much they will cost here in India, even in the grey market, is yet unknown.

All we can say is that the Digit Test Centre is pretty excited, and they're already fighting over who gets to test it when it comes in for review. The iPod's back and prettier than ever!

LIFE'S GETTING BETTER

Google + OpenOffice Vs MS Office?

In early October 2005, Sun Microsystems and Google informed the world of their plans to offer an online version of Sun's OpenOffice.org, presumably as a Google service, to anyone with an Internet connection.

This online version of



Three Incredibly Useful Sites

News And Views

www.automartindia.com



Automart India

Buyers, sellers, dealers and other service providers for new or used cars will find Automartindia.com to be a useful site. Registration is free. You can fill a standard pre-application form for obtaining used car finance and receive responses from multiple finance companies. Also featured are tips on buying, evaluation and insurance.

www.valleyofthegeeks.com



Valley Of The Geeks

This site claims to be 'hi-tech humour served fresh occasionally'. It features news, reviews, and opinions. Subscribing to their newsletter might win you a free copy of *The Valley of the Geeks*! Both the Web site and the book have been recognised for their satirical coverage of Silicon Valley. Give it a look—it's sure to induce a few laughs!

www.thehoot.org



The Hoot

The Hoot is a portal that focuses on everything from media ethics and development in the subcontinent to information, censorship, and the responsibility of the media. The site has specially-segregated information relevant to professionals, teachers, students, readers and viewers of mass media.



Photograph Sandip Patil

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 15th of this month.

Beat That!

Digit Caption
"Slick Calling!"

Last Month's Winner!

Anand Gupta,
Raigad, Maharashtra

"INPUT INSIDE, OUTPUT OUTSIDE!"



E-mail your caption with the subject "Beat That", and your postal address, to beatthat@thinkdigit.com and win

Essential ASP.NET
by Ted Pattison
Published by
Pearson Education,
Delhi



OpenOffice.org will attempt to break Microsoft's stranglehold on the business software segment. Sun's CEO Scott McNealy said, "Working with Google will make our technologies available more broadly, increase options for

users, lower barriers and expand participation worldwide."

Though it's not certain that the change in the stock markets directly afterwards was caused by this announcement, it's interesting to note that

Microsoft shares fell by a little while Google's

fell the highest, with only Sun seeing a marginal rise.

The bourses apart, nothing else seemed to indicate the beginnings of a ground-breaking story. This was perhaps due to the lack of details given by Sun and Google—there's no fixed date for the launch of this service, neither is there any clarity on whether this will be yet another Google service.

What we do know, however, is that the agreement gives Google the rights to further develop Sun's products.

If anything, this is the condition in the agreement that could worry Microsoft. After all, as we've seen with services such as Gmail, its world-renowned search technology and its Desktop Search application, Google builds great services and applications that are really easy for almost anyone to use. A Google-developed version of OpenOffice.org might just threaten MS Office enough to bring down prices a little, or actually make a dent in MS Office's business holdings.

Though we have no option but to wait and watch, as of yet, one thing's certain: life as an end-user of technology products and services is only going to get better!

YET ANOTHER FORMAT

The Memory Mess

You guessed it—another proprietary memory card format! As if we didn't have enough, Sony, in collaboration with SanDisk, have launched the Memory Stick Micro, a compact flash memory card that's just 1.5 x 1.25 x 0.12 cm (l x b x d) in dimensions.

The card has a whopping 32 GB theoretical data capacity—with the operative word being "theoretical", though even a quarter of that would meet with no complaints! The cards can support data transfers of a little over 150 Mbps—not bad at all.

The Memory Stick Micro



GENDER



BENDERS

Pravin Menon vs Ruby Tiwari

Display Filename Extensions




6 min
34 sec

Pravin wondered, "I hope it's not very difficult." On hearing about the task, he visibly relaxed. He clicked 'My Computer' and opened the C: drive, and accessed Tools > Folder Options > View from the menu bar. He then started to hunt under the various menus without luck. After five minutes, we gave him a big hint—'Folder Options'! Pravin saw the light: he unchecked "Hide extensions for known file types." Well, we have a winner!




6 min
42 sec

Ruby was as apprehensive as Pravin. And when she started to search, she looked all over except at the right place. After three minutes or so, Ruby had an idea—she right-clicked files and chose 'Rename', renaming two files she identified as MS Word files with the .doc extension. However, Ruby's joy was short-lived, as we pointed out that it wasn't the right method to arrive at the answer. We decided to help her a bit and gave her the same hint. That done, Ruby nailed the solution in almost no time, taking just a few seconds more than Pravin had.

cards use the MagicGate protection technology, which, as you've guessed, is another proprietary Sony technology.

The fact is Sony has been pushing its own storage formats for a little too long now, and it could land them in serious trouble—customers are more likely to choose a product that offers compatibility with easily available, and cheaper,

storage formats.

Besides, SanDisk's own MicroSD (originally called TransFlash) Flash cards have been adopted by the SD Association and the SD memory card standards group. The MicroSD measures just 1.5 x 1.1 x 0.1 cm—smaller than the Memory Stick Micro—and SanDisk have promised to launch a 2 GB MicroSD chip as early as 2006! Talk about

a conflict of interests!

In a game where the customer is king, Sony sure has been walking the tightrope with its mobile storage solutions.

Remember the Memory Stick Duo, Memory Stick Pro, and Memory Stick Duo Pro (or was it Pro Duo)? Nothing vexes us customers more than having to shell out more money than usual for a memory card that works only on our own devices—we can't connect it to a friend's device, we can't connect a friend's card to our device, we can't use common card readers, and generally get bugged when we see our friends buy an SD or Micro Flash card with more capacity for Rs 2,000 less! Welcome to proprietary hell!

Murmurs have been heard that Sony is not looking to keep this new format proprietary, but the fact is, no-one else is going to give Sony the chance gloat, "Ha! Even our biggest competitors use our technology"! Even if a competitor does tie up with Sony, they're not likely to pay licensing fees and migrate their entire product line to Sony's format now are they?

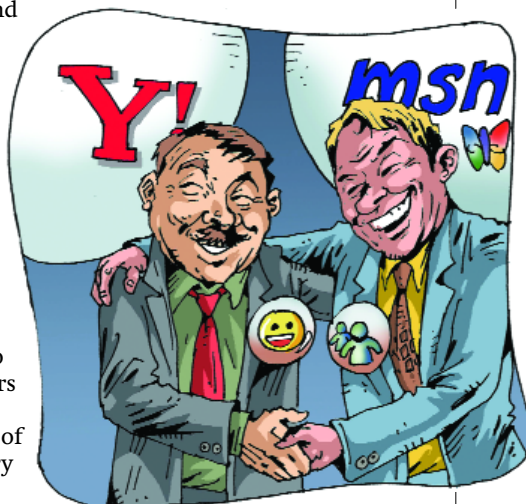
The bottomline is that Sony's proprietary formats seem doomed, and it's going to take a lot more than a "theoretical" capacity of 32 GB to bring its competitors to their knees, begging for a piece of the Sony proprietary pie!

BROTHERS IN 'ARMS'!

MSN, Yahoo!, Bhai-Bhai?

Yes, it's not just a rumour. Microsoft (MSN Messenger) and Yahoo! (Y! Messenger) announced in mid-October 2005 that their respective IM services would be interoperable by mid-2006. This means you will now be able to add your Yahoo! Messenger buddies into your MSN Messenger list and vice-versa, and also chat, send select emoticons and see their online/offline status. This is expected to take their joint, directly-connected, IM community to over 27 crore!

However, before you start popping open the champagne (or cola) bottles in celebration, you should know that all this has been promised earlier, by Yahoo!, MSN and even AOL, and not much has happened since. However, keeping in mind that this is an official press



nVidia C51

Usually, a buzzword is something that exists in the common man's domain. Something like nVidia C51 does not. In fact, it hasn't quite entered the geek domain as yet.

Well, the C51? It's a chipset that promises to beat the pants off every other one. The specifications released by the company created quite a buzz before it was released. So what does the C51 do? OK, here's the

device in action: it has four DIMM slots for DDR memory, a PCI bus interface, a SATA interface and an onboard battery that will last for 16 hours before losing all the data on the card. That's a huge amount of time before you need to rush in for a recharge. Still don't get it? Just plug one of these heavyweights into your machine and feel the buzz. You'll figure out why it's a buzzword!

Buzzword
of the MONTH



U3

What is U3?

U3 is a new hardware and software platform that enables personal workspace portability by allowing USB Flash drives to carry, store, and use one's own applications and data on any PC.

Who developed it?

U3 is the result of a collaboration between SanDisk and M-Systems Flash Disk Pioneers Ltd.

Where is it used?

U3 is used to develop what are being called 'U3 smart drives' and applications compatible with them. These drives are targeted at just about anybody who wants to carry data and applications wherever they go.

When will U3 Smart Drives be available?

Very soon. Leading manufacturers have announced new products based on the U3 platform. Software developers have also shown interest, and users will soon be able to procure U3 smart software.

Why is it needed?

The platform promises to be extremely useful for people who travel frequently and often use shared PCs.

How does it work?

There are two filetypes associated with the U3 platform. *.u3i is an XML-based text file that defines the application's version, download path and working parameters, and *.u3p is a Zip file containing everything needed to run an application. A 4 MB read-only system partition of the drive pretends to be a CD-ROM drive, while the data partition shows up as a regular Flash drive. Windows is led to believe that the system partition is a CD, so U3 takes advantage of the AutoPlay feature to automatically run the LaunchPad and unlock the data partition.

statement made by both Microsoft and Yahoo!, we're inclined to give them the benefit of the doubt and wait and watch.

Whether or not you will be able to join Yahoo!-style chat rooms and conferences from within MSN Messenger is still not known, but we have a feeling most IM users will be quite satisfied to get simple text IM and online/offline statuses across the competing IM clients for now.

Tell us about your thoughts on the subject—write in to editor@thinkdigit.com.

SOUND DECISIONS

Bose Announces New Products

Bose Corp. announced the launch of new products in the home theatre segment—the Personal Music Centre II, BoseLink AL8, Lifestyle RoomMate and CineMate that eliminate the extra equipment and complexity usually associated with other speakers. Noteworthy among these were the incorporated technologies—'Adapt IQ'—an audio calibration system, 'uMusic'—an intelligent playback system, and the 'Bose link'—one that can expand the aural experience to 14 rooms.

The new Bose CineMate digital home theatre speaker system is designed to enhance the sound of televisions—users will now be able to add the home theatre sound to their TV and DVD players. The CineMate speaker system delivers the performance benefits of a five-speaker system: two angled ported-enclosure speaker arrays work in tandem with TrueSpace surround digital processing circuitry and the hideaway Acoustimass module to produce a broad, spacious home theatre experience without the need for rear or centre channel speakers.

The Bose Lifestyle system expansion was facilitated with the 2005 introduction of Bose link, a seamless, wired connection method. However, the Bose link AL8 homewide wireless audio link enables customers to enjoy the Lifestyle system in areas outside the main room sans any room-to-room wires.

The uMusic intelligent playback system digitally stores an entire music collection and serves as your personal DJ—it evaluates the user's listening preferences and prioritises the music collection automatically, without any charts, menus or manual intervention in terms of creating and managing playlists. The uMusic system stores and organises the content of hundreds of CDs.

Bose prices their products in India slightly

higher than overseas, as India is a high-import duty country.

NOTEBOOKS AND DESKTOPS

NEC Joins The Indian IT Gravy Train

NEC, Japan's largest PC manufacturer, has made its entry into the Indian PC market. This is in a bid to break into the top five PC brands in the country by 2008. NEC Versa notebooks, and PowerMate desktops will be distributed in the country by Enkay technologies. In addition to these, NEC has also launched a plasma TV.

Though the computer major has entered the market much later than its global competitors such as Dell and HP, NEC believes that the Indian computer market is large enough, and that it is growing at a rate that will support large volumes.

The price range for the Versa notebooks would be between Rs 45,000 and Rs 1,40,00. The desktops, priced between Rs 33,000 and Rs 70,000, would include a revolutionary water cooling system. The water-cooling technology built into the PC enables the system to operate in an extremely silent mode of less than 30 decibels.

Mr Wu Teng Guo, Managing Director, Sales, NEC, Asia Pacific, stated that NEC's India entry would be purely through the reseller channel. The company also ruled out the setting up of any assembling or manufacturing units in India in the foreseeable future.

Quizzed about NEC's alignment with either the Blu-Ray or HD-DVD camp, Guo said that they would let the consumer decide. ■

Compiled by Preethi Chamikutty, Mithun Kidambi, Ram Mohan Rao and Renuka Rane





28 The Computer Inside You



40 Double Or Nothing!



46 Booster Boards

Digital Passion

Fuelling the pursuit of technology knowledge

Lead Feature

Hybrid Horsepower

Electric cars have moved on, and hybrids are attractive today. We also have fuel cell powered cars. Either way, it looks like technology will ensure a greener future for us

Aditya Kuber

With rising fuel costs, there's enough cause for concern that cars may soon become a mode of transport only for the rich. Far-fetched as it may sound, the reason for rising fuel costs is the exponentially falling availability of crude oil.

Contrary to other reasons that may have been cited (oil mafia and what not), this is a real threat, and may soon skyrocket prices of even the most mundane everyday supplies. How? Well, an economy depends upon oil and fuel for transporting goods and a rise in this commodity has a direct effect on everything else.

However, technological advances in the last few decades have given hope that this threat may just yet be avoided. The emergence of

hybrid cars—those that run on conventional fuel as well as alternative forms of fuel—has meant that there are cheaper options that may soon become a reality.

In first-world countries, there are cars that use hybrid technology successfully and commercially. For the moment, though, this is restricted to passenger cars, and is not available for bigger vehicles. But what exactly is a hybrid car and how does it work? Moreover, what are the alternative sources of fuel? We answer these and many more questions related to alternative motoring.

Hybrids

If a device uses two or more sources of power to run, it's called a hybrid. For example, we can even say that a moped is a hybrid, as it includes two types of energy input—a motorised engine and a foot pedal.

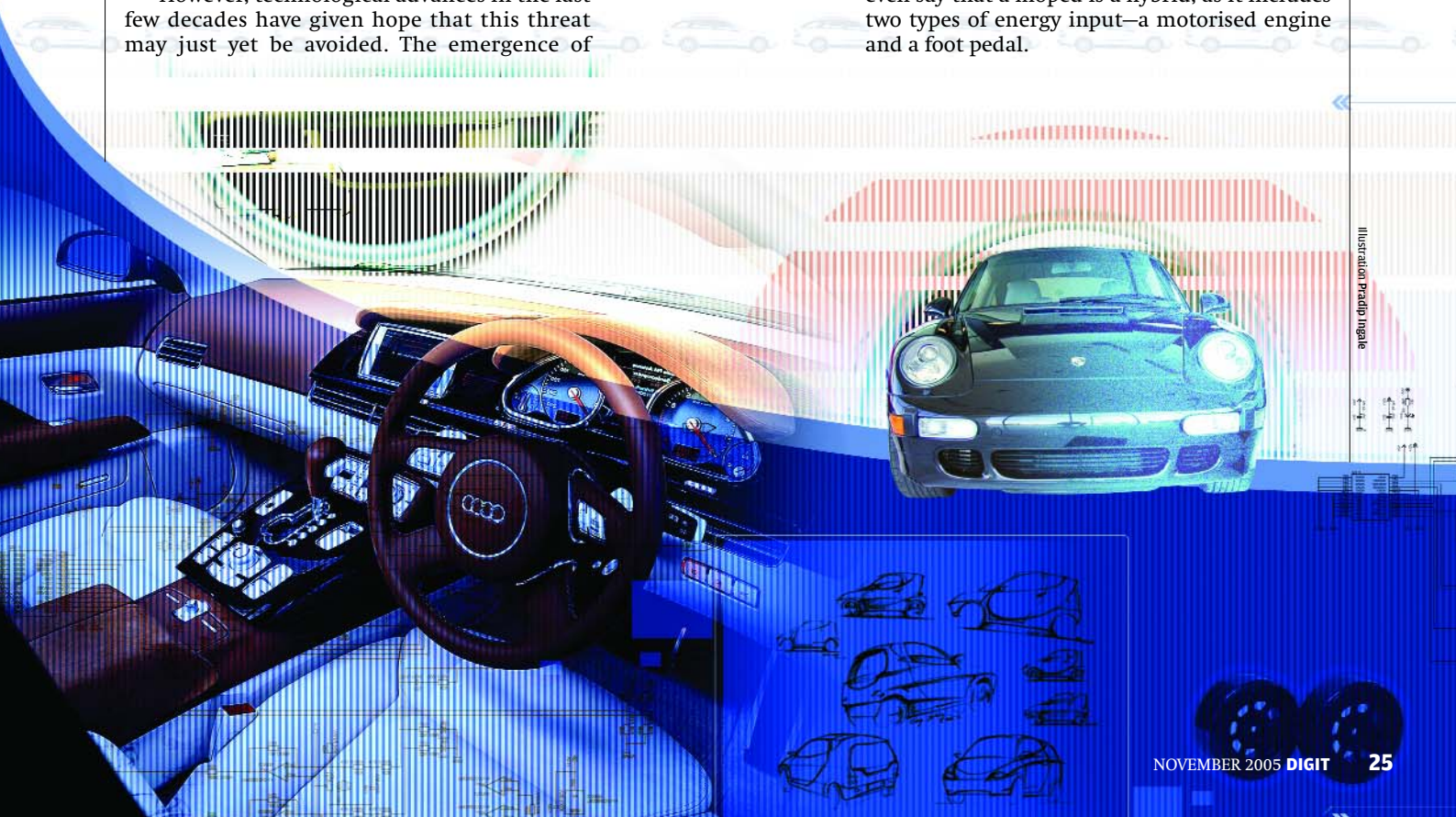


Illustration: Pradipto Ingole

Hybrid cars are those that run on both a rechargeable battery and fuel. There are also some hybrids that use petrol and another form of fuel: biodiesel, created from the Jatropha plant that grows only in certain areas of the world—including India.

There are two types of hybrid cars—parallel and serial. The parallel hybrid has a petrol engine that runs off a fuel tank, and also has an electric engine that is powered by a set of batteries. The advantage is that the electric engine can turn the transmission and take care of initial acceleration, without having the petrol engine do any work.

The other kind of hybrid—the series hybrid—uses a petrol engine to power a generator. This generator can either charge the batteries or power the electric motor that drives the transmission. Thus, in a series hybrid, the petrol engine never directly turns the transmission.

Hybrid Components

A hybrid car contains the following parts:

▣ **Petrol engine:** A hybrid car's petrol engine is similar to regular ones, but these engines are smaller and uses advanced technologies to reduce emissions and increase efficiency.

▣ **Electric motor:** The electric motor powering a hybrid car is very sophisticated. Advanced electronics allow it to act as a motor cum generator. Thus, the motor can draw energy from the batteries to accelerate the car, and also act as a generator and return energy to the batteries when it slows down.

This also happens to be the biggest difference between a hybrid car and fully electric car, as the latter needs to be recharged often, whereas the battery in a hybrid car recharges when the petrol engine is being used, or when the electric motor acts as a generator.

▣ **Batteries:** The batteries in a hybrid car are the energy storage device for the electric motor. Unlike the petrol engine, which only draws fuel from the tank, the electric motor can draw energy from the batteries as well as put energy back. Actually, it's a set of nickel metal hydride batteries that the electric engine draws its power from.

▣ **Design:** While the car is perfectly set under the hood, what's covering it is equally important. A frame built for maximum aerodynamics and minimum requisite weight will ensure the best fuel efficiency and a massive reduction in emissions.

Computer Control

For the entire ride, a hybrid car's inbuilt computer calculates when to let the petrol engine do the work, and the kind of boost it needs from the electric motor. The onboard computer is also actively involved in calculating and deciding when to reclaim excess energy while driving using the electric motor.

The computer also monitors the amount of charge in the batteries, ensuring they are always between 30 and 80 per cent charged. This allows the batteries to last almost 3,000 to 3,500 km—not bad at all!

In the Toyota Prius, a hybrid car, when you accelerate, you really control a device that tells

Concept Hybrids

Like with any new car that's built from the ground up, a new hybrid has to be constructed at the drawing board first. Here's some information from the Net about some concept cars.

Volvo 3CC

Designers, engineers and business people at the Volvo Monitoring and Concept Center think-tank in California came up with the 3CC when confronted with the task of creating a 'future-proof concept' that would enhance sustainable mobility. The idea was to make a car that was not only fuel-efficient, versatile, comfortable and safe, but also exciting to drive and look at.

In the 3CC, Volvo aimed to attractively present a concept that



focused on efficient mobility. This was achieved through good aerodynamics on a compact footprint, light-weight body material, and an electric powertrain. Volvo opted to give the 3CC a high strength steel space frame and composite sandwich floor panels for safety and reduced weight. In fact, the outer body is a bonded one piece carbon fibre shell.

With a potential driving range of over 300 km under certain driving conditions, the torque-to-weight ratio is roughly comparable to the V70 T5 but available over 0–3,500 rpm.

This performance is achieved using a drivetrain that has been specifically designed for the 3CC, although it, too, is a prototype. The electric power comes from lithium-ion cells that are identical to those used in modern laptop computers that are packaged in the thin sandwich floor.

Toyota Volta

Way back in 1800, Count Alessandro Volta arranged zinc and copper discs in a column and invented the battery. Circa 2004, Toyota electrified automotive history with the first high-performance



hybrid, named in his honour.

The Giugiaro-designed carbon-fibre body seats three people abreast and features "drive-by-wire" controls, allowing you to position the steering wheel and pedals in front of any one of them. And the Volta's 408-hp Hybrid Synergy Drive (a 3.3-litre V6 with an electric motor for each axle) not only delivers 700 km on a 52 litre tank, but also facilitates 0-80 kmph acceleration in about four seconds.

Operating electronics enable the power transmitted by the electric motors to the wheels to be modulated, thereby rendering superfluous the gear/clutch unit. Housed under the lightweight, carbon-fibre chassis are the batteries, weighing 70 kg.

the inbuilt computer how fast you want to go. The computer makes decisions about when to use the petrol engine, when to go electric, or when to use a combination of both.

Mass Acceptance...

So why doesn't everybody—at least in the US—just go out and buy a hybrid car? Several celebrities including Cameron Diaz and Leonardo DiCaprio are big fans of their hybrid cars, but the cars still have not made a big impact on the average consumer: misconceptions exist.

For example, people believe that the cars have to be plugged in to get recharged. There's also the common perception that all alternative fuel cars run slow—this, however, isn't true anymore.

Electric cars used to be a little funny-looking, at one point of time, and, unfortunately, this stereotypical image has passed on to hybrids as well. And finally, there's also the question of whether hybrids are indeed the way forward.

The Current Buzz

Many question the very sanity of focusing on hybrid cars for the future: we all know that our crude oil supplies will not last for long. The point raised by these dissenters is quite simply, why waste time on a technology that still pretty much depends on derivatives of crude



Why Are Hybrid Cars A Good Idea?

- ▶ Hybrid cars are good for the environment. They can reduce smog by 90 per cent and use far less petrol than conventional cars.
- ▶ Hybrid cars are economical. They can offer mileages of up to 25 km per litre for city driving—while a typical SUV might travel 8-10 km per litre, or use three times as much petrol for the same distance!
- ▶ Hybrids are better than all-electric cars because hybrid car batteries recharge as you drive so there is no need to plug in repeatedly.
- ▶ Though until a few years ago most electric cars could not match the speeds of fuel-driven cars, today, certain electric and hybrid cars can attain speeds of more than 350 kmph—and let's face it, we really don't need to go any faster than that!

oil? Since hybrids use both fuel and electric motors to power themselves, what happens when the fuel runs out? At best, a mass adoption of hybrid cars will merely delay the inevitable. This is where research for alternative power sources is headed.

Fuel Cells

Don't be fooled by the word "fuel" here, because fuel cell powered cars generally use a combination of hydrogen and oxygen. Basically, in such cars, hydrogen is combined with oxygen to produce energy, and only one by-product is formed—hydrogen oxide, better known as water! There are, therefore, no harmful gases released into the atmosphere to damage the ozone layer; there's enough fuel to go around,

and if you get thirsty, you can always pop open your car and have a drink of pure water! It's only a matter of time before we see fuel cell cars becoming commercial, as fully functional prototypes already exist.

The Honda 2006 FCX Fuel Cell

A prototype of this car was recently unveiled by Honda. The car has a 107 horsepower engine that is powered by hydrogen. The car can store a little over 150 litres of highly compressed hydrogen, has a top speed of 150 kmph, and mileage of 190 km on a full tank. The car is as stylish as any other in the sedan class, and as we mentioned earlier, does not pollute at all.

Looking Forward

In the near future, it's obvious that alternative technologies and fuels will be needed, and the first place these changes will occur will be with our gas guzzling transport vehicles. Thanks to research being done on electric, hybrid and fuel cell powered cars, we at least have a vision of what destiny holds in store.

The only thing standing in the way of prototypes hitting the production lines is mass acceptance. It's time we started to think for the future, think about saving the environment, as well as think about how much money we will save in the long run. Now that you know better, the choice is all yours! ■

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Ford Escape

Ford has also unveiled a petrol-electric hybrid Escape sport-utility and it's being offered to consumers in the US since last year.

Ford claims that the Escape Hybrid's 2.3-litre four-cylinder engine, 300-volt battery, and 65-kilowatt electric motor provide acceleration



Ford Escape

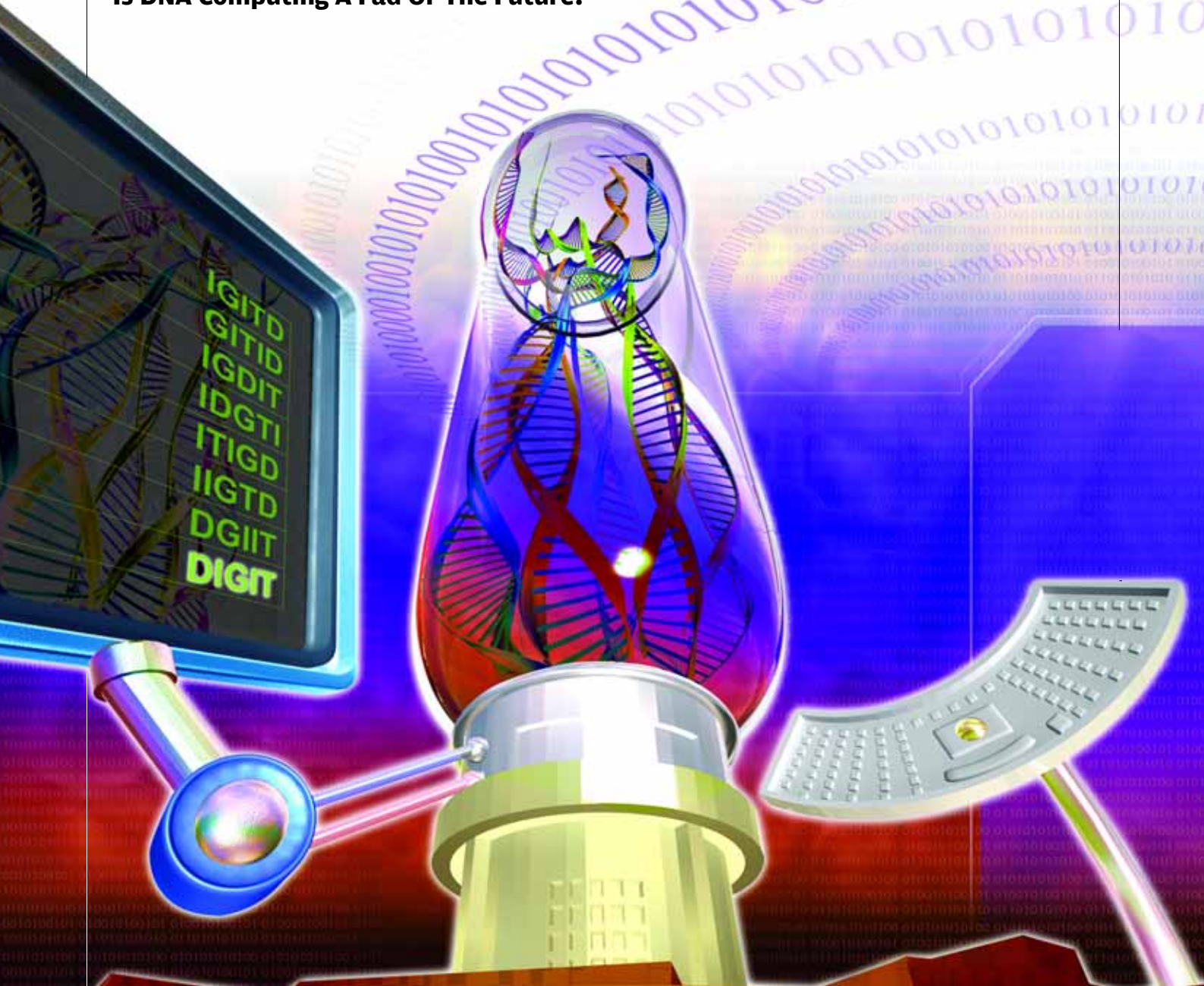
comparable to the regular Escape's optional 201-hp V-6 engine while delivering 56 to 65 km/litre in the city.

Ford claims that its hybrid-electric system is more sophisticated than those of its competitors, as it has a larger storage battery and the capability of driving on electric power alone.

The price premium over a regular Escape, Ford says, will be roughly equivalent to the savings in fuel that the Escape Hybrid will provide. It costs approximately Rs 13,00,000.

The Computer Inside You

Is DNA Computing A Fad Or The Future?



Ram Mohan Rao

Silicon has been singularly successful as a computing material. So much so that there's even an area nicknamed after the element—which, as some have half-jokingly pointed out, should be called “iron oxide valley” instead of “silicon valley” because of the disk industry. Every desktop computer in the world has silicon in it; and we can't imagine computing except in the context of silicon.

Is there something fundamental about silicon that makes it impossible to live without in the computing world? Nothing, really. Silicon and its properties just happen to be extremely suitable for computers to be built upon. But it's not that other materials—such as DNA, for example—cannot be explored.

DNA? When one first hears about “DNA Computing,” the natural reaction is bewilderment. It needn't be: one just needs to know what “computing” really means. “Computing” does not mean browsing the Web or playing an MP3 song. Computing means the manipulation of numbers or other symbols, while having a means of feeding inputs to, and extracting outputs from, the system that is doing the manipulation.

We decided a long time ago that the best things to manipulate were ones and zeroes (binary), and that the ideal devices to do that were to be silicon-based. That's about the hardware. What about the software—the stuff that does the manipulation? John von Neumann—the pioneer of the stored-program concept—decided that the software, too, should be put into the silicon, and there you have it.

Now substitute A, C, G and T for the ones and zeroes, substitute enzymes for the software, and you have a DNA computing system. To expand this a little bit: A, C, G and T are the nucleotides (or bases) in DNA molecules, one of the fundamental building blocks of life. The enzymes we're talking about are chemicals that do things to DNA in much the same way they do in your body. And since software needs to ‘operate on’ hardware, we need to have a basic set of operations. That, too, is provided by DNA: the molecules can split, copy themselves, recombine, and so on, which gives us an adequate set of operations—just as adding, XORing, and so on give us an adequate set of operations for ones and zeroes.

Note that we haven't mentioned a “DNA computer” so far. There's a good reason for that: DNA computers don't exist. DNA computing does. How? Well, we think of computers as things that produce results ‘on their own,’ given a set of inputs. Like when you type in “thinkdigit.com” into a browser, you don't need much further inspection of the system before your browser takes you there. On the other hand, when we talk about “DNA computing,” we're talking about solving problems using DNA—with or without human intervention—and this was Leonard Adleman's

Is there something fundamental about silicon that makes it impossible to live without in the computing world? Nothing, really

idea. Adleman is a theoretical computer scientist and professor of computer science and molecular biology at the University of Southern California.

The Travelling Salesman Problem

Adleman solved a broad version of the Travelling Salesman Problem (the TSP) using DNA. The TSP is quite simple to understand, really (but difficult to solve in most cases). Think of a salesman who needs to do a tour of some cities—say five, including the origin city. He needs to visit each city once, and return to his origin city. He shouldn't visit any city twice or more—just once.

The problem is to find the shortest route by which he can complete his tour, so he can save on the airfare. For example, say he starts from Mumbai; he needs to visit Delhi, Kolkata, Chennai and Bangalore, with Kolkata being his last leg, and return to Mumbai. What is the shortest route? You can see there are several possibilities. He could do M-D-B-C-K, or he could do M-C-D-B-K, or he could do...

Since we know some Indian geography, it's easy to see that our first option is the best. When the problem is limited to a few cities, it can be solved by hand; when it involves, say, 20 cities, a computer would take a while to do it. When there are, say, 200 cities, a supercomputer is needed, doing it the ‘brute force’ way—looking up each route. And when it involves 2,00,000 cities, the fastest supercomputer on earth probably can't do it in a hundred years!

So did Adleman do it? Did he use his DNA—rather, the DNA in his test tube—to solve what supercomputers can't? Actually, no. He solved something like our example above, which we can do by hand. It was groundbreaking because he illustrated what could be done using DNA. That's needed because, as you've probably noticed from the figures above, the complexity of the problem explodes as the number

of cities goes up. That's because of the massively parallel nature of the problem—meaning that the computer (or computing device) cannot work out a neat, systematic way of exploring routes. It has to look at many, many paths at the same time, one of which will turn out to be the answer. (There happen to be algorithms that simplify the process heavily, but that, again, depends on human ingenuity—change the problem and it'll take people years to discover a cooler way to solve it.)

That's where DNA computing comes in. The hardware—the DNA molecules themselves—is used to encode the operation, and in one droplet of DNA solution are more than a trillion molecules. They all work in parallel, doing the same kind of thing, and then some molecules morph into the answer.

The Key Insight

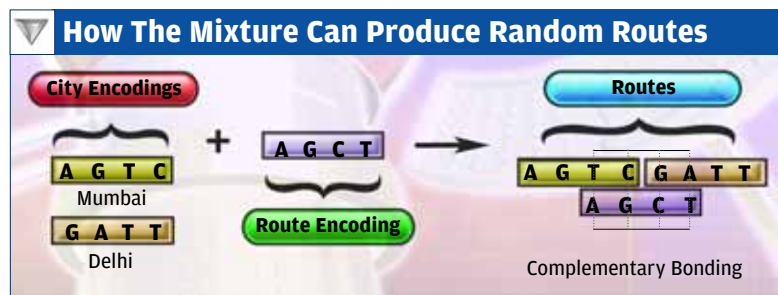
Like we said, Adleman kickstarted the field of DNA computing by using DNA to solve a broad version of the TSP. What he did was pour a solution with some DNA into a test tube, then add some enzymes to it, then add more enzymes, and

finally filter out the molecules in the test tube. Those DNA molecules that emerged gave him the answer to the seven-city version of the TSP.

If that sounds way out, it's only because we don't understand how advanced biotechnology is today. It's relatively easy to understand the 'hardware' part of it—that DNA molecules, with A, C, G and T, play around and recombine and split and so on. What seems difficult to understand is how they play around the way we want them to. It turns out that using the appropriate biochemical techniques, one can 'tell' the DNA molecules what to do, and one can also 'read out' the results of what went on in the test tube.

It is beyond our scope here to explain *how* exactly these biochemical agents work; what we can do is explain *what* manipulations are done. And what better example than Adleman's experiment?

To understand how a mathematical problem



We can obtain the route encodings from the city encodings. These two mixed together result in complementary bonding—producing molecules that represent routes

can be solved by a bubbling solution in a scientist's test tube requires us to understand a few things. First, the structure of the molecules in the solution. Second, what goes on inside the test tube and how. And third, how the scientist gets his answers from the test tube.

Now let's get our hands dirty and see how Adleman's experiment worked.

Adleman's Experiment (Or Something Like It)

DNA molecules consist, like we said, of the four nucleotides A, T, G and C. These can be considered its building blocks. The familiar double-helix you see in all the pictures comes about this way: A (Adenine) bonds with T (Thiamine), and C (Cytosine) bonds with G (Guanine), to produce what is called a complementary strand. So if you have a strand like ACCTCA, the complement would be TGGAGT. Those two strands entwine in double-helix fashion.

We'll restrict the problem a little so there's only one correct answer. (Let's take it easy on Adleman, shall we?) So let's say there are no flights between some cities, such that the *only* answer is M-D-B-C-K. So what we hope to achieve with this DNA computation is DNA strands that encode this particular route.

Our first step would, naturally, be to encode the cities and the routes. Let's use four bases to encode a city, so Mumbai could be, say, AGTC, Delhi could be GATT, and so on. Our first task is to produce a test tube full of these molecules. That's easy to do with today's techniques—all that's needed is a DNA synthesiser. (OK, we're skipping a lot of details, but those aren't important.)

Now how would we produce molecules that encode the routes between cities? We use a property of DNA for this—the fact that a strand of DNA entwines ('hybridises') with its complementary sequence. So, suppose we took the last two bases of Mumbai (TC), and the first two bases of Delhi (GA). We get TCGA. Now we take the complement of this, which is AGCT. This can represent the path between Mumbai and Delhi. How? Because AGCT would hybridise with TCGA, linking the two strands together.

So if we had lots of copies of Mumbai (AGTC) and Delhi (GATT), and lots of copies of the route between them (AGCT), we'd get several molecules that strung together Mumbai and Delhi. The molecules that string together Mumbai and Delhi would represent the route between them.

The same holds for more than two cities—you could have routes consisting of any number of cities. After a sufficient period of time, if you'd taken enough DNA in the test tube, you'd have all the paths possible—including paths that make no sense for our purposes, such as Mumbai-Bangalore-Delhi. These answers are nonsensical because we're assuming there's only one answer to the problem.

We need to weed out the paths that make no sense, so our next step is to make the test tube full of paths that start at the correct city (Mumbai) and end at the correct city (Kolkata). Like we said, there are several operations possible with DNA. Let's use copying. There's an enzyme called polymerase involved. And a reaction called the Polymerase Chain Reaction (PCR). Well, what happens?

PCR can be used to copy sections of DNA you're interested in. The polymerase actually does the copying, and PCR means many iterations of the copying process. You can dictate to the polymerase what segment of DNA you want to start at and where you want it to end. So if we said we wanted it to start at Mumbai and end at Kolkata, those sections of DNA would be copied over and over via PCR. And after a while, you end up with a mix of DNA molecules that encodes several routes, some of them still nonsensical, but all of them starting at Mumbai and ending at Kolkata.

Now we find those paths that are exactly five cities long. Since each city is encoded by four bases, we know the final path should be exactly 20 base pairs long—4 base pairs, multiplied by 5 cities. The technique used to find the length of base pairs is called gel electrophoresis (GE). Using GE, the DNA gets segregated into different lengths, and you can filter out the DNA molecules that have the length you want. So into the next test tube goes all the DNA that is 20 base pairs long. And what does this encode? To reiterate, this new test tube contains all paths that start at Mumbai and end at Kolkata, and which have a total of five cities encoded.

We now need to select those itineraries that have all the cities in them. (Remember we have DNA molecules that are five cities long, but in which cities may be repeated or missing). Now to pick out the molecules that contain a specific city, we use a process called affinity purification. We do this using, of all things, magnetic beads: the complement of the sequence you're interested in is attached to a magnetic bead. This complement hybridises with the sequence you're after. (Again, we're using the hybridising property of DNA.) Then you simply retrieve the bead, and you're left with DNA that *does* contain the sequence you're after.

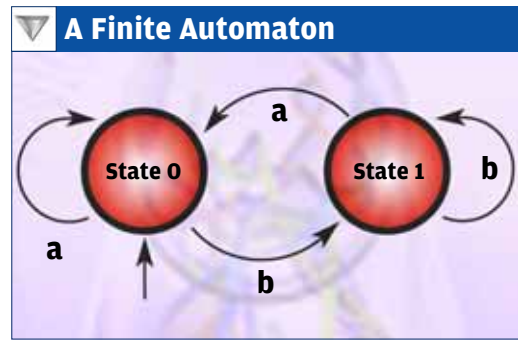
It should be patent that you need to do affinity purification five times. For example, Mumbai *must* be in the pool of candidates; so you attach the complement of Mumbai to the magnetic beads, it hybridises with all the molecules that have Mumbai in them, and you pull out all the beads. The ones that get left behind are the sequences that *don't* have Mumbai in them. Then, in the next test tube, you affinity-purify for Delhi, and so on. In the last test tube, you'll be left with itineraries that visit each city exactly once, and which start at Mumbai and end at Kolkata!

Here, we 'know' the answer: it should be Mumbai-Delhi-Bangalore-Chennai-Kolkata. So we need to find if our 'solution' test tube has the correct path. The technique used is PCR again, combined with the technique for measuring the length of a DNA sequence, called gel electrophoresis, which we've used before. You amplify (using PCR) the section between Mumbai and, say, Bangalore. If these molecules are 12 base pairs long (as they should be if all went well), you know Bangalore is the third city in the itinerary! Similarly, you PCR-amplify for all the four remaining cities and find their positions in the itinerary. We're done!

Of course, in our example, we haven't really solved a problem, but we've shown (like Adleman did) that DNA and the procedures mentioned above can be used to solve a mathematical problem. Unfortunately, even what Adleman did has not convinced everyone. Calculations have been done to show that if the problem were to be increased to a 100 or so cities, the amount of DNA required would be utterly impossible; here, it's a restriction in terms of volume, rather than a restriction in terms of time as with a traditional computer.

So Is DNA Computing Any Good?

Yes. It's only that we haven't gotten there yet. One must realise that DNA computing is, at the current state of the art, best applicable to problems that are massively parallel in nature. This includes problems of the sort we described above. Then, there's encryption, where pretty much the same thing applies: to crack a code, one needs to try a whole lot of possibilities at the same time. There also happen to be several computer science issues that can be explored better by a DNA-based computing system, by virtue of its "stochastic" (based on probability and statistics) nature.



A simple two-state, two-symbol finite automaton (FA). The FA is a 'machine' that has a state. When it's in state 0 and the input is b, the machine goes to state 1. When it's in state 1 and the input is b, it remains in state 1, and so on

At the same time, advances in biotechnology are about as staggering as those happening in the silicon world. We're just not aware of them! We've mentioned techniques, involving enzymes and magnetic beads, in our sample 'problem': these would have been impossible to do in, say, 1970.

There's a lot of the word 'self' associated with DNA. DNA molecules self-replicate; in so doing, they self-refer, with proteins as the intermediary; and it turns out that DNA's biggest promise lies in its ability to self-assemble. Much research in recent years has focused on this property of the DNA molecule—rather, of the structures that can be built at the nanoscale from the DNA molecule itself.

So what is self-assembly? And what is the relation between self-assembly and computation? These are important questions, because we're asking if DNA computing is just a fad or if it is the future. It turns out that DNA, in its self-assembling nature, could be a universal computer. In other words, it might be used someday to build any kind of computer at all!

Now that's a possible happy ending. But if you'd like the gory details, read on...

"A Trillion Computers In A Drop Of Water"

Such headlines make for exciting news. This one was in November 2001, when several Web sites reported that a group of scientists led by Prof Ehud Shapiro at the Weizmann Institute of Science in Israel had created a programmable FA (finite automaton; see figure) in a test tube. It was a two-state, two symbol FA, which is not very complex as FAs go, but it is an achievement. The news went: "This nanocomputer is so small that a trillion such computers compute in parallel, in a drop the size of a tenth of a millilitre. Collectively, the computers perform a billion operations per second..."

"This study may lead to future computers that can operate within the human body, interacting with its biochemical environment to yield far-reaching biological and pharmaceutical applications."

Not to downplay the stupendous achievement, we should emphasise that such "computers" are not very different from the one we discussed—Adleman's DNA computer solving the TSP. The future implications for DNA computing that such news items predict are typically vague and broad. They say nothing about what DNA computing will be like, and whether you'll see a DNA desktop anytime. But that's what we really want to know—enough of the test tubes!

Self-Assembly

According to a Web definition, self-assembly is "the fundamental principle that generates structural organisation on all scales—from molecules to galaxies. It is defined as a reversible process in which pre-existing parts or disordered components of a pre-existing system form structures of patterns." According to another definition, self-assembly is "a branch of nanotechnology in which objects, devices, and systems form structures without external prodding."

Adleman's work was just the beginning. His 1994 paper basically explained how one-dimensional self-assembly of DNA—remember how the molecules arranged themselves physically according to the inputs?—could work like a FA. That was the foundation for connecting computation and self-assembly of DNA.

His work inspired Erik Winfree, in 1996, to propose that *two-dimensional* self-assembly of DNA can perform universal computation, with a set of 'molecular Wang tiles' as the 'program'. Winfree's proposal used Hao Wang's idea that computation had something to do with tiling. If Winfree's proposal was right, DNA would be a material that could, well, be used in a DNA computer.

We need to get our hands dirty again. What is a "universal computation"? What are molecular Wang tiles? How did Wang relate computation to tiling? What is tiling, anyway? There are straight answers to all these.

Winfree And Wang

A universal computation means any computation at all—just as the phrase implies. The full form is "Turing-universal," which refers to Turing machines. A Turing machine is the underlying conceptual 'machine' behind all computers today—whatever a Turing machine is capable of, any computing machine is capable of.

To put it simply,

A Set Of 13 Wang Tiles—Do They Tile The Plane?



Wang tiles are equal-sized squares with a colour on each edge. To tile the plane using a set of Wang tiles, the colours on the edge must match. This is a set of 13 Wang tiles that can tile the plane aperiodically—meaning the tiling pattern doesn't repeat

think of a Turing machine as something that can do everything a general-purpose computer can do.

A tiling is an arrangement of a few basic shapes, called tiles, that fit perfectly together and stretch any area you can imagine. Think of bathroom tiles—they're all square, and they fit perfectly together for any extent you can imagine. Bathroom tiles, however, aren't very interesting, because they're all square! Think of, say, a rectangle and two different kinds of triangles. If you had an infinite supply of these, would you be able to tile any area? Of course, that depends on the shape of the triangles; if you can, that set (of the rectangle and the triangles) is said to "tile the plane," if not, then the set does not tile the plane. And if the tiling pattern can repeat, it's called a periodic tiling.

Given a set of tiles, it was expected by scientists that one should be able to say whether they can periodically tile the plane. When Wang investigated the problem—called the "tiling problem"—in the 1960s, he discovered it was unsolvable. That is, given the set of polygons, it could be *proved* that there was no way of telling whether the set would tile the plane or not.

The tiling problem thus 'reduced' to the Halting Problem of Turing Machines. That's the computer-science way of saying that if you could solve the tiling problem, you could achieve the impossible. However, it also means that a machine (or whatever) that could go about trying to tile the plane is theoretically as powerful as a regular computer. For example, your computer, given a set of tiles that *does* tile the plane, will be able to find that it tiles the plane. In other words, dealing with tiles was proved to be the equivalent of computing in general!

Now, there is a close relationship between the way the plane is tiled and the way *crystals* grow. (Crystals start forming when a seed is put into a gel, for example: the gel starts crystallising from the seed outwards. The seed can even be a seppck of dust.) Winfree asked if crystal growth had the potential to compute as powerfully as tiling did. To answer *that* question, one needed the ability to design *molecular* Wang tiles. (Wang tiles are square tiles coloured on the edge, which pose the question whether the plane can be tiled using them.)

Winfree's Conclusions

It turned out that Wang tiles on the molecular scale could indeed be constructed. Nadrian Seeman, a pioneer of DNA nanotechnology, envisioned the use of DNA as an architectural element. DNA, it turns out, can morph into structures other than the double helix. Seeman and his students built a variety of nanostructures—a wire-frame cube, a truncated octahedron, and more—all with DNA; and most especially, a four-armed 'brick' known as a double-crossover (DX) DNA molecule. This DX molecule was the molecular Wang tile Winfree was looking for. The DX molecule's four arms could be given sequences of DNA bases (A, G, C or T) corresponding to the colour labels on the four sides of the Wang tile it represented.

In a 1998 paper, *Simulations of Computing by Self-Assembly*, Winfree argued it was plausible to perform Turing-universal computation by crystallisation, or crystal growth. He summarised at the end of the paper: "Our results lend credence to proposals for computation by self-assembly of DNA: we have found that 2D self-assembly can theoretically support computation with arbitrarily low error rates."

"With arbitrarily low error rates" is science-speak for "perfectly, depending on your implementation." So, DNA can indeed self-assemble in 2D, and this self-assembly means DNA is complete computing material!

If things are a little fuzzy at this point, a little summary should make it clear:

- ☐ DNA can be nano-engineered into DX molecules, or molecular Wang tiles
- ☐ Molecular Wang tiles self-assemble into 2D crystal lattices
- ☐ Crystal lattice growth is similar to tiling the plane
- ☐ Tiling the plane means universal computing
- ☐ Hence (if Winfree's conclusions are correct) DNA can be used for universal computing!

DNA Nets

More on the self-assembly and nanotechnology front: Duke University scientists used, in 2003, self-assembling DNA molecules to build molecular meshes that could expand and contract, according to "Switchable net woven from DNA," published by *Nature*. Such a molecular mesh "might even be the basis of a computer that has as its components lumps of metals or semiconductors just a few nanometres wide. The switchable DNA net could turn electrical communication between these devices on and off by altering the distance between them." On and off—ones and zeroes! And once we build something that can manipulate ones and zeroes, we can, in theory, build a computer around it.

Today, Tomorrow, And The Day After

There are many visions for DNA computing out there. If you view it in the short term, you could say it's limited to massively parallel problems; that it is "an interesting idea, but..." If you're looking a few years ahead, you'll factor in that biotechnology is, strictly speaking, only a few years old, and that DNA manipulation techniques will take us well beyond where we are today. And if you look even further—at the work of Winfree, Seeman and others—you might see that nanotechnology is where it's at and that along with quantum computing, DNA computing is the future.

You won't see a desktop DNA computer soon, but whether you'll see one in your lifetime is an open question. If Moore's Law holds good for all of technology, you probably will. ☐

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Some of us are content with our PCs the way they are, most want better hardware, some have the best hardware around; what now? Take a metal cutter and rip holes in your cabinet, that's what...

Mithun Kidambi and Robert Sovereign-Smith

What is the first thing that grabs your attention when you look at a computer? The monitor that looks and behaves very much like its idiot sibling, or the bulky, staid-looking cabinet that is ugly and unaesthetic?

Most would be attracted to the monitor. If it's a flat screen LCD, you might have to wipe some drool off the computer desk. Yes, even older people find it difficult to control that aspect of instant infatuation. But the solid cabinet that houses all the essential parts of the machine will be treated as a non-existent piece of hardware—its bulk notwithstanding.

A few companies do try to jazz up the cabinet by adding a few extra LEDs (Light Emitting Diodes) in the front and on the sides, or a few extra fans on the side to give it a supposed "space age" feel. But that's just about as far as it goes. None of the cabinets available in the market will actually grab your attention. At best, you'd have a choice of a black over the normal white ones.

But there are a bunch of people out there who want to customise every single aspect of their machine. Though small, this tribe is near fanatical in their approach and goes to great lengths to modify (or mod) their PCs.

For the uninitiated, to mod a PC means customising the cabinet or case. This could be as simple as adding a few extra LEDs along the sides of your PC case to more complex things like cutting a window into the side, adding fans, UV tubes, and in extreme cases, water cooling your PC and redoing your mouse and keyboard.

Working with tools such as glass and metal cutters, acrylic paints, LEDs and soldering tools, these guys take great pleasure in ripping apart the cabinet and adding their extra two bits, anything to have their own signature style.

One such mod warrior is Nimish Thacker. This 24-year-old engineering graduate has always been

Vanilla Is

fascinated by the thought of customising his PC cabinet. "An article that appeared in *Digit* back in 2002 is what enthused me to give modding some serious thought," says Nimish.

The thought stuck and Nimish was soon hunting around for the tools that would make his cabinet stand out. He points out that computer cases are the most neglected component of a new buy. "This trend is prevalent especially amongst the first timers. The general concept is to buy the cheapest, decent looking cabinet and save money for the rest of the hardware," he adds.

Mod Star

So what is the first thing that a wannabe Mod Star needs to keep in mind? Nimish has a few tips: "First, you need to make sure that the cabinet should be spacious and well built. A spacious cabinet means there will be ample air flow and a sturdy one will lend itself to be cut and drilled."

Whoa, did someone talk about cutting and drilling? Who would take a whirring blade close to their precious motherboard? Well it's not as difficult and macabre as it sounds. As Nimish puts it, all you need is some creativity, freakish experimental streak (things do go a little awry sometimes) and a small bit of moolah to stock up all the standard equipment you'd need.

Tools like a soldering iron, cutting blades and sandpaper can be bought from any hardware shop. Cutting tools like a circular rotating blade are slightly more expensive. Most modders like Nimish swear by Dremel. This North American manufacturer churns out some of the best cutting tools.

Other necessary equipment for any mod such as PCBs (Printed Circuit Boards), LEDs and can be bought from any electrical store. The most common LEDs are the red ones but if you want your case to be cool then you can get either blue or white ones. These however come at a premium. In case your case design requires an LED tube then you've got to be ready to shell out a lot more.



Part of the fun while modding is using tools like this cutter

Equipment List	
Equipment	Cost (Rs)
Soldering iron with solder	250
Dremel	1600
Blades	20
Diamond blade	50
Sanding paper	20
LEDs	3-5 for white and blue LEDs
LED lighting tube	800
UV lighting tube	1000
General Purpose PCB	8
Can of acrylic paint	250 (depending on the colour)
Acrylic sheet for window	30 for each

Boring

Putting the tools to work, Nimish went ahead and modified his new PC case.

Adding a transparent window by cutting out the sides of your case is perhaps one of the most common methods used by first time modders. "My case mod consists of a custom LED lighting with switching panel that switches between white and blue lighting. It also has two exhaust fans at the back and the top and two intake fans over the heatsink," claims Nimish.

He found the experience very enriching, and doing bits of designing and modding after a hectic work day and in between gym sessions didn't deter him. "This is what I like. The picture of a modded case with a window at the side is what got me going. I started making a design and also surfed the Net for a little bit of research," says Nimish. To top up the experience of doing something different, Nimish recorded every modding session on a forum, he also managed to take pictures using his mobile phone and post them on the forum.

One common problem faced by modders is that tinkering around with the case

Interesting Links

Here are a few links that Nimish suggests for fellow *Digit* readers interested in case modding:

How to mod a case

<http://snipurl.com/iqyz>

PC and Mod Tools

www.crazypc.com

www.pcsforeveryone.com

www.pctoys.com

www.xoxide.com

www.x-trememodz.com

www.case-mod.com

Cool Case Mods

Hypercube: <http://snipurl.com/iqz0>

Black Mesa Half Life 2:

<http://members.home.nl/gis/>

Doom3 Mars City

<http://snipurl.com/iqz1>

disrupts the airflow in the cabinet. This results in overheating and we all know what happens when our machines decide to toast! The art, according to Nimish, is to place your fans at strategic points, "I have an exhaust placed at the top of my cabinet. This has improved the heat dissipation from my system and it now runs at a range of 34-36 degree Celsius."

With all the designing and sweating, Nimish is now the proud owner and creator of his own customised PC cabinet. The most logical development from this would be to start off a case modding business. So does Nimish have any such ideas?

Well not as yet. "As of this case mod I think I'm done. My next mod will include a white cabinet and UV lighting options along with cable wraps."

Another project that I'm mulling over is a custom Linux box for routing and data centre purposes. This is where I could make some money. However, for implementing this, I would need substantial funds. Part of the plan is mount a 7-inch touch-screen for the monitor and interface it with the parallel port. The system will be administered remotely. So as of now, I'm currently working on the newer designs and also on ways to generate funds for the Linux project," says Nimish.

With ever-increasing awareness about computers and with people ready to explore their creativity beyond the normal canvas, case modding might move away from being just a hobby for a few geeks to a proper art form.

Moreover, as a cabinet occupies the prime place on your desk, it makes sense to have your signature on it. A PC is after all a 'Personal' Computer. ☑

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Photograph: Jiten Gandhi



Double Or Nothing!

Much before the CPU got there, multi-core Graphical Processing Units (GPUs) have invaded our PCs. These graphics monsters are pushing the bar higher for every manufacturer and every component inside a PC. Everything else is just trying to catch up. We look at what makes the latest multi-GPU cards tick

Robert Sovereign-Smith

There was a time when graphics was a simple deal—get a card, push it into a free PCI (Peripheral Component Interconnect) slot, and merrily start installing games such as *Half-Life*! Then they complicated things by introducing the AGP (Accelerated Graphics Port) slot on motherboards. This meant we had to upgrade our motherboards. Before we knew it, there were differences between 1x, 2x, 4x and 8x AGP motherboards; and since the newer 4x and 8x AGP cards were not backward-compatible with the older 1x and 2x AGP cards, the few who insisted on the best upgraded again and again!

Next, they upgraded the old PCI slots with higher bandwidth capacities, and the new PCI-express (PCIe) port was born; we all upgraded again! Someone at nVidia reinvented the SLI technology, and SLI graphics was born; some of us upgraded, yet again.

Sounds like a history lesson? Well, all this happened in less than five years! So as far as the

graphics market goes, you can be sure you have to spend in excess of Rs 50,000 every few months if you want to have current-generation hardware.

The latest line of graphics cards are multi-GPU cards. These cards have two GPUs on a single card, and essentially offer double the speed of a single GPU card—theoretically. These cards are a boon to those of us with motherboards less than six months old, and only one PCIe slot. Why? Because right now, if you want the best graphics hardware available, it has to be either nVidia-based SLI cards, ATI's CrossFire cards, or a multi-GPU card. There's also the possibility of having two multi-GPU cards in SLI or CrossFire mode, but let's not complicate things!

SLI

nVidia's SLI (Scalable Link Interface) technology needs a motherboard with two PCIe slots. This technology seems relatively simple: put in two nVidia SLI cards (the cards should be identical; thus you should have two 7800 GTs or two 6800 GTXs, etc.) on to the motherboard. Connect them (like master and slave) via a small daughter card that fits on the top of the cards. Then just connect your monitor to the master, and you're set to go.

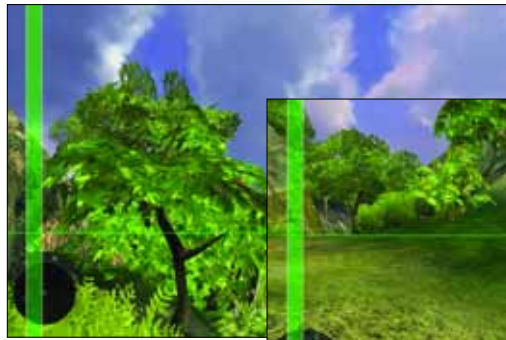
Unfortunately, it's not all that simple! The nVidia SLI solution uses technology that was actually created by its erstwhile rival, 3dfx. Back then, SLI stood for Scan Line Interlace. This old technology was used by two graphics cards working in tandem to render alternate lines of a display—one card rendered lines 1, 3, 5, etc., while the other rendered lines 2, 4, 6, etc.

Since nVidia announced its acquisition of 3dfx in 2000, the graphics race was down to only nVidia and ATI. 3dfx's SLI technology resurfaced in 2004 as nVidia's Scalable Link Interface. The major difference was that instead of rendering lines, the new SLI interface would split the 'work' into two, giving each graphics card an equal amount.

This meant that both cards take the same time to finish rendering their allotted work, and this increases performance. Although nVidia had improved the technology earlier, they still had to wait for PCIe to enter the end-user segment—traditional PCI was way too slow for modern GPUs, and AGP didn't allow for dual graphics cards.



nVidia's SLI technology allows two cards to be connected in parallel



Split-frame rendering, as seen in *FarCry*. The horizontal green line distinguishes between the rendering done by each card



How It Works

SLI works in two major ways. The first is Alternating Frame Rendering. Here, each card is given an alternate frame to render by the graphics driver. After the slave card renders its frames, it passes them to the master card, which then adds them alternatively to its own output.

Most games benefit from this form of rendering, as it is easier for the driver to send alternate frames to different cards. Because each frame is rendered on a different card, there is less geometry data that needs to be passed on to each card by the driver. That is, since each card is rendering one frame of a whole scene, each card calculates geometry individually, thereby doubling the geometry output. Most benchmarking software, such as 3DMark, show higher geometry scores because of this.

The second way SLI works is via Split Frame Rendering. This type of rendering divides each frame into work data, and evenly distributes this 'work' between the two graphics cards. This is the technique used to render games such as *FarCry* in SLI mode. Let's take an example of a single frame to better explain how split frame rendering works.

A common scene in *FarCry* is a jungle scene, where, close up, you have lots of plants and foliage, and there's the beach visible on the horizon. As usual, there's the sky above, and there's beautiful rendering of the water in the distance.

Here, the lighter element of the scene is the sky, which needs little or no geometry drawing, and is mainly a simple background. The water (*FarCry*'s speciality), the trees and bushes, however, take a lot of detailing, and thus more geometry and pixel shading. What happens with split frame rendering is that the frame is split into equal processing parts by the driver and then passed on to the cards. Thus, one card gets much more of the frame to render than the other—say, all of the sky and only a part of the trees. The other card gets much less of the frame—the (glorious looking) water and some of the foliage.

The driver calculates the approximate time it will take to render the scene, splits the data in two equal workloads, and then distributes it to the cards. This is always an approximate calculation, because no matter how good the driver is, it cannot predict the exact outcomes of the rendering times. The aim, however, is to get both cards to finish rendering their parts in the same

time. The slave card's rendered data is sent to the master, which adds its own data and outputs the complete frame. As expected, this mode earns lower scores in 3DMark for geometry.

The only drawback of nVidia's SLI technology is that both cards have to be identical models to work. This means that if you have an older card, you cannot just buy a 7800 GTX and connect them both in SLI mode. Instead, you have to buy two 7800s and junk the existing card!

Let's take a look at ATI's multi-GPU offering.

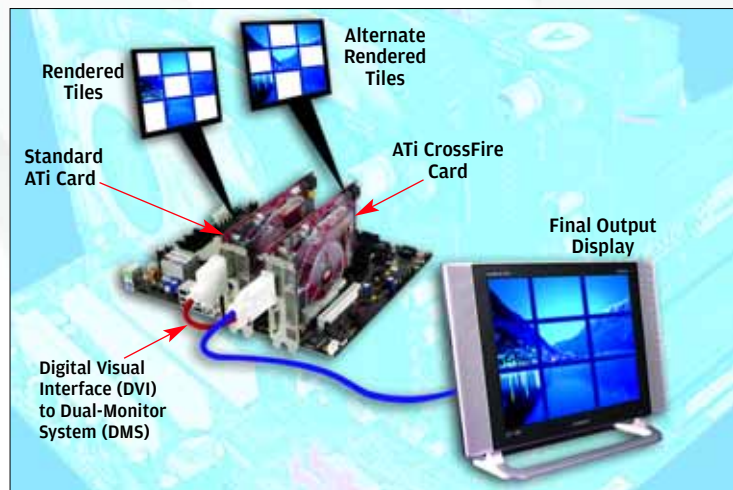
CrossFire

After a long wait, ATI finally came up with a reply to nVidia's SLI technology. Christened CrossFire, ATI's multi-GPU solution won a lot of accolades from end users because of the flexibility of being able to add a brand new, current-generation ATI CrossFire card to a system with an older PCIe card, and have them work in tandem.

Remember, in the graphics card business, six months makes your card a relic, and the latest cards always cost in excess of Rs 30,000. Considering this, a user who just spent Rs 30,000+ less than six months ago on an ATI card did not have to junk his or her card and get two new PCIe multi-GPU cards like their nVidia counterparts.

Like SLI, the CrossFire technology also has different ways in which the two cards work together.

Supertiling: Here's where the major difference between SLI and CrossFire lies. The supertiling rendering method is supported only in Direct3D rendering (Direct3D is Microsoft's proprietary Application Programming Interface (API), which is used to program many current generation games).



A visual description of how ATI's CrossFire uses supertiling across the two cards

Basically, what happens in supertiling is that each frame is broken up into 32 x 32 pixel squares. Each graphics card renders every alternate square, one by one, until the frame is completely rendered. This sharing of the rendering of square 'tiles' that make up a screen is what gave the technique its name. This method is good for equally fast graphics cards, but an older generation card such as the X800 could slow down a newer and faster CrossFire card. So, the bottomline is that both cards will run at the speed of the slower card.

Scissoring: Here the frame is divided exactly in half, and one card renders the top half while the other renders the bottom half. Unfortunately, this isn't as efficient, theoretically, as SLI's Split Frame Rendering. This is because a frame generally contains some parts with more geometry and shading, and others with much less. You might therefore end up with the card running as master finishing up its render process and then doing nothing while waiting for the other card to finish its computing!

Alternate Frame Rendering: This is exactly the same as described for nVidia's SLI technology. The only thing to remember is that since alternate frames are rendered, the total graphics sub-system speed will depend solely on the slower card.

CrossFire cards are connected via an external dangle. This connector itself introduces some drawbacks into the system. For starters, the maximum resolution for 60 Hz monitor display is 1600 x 1200 pixels. This is ridiculous considering that hardcore gamers (the people who would spend the money to buy these cards) generally use high-end monitors capable of displaying 2048 x 1536 at 70 Hz or better.



ATI's CrossFire solution is their answer to nVidia's SLI technology

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One advantage that makes up for the lower resolutions in the latest ATI models is the enhanced anti-aliasing output that CrossFire offers. Basically, the two cards render frames with different anti-aliasing levels, and then the compositing chip puts them together using a new technique called Adaptive AA (Anti-Aliasing).

Adaptive AA is ATI's new method of improving graphic quality. Basically, it uses previous methods of multiple AA sampling, but intelligently.

What this means is that so far, chips were taking multiple samples of almost everything with a texture, and then sampling it multiple times to get the best quality textures. This sampling is done by shifting the centre of a pixel around and then rendering it. When done multiple times, the outputs are blended together to give you a higher resolution texture.

This, however, is not very efficient, as not all textures in the display need to be high resolution to output great graphics. This is where Adaptive AA comes in. It intelligently decides which textures will improve the visual output and which won't. The textures that need multiple rendering passes (to make the output look better) are given priority, thus increasing the visual detail.

Single Card Multi-GPU

Both nVidia and ATI offer dual GPUs on a single card. These multi-GPU cards offer better performance, albeit only theoretically. Our various graphics card tests have shown us that dual-PCIe cards perform better than a single dual-GPU card—two 6800 GTXs in SLI mode outperformed a 6800 Ultra dual-GPU card.



Card makers have started putting two GPUs on cards to get the best performance possible. It gets better when you use two of these dual-GPU cards in SLI or CrossFire mode



Extreme Hardware

For gaming freaks, there's also the option of nVidia's Quadro and ATI's FireGL range of workstation cards, which, in all honesty, we have ignored through all our articles thus far. Why? For starters, they are way too expensive!

These cards, (Quadro, FireGL, and even Creative's Oxygen line) are used for really high-end video rendering, in systems that costs lakhs of rupees. They support ridiculous levels of full screen anti-aliasing (32x) and offer multiple screen outputs. nVidia's cards can also be run in SLI mode, thus doubling their already superlative performance.

Overall, these are not mass consumer gaming cards—not that the Rs 30,000+ nVidia and ATI cards can be bought by everyone anyway, but they're cheaper than workstation solutions.

For gaming addicts with money to burn, there are many more performance solutions out there: the Gigabyte GA-8N SLI Quad Royal motherboard, for example. This board offers four, yes, *four*, PCIe graphics card slots, though you should know that nVidia's drivers do not currently support four GPUs.

You could also overkill the idea of GPUs and plug in four 7800 GTs, which makes a total of *eight* GPUs running on your system. It's kind of pointless, since all four PCIe graphics ports running together only offer 8x PCIe speeds per port.

Thus your 7800 GTs would be running considerably under power, but with a glass cabinet, a little in-cabinet lighting and one monstrous power supply, you could be the talk of the gamer clan across the world!



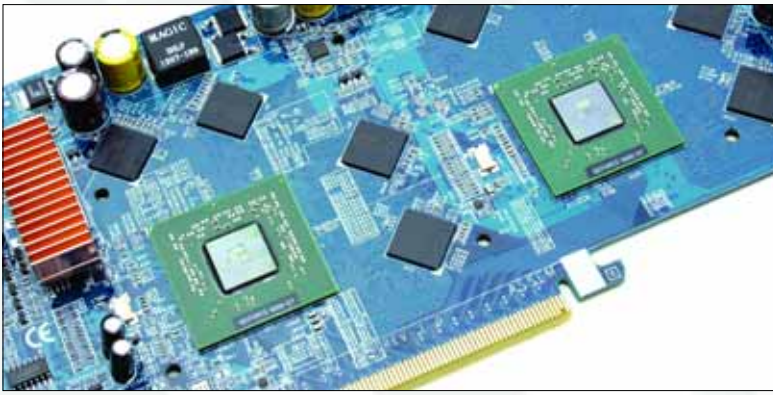
The Quad Royal is the perfect example of extreme hardware—four cards in SLI mode!

There's a limitation in the motherboard's PCIe chipset architecture that reads two PCIe x16 slots as two PCIe x8 slots—due to the fact that the chipsets only support about 20 PCIe pipelines. Thus, even two graphics cards installed on two PCIe x16 slots, running in CrossFire or SLI mode, are used at x8 PCIe speeds each.

When compared to a single dual-GPU card, which should be detected as a full fledged x16 PCIe card, it's obvious that the single dual-GPU card should outperform the dual-card setup. In the real world, this just isn't true, and dual-card setups are faster—as of now! This is still so because motherboard chipset makers are still trying to catch up with the graphics card market in terms of speed and technology.

Currently, nVidia's flagship GPU is the 7800 GTX, while ATI launched the X1800 very recently. Both these chips will be used to create multi-GPU cards, which offer the ultimate in graphics technologies. We haven't had a chance to compare them in a direct shootout yet here at Digit, but we will, soon.





Here's a better picture of dual-GPUs on a single card, with the cooling fans removed

Basically, dual-GPU cards work exactly the same way as two cards in SLI or CrossFire mode, except that the card's memory is shared, and transfer between the chips is much faster, due to the fact that they're on the same PCB.

Dual-Core GPUs?

One would think that, logically, the advent of dual-core CPUs should now prompt graphics card manufacturers to shift towards dual-core GPUs as well. This doesn't seem to be the case, though.

nVidia, for one, has made it clear on several occasions that they currently have no interest in dual-core GPUs, simply because they are not needed. According to tests and benchmarks, two nVidia cards in SLI mode perform more floating point operations than the best Intel and AMD

dual-core CPUs! So as far as current technologies go, it would be an understatement to say that GPU technology is way ahead of the CPU market!

Conclusion

Unfortunately, neither Intel nor AMD can match dual-GPU speeds, and essentially, the graphics sub-system is bottlenecked by the system architecture. This happens because it is the system CPU that send the requests for graphics processing to the GPUs, and thus far, even the best CPUs cannot do this fast enough. Perhaps dual-core CPUs will minimise the loss of speed we have faced.

Of course, by the time dual-core CPUs become the norm, the champions of graphics (nVidia and ATi) will have fought each other into a new era of GPUs all over again—if history is anything to go by. Overall, it's a great fight that's going on between these giants and it's us, the end-users, who will benefit. So far, a multi-GPU system—whether two cards or one—is the way to go. If you're the type who needs the best visual feel possible, you need to get yourself one!

It looks like parallel processing for graphics is here to stay, whether in the form of two cards running in parallel, or two chips on a single card parallel-processing textures and frames. We're not naïve enough to make this a long-term prediction, simply because the graphics market is one of the most competitive, and technologies come and go almost on a monthly basis.

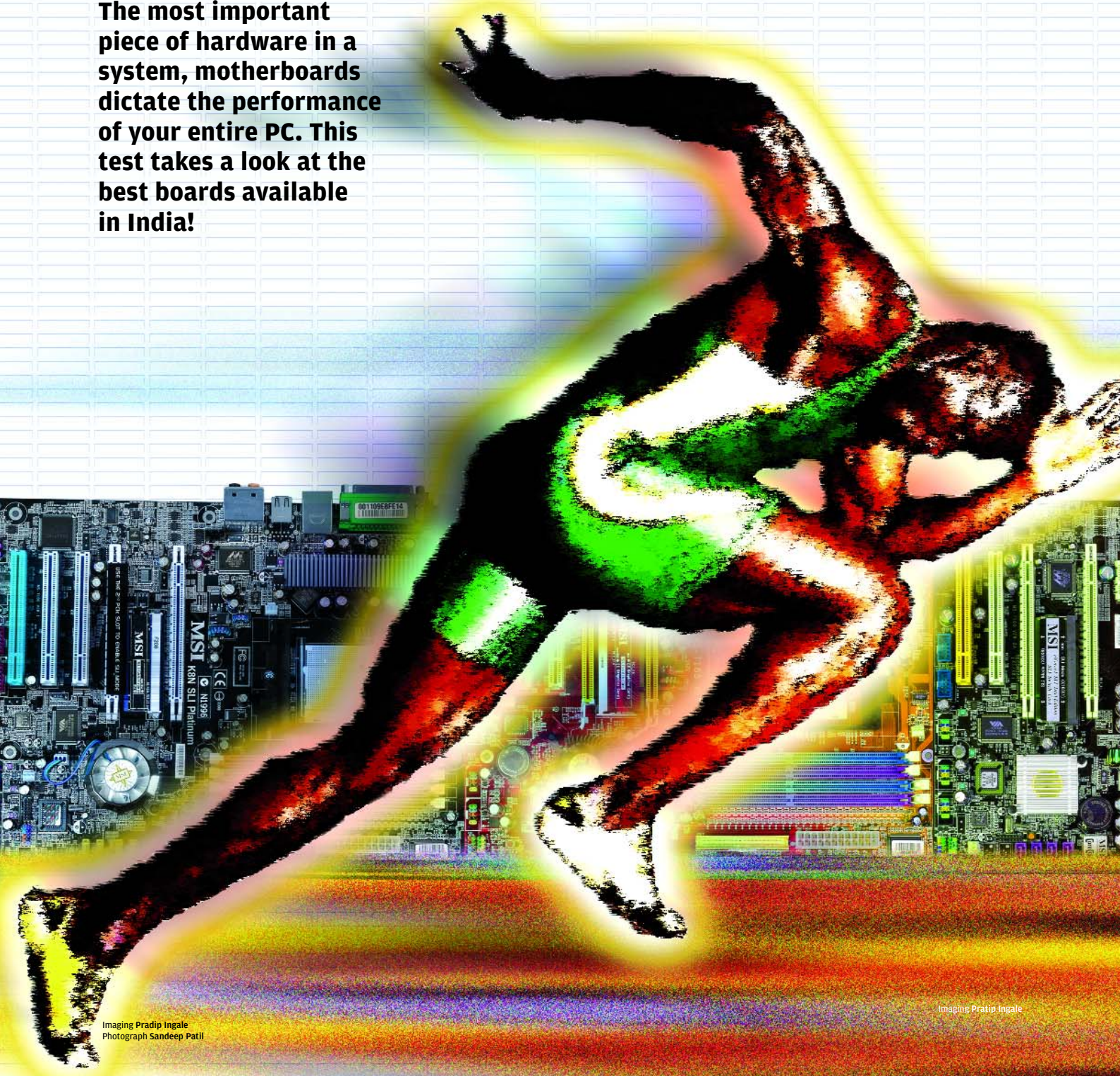
So we'll leave you with a blanket statement: "If there's a change in this trend, we'll be the first to let you know." ☒

robert_smith@thinkdigit.com

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Booster Boards

The most important piece of hardware in a system, motherboards dictate the performance of your entire PC. This test takes a look at the best boards available in India!



Jayesh Limaye

A few months ago, we carried a comparison test of entry-level motherboards, which were meant for the budget-conscious consumer. This time round, we have a line-up of the choicest and best motherboards available in the Indian market—if you're ready to break your budget shackles in order to get the best.

In this comparison test of high-end motherboards, we're talking about top-of-the-line motherboards. Targeted primarily at PC enthusiasts, gamers, graphic designers and those who need to work with high-end applications such as video editing, these motherboards promise you performance to the core. Integrated with technologies such as infrared, Bluetooth, Wi-Fi, overclocking features, dual-core processor support and more, these motherboards carry a premium price tag.

The prices seem more justified because of the inclusion of high-end features such as SATA II, SLI, high-end audio, and advanced overclocking features in these motherboards. The inclusion of SATA II will support better storage capacities and performance. SLI dramatically improves graphics performance, which gamers will love. High-end audio means you can now really use your computer in your home theatre setup. Overclocking, again, is a gamer's delight—PC enthusiasts, too, will be able to play around with systems based on these boards and attain maxed-out performance.

To reiterate, systems in regular offices would not find a use for motherboards of this kind; the market here would be gamers and other enthusiasts. Built to cater to processors from market leaders Intel and AMD, these motherboards are a real joy to work upon.

We received a total of 20 motherboards—from ASUS, DFI, ECS, Foxconn, Gigabyte and MSI. Almost all these boards came with goodies (read lots of

cables and accessories) and packed boxes so attractive we wished we could have a separate photo shoot for these! As always, we gauged the motherboards based on features, performance and price, and zeroed in on the best of the best.

The boards were naturally divided into two categories—mobos for AMD and those for Intel. We talk about these in entirely different sections, as is appropriate.

MOTHERBOARDS (AMD)

In this comparison test, there were eight motherboards that supported AMD processors. Two of them were from ASUS, two were from Gigabyte, two were from MSI, and there was one each from DFI and ECS.

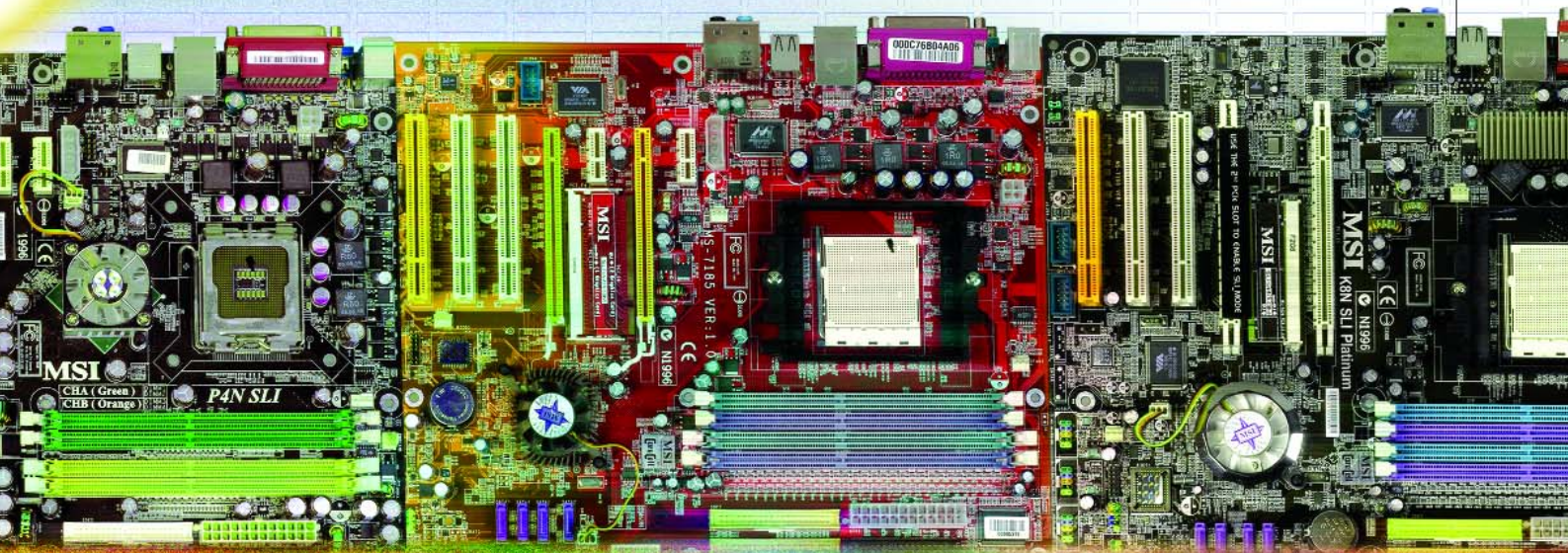
There happen to be four vendors who manufacture chipsets for AMD Athlon64 processors—ATI, nVidia, Via, SiS and ULI.

The various chipsets available for AMD motherboards are ATI's Radeon Xpress 200, nVidia's nForce4 Ultra and nForce4 SLI, SiS' SiS756, Via's K8T890, and ULI's M1573.

Technically speaking, the ATi Radeon Xpress 200 has the highest number of PCI-Express lanes—22—but two of these are utilised to connect the Northbridge with the Southbridge. nVidia and Via have 20 each, while SiS has only 16. This means all chipsets except SiS can support an x16 PCI-Express graphics card in addition to x4 slots.

While SiS756 supports an x16 PCIe graphics card, it has to rely on the Southbridge for additional PCIe slots. A thing worth noting is that of all the chipsets, only the nForce4 is a single-chip implementation, that is, there is no separate Northbridge and Southbridge.

Since the memory controllers for the Athlon64 class of processors reside on the CPU, the Northbridge does not have much to do, and the focus is more on the Southbridge, which has the storage, networking and audio controllers.



The boards we've reviewed are based on the most feature-rich of all the chipsets—the nForce4 Ultra and nForce4 SLI, since the other chipsets, even with the good performance and features they may be offering, are priced lower, and hence are confined to the budget or mid-range segment. The only extra feature the nForce4 SLI has over the nForce4 Ultra is support for two PCIe x16 graphics card in SLI mode.

Features

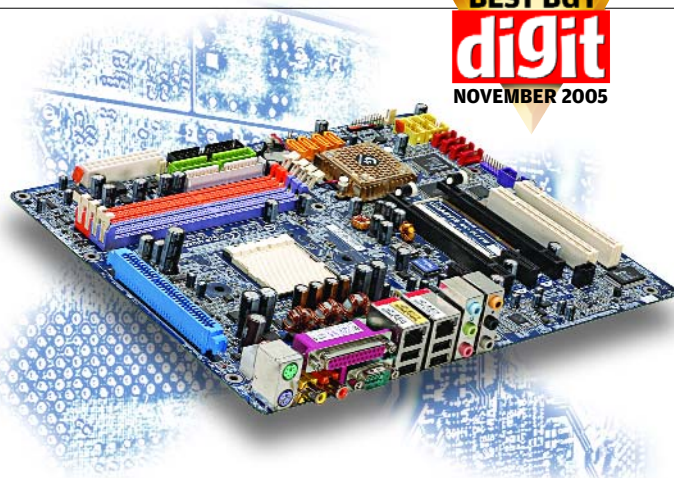
Like we said, all the motherboards we received were based on either nForce4 Ultra or nForce4 SLI. Hence, every board supported the AMD Athlon64 X2, which was what we used to test the motherboards with.

There is no variation in the type and speed of memory in this segment: the supported memory was DDR 400 MHz. All the motherboards supported SATA II, since the nForce4 chipset supports this standard. Similarly, most of the motherboards supported the SATA hot-plug function, which enables you to remove or plug in a SATA drive without powering off the computer!

The motherboards from DFI and Gigabyte, as well as the ASUS A8N-SLI, all had eight SATA ports, so that up to eight SATA drives can be added to the system. To complement the number of SATA ports, the Gigabyte GA-K8NXP-SLI and the ASUS A8N-SLI came bundled with eight SATA cables.

The MSI K8N SLI Platinum sports an on-board Creative SoundBlaster Live! 24-bit audio solution, which is the best in this class. The DFI LanParty UT NF4 SLI-D features the 'Karajan' module, which is a detachable audio module that isolates audio signals so as to produce the best quality audio. Some cabinets, however, might not be able to accommodate the board with this module.

Dual LAN—a feature likely to appeal to gamers—was available on most of the mother-



Gigabyte 8Σ Series GA-K8 NXP-SLI

boards. Computers on a LAN can connect to each other via one LAN port, while the other LAN ports are all connected to the Internet. A team of gamers on a LAN can thus play online with gamers around the world!

A Wi-Fi 802.11 b/g card was bundled with the Gigabyte 8Σ Series GA-K8NXP-SLI to facilitate wireless connectivity with access points at hotspots. A U-Plus DPS (Dual Power System) card was also bundled with this board. This card aids in stability of the system in the face of power fluctuations. It also has LEDs that indicate the power and load status.

The DFI LanParty motherboard had UV reactive slots and round cables. The cables and slots emit a lovely glow when UV light falls on them. This might not be visible if ordinary cabinets are used, but will be very visible if a modded cabinet with transparent panels is used. Of course, you're going to need to buy yourself a UV cold-cathode light for the glow to happen.

How We Tested

Our benchmarks and tests were chosen after careful consideration so as to stress the boards to the maximum. As many as five test-bench setups had to be used because of the various types of processor sockets available on the motherboards we tested.

Intel motherboard setups featured the Pentium IV 3.6 GHz processor, while AMD motherboard setups featured the Athlon 64 X2 dual-core processor. Other than that, the test setups consisted of Corsair 1 GB DDR 400 MHz RAM or Micron 1 GB DDR2 533 MHz RAM, according to the RAM supported by the motherboard; a 120 GB 7200 rpm SATA Maxtor hard drive; and an XFX NVIDIA GeForce 7800 GT PCI-Express display card. The systems were powered by Antec NEOPOWER 480 Watts power supply.

Windows XP Pro with SP1 was freshly loaded along with DirectX 9.0c, and the drivers from the driver CDs provided with the motherboards were loaded.

Our tests and benchmarks consisted of the following:

FarCry: This is a Direct3D game that accurately measures the Direct3D gaming subsystem. This game was chosen because it uses a fairly modern graphics engine, especially for rendering water, and represents how most games will play on your system in the future.

Doom 3: This OpenGL game is used to test the strength of the OpenGL graphics subsystem. We chose this game because it's very heavy on resources.

3DMark05: This is an industry-standard Direct3D synthetic benchmark from FutureMark, and it measures the graphics performance and capabilities of the system. This test gives you an indication about the graphics performance you can expect from the system.

PC Mark 2004: This is another industry-standard benchmark from FutureMark; it measures the CPU, memory, graphics and hard disk performance of the system—and hence is a good system-wide benchmark.

SiSoft Sandra 2005: This consists of benchmark modules that measure CPU, filesystem and memory performance.

Ziff-Davis Business Winstone 2004: This benchmark suite runs various applications such as MS Office 2002's Word, Excel, PowerPoint and Outlook, and other programs such as WinZip, to measure the real-world performance of the system.

Dr. DivX 1.06: This is a video encoding application used to encode DivX video files. A 100 MB DVD file was encoded to DivX, and we noted the time taken to encode.

We ran all the above benchmarks and logged all the scores. After applying the proper weightage to each of the logged scores, the aggregate performance score was calculated. Similarly, the various features of the motherboards, along with their prices, were noted to calculate the features and price scores. These, along with the performance scores, were taken into consideration to decide the winners.

The ECS motherboard came with an accessory called Top-Hat flash. If for some reason the BIOS gets corrupted, all you need to do is place the Top-Hat flash tool on top of the BIOS chip, and you'll be able to boot and re-flash the BIOS and restore it. Similarly, Gigabyte, MSI and ASUS have a backup redundant BIOS facility on the motherboard so in case the BIOS gets corrupt, you may still be able to boot and restore the BIOS.

DFI has a unique feature known as CMOS Reloaded, in which you can set, name and save up to four different BIOS settings from within the CMOS setup. Then there is the Genie BIOS, which allows you to overclock to the max. Overclocking was standard on all the motherboards, where CPU core speed and memory voltage, along with HyperTransport Technology speed and DRAM speed, could be tweaked.

Performance

Gaming

The ECS KN1 Extreme, along with the DFI LanParty, were the best when it came to gaming performance. The other boards, though, were not far behind, and lagged by a maximum of five fps. The above two are the motherboards you might consider grabbing if you're a big-time gamer. The Gigabyte K8 Triton GA-K8N Pro-SLI posted disappointing scores here.

Synthetic benchmarks

In 3DMark05, there was no clear winner as such, because all the motherboards scored almost the same. This test is a general indicator of what kind of a gaming experience you'll get using a PC based on this motherboard. In this test, the Gigabyte K8 Triton again lagged way behind the others, especially in CPU marks.

In the PCMark 2004 test, the ASUS Proactive A8N-SLI and the Gigabyte 8Σ Series GA-K8NXP-SLI scored the highest—and almost the same—



Asus Proactive A8N-SLI

points, which reflects the fact that these motherboards will give overall better performance in daily use. The Gigabyte K8 Triton's woes continued: it failed to even complete this test after repeated attempts!

SiSoft Sandra 2005 saw the DFI and ECS motherboards score high in the memory benchmark, with the other boards not even coming close. However, in the CPU and file system benchmarks, almost all the boards scored equally.

Real-World Benchmarks

The ASUS A8N-SLI was the fastest in the video file encoding test at 110 seconds, followed by the ECS and the Gigabyte 8Σ Series at 111 seconds—practically no difference. These three boards are therefore better at utilising the power of the X2 to the maximum, so you can expect better performance in multimedia applications such as video editing programs.

The DFI LanParty UT NF4 SLI-D board performed better than the others in ZDBench Business Winstone 2004, scoring 31.1. Very close on its heels was the Gigabyte 8Σ Series

What Should You Look For In A High-End Motherboard?

Dual-core processor support: The motherboard must support dual-core processors of the highest speed available at the time of purchase, even if you plan to use a single-core processor. This is to ensure your computer will be future-proof—you will probably move on to a dual-core processor at some point.

High-speed memory support: The motherboard must support dual-channel memory of as high a speed as possible. Currently, motherboards support DDR memory of speeds as high as 400 MHz and DDR2 memory of speeds up to 888 MHz, such as the Gigabyte i-DNA GA-8I955X Royal.

Number of SATA ports: A higher number of SATA ports is preferred, especially since a SATA port supports one SATA device—unlike an IDE port, which can support two devices. Generally, four SATA ports are

found on most motherboards. Some may come with as many as 10.

SATA II support: The SATA standard, in which the data transfer rate goes up to 150 MBps, is slowly being replaced by SATA II, which boasts if 300 MBps. Motherboards that support SATA II also support the older SATA standard in case you have a SATA drive.

SLI: Even if you have or plan to buy a single PCI-Express graphics card, for future-proofing the graphics capabilities, a motherboard that supports SLI should be preferred. It provides the option to add another PCI-Express card to improve graphics performance in the future, in case a single card is not enough.

FireWire: A FireWire port is used to connect FireWire devices such as DV cams, usually to capture high-resolution digital video.

Dual Gigabit: Dual Gigabit ports allow you to be on two networks at the same time, so you can be connected to the Internet using one of the ports while the other port can be used to connect other computers on a home network or LAN.

Wi-Fi: Wi-Fi offers you the convenience of wireless networking and Internet access.

Bluetooth: Bluetooth is useful in situations such as when you wish to listen to music via your Bluetooth headset or when you want to transfer files between your PC and your Bluetooth mobile phone or PDA.

Overclocking features: A good premium-quality motherboard should come with advanced overclocking features. This is a feature much sought after by hardcore gamers, who would like to squeeze out all that the system is capable of.



Scoreboard

High-End AMD Motherboards

BRAND	ASUS	ASUS	DFI	ECS	Gigabyte
Model	Proactive A8N-SLI	A8N-E	LanParty UT NF4 SLI-D	KN1 Extreme	82 Series GA-K8NXP-SLI
Chipset	NVIDIA nForce4 SLI	NVIDIA nForce4 Ultra	NVIDIA nForce4 SLI	NVIDIA nForce4 Ultra	NVIDIA nForce4 SLI
Features	36.36	29.90	34.22	29.50	37.69
Maximum CPU supported	AMD X2	AMD X2	AMD X2	AMD X2	AMD X2
Memory Type/Speed	DDR/400/4	DDR/400/4	DDR/400/4	DDR/400/4	DDR/400/4
Supported(MHz)/Max memory					
SLI	4	6	4	6	4
PCI Slots	3+2 PCIe	3+1 PCIeX4+2 PCIeX1	2+2 PCIe	3+2 PCIe	2+2 PCIe
Onboard FireWire/Firewire b	1/a	6	1/a	Pin header 2/a	Pin header 3/b
BlueTooth/WiFi	6/6	6/6	6/6	6/6	6/4
USB 1.1 (Nos)/USB 2.0 (Nos)	4	4	6	4	4
Ethernet Type (10/100/Gigabit)	Dual Gigabit	Gigabit	Dual Gigabit	Gigabit + 10/100	Dual Gigabit
RAID type	0,1,0+1,5,JBOD	0,1,0+1,JBOD	0,1,0+1	0,1,0+1	0,1,0+1,5
SATA Type/Number/Hot PnP	II/8/4	II/4/4	II/8/4	II/6/6	II/8/4
Miscellaneous	Coaxial and SPDIF out	Coaxial and SPDIF out	Power and reset switch on the motherboard	Coaxial and SPDIF out	Dual BIOS, SPDIF IN/Out
Component layout (S05)					
Capacitors near the CPU socket	4	3.5	4	3.25	3.25
Placement of IDE and SATA connectors	3.5	3.75	3	2.75	3
Graphics slot with locks	5	5	0	5	5
Interference of AGP card with PCI slot	5	5	5	3	5
Package contents					
Manual/CDS	4/4	4/4	4/4	4/4	4/4
Necessary cables	8 SATA, 3 SATA power, IDE, floppy	4 SATA, 2 SATA power, IDE, floppy	4 SATA, SATA power, IDE, floppy	6 SATA, SATA power, IDE, floppy	8 SATA, 3 SATA power, IDE, floppy
Other Miscellaneous Features	D-bracket for 2 USB, D-bracket for 1 FireWire, SLI bridge with retention bracket, SATA extension cable	D-bracket for communication port, D-bracket for 2 USB and Game Port, D-bracket for 2 USB	SLI bridge, Karajan audio module	D-bracket with communication port, D-bracket for 2 USB and FireWire, Top Hat BIOS recovery tool, cross over cable	2 D-brackets for 2 USB, D-bracket for 2 FireWire, SLI bridge with retention bracket, WiFi 802.1 b/g card, DPS dual power system
Performance					
Far Cry 1024x868/1600x1200 (fps)	150.24/104.26	151.12/105.2	155.41/106.24	157.78/105.29	152.46/105.13
Doom 3 1024x868/1600x1200 (fps)	115.5/91.7	120.9/92.7	127.7/93.5	126/93.8	119.2/91.9
3D Mark 2005 Marks/CPU Marks	7107/5784	7125/5867	7110/6388	7118/6792	7101/6745
PC Mark 2004					
CPU Index/Memory Index	6710/4715	6689/4759	6461/3061	6486/4818	6694/4789
Graphics Index/Disk Index	8238/4439	8272/4391	8200/4354	8244/4452	8249/4439
Total Score	6715	6698	6242	6601	6707
SiSoft Sandra 2005 Professional					
ALU to RAM/FPU to RAM (MB/s)	4726/4737	4770/4800	5801/5757	5772/5725	4729/4730
CPU Dryhstone/Whetstone	20424/7577	20426/7581	20330/7610	20367/7629	20415/7553
Multimedia—CPU Integer/FPU SSE	45970/49707	46121/49763	45999/49441	45660/49571	45923/49735
Drive Index (MB/sec)/Average access time (sec)	49/8	48/8	48/9	50/8	50/8
Sequential/Random Read (MB/sec)	56/35	54/35	55/35	55/36	56/37
Sequential/Random Write (MB/sec)	55/40	55/42	55/41	55/42	55/42
ZDBench Business Winstone 2004	30.7	30.3	31.1	30	30.9
Video Encoding (sec)	110	115	116	111	111
Price Index	5.26	8.50	3.60	7.17	4.66
Price (Rs)	10,900	6,750	15,950	8,000	12,300
Total Score (Out of 100)	78.65	75.27	74.78	74.45	79.80



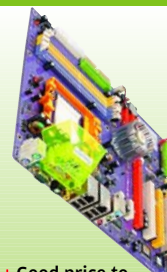
+ Good performance and features
- None



+ Good price to performance ratio
- No SLI slot



+ Over the edge performance for gamers
- Very expensive



+ Good price to performance ratio
- No SLI slot



+ Great performance, and package contents
- Expensive

Gigabyte	MSI	MSI
K8 Triton GA-K8N Pro-SLI	K8N SLI Platinum	K8N SLI-F
NVIDIA nForce4 SLI	NVIDIA nForce4 SLI	NVIDIA nForce4 SLI
34.99	33.55	33.93
AMD X2	AMD X2	AMD X2
DDR/400/4	DDR/400/4	DDR/400/2
4	4	4
2+1 PCIe	3	3+1 PCIe
Pin header 3/b	1/a	1/a
6/6	6/6	6/6
4	4	4
Dual Gigabit	Gigabit	Gigabit
0,1,0+1,5	0,1,0+1,JBOD	0,1,0+1,JBOD
II/8/4	II/4/4	II/4/4
SPDIF IN/Out	Creative Sound Blaster Live! 24-bit on-board, Coaxial and SPDIF out	Coaxial and SPDIF out
3.25	3.5	3.75
3	3	3
5	0	5
5	5	5
4/4	4/4	4/4
SATA, SATA power, IDE, floppy	2 SATA, SATA power, IDE, floppy	2 SATA, SATA power, IDE, floppy
D-bracket for 2 USB and FireWire, D-bracket for 2 USB, SLI bridge with retention bracket	D-bracket for 2 USB, SLI bridge with retention bracket	D-bracket for 2 USB, SLI bridge with retention bracket
23.60	37.12	36.73
75.13/66.42	150.87/105.59	150.24/104.95
45.6/43.2	121.1/92.6	121/92.7
5716/2626	7148/6129	7129/5923
Failed/Failed	6685/4758	6834/4760
Failed/Failed	8247/4434	8245/4431
Failed	6683	6668
3574/1679	4779/4776	4765/4766
20355/7642	20598/7608	20400/7573
45861/48630	45974/49429	45099/49380
47/8	49/8	48/10
53/34	55/38	55/36
53/39	55/42	55/41
24.9	30.4	30.4
118	113	115
5.77	4.78	6.04
9,950	12,000	9,500
64.35	75.45	76.70



+ None
- Slow performance



+ Creative Soudblaster Live! On-board
- Expensive



+ Good performance
- Ordinary package contents

GA-K8NXP-SLI with 30.9. This indicates that these two boards can rip through daily-use applications such as word processors, spreadsheets, presentations, file compression and anti-virus programs.

The Conclusion (AMD Motherboards)

The ECS KN1 Extreme was the best performer, with high scores in all the benchmarks, and was followed closely by the Gigabyte 8Σ Series GA-K8NXP-SLI.

With accessories such as the Wi-Fi 802.11 b/g card and the U-Plus DPS power system card, and lots of cables and almost all high-end features to boot, the Gigabyte 8Σ Series GA-K8NXP-SLI was the clear winner in the features department. The ASUS Proactive A8N-SLI, which also had good features and accessories, came in second.

The DFI LanParty UT NF4 was the highest-priced motherboard at Rs 15,950 which is a bit over the top, because it does not offer enough premium features or performance to justify the price tag. The nForce4 Ultra-based ASUS A8N-E was the lowest-priced—at Rs 6,750—and is actually a good value-for-money board.

After careful consideration (and calculations!), the Gigabyte 8Σ Series GA-K8NXP-SLI turned out the clear winner of the *Digit* Best Buy Gold award. The *Digit* Best Buy Silver was awarded to the ASUS Proactive A8N-SLI: it had good overall feature and performance scores, and a moderate price tag.

MOTHERBOARDS (INTEL)

Twelve motherboards that supported Intel processors were reviewed in this comparison test. Three were from ASUS, there was one each from ECS and Foxconn, two were from Gigabyte, and MSI sent in five boards.

We saw a variety of chipsets in this category. Some had Intel chipsets such as Intel 915G, 915P, 925 XE, 945G and 955X, whereas nVidia's offerings were the nForce4 Ultra and nForce4 SLI.

Over the years, Intel has reigned as the undisputed leader in chipsets for Intel processors, providing the best performance and features, and it has continued to raise the bar with each new chipset beating its predecessor. Some chipset manufacturers—Apollo, for example—have tried to beat Intel chipsets in terms of performance, but none actually did. Until now!

nVidia's nForce4 SLI Intel Edition chipsets offer better performance and features than any of the Intel chipsets out there, and as our benchmarks will show, have finally dethroned the king and have assumed top position amongst chipsets for Intel processors.

Though we did receive motherboards based on the Intel 915 and 925 chipsets, these chipsets are fast aging, and so do not stand anywhere near the newer ones—Intel's 955X, which supports dual-core processors, and the Intel 945.

The above chipsets, along with the nForce4 SLI, support an FSB of 1066 MHz. This FSB is available only with the Extreme Edition type of processors, and will truly harness the high bandwidth of DDR2 memory.

Intel 955X utilises a new standard in its memory controller known as MPT or Memory Pipeline Technology, which uses each memory channel optimally—resulting in a bandwidth higher than that of the 945.

Both chipset makers have come up with their own versions of RAID implementations in the Southbridge. Intel has what it calls Matrix RAID, which can combine RAID 0 and 1 arrays using only two drives. nVidia has nVraid, which, amazingly, is capable of spanning arrays across both ATA and SATA drives. This means, for example, that you can have partitions that span two drives, one of them SATA and the other ATA.

nVidia's hardware-accelerated Gigabit Ethernet controller and firewall are unchallenged by Intel ICH7R, because the latter lacks a network controller.

Support for high-definition sampling rates (24-bit at 196 Kbps) audio is the bone of contention for Intel on the audio front, which nVidia's AC'97 solution is incapable of providing. But neither of these support hardware-accelerated 3D audio.

Features

Dual-core processor support was available in the boards that sported the Intel 945G and 955X and the nVidia nForce4 SLI Intel Edition



MSI P4N Diamond

chipsets. Even if you have only a regular (single-core) processor, a board that supports dual-core should be preferred, keeping upgradeability in mind.

One thing to note here is that nForce4 SLI-based motherboards still do not enjoy full compatibility with dual-core processors from

? Jargon Buster

The BIOS: The Basic Input-Output System is a program located on the CMOS chip on the motherboard. The BIOS controls the primary functions of the hardware and facilitates low-level communication between the OS and the hardware. The BIOS can be upgraded to provide additional functionality.

Bluetooth: A wireless radio standard, primarily developed for lower power consumption. It has a short range of 10 m, 100 m or 400 m, depending on the power class. It has certain advantages over prevailing radio standards: Bluetooth-enabled devices can communicate with each other even if they are of different types—for example, MP3 players, mobile phones, laptops, headsets, printers, and more.

DDR RAM: Double Data Rate SD RAM is a type of memory that handles data at twice the speed of the older SD RAM. DDR SD RAM typically operates at 266 MHz, 333 MHz or 400 MHz effective speeds, while the actual speeds are 133, 166 and 200 MHz respectively.

DDR2 RAM: Double Data Rate 2 RAM is a memory type based on chips designed to run at speeds higher than that of DDR RAM, such as 533MHz and 667 MHz. Few motherboards support DDR2 RAM right now.

Dual-Channel: When two RAM modules are plugged into two slots marked for two different memory channels, then, theoretically, the data flows at twice the normal rate through the RAM. This is

known as a dual-channel memory configuration.

FSB: The Front Side Bus speed is the speed at which the different components of the computer speak to the CPU. The CPU's FSB is the most important, and changing it can dramatically affect the overall performance of the computer.

IDE: Integrated Drive Electronics is a standard interface for hard drives, optical drives and other physical storage devices. It is also known as ATA, which stands for Advanced Technology Attachment, and Parallel ATA. Various types are ATA33, ATA66, ATA100 and ATA133, based on transfer speeds. It uses a 40-pin connector cable that may consist of 40 or 80 conductors.

JBOD: Just a Bunch Of Disks is a disk configuration which, in the true sense, is not RAID at all. When two or more hard drives are in JBOD configuration, the entire space of all the disks can be combined into a single volume, or can be split into separate logical volumes. This does not provide fault tolerance, but there are certain advantages, such as no wastage of drive space and easier disaster recovery.

Matrix RAID: A technology developed by Intel, it achieves what RAID 0 and 1 achieve, using only two hard drives. It does so by creating two separate volumes in an array of two hard disks. It enables you to separate a two-disk array into two volumes, as if there were two separate sets of hard disks.

Multiplier: This is a number for a CPU that determines how fast the CPU operates. The CPU speed equals the FSB multiplied by the multiplier.

Northbridge: A chip on the motherboard that controls the FSB and memory. This is the largest chip on the motherboard and is normally covered by a heat sink, and sometimes actively cooled by a fan.

PCI: Peripheral Component Interconnect is a standard used on all current-generation motherboards and expansion cards used to connect the two devices. The data transfer rate of PCI bus can be up to 133 MBps.

PCI-Express (PCIe): Peripheral Component Interconnect Express is a new PCI standard that can transfer data at speeds equivalent to AGP 16x, which is roughly 4.3 GB/s.

RAID: Redundant Array of Independent Disks is a software or hardware configuration that employs two or more drives in combination for fault tolerance and performance. RAID 0, 1 and 0+1 are the commonly used types.

RAID 0: This involves only striping, and there is no data redundancy. It has the best performance but no fault tolerance. (Striping is a technique in which the drive's storage space is partitioned into units ranging from 512 bytes to several megabytes.) The stripes are interleaved and addressed in order.

RAID 1: This type of RAID implementation is also known as disk mirroring, which involves at least two

Intel. An example of this is that the Pentium D 820, which is a dual-core processor, runs as a single-core on these boards.

Though all the boards supported DDR2, except for the MSI 915G Neo3-FIR, which supported DDR 400MHz, the speeds varied. Some boards supported DDR2 at 533 MHz, while others supported 667 MHz. The ASUS P5AD2-E Premium supported an odd 711 MHz, while the Gigabyte i-DNA GA-8I955X Royal supported an equally odd 888 MHz.

Higher memory speeds are advantageous when you are into multimedia applications and gaming, where that little extra bandwidth can make a lot of difference.

The motherboards based on Intel 945G and 955X as well as those based on nVidia's nForce4 SLI supported the faster and emerging SATA II standard, while being backward compatible with SATA I drives. The ASUS P5AD2-E Premium, P5ND2-E Deluxe and Foxconn 955X7AA sported eight SATA ports, which allow you to add up to eight SATA devices—which is great from the upgradeability point of view.

The ASUS Proactive P5AD2-E Premium Wireless Edition board had IEEE 802.11g-compliant Wi-Fi on-board, which allows data transmission of up to 54 Mbps. The MSI P4N

drives to duplicate data. Striping is not involved here. This offers the best ratio of performance to fault tolerance.

RAID 0+1: This combines the best features of RAID 0 and 1. In this type of RAID, two pairs of striped drives are mirrored together to provide fault tolerance. Thus, it requires four hard drives to implement.

SATA: Also abbreviated as S-ATA, is short for Serial ATA, which is an interface for physical storage devices such as hard drives. It is a serial link and consists of a single cable with a minimum of four wires creating a point-to-point connection between devices. The transfer rates for SATA begin at 150 MBps, and for SATA II it is 300 MBps.

SLI: Short for Scalable Link Interface, which is a graphics standard in which the motherboard has two PCIe graphics slots so that two cards can be plugged in simultaneously and connected via a bridge. This setup offers a huge performance leap in graphics applications such as gaming.

Southbridge: This is a chip on the motherboard that controls all the onboard devices including the IDE bus and the PCI bus. This is the second-largest chip on the motherboard, and is sometimes covered by a heat sink.

Wi-Fi: An abbreviation for Wireless Fidelity, Wi-Fi is a wireless radio standard that was developed for communication between mobile devices such as laptops, PDAs, and LANs, but is now even being used in desktop computers.



Asus Proactive P5ND2-SLI Deluxe

Diamond goes even further by bundling a Bluetooth and IEEE 802.11g combo PCI card which, if purchased separately, retails at Rs 2,900. If you have a Bluetooth-enabled phone, it is very convenient to transfer files from the phone to the PC. The Gigabyte i-DNA GA-8I955X Royal also shipped with a Bluetooth USB dongle—you just plug in the dongle to a USB port, install the drivers, and your PC is Bluetooth-enabled.

An external SATA port was present on the ASUS P5ND2-SLI Deluxe, known as SATA-On-The-Go, which has hot-plug support. Up to 16 devices can be connected with port multiplier functions.

SPDIF-Out was a feature common on all the boards, with some even providing SPDIF-In and coaxial Out. The Intel 945G-based boards also had integrated Intel graphics, though if you're purchasing this board, you're expected to purchase a separate PCIe graphics card to fully utilise the power of the system.

The Gigabyte i-DNA GA-8I955X Royal came with a U-Plus DPS (Dual Power System), which is a revolutionary circuit built to withstand varying AC power levels for system protection and stability.

Several boards featured excellent audio solutions, one of which was the Intel HDA (high-definition audio), which produces high-fidelity audio output. The MSI P4N Diamond had a hardware Creative SoundBlaster Live! 24-bit chip as the audio solution. (Most onboard sound solutions involve the CPU; this 24-bit chip takes the load off the CPU.) This is no doubt one of the best on-board audio solutions.

The Gigabyte i-DNA GA-8I955X Royal sported dual BIOS, where there's a backup BIOS on the motherboard. If the main BIOS gets corrupted, the backup BIOS takes over and the main BIOS can be flashed to restore it. The MSI motherboards also featured similar functionality. ECS featured Top-Hat Flash. (Refer the AMD section for more on Top-Hat Flash.)

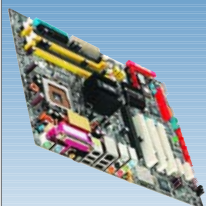
In addition to this, all the boards had overclocking of some sort. MSI featured the 'Cell menu' in the BIOS, while ASUS has 'AI overclocking' and 'non-delay overclocking'. In all these cases, there were options to tweak the FSB, memory frequency, timings and CPU core and memory voltages in order to overclock the system.



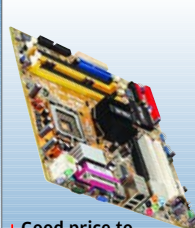
Scoreboard

High-end Intel Motherboards

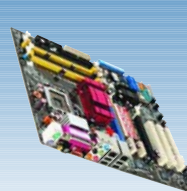
BRAND	ASUS	ASUS	ASUS	ECS	Foxconn
Model	Proactive P5AD2-E Premium (W.E.)	P5LD2-VM-UAYZ	Proactive P5ND2-SLI Deluxe	PF21 Extreme	955X7AA
Chipset	Intel 925XE	Intel 945G	NVIDIA nForce4 SLI	Intel 925 XE	Intel 955X
Features	29.34	21.11	35.60	25.34	28.62
Maximum CPU supported	P-4	P-4 Dual Core	P-4 Dual Core	P-4	P-4 Dual Core
Memory Type/Speed	DDR II/711/4	DDR II/667/4	DDR II/667/4	DDR II/533/4	DDR II/667/4
Supported(MHz)Max memory					
SLI	6	6	4	6	6
PCI Slots	3+2 PCIe	2+1 PCIe	3+2 PCI	3 + 3 PCIe	3 + 3 PCIe
Onboard FireWire/Firewire b	Pin header 2/b	6	1/a	1/a	1/b
BlueTooth/WiFi	6/4	6/6	6/6	6/6	6/6
USB 1.1 (Nos)/USB 2.0 (Nos)	4	4	4	4	4
Ethernet Type (10/100/Gigabit)	Dual Gigabit	Gigabit	Dual Gigabit	Gigabit + 10/100	Dual Gigabit
RAID type	0,1,0+1,5,10,Matrix,JBOD	6	0,1,0+1,JBOD	0,1,0+1	0,1,0+1,5,Matrix
SATA Type/Number/Hot PnP	I/8/6	I/4/6	II/8/4	I/6/6	II/8/6
Miscellaneous	Coaxial and SPDIF out, WiFi antenna port	Intel GMA 900	External SATA port, SPDIF out	SPDIF IN/Out	Coaxial out
Component layout (SO5)					
Capacitors near the CPU socket	4.5	4	4.5	3.5	4
Placement of IDE and SATA connectors	4	4	3.75	4	3.5
Graphics slot with locks	5	5	5	5	5
Interference of AGP card with PCI slot	3	3	5	3	3
Package contents					
Manual/CDs	4/4	4/4	4/4	4/4	4/4
Necessary cables	10 SATA, 3 SATA power, IDE, floppy	2 SATA, SATA power, IDE, floppy	4 SATA, 2 SATA power, IDE, floppy	6 SATA, SATA power, IDE, floppy	2 SATA, 2 SATA power, IDE, floppy
Other Miscellaneous Features	D-bracket for communication port, D-bracket for 2 USB, D-bracket for 2 FireWire and LAN, External SATA connector,WiFi antenna	None	D-bracket for 2 USB and Game Port, D-bracket for FireWire, SLI bridge with retention bracket	D-bracket for 2 USB and FireWire, D-bracket for printer port, Top Hat BIOS recovery tool, cross over cable	D-bracket for 2 USB
Performance					
Far Cry 1024x868/1600x1200 (fps)	121.52/104.73	120.62/104.95	121.82/103.56	123.2/104.12	123.79/106.68
Doom 3 1024x868/1600x1200 (fps)	100.7/85.2	99.8/85	99.1/86.5	104.1/85.6	102.8/86.6
3D Mark 2005 Marks/CPU Marks	6959/4829	6932/4898	6957/4860	6943/5149	6967/5338
PC Mark 2004					
CPU Index/Memory Index	5245/5455	5393/5214	5283/5538	5518/5469	5486/5477
Graphics Index/Disk Index	8162/4333	8171/4342	8187/4672	8209/4427	8193/4406
Total Score	5415	5405	5410	5485	5464
SiSoft Sandra 2005 Professional					
ALU to RAM/FPU to RAM (MB/s)	4804/4799	4717/4718	4820/4809	4773/4774	4837/4838
CPU Dryhstone/Whetstone	10526/4302	10489/4279	10451/4307	10452/4273	10469/4287
Multimedia—CPU Integer/FPU SSE	25576/32722	25472/33989	25446/31750	25409/33793	25448/33902
Drive Index (MB/sec)/Average access time (sec)	50/8	49/8	50/8	46/8	44/8
Sequential/Random Read (MB/sec)	56/39	56/39	56/40	53/37	51/35
Sequential/Random Write (MB/sec)	56/43	55/42	56/41	52/37	52/38
ZDBench Business Winstone 2004	25.6	25.6	26.6	24.4	24.6
Video Encoding (sec)	119	121	120	118	119
Price Index	3.83	8.50	3.83	6.99	6.49
Price (Rs)	16,000	7,200	16,000	8,750	9,425
Total Score (Out of 100)	70.25	66.55	76.78	69.24	72.09



+ Good performance, WiFi capable
- Very Expensive, does not support dual-core CPUs



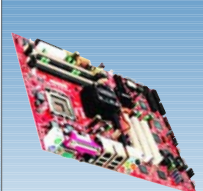
+ Good price to performance ratio
- Low on features and package contents



+ Good performance and SLI capable
- Very Expensive



+ Good price to performance ratio
- Does not support dual core processors



+ Good performance
- Ordinary package contents

Gigabyte i-DNA GA-8I945G Pro	Gigabyte i-DNA GA-8I955X Royal	MSI 915G Neo3-FIR	MSI 915P Neo2 Platinum	MSI 925XE Neo Platinum	MSI P4N Diamond	MSI P4N SLI
Intel 945G	Intel 955X	Intel 915G	Intel 915P	Intel 925 XE	NVIDIA nForce4 SLI	NVIDIA nForce4 SLI
29.00	33.73	23.00	23.92	26.53	36.92	34.00
P-4 Dual Core	P-4 Dual Core	P-4	P-4	P-4	P-4 Dual Core	P-4 Dual Core
DDR II/667/4	DDR II/888/4	DDR/400/4	DDR II/533/4	DDR II/533/4	DDR II/667/4	DDR II/667/4
6	6	6	6	6	4	4
3	3+2 PCIe	3+1 PCIe	3+2 PCIe	3+2 PCIe	2+2 PCIe	2+2 PCIe
1/b	1/b	Pin header 2/a	Pin header 2/a	1/a	1/a	1/a
6/6	4/6	6/6	6/6	6/6	4/4	6/6
4	4	4	4	4	4	4
Gigabit	Dual Gigabit	Gigabit	Gigabit	Gigabit + 10/100	Dual Gigabit	Dual Gigabit
0,1,0+1,5	0,1,0+1,5,Matrix	0,1,0+1,Matrix	0,1,0+1,Matrix	0,1,Matrix	0,1,0+1,5,JBOD	0,1,0+1,5,JBOD
II/4/4	II/6/4	I/4/6	I/4/6	I/4/4	II/4/4	II/4/Y
SPDIF out, Intel GMA 900	Dual BIOS, SPDIF IN/Out, optical out	SPDIF out, Intel GMA 900	Coaxial and SPDIF out	Coaxial and SPDIF out	Creative Sound Blaster Live! 24-bit on-board, Coaxial and SPDIF out	Coaxial and SPDIF out
4	4	4.5	3	4	4	4
3.5	3.5	3.75	3.5	4	4	4
5	5	0	5	5	5	5
3	3	5	5	5	5	5
4/4	4/4	4/4	4/4	4/4	4/4	4/4
2 SATA, SATA power, IDE, floppy	4 SATA, 3 SATA power, IDE, floppy	2 SATA, SATA power, IDE, floppy	2 SATA, 2 SATA power, IDE, floppy	2 SATA, SATA power, IDE, floppy	2 SATA, SATA power, IDE, floppy	2 SATA, SATA power,IDE, floppy
D-bracket for 2 USB and 2 FireWire	Bluetooth USB dongle, U-Plus D.P.S. dual power system	2 D-brackets for 2 USB and 2 FireWire	2 D-brackets for 2 USB and 2 FireWire	2 D-brackets for 2 USB and 2 FireWire	WiFi-Bluetooth combo card, SLI bridge, external SATA port, D-bracket for 2 USB	SLI bridge with reten- tion bracket, D-brack- et for 2 FireWire
36.14	37.32	34.98	35.83	36.73	37.71	37.97
119.14/103.95	134.79/104.87	118.46/103.61	123.68/104.22	129.05/104.6	125.46/107.25	125.87/107.47
94.1/83.3	103.2/87.5	97.1/83.7	100.9/84	102.2/86.7	104.1/88.3	105.3/89.5
6864/4576	6971/5357	6754/3920	6934/4206	6965/5229	7021/5284	7037/5310
5492/4823	5510/5498	5380/3587	4652/5393	5492/5473	5552/5542	5579/5550
8177/4411	8208/4432	8040/4394	8208/4393	8213/4378	8215/4768	8218/4788
5354	5491	5220	5077	5516	5482	5500
4364/4366	4845/4847	4252/4258	4850/4855	4769/4771	4827/4811	4835/4825
10510/4313	10488/4297	10487/4291	9392/4344	10482/4311	10483/4308	10525/4316
25586/34087	24461/33923	25466/33925	25661/29580	25447/33833	25445/33931	25559/34043
45/8	45/8	42/8	41/8	41/8	49/8	49/8
52/35	52/36	45/35	45/33	45/34	56/39	56/39
54/41	54/40	46/36	45/36	45/36	55/42	55/41
24.6	25.2	23.6	25.2	24.8	25.9	26.3
118	119	119	118	120	120	118
6.33	3.41	7.65	5.10	4.71	3.50	4.74
9,675	17,950	8,000	12,000	13,000	17,500	12,900
71.47	74.45	65.62	64.85	67.97	78.13	76.72



+ Good performance,
onboard graphics
- Ordinary package
contents



+ Good performance,
Bluetooth capable
- Very Expensive



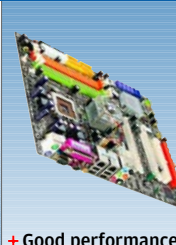
+ Good price to
performance ratio
- Does not support
dual-core CPUs



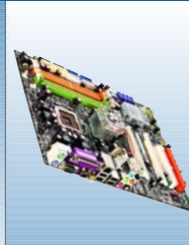
+ None
- Does not support
dual-core
processors



+ None
- Does not support
dual-core
processors



+ Good performance
and package
contents
- Very Expensive



+ Great performance
and SLI capable
- None

Performance

Gaming

In *FarCry*, while the Gigabyte i-DNA GA-8I955X Royal topped the table with 134.79 fps at 1024 x 768, the MSI P4N SLI topped with 107.47 fps at the higher resolution of 1600 x 1200. Not far behind was the MSI P4N Diamond, which scored 107.25 fps at 1600 x 1200. In the *Doom 3* benchmark, the MSI P4N SLI was the top scorer with the P4N Diamond following closely at both resolutions. Hence these are better motherboards for gamers.

Synthetic Benchmarks

In 3DMark05, the MSI P4N SLI was again the top scorer, with 7037 marks—so, along with gaming, this board is good for multimedia applications such as Maya and 3D Studio Max.

PCMark 2004 is a system-wide test. The top scorer here was yet again the MSI P4N SLI, again closely followed by the MSI P4N Diamond. In almost all the sub-tests here, the P4N SLI fared well, and so can be considered a board around which a system with good overall performance can be built.

In SiSoft Sandra 2005, the memory bandwidth scores were almost the same for most of the boards, and so there was no clear winner. In the CPU benchmarks, the ASUS P5AD2-E Premium, Gigabyte i-DNA GA-8I945G Pro and MSI P4N SLI were the better performers, and there wasn't much difference between these three.

Real-World benchmarks

In video encoding, again, there wasn't much difference between the boards. The encoding time ranged from 118 to 121 seconds, which is not sufficient to make a decision about which board is better. Hence, for video encoding applications, any of these boards would be as good as the other.

In the ZDBench Business Winstone 2004 test, the ASUS P5ND2-SLI Deluxe scored 26.6, followed very closely by the MSI P4N SLI with 26.3. Since this is a real-world test—it reflects real-world performance—the high-scoring motherboards are the ones which will perform better in office and similar applications.

The Conclusion (Intel Motherboards)

When we're talking about features, the MSI P4N Diamond was the best, with nice bundled accessories such as the Bluetooth and Wi-Fi combo card and the on-board Creative Sound-Blaster Live! 24-bit sound chip. Also good on the features front was the ASUS Proactive P5ND2-SLI Deluxe, which bundled some good accessories and an external SATA port.

Performance-wise, the ASUS P5ND2-SLI Deluxe, Gigabyte GA-8I955X, MSI P4N Diamond and MSI P4N SLI were almost neck-and-neck. But the Giga-

BEST BUY
digit
NOVEMBER 2005



MSI P4N-SLI.

byte GA-8I955X was the highest-priced motherboard at Rs 17,950, and the MSI P4N Diamond is at Rs 17,500. The ASUS P5LD2-VM was the least expensive at Rs 7,200, but this board was also the one with the lowest feature points.

We took features, performance and price into account, as always, and the *Digit* Best Buy Gold winner was the MSI P4N Diamond.

Deciding the Silver winner was a problem because two boards scored almost the same in the final tally. So a tie it was to be, and the *Digit* Best Buy Silver goes jointly to the ASUS Proactive P5ND2-SLI Deluxe and the MSI P4N SLI.

The Overall Conclusion

A motherboard is as important a component of a computer as the CPU, and is a major contributing factor to the general performance and features you can access on a PC. After all, it is the *mother*-board.

We tested twenty high-end, cutting-edge motherboards on which you can really enjoy gaming as well as entertainment, and on which you get rich high-definition audio. These boards are all made to perfectly complement high-end processors such as dual-cores, and high-end peripherals such as PCIe graphics cards, low-latency RAM and high-speed SATA II hard drives—delivering the best performance any enthusiast could hope for.

Some motherboards such as the DFI LanParty are specifically targeted at, as the name suggests, avid gamers. If you're wondering, a LAN party is when a group of gamers come together—usually over the weekend—with their gaming rigs which they hook up to a LAN, and play as long as they possibly can. Because it is a party, (junk) food and drink is always involved, along with lots of multi-player games.

Several of the boards we've tested featured nVidia's SLI interface, which is sure to become the norm of the future. Similarly, ATI's CrossFire (which is similar to nVidia's SLI, but which is more flexible and which supports only ATI's PCIe graphics cards) is expected to arrive soon, and time will tell whether SLI and CrossFire will happily coexist—or whether there will be an all-out battle. ☒

jayesh_limaye@thinkdigit.com



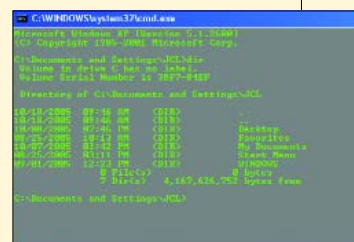
Contact Sheet

Motherboards

Brand	Company	Telephone	E-mail	Web site
ASUS	Rashi Peripherals Pvt Ltd	022-28221013	asus@rptechindia.com	http://in.asus.com
DFI	Cyber Space Abacus Pvt Ltd	044-52154188	info@theitdepot.com	www.dfi.com
ECS	Cyberstar Infocom Ltd	080-30961193	elite@cyberstarindia.com	www.ecs.com.tw
Foxconn	Mediatech India	022-26361111	digit@mediatechindia.com	www.foxconnchannel.com
Gigabyte	Gigabyte Technology (India) Ltd	022-26526696	sales@gigabyte.in	www.gigabyte.in
MSI	Micro-Star International	011-51758808	info@msi-india.com	www.msi-india.com

THIS MONTH'S CHALLENGE

Change the AutoComplete key and colour of the Windows XP command prompt



How would you change the colour of the Windows Command Prompt—both the text and background colour—as well as the key assigned for AutoComplete, from [Tab] to [Ctrl] + [F] (without using third-party utilities)? Write in with the subject 'Take a crack', and your postal address, to takeacrack@thinkdigit.com with your solution

LAST MONTH'S CHALLENGE

Win!



Take a Crack and Win Professional DCOM Application

By Jonathan Pinnock
Published by Shroff Publishers & Distributors Pvt Ltd

LAST MONTH'S WINNER

KP Peter

Mech (AR) 3, NIAT,
Naval Base, Kochi
Kerala

Rules and Regulations

Readers are requested to send in their answers by the 15th of the month of publication.

Employees of Jasubhai Digital Media and their relatives are not permitted to participate in this contest.

Readers are encouraged to send their replies by e-mail. Jasubhai Digital Media will not entertain any unsolicited communication.

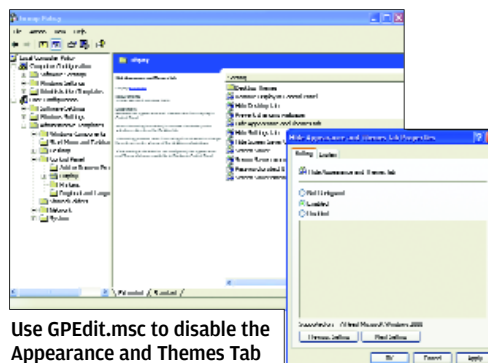
Jasubhai Digital Media is not responsible for any damage to your system that may be caused while you are trying to solve the problem.

Hide the Themes, Screensaver, Appearance and Settings as well as prevent changing the Desktop wallpaper

You can hide the themes, screensaver, appearance and settings in the 'Display Properties' window, by two methods—using the Group Policy Editor or via the Registry.

The first method is by using the Group Policy Editor. To start it, go to **Start > Run**, type in "gpedit.msc" and press OK.

Go to the User Configuration tab and then to 'Administrative Templates'. Then go to 'Control Panel', and there, select 'Display'.



Use GPEdit.msc to disable the Appearance and Themes Tab

Double-click 'Hide Appearance and Themes tab', then click the 'Enable' radio button. Click 'Apply', then 'OK'. Your 'Appearance and Themes' tab will disappear from the display properties.

In the same way, you can select 'Hide Screen Saver tab', and 'Hide Settings tab' to hide the screensaver and the settings from the display properties. Similarly, you can also prevent changing of the wallpaper.

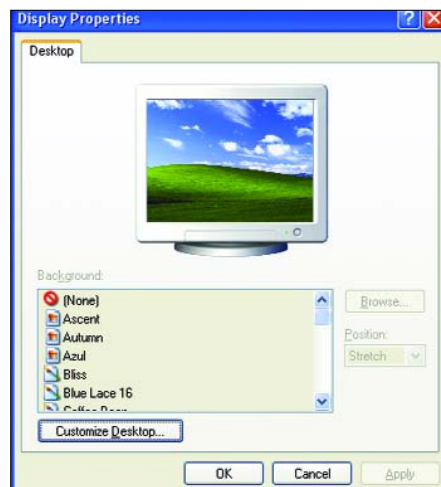
The second method is by using only the Registry Editor. To prevent changing of the wallpaper, navigate to **HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Policies\ActiveDesktop** (if the key isn't there already, create it.)

Once there, create a DWORD called "NoChangingWallpaper". Set the DWORD value to "1". ("1" is for disabling it, and "0" is for enabling it.)

To remove the screensaver, go to **HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Policies\System**. Create a DWORD called "NoDispScrSavPage" and set the DWORD value to "1".

To remove the Appearance and Theme tabs, go to **HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Policies\System**. There, create a DWORD called "NoDispAppearancePage" and set the DWORD value to "1".

To remove the Settings tab, go to **HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Policies\System**. Now create a DWORD called "NoDispSettingsPage" and set the DWORD value to "1".



Display properties with only the Desktop tab

If the System key we've mentioned isn't there, you'll need to create it under 'Policies' by right-clicking on 'Policies', then selecting **New > Key**. Rename it to "System". Similarly, **NoDispScrSavPage**, **NoDispAppearancePage** and **NoDispSettingsPage** can be created by clicking **New > DWORD Value** after right-clicking 'System'. ☑

Go click-happy with the new Kodak EasyShare One—a Wi-Fi enabled digital camera. It's a dream come true for any shutterbug worth his salt!

Can you click a photograph and e-mail it to your friends from your camera? Have you ever been able to upload the picture of a beautiful sunset you just shot to your home computer while you continue to enjoy the sundown at the beach?

Yes, we're talking Wi-Fi, and all you need is the Kodak EasyShare One—a sleek Wi-Fi-enabled digital camera that gives a whole new meaning to the term 'click and send.'

Mind you, it's not just another digital camera with some neat features. The Kodak EasyShare One has a Schneider-Kreuznach lens, 256 MB of internal memory, a three-inch high-resolution LCD touchscreen with stylus, 4-megapixel resolution with 3x optical zoom, VGA quality video and sound. Phew, just try saying that sentence in one breath!

With the Kodak EasyShare One, you can also print large still images with amazing clarity—20 x 30 inches. You can also organise your photos by album or by date and accordingly view them. Moreover, there's no need to transfer the pictures to the computer for editing, because you can edit a photo and add a caption to it on the camera itself! Now that's what we call "living wirefree"!



Kodak EasyShare-One



Imaging Sivalal S

SONY PlayStation Portable

Aditya Kuber

The moment I saw the shiny new Sony PSP in office, I just had to use it. That's how I got talked into writing this. But hey, it's worth the time I got to spend with this baby!

Day 1: Love At First Sight

As I held the PSP, a strange feeling crept over me. So far, I had only read about it and seen pictures, but actually using the PSP in office and getting awestruck glances from colleagues made me feel great. Hey, I was in a world of my own. First thing I did was transfer songs (albeit only about 8 on the 32MB card) and check the playback. Rocking!

Day 3: All Else Is Second Fiddle

The weekend was finally here and I could now spend more time with the PSP. A fact my wife did not approve of much. But, to be totally honest, she too was smitten by the sleek black looks and the massive screen. Heh!

All along, I admired the quality and layout of the screen. It was magnificent. Every time I played a game (or watched videos), I had to wonder where I had ever seen such good quality...

Day 4: It Gets Better And Better

Guests at home and I could not help but show off the PSP. Soon enough, it was the talking point of the day. And then an interesting event happened. Children (aged 4) were soon smitten by the PSP and much to my amazement, could even handle the volume controls when I played some sample games for them. Their next request, though, was something I could not fulfil: "The cartoon channel" didn't show on the PSP! That was it for them. Still, a brownie point to the PSP for being so user-friendly.

Day 10: Strutting My Stuff

By now, I was so used to having the PSP around, that I had stopped playing games on the PC and was hooked to Ridge Racer on the UMD (Universal Media Disc). I had to move to top spot and after ten days, I was closer than ever. The controls on the PSP are feather touch and respond intuitively. It does need some getting used to. On my bus ride to work, the music on the PSP had taken over my world. I completely enjoyed the stares it induced. "WOW" was the most-heard exclamation.

Day 18: It Comes At A Cost

As the time to return the PSP approached, I actually contemplated buying one so I would never have to endure that empty feeling again. Once more, it was something the wife did not approve much of. In fact, when I found out that it cost Rs 19,000-plus, I started having second thoughts myself. Was it so good? Was I so smitten? Hmm...

Day 24: A Hard Decision

I realised that I wanted the PSP, but not at the current price. Why? Because there were more investments involved to use it the way intended. For instance, as a Portable Media Player. I would have to buy more memory card(s) and this would be a substantial investment. Moreover, it had no FM Tuner. I am a music aficionado but not much of a gamer. Of course, some peripheral features that the PSP offers are important. However, for now, I decided to invest that money in a phone that offered all these options. Maybe one day, I would save and buy the PSP.

Day 30: Love's Labour Lost

Despite my decision to not buy the PSP, the farewell was particularly painful and I felt as if a part of me went missing that day. Not to get all misty eyed, I would certainly have liked to own it... but for the lack of internal memory (maybe 4 GB would work, too) and the restrictive pricing. I think Rs 12,000 (which is what it costs in Japan) would have been ideal. Anyway, all good things must end sometime as did my life with the PSP. For now! ☒

aditya_kuber@thinkdigit.com

JULY						
Wk	M	T	W	T	F	S
26	31				1	2
27	3	4	5	6	7	8
28	10	11	12	13	14	15
29	17	18	19	20	21	22
30	24	25	26	27	28	29

AUGUST						
Wk	M	T	W	T	F	S
31	1	2	3	4	5	6
32	7	8	9	10	11	12
33	14	15	16	17	18	19
34	21	22	23	24	25	26
35	28	29				





68 Driving Data



92 New & Notable:
Sony PSP



103 Shoot To
Capture!

Digital Tools

Technology For Personal And SoHo Productivity

Enhance

Order, Order!

It's time to put the house in order—and for once, know where that elusive phone number or e-mail address is

Aditya Kuber

Information overload is a part of life today and it's important to know how to deal with it. The more the people we know online and offline, the tougher it becomes to maintain their contact and correspondence information. A Personal Information Manager (PIM) is a must-have in today's hyper-connected world: it's something that lets you store all contact and schedule information, and in some cases even correspondence records, in one place. Gone are the days of carrying bulky Filofaxes or multiple phone books—the e-age of information management is in.

The Outlook Way

Of all the PIMs available—whether free or paid—Outlook is the

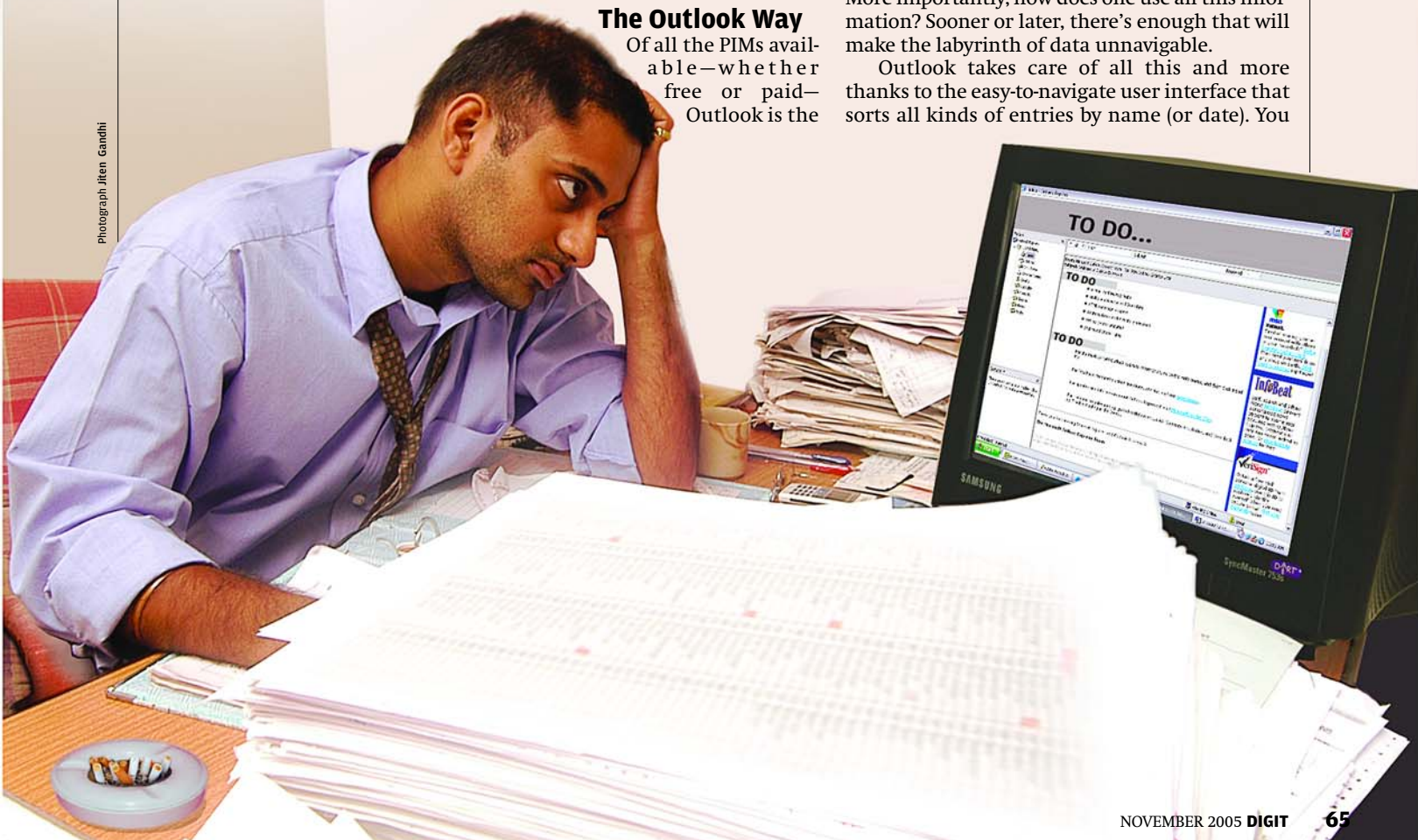
best bet for all uses. If you have to work more out of office than on the field, Outlook is the most robust software of them all. It has enough scope to let you store as many contacts as you may know and then use them in the most effective manner possible.

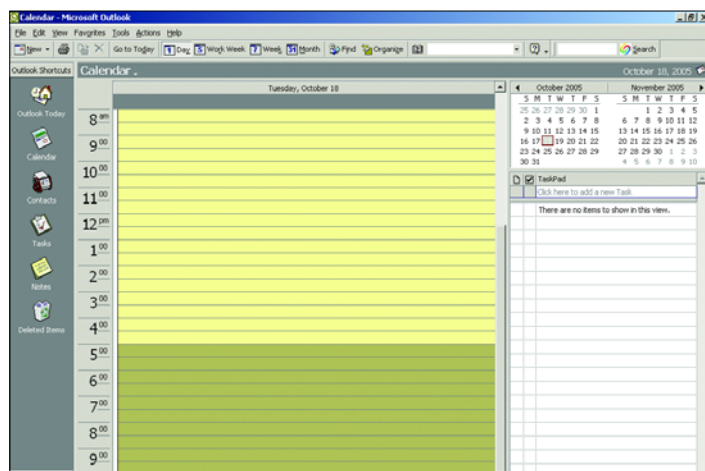
Outlook lets you use your contacts for more than just reference. In fact, you can run the entire Outlook package from just the 'Contacts' section!

What are the essential pieces of information of a contact? Name, address, phone number, date of birth, work place, office contact details, anniversary date, duplicate contacts and then some notes. This, we would think, is the bare minimum. But how do you keep it up to date? More importantly, how does one use all this information? Sooner or later, there's enough that will make the labyrinth of data unnavigable.

Outlook takes care of all this and more thanks to the easy-to-navigate user interface that sorts all kinds of entries by name (or date). You

Photograph Jiten Gandhi





Outlook: The real Personal Information Manager

can also navigate to all entries beginning with a particular letter at just the click of a button!

Coming to the actual uses of a contact entry in Outlook, the question that needs to be asked is what all would you like to do. Sending e-mail, creating a reminder or scheduling a meeting is all just a click away.

Outlook allows users not merely to do everyday tasks, but also get interactive with e-mail. Take the example of voting on a subject: people need not be present physically, and can just click 'Yes' or 'No'—and a consensus can be had over e-mail. What's better is that this also ensures confidentiality and speed of response. The respondents could also add their notes or reasons for their vote.

Synchronising your contacts too, is easier, as is taking a backup when migrating computers or just clearing up disk space. It's time to change your Outlook, eh?

Mobile PIM

If you happen to be an on-the-go professional who collects more phone numbers and visiting cards than you can remember, there are ways for you to organise your innumerable contacts.

With the changing times, we're used to noting down new phone numbers directly on our phones or PDAs. Often, we forget to include other vital information such as the company name, or why we have that number in the first place! It's good practice to include such info, because no amount of automation or technology can help you with information that it does not know!



Know Outlook Better

- ❑ You can use MS Word as the default text editor in Outlook.
- ❑ You can include a rich text signature that features characters in bold, italics, and different font sizes in Outlook.
- ❑ Your Task List can also be shown on the Schedule Sheet and e-mailed as an assignment.
- ❑ You can view and print out your Schedule Sheet in more ways than one to ensure you have an optimised view of your activities.
- ❑ Colour coding on the calendar allows you to identify the task (Personal, Business, Birthday) at a glance. You can even share this with your team or assistant and mark whether you will be out of office or not.



Essential PIM: Would you like to import all Outlook info?



Nicely laid out parts of the Essential PIM

If you are using a PDA phone (or even a smartphone), it is always recommended that you regularly back up all your phone data via Bluetooth, IR or a data cable. Almost all phones (and corresponding sync software) are capable of detecting changes to even a single field in data that is already present as backup. This ensures that you don't have to worry about updated or changed contacts not being backed up.

Outlook And Mobile?

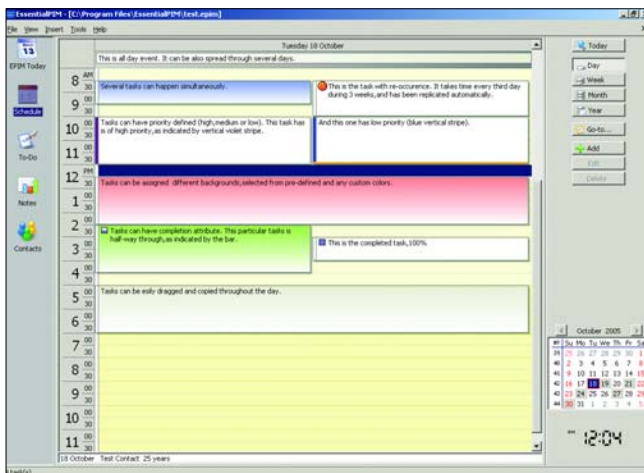
Now here's the interesting part. The data you already have in your Outlook, and data you've backed up from your phone, can work together and make your information management even more robust. How?

There are problems in synchronising your handheld directly with Outlook, but there is a way around this. Better still, this could be a one-time operation from Outlook by exporting your contacts as a CSV (Comma Separated Values) file. In the case of Nokia PC Suite, you can then export this file and have all your contacts sync with your handheld.

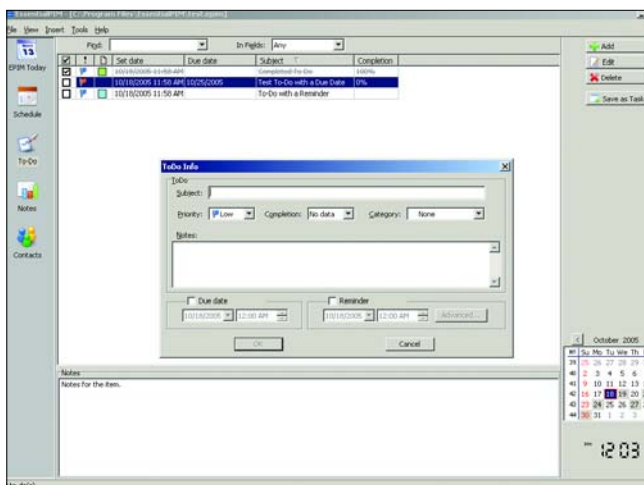
For devices by other manufacturers, the same may not hold true, and you may have to manually import (copy) contacts before synchronising. But hey, it's just once, and then, they're all in one place!

Third-Party PIMs

Freeware rules the world. Well, almost. So it's not surprising that there are freeware to counter the PIM problem as well. Another reason for using freeware is that it's legal, and you won't be using pirated versions of Outlook.



Colour coding of various tasks makes it more navigable



Adding a new task to Essential PIM is as simple as using Outlook

Take, for example, the 'Essential PIM'. It works well enough, and in fact, acts and looks just like Outlook. It has all the essentials Outlook has and upon installation, even offers to import all contacts and information (such as tasks and schedules) from Outlook. The points it scores over Outlook are the colour interface and the fact that it's free.

The one thing missing here is the ability to send e-mail. But the point of using this is to avoid spending on the MS Office suite only for Outlook. Essential PIM, and Opera or the Mozilla suite for your e-mailing needs, is a great combo. And you still have all your information and schedules in one place.

Essential PIM is also a good option to just back up your Outlook contacts from time to time. We all know how prone Microsoft products are to crashes, and it's a good idea to have your backup in an interface that looks and behaves like Outlook does.

Despite these pitfalls, we will maintain that Outlook is the best because it's just what a PIM should be and do. The interoperability between its various functions, the robust mail client, and the way it works with other products from the MS Office suite is marvellous. ☒

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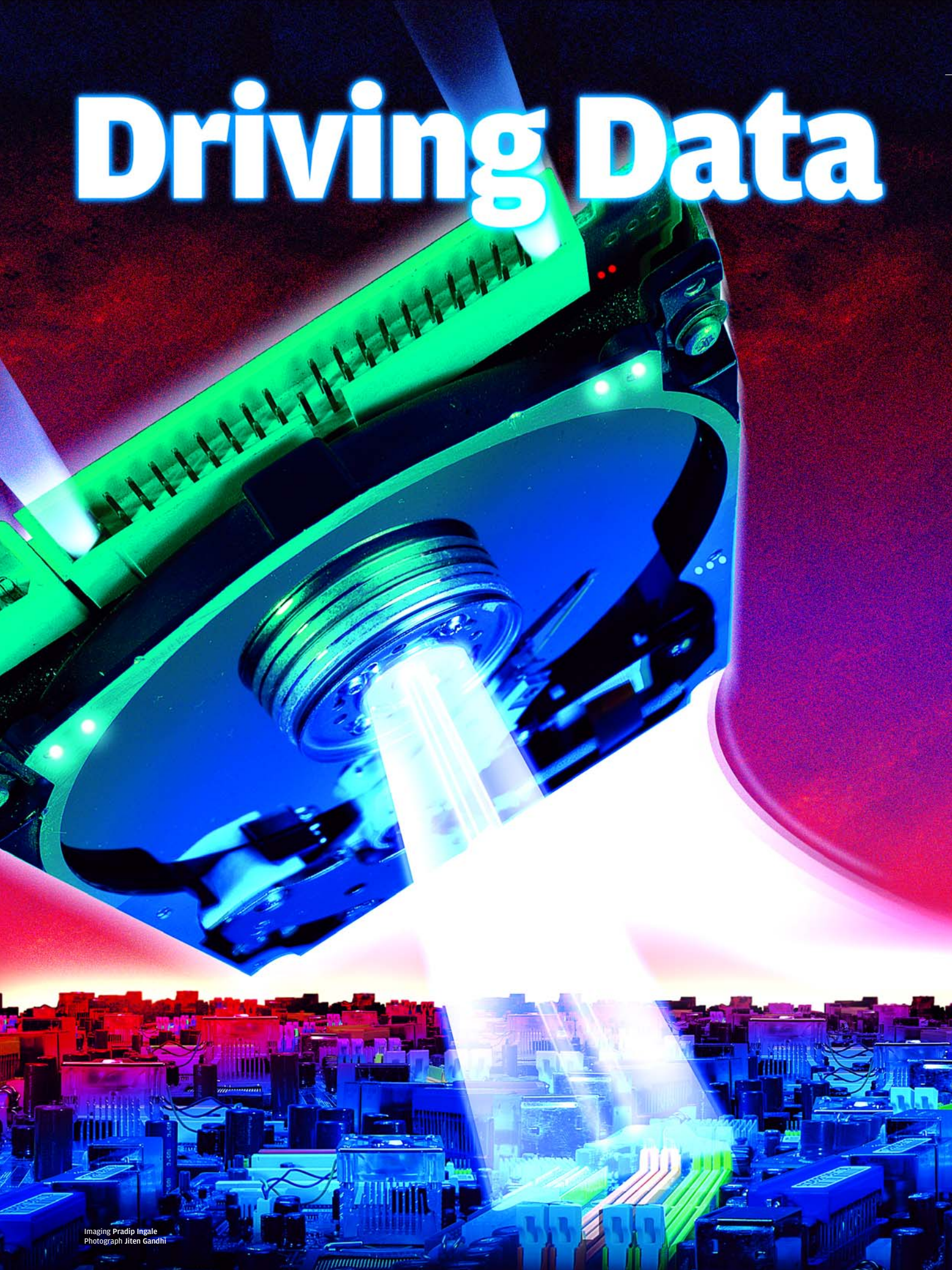


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Driving Data



Money can replace anything in your computer—except your beloved hard disk, which holds all your data! The venerable HDD has undergone changes over the past couple of years. Here's a shootout to help you choose your primary storage solution

Anup Nair and Deepak Dhingra

The Pentium I machines that hit the Indian market in the early '90s were equipped with hard disks of capacities less than 1 GB, and ran Windows 3.1. Now, a little over a decade later, it's difficult for us to find a gig of free space even on our 80 GB hard disks!

Those who've 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.

We have indeed come a long way. The most recent development in the hard disk area is SATA II, a major improvement over the conventional parallel interface (IDE, short for Integrated Drive Electronics), and somewhat of an improvement over its predecessor, SATA I. Speeds have shot up from 150 MBps (in SATA I) to 300 GBps in SATA II. Technologies such as Native Command Queuing have made an entry into the SATA specification, though these require compatible motherboards for optimal performance.

Other than speeds, storage capacities, too, have been on the rise, as you know only too well. Desktop machines now feature hard disks with capacities of 250 GB and even 500 GB. You might criticise the need for such humongous capacities, but some people do need this much space, even on a desktop machine—people like gamers, professionals in animation and graphic imaging, and so on.

A PC game of today can consume two to five GB of disk space: for example, *Unreal Tournament 2004* takes up four GB. If you're using a 40 GB disk, you could complete a game, then delete the installation to install and play another one. But we don't like to do that—we like to keep everything we've got! Similarly, most of us dump movies and music onto our drives, and find it psychologically hard to delete a few to create some room.

So increased capacities and speeds it will be, and SATA is the way to go.

The test centre compared fifteen hard disks from five well-known manufacturers. Several of these were SATA II, except for Samsung's two Parallel ATA drives. SATA II drives are backward-compatible with SATA I,

which is a welcome feature since some motherboards do not support the faster version. (See box *How We Tested*.)

Features

Before we settle down to comparing the drives on the basis of features, let's do away with the odd ones in the lot—the Samsung SP0411N and SV0411N. These are IDE drives with a 2 MB buffer; and moreover, the SV0411N, at 5400 rpm, was way below par. It's not really fair to compare this disk with the others, but we did it anyway—if the cost per GB turns out good, such disks can serve as large data dumps.

The contest for the top spot was very close indeed! The Hitachi drive could have been the absolute winner only if it had better shock resistance (it could withstand 55G). The Seagate Barracuda (63G) and the Samsung SATA (63G as well) drives, too, were behind the frontrunner, WD (65G)—only in terms of shock resistance, however. The Hot-Plug feature encourages one to carry disks in and out of the machine, so high shock resistance becomes important—it is a measure of the portability of the hard disk.



The Hitachi drives came with a bootable floppy containing the 'Hitachi Feature Tool', using which we could change the drive settings—from 1.5 Gbps to 3.0 Gbps—and even monitor the drive temperature.

Most switched-mode power supplies (SMPs) have provision for the Molex power connector, which is the five-pin power connector used for CD-ROMs and IDE hard disks. Provision for a separate SATA power connector is usually absent in SMPs, so including Molex power support along with a SATA power connector on the drive is a good thing. It would be ideal if manufacturers such as Seagate, Samsung and Maxtor had provided this.

WD's RAID Edition (Caviar RE2) had a few features unique to the maker, namely RAID-TLER and RAFF. (See box *Jargon Buster*.)

With the increase in capacity, the data density on the platter increases, and the accuracy of the head becomes important, especially in drives such as WD's Raptor (it's a 10,000 rpm disk). RAFF makes

sure rotational vibrations are countered, so that the head reads data with minimal errors.

Based on support for both types of power connectors, additional features, and shock resistance, WD edged out the Hitachi drives to dictate terms in the Features section of the comparison.

Performance

The WD Raptor delivered outstanding scores in the synthetic tests, followed by other members of the WD family, and the lone Seagate. The Hitachi drives recorded the highest burst speeds in the HD-Tach benchmark. However, there's not much one can deduce from this, since the operating speed of the drive is much less than the burst speed. At the same time, this could have boosted Hitachi's performance in the real-world tests.

Synthetic Tests

HD-Tach

HD-Tach reports the burst speed of a drive in addition to other



Hitachi Deskstar HDS722525DLA380

readings such as random and sequential read/write, which is common with the other benchmark tool—SiSoft Sandra. Maxtor's DiamondMax 10 trailed WD's Raptor by a small margin in average read and write speeds. Note that the maximum and minimum read/write speeds is just an outcome of the graph that HD-Tach plots while benchmarking; the highest peak is the maximum speed and the lowest dip is the minimum speed. Taking the average of these

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Imaging: Shweta S. Photograph: Sandeep Patil

How We Tested

To ensure that all the disks got equal treatment, we maintained a common test bed that would meet the requirements of all the disks. We installed Windows XP on our hard disk—a Seagate Barracuda 120 GB SATA. The test hard disk served, in each case, as a secondary drive. The test bed was powered by an AMD FX53 processor on an Asus A8N SLI Deluxe motherboard, with 1 GB of Corsair DDR RAM and an ATI Radeon X850 XT 256 MB Platinum Edition.

Features

Among the nine listed features, points were only given to the type of power connector, additional features, and shock resistance, as the rest of the features contributed to the Performance and Cost Per GB factors. Most of the additional features—such as NCQ and Hot-Plug—were common to all the drives, and some (such as RAFF, TLER and TCQ) were specific to the manufacturer; only the Parallel ATA drives differed in additional features, so the considerable difference in scores reflected only in the case of the Samsung's parallel ATA drives. The variation in this segment was negligible among the other drives.

Disks that supported both types of power connectors—Molex and SATA—were awarded more points in the Features category.

Performance

Our performance tests were classified into the synthetic tests and the real-world tests. The synthetic tests included the HD-Tach and SiSoft Sandra benchmarking tools.

HD-Tach runs on a raw partition. We did not award points to the minimum and maximum read/write speeds, since the data from those readings was considered inconsistent. Points were therefore allotted to average read and write speeds, CPU usage, burst speeds and random access time.

We used SiSoft Sandra's File System benchmark to estimate the Drive Index, Sequential Read, Sequential Write, Random Read, Random Write and Access Time. The score for read and

write operations are in MB per second, while Access Time is in milli seconds.

The real-world test included the file transfer and Photoshop image load tests. We created a 700 MB assorted folder containing files of various sizes and types, whereas a 700 MB video clip served as the sequential file. The inter-drive transfer results were obtained by recording the time taken for transferring 700 MB of assorted and sequential data between the test hard disk and our primary hard disk (the one that had the OS on it).

A RAM drive is a virtual hard disk partition created using software. A pre-defined (712 MB) amount of RAM was allocated for this purpose. The intra-drive test was weighted over the other transfer tests as it tests the effectiveness of the drive's buffer.

For the Photoshop image load test, we created image files of varying sizes by increasing the resolution of a multi-layered image (in the PNG format). We created two FAT32 partitions on each test hard disk. The path to Photoshop's scratch disk, which acts as a virtual RAM space on a hard disk's partition, was changed to the test sample's first partition, and the images were stored in the second partition of the same test sample. The time taken to open the images was recorded as the observation.

Price Index And Warranty

We compared the drives based on cost per GB, obtained by the ratio of price to formatted capacity. Drives that had a higher capacity at a lower price scored higher on the Price Index. Warranties were either three or five years, and points were awarded accordingly.

Picking The Winners

The scores from Features, Performance, Price Index and Warranty were scaled out of 100 with relevant weightages given to each. The product that scored the highest was awarded the *Digit* Best Buy Gold, and the one that trailed the Gold winner was adjudged the *Digit* Best Buy Silver.

doesn't make sense. It's the real average read and average write speed that should be looked at, rather than the maximum and minimum values.

SiSoft Sandra

When we converted the benchmark scores obtained from SiSoft Sandra to evaluation points, the lone Seagate—the Barracuda 7200.8—was right on top. This 400 GB, 1.5 Gbps drive with an 8 MB buffer delivered scores that edged out the top performers of WD, Hitachi and Maxtor.

The results we obtained using SiSoft Sandra's File System benchmark gave us information about the Sequential Read, Sequential Write, Random Read, Random Write, Access Time and overall Drive Index. While HD-Tach rated Raptor very high for its access time, SiSoft Sandra's result for the same parameter was misleading. We repeated the test but ended up with the same results.

Real-World Tests

The real-world tests are classified into two broad areas—file transfer time and Photoshop image load time, as explained in *How We Tested*. Real world tests are designed to provide information that you can easily identify with so as to judge the performance of a drive. A 700 MB data transfer between two disks was timed in seconds, and the results are presented in the table of results.

The file transfer test is classified into three sections—inter-drive, RAM drive, and intra-drive. The disk's speed is tested to its limits as it tries to match the speed of the RAM. The speed at which the data transfer occurs wholly depends on the drive's read/write speed, spindle speed and access time.

Technically, the 10,000 rpm Raptor *had* to perform well in this test, and it did. The Seagate managed to narrowly edge out the Raptor in one of the four recorded timings. In the rest of the transfer tests, both drives were neck-to-neck.

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Digital Tools | Test Centre



Western Digital Caviar SE WD2500KS-22MJBO

Time to check out the real transfer rates of the drives! Inter-drive file transfer was carried out between a test-bed SATA disk and the test samples. The intra-drive file transfer tests the effectiveness of the buffer of each of the test samples, as the buffer synchronises the data transfer between drives or between two partitions on the same drive.

The inter-drive test results may confuse you—case in point: the



Jargon Buster

NCQ (Native Command Queuing): By command queuing, the hard disk accepts multiple commands from the host controller and rearranges them into a completion order. The major portion of the drive's command service time is seek and rotational delay for the drive head.

NCQ is an advancement over LCQ (Legacy Command Queuing). To understand the importance of NCQ we need to know how LCQ functions.

Not all data on a hard disk is stored sequentially. Random data, or data that is part of a folder, may not be placed contiguously on the disk surface.

Imagine we have scattered data A, B, C, D and E on sectors 1, 5, 2, 4 and 3 respectively of the disk. Whenever this block of data is called by the processor, the disk will queue the data as A, B, C, D and E. So, the hard disk head will first approach sector 1 to take data A, then it will move to sector 5 to take data B, skipping data C, which is on the immediate sector. It only takes a few milliseconds for an extra rotation to read data C, but consider a hard disk full of such fragmented data. Thus hundreds (and probably thousands) of rotations are wasted, and this is how LCQ works.

The drive can use rotational optimisations to select the next command to complete, so that the major components of the service time—seek and rotational delay—are minimised. NCQ does this by enabling the hard disk to

select the next command, based on what data is closest rotationally to the head's current position.

NCQ is native to SATA drives.

However, some early SATA drives may not include this feature.

SATA (Serial Advanced Technology Attachment): Most of us know about the IDE cable, which is used to connect hard disks and optical devices such as a CD-ROM to the motherboard. SATA is no different from the perspective of this primary purpose. It is essentially a serially-communicating interface that not only works faster than the conventional parallel interface, it is also longer in length (up to 1.5 metres) and smaller in width. SATA was introduced with a speed of 150 MBps. Further research led to the development of SATA II, with a transfer rate of 300 MBps.

TLER (Time Limited Error Recovery): Most desktop hard drives are designed considering regular operation, assuming there is no RAID card. All desktop drives include read/write error correction, but they do not issue error messages or respond to commands by the RAID adaptor. If error correction takes time, the RAID controller drops the RAID volume as a non-responsive drive. This problem is most common in ATA drives. TLER was essentially enabled in Western Digital Caviar RE2, as this drive was designed considering RAID operation.

RAFF (Rotary Acceleration Feed Forward)

Forward): This technology is designed for Western Digital hard drives—the Raptor and the Caviar RE2. The rpm of Raptor drives is very high (10,000 rpm), so rotational vibrations are unavoidable. By implementing RAFF, rotational vibrations can be cancelled to provide better and more accurate performance.

S.M.A.R.T. (Self Monitoring And Reporting Technology): Most hard disks now have SMART inbuilt. This is a protocol used to report the device status to the host machine. A SMART-enabled hard drive constantly monitors itself for any kind of discrepancy, and reports any problem so you can take corrective action. The primary corrective action is taking a backup of your data and then trying various disk utilities tools to check your disk.

Hot-Swap and Hot-Plug: 'Hot-Swap' and 'Hot-Plug' are sometimes used interchangeably. Hot-Swap means you can remove a drive and replace it with another without interrupting the system; an example where this would be used is in a mirrored storage system on a server.

Hot-Plug lets you plug in a new device while the system is running. Care should be taken while removing a device this way. A Hot-Plugged device should be detached only after using some kind of un-mounting option available on the host OS.



Scoreboard

Hard Disk Drives

BRAND	Hitachi	Hitachi	Hitachi	Maxtor	Maxtor	Samsung
Model (Series)	Deskstar	Deskstar	Deskstar	DiamondMax 10	Maxline III	SpinPoint P
Model Number	HDS728080PLA380	HDT722525DLA380	HDS725050KLA360	6B300S0		HD080HJ
Features	16.75	16.75	16.75	9.82	9.82	10.10
Capacity (GB)	80	250	500	300	300	80
Formatted Capacity (GB)	76.69	232.88	465.76	279.48	279.48	74.53
Spindle Speed (RPM)	7200	7200	7200	7200	7200	7200
Interface Type (ATA133/SATA)	SATA - II	SATA - II	SATA - II	SATA - I	SATA - I	SATA - II
Interface Speed	3.0 Gbit/s	3.0 Gbits/s	3.0 Gbits/s	1.5 Gbits/s	1.5 Gbits/s	3.0 Gbits/s
Data Buffer Size (MB)	8	8	8	16	16	8
Power Connector	Molex + SATA	Molex + SATA	Molex + SATA	SATA	SATA	SATA
Additional Features	Backward compatible to SATA 1.5Gbits/s, S.M.A.R.T., NCQ, ECC & CRC protection	Backward compatible to SATA 1.5Gbits/s, S.M.A.R.T., NCQ, ECC & CRC protection	Backward compatible to SATA 1.5Gbits/s, S.M.A.R.T., NCQ, ECC & CRC protection	NCQ, shock protection system(Maxtor), hot plug support	NCQ, hot-plug and asynchronous signal recovery	NCQ, SMART compliant, Hot-plug & hot-swap capable
Operating Shock Resistance (in G)	55	55	55	60	60	63
Performance	33.35	36.86	38.22	36.39	35.41	31.90
Synthetic tests						
HD Tach						
Write Speeds						
Min/Max (in MB/s)	10.7/65.3	18.8 / 47	12.3/95	16.1/40.9	11.1/53	18.3/32.8
Average (in MB/s)	28	30.4	29.3	32.4	30.7	25.7
Read Speeds						
Min/Max (in MB/s)	33.2/63.9	29.6 / 72.6	32/67.2	36.2/126.1	36.9/70.8	27.6/65.7
Average (in MB/s)	50.3	56.3	52	56.9	36.9	49.7
Random Access Time (in msec.) *	13.3	12.9	12.9	16.9	17	13.2
Read Burst Speed (MBps)	225	224.9	225.2	138.5	139.1	180.8
CPU Utilisation (%) *	7	5	7	4	5	7
SiSoft Sandra 2005 Pro						
Drive Index (MB/s)	50	56	56	55	51	52
Sequential Read/Write (MBps)	58/58	64/63	62/62	63/62	62/63	59/60
Random Read/Write (MBps)	41/30	46/36	46/50	40/48	32/48	41/44
Access Time (ms) *	7	6	6	9	15	8
Real world tests						
Inter Drive Test (Two drives) *						
Assorted Data (700MB)	31/33	29/33	28/33	30/31	33/32	30/30
Write/Read (in secs)						
Sequential Data (700MB)	18/19	19/19	19/20	19/20	21/22	20/21
Write/Read (in secs)						
Inter Drive Test (Using Ram Drive)*						
Assorted Data (700MB)	22/14	18/13	15/13	13/13	13/14	16/14
Write/Read (in secs)						
Sequential Data (700MB)	13/14	12/12	13/12	11/11	11/12	13/13
Write/Read (in secs)						
Intra Drive Test (With in same Drive)*						
700MB Assorted/Sequential (in secs)	43/37	34/31	29/25	35/26	32/23	50/34
Photoshop Image Load Time *						
200 MB (secs)	4	4	4	5	4	5
550 MB (secs)	51	45	42	45	43	56
800 MB (secs)	78	70	65	71	69	100
1 GB (secs)	116	102	99	106	99	140
1.4 GB (secs)	167	151	122	154	141	213
Warranty (No. Of Years)	5	5	5	3	5	3
Price Index	10.66	15.11	11.33	17.00	16.00	10.99
Cost/GB (Rs) *	45.64	32.21	42.94	28.62	30.41	44.28
Price (Rs)	3500	7,500	20,000	8000	8500	3300
Overall Score (Out of 100)	70.77	78.72	76.31	69.21	71.22	58.99

* Lower scores indicate better performance



+ Molex and SATA connectors
- High CPU use



+ Good performance,
- None



+ Excellent performance,
- High CPU use



+ Great value for money, good performance
- None



+ Good value for money
- None



+ None
- High CPU use

Samsung SpinPointP HD160JJ	Samsung SpinPoint P SP0411C	Samsung SpinPoint P SP0411N	Samsung SpinPoint V SV0411N	Seagate Baracuda ST3400832AS	Western Digital Caviar SE WD2500KS-22MJ80	Western Digital Caviar SE WD4000KD-00NAB0	Western Digital Caviar RE2 WD4000YR-01PLB0	Western Digital Raptor WD740GD-00FLA1
10.10	7.30	7.30	7.30	10.10	16.99	16.99	16.99	16.29
160	40	40	40	400	250	400	400	74.3
149.05	37.31	37.31	37.31	372.61	232.88	372.61	372.61	69.24
7200	7200	7200	5400	7200.8	7200	7200	7200	10000
SATA - II	SATA - I	ATA 133	ATA 133	SATA - I	SATA - II	SATA - I	SATA - I	SATA - I
3.0 Gbits/s	1.5 Gbits/s	133MB/s	133MB/s	1.5 Gbits/s	3.0 Gbit/s	1.5 Gbits/s	1.5 Gbits/s	1.5 Gbits/s
8	2	2	2	8	16	16	16	8
SATA	SATA	Molex	Molex	SATA	Molex + SATA	Molex + SATA	Molex + SATA	Molex + SATA
NCQ, SMART compliant, Hot-plug & hot-swap capable	NoiseGuard, ImpacGuard	S.M.A.R.T. complaint, fluid dynamic bearing	S.M.A.R.T. complaint, fluid dynamic bearing	Support NCQ, hot plug support	Shock guard, Hot Plug support, TCQ,	Shock guard, Hot Plug support, TCQ,	Supports NCQ, Hot plug support, RAFF™, RAID-TLER	Supports TCQ, Hot Plug, RAFF™
63	63	63	63	63	65	65	65	65
31.73	25.39	25.53	22.87	34.23	36.74	37.11	37.98	34.29
15.8/31.2	17.6/26.3	16.6/28.6	12.8/20.7	10.3/53.9	18.5/27.1	18.6/32.8	17.8/39.2	27.5/40.4
25.5	22.3	21.5	17.1	20.4	23.3	26.9	28.3	34.1
27.2/63.3	20/55.6	21.2/54.5	17.2/42	32.9/75.2	37/65.7	40.5/68.3	38.1/69.6	40.9/74.2
49.2	35.1	44.1	32.8	60	54.3	58	57.8	65.5
13.3	13.9	13.9	15.6	15	12.9	12.8	12.9	7.5
181.6	67.2	64.9	50.3	135.4	172.6	138.5	150	118.8
7	5	5	2	7	7	8	7	5
50	42	44	34	58	53	55	54	55
57/57	53/52	51/51	40/40	67/66	59/59	62/62	62/62	69/69
40/42	23/37	33/36	26/27	46/45	43/45	43/45	43/45	31/52
8	25	11	14	7	6	7	7	18
29/31	30/31	30/30	32/34	30/32	30/33	28/31	28/31	28/33
18/23	20/22	19/22	19/23	21/23	17/21	19/21	18/18	19/21
15/15	28/15	30/23	38/21	13/13	15/13	14/13	13/13	18/13
13/13	19/14	20/14	29/18	10/11	13/13	11/12	11/11	10/11
39/32	62/50	67/51	77/65	38/33	32/26	31/25	30/24	60/27
7	9	10	11	6	4	4	4	4
56	69	74	89	49	41	44	42	52
92	113	120	144	81	60	60	60	125
140	175	176	204	117	97	100	101	141
208	253	268	290	168	144	146	144	197
3	3	3	3	5	5	5	5	5
15.11	6.72	6.98	7.26	7.72	15.11	13.95	13.43	4.11
32.20	72.37	69.69	67.01	63.07	32.21	34.89	36.23	118.43
4800	2700	2600	2500	23,500	7500	13,000	13,500	8200
62.94	45.41	45.81	43.43	62.04	78.84	78.04	78.39	64.68



+ Good value for money
- High CPU use



+ None
- High cost/GB



+ None
- High cost/GB



+ Low CPU use
- Poor performance



+ Decent performance
- High CPU use



+ Good performance, value for money
- None



+ Good performance, value for money
- High CPU use



+ Good performance
- High CPU use



+ Decent performance
- Very high cost/GB

scores of the Samsung ATA 133 drives. We need to remind you that the transfer speeds also depend on the test bed hard drive, which happens to be faster than the two Samsung ATA 133 drives. Hence the read speed was more than the write speed for these two drives. We would recommend you rely on the intra-drive speed to measure the performance of these drives. Exceptional performers in the inter-drive test were the Hitachi Deskstar 250 GB and the WD Caviar RE2.

As expected, Samsung's parallel ATA drives were beaten by a big margin in the intra-drive transfer test. The Samsung SP0411C, a SATA drive with a 2 MB cache, performed no better than the Samsung ATA drives! The WD Caviar RE2, Hitachi Deskstar 500 GB and Maxtor's Maxline III topped the charts with superior times in the intra-drive test.

The Photoshop image load test is one of the most important tests, especially for those using software such as Maya, 3D Studio and Photoshop. Photoshop's scratch disk, or the virtual RAM space for the application, was created on the test sample. Images of varying sizes (200 MB, 550 MB, 800 MB, 1 GB and 1.4 GB) were also stored on the test sample, so as to maintain the outcome of the test purely on the basis of the performance of the test sample. We used Photoshop to open these image files from the test hard disk and timed the process for each image.

The contest for the top slot was fierce, between the WD Caviar SE (WD2500KS) and the Hitachi Deskstar 500 GB, with the latter recording better timings. Other drives that performed well were the Maxtor MaxLine III and Hitachi Deskstar 250 GB. If you're looking for a performer at an affordable budget, then the WD2500KS is your best bet!

Value For Money

Rs 2,500 and Rs 4,000 are attractive figures, but have you thought about how much you're spending per GB of storage? It's a fair notion if you're a moderate user, but the

actual price is not an ideal criterion if you demand performance at a fair price.

Back to the paperwork: all the drives have a remarkable warranty period—either three or five years—so the main aspect of discussion is the price index. Let's start with the Samsung hard drives, which we introduce again and again as the reference. The SP0411 and SV0411N belong to the category that most people buy. The price that one pays per GB for this category of hard disk is the highest—you can get double the capacity (80 GB) and much better performance for just an additional 1,000 rupees!

Maxtor's DiamondMax10, with a capacity of 300 GB and priced at Rs 8,000, proved to be the most cost-effective of all the drives, at Rs 28.62 per GB. On the other hand, WD's 74 GB Raptor priced at Rs 8,200 is the most expensive, at a whopping Rs 118.42 per GB.

Generally, we see that the cost per GB of higher capacity drives is much less than that of lower capacity ones, but the Seagate Barracuda (400GB) ripped through the price paradigm. It was not only costlier than its counterparts, the WD4000KD and WD4000YR, but was also more expensive than the Hitachi Deskstar 500 GB by a margin of Rs 3,500.

Considering the warranty, price index and performance, the Hitachi Deskstar 80 GB, Maxtor MaxLine III 300 GB, Western Digital WD2500KS 250 GB and Hitachi Deskstar 250 GB are the ones that make for value for money, in their respective categories. However, if you are hunting for a 160 GB drive, the Samsung HD160JJ is your best bet.

The Consensus

Based on our results from the Performance comparison and the overall analysis, we award the Best Buy Gold to the test sample that secured the highest overall scores.

The overall score is obtained by giving appropriate weightages to individual test segment scores. A higher weightage was given to the intra-drive test and the appli-



Western Digital Caviar RE2 WD4000YR-01PLB0

cation load time test in the Performance segment, while additional features and shock resistance were the determinants in the Features segment. Hitachi's Deskstar 500GB recorded the highest performance scores amongst all the drives but it lost out on price index.

We have two Best Buy Gold winners, the Hitachi Deskstar 250 GB (HDT722525DLA380) and the WD 250 GB (WD2500KS). It was difficult to judge the better of the two as warranty, price and capacity were identical. While the Hitachi leads in the performance segment, the WD2500KS leads in features.

The WD Caviar RE2 was close to Gold with better performance and features than the two Gold winners, but had to settle for Best Buy Silver due to its slightly higher cost per GB.

What Next?

Along with increased capacities, there has been a remarkable decrease in the dimensions of hard disks. The storage density of the platters has increased as well. There had to be a limit to the prevailing technology, and researchers had to think of new ways to develop a high-volume storage medium.

Thus, the need for higher capacity and ace performance is changing the way data is written onto a medium. Currently, data is written onto the disk surface by Longitudinal Recording (LR), which is reaching its limits (refer *Towards Terabytes, Digit*, October 2005). Disk manufacturers are now moving on to Perpendicular Recording, which promises much higher densities.

We are anxious to get our hands on this technology, and we're sure you will be looking forward to it as well! ☒

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deepak_dhingra@thinkdigit.com



Contact Sheet

Hard Disk Drives

Brand	Company	Phone	E-mail	Web site
Hitachi	Cyberstar Infocomm Ltd.	080-51266808	hitachi@cyberstarindia.com	www.hitachigst.com
Maxtor	Maxtor Corporation	011-51609661	maxtorinfo@denave.com	www.maxtor.com
Samsung	Samsung India Electronics Pvt Ltd	011-51511234	jjyotiraman.khosla@samsung.com	www.samsung.com/in
Seagate	Esys Distribution Ltd	011-51811694	naresh@esysmail.com	www.seagate-asia.com
Western Digital	Western Digital Corporation	0-9321029204	amarjit.singh@wdc.com	www.wdc.com

Learning How To Play Guitar

We found ourselves flooded with musical instruments here at *Digit*. Why? Because our annual Diwali party is around the corner. We ended up with a keyboard, a drum set and four guitars. Everyone was keen on learning how to play guitar—or just waste a few work hours! A few sincere employees looked up Web sites to learn guitar. And a story was born...

Robert Sovereign-Smith (robert_smith@thinkdigit.com)



Learn from someone



Learn from the computer

1

First of all, get your hands on a guitar, beg, borrow or steal is our motto—no compromises with a passion like music. Good thing that we had guitars coming out of our ears this month.

Honestly, there's no difference here. You still need a guitar!

2

The next step is to find someone who knows something about guitars. Easier said than done! You could choose to sign up for classes, but this involves money. We'll stick to asking one of your friends or colleagues for help in their free time. After all, it's generally when you see someone playing an instrument that you get the urge to learn!

The true tech way is to hit Google and search for sites or software that will teach you for free. A few e-books wouldn't hurt either. Just make sure they're not pirated e-books in the PDF format, or you could land yourself in trouble! Luckily, we found that several sites offer free basic guitar lessons.

3

The few people who had the determination to learn at work just kept bugging the maestros to show them a few tricks. The snag here is that when you're free to learn, the other is generally too busy to teach!

We decided the first step to learning guitar was to get to know the chords—a collection of musical notes form chords when played together. For this we needed a visual depiction of the actual chord being played, and an easy way to find all possible chords. We stumbled across www.chordfind.com, which tells you how to play every chord in the book.

Time taken: It's hard to get exact time limits here, but let's just say it's a lot more than a few hours of waiting.

Time taken: 15 minutes of Googling

4

Learning from real people has the advantage of being able to ask questions, and since we're all individuals, our questions may differ. We found that getting a question answered was much easier when face to face with a real teacher. Also, people seemed to learn faster this way.

With the advantage of learning at your own pace, the tech way seems a lot better, until you come to a standstill when you just cannot understand something! For instance, our beginners could see which strings needed to be pressed, but couldn't figure out which finger was used to press which string. This help is available at <http://snipurl.com/it6i/>. Thank God for Google!

Total Time Taken: A few hours of practise;
Cost: Nothing (not counting the cost of treating your friends to coax them to teach you)



Total Time Taken: A few hours of searching online;
Cost: Nothing (not considering the cost of bandwidth)



AND
THE
WINNER
IS...

The Winner, hands down was the Old Way. Even though you may have to chase a few friends to get them to give you some of their time, it beats spending hours on Google learning less about guitar and more about how to search. Even if you are willing to spend money on this hobby, you'd

be better off enrolling for classes than using some of the paid software that claims to teach you. Of the people in the office that wanted to learn, we found that the ones learning from real people learned a lot faster than the ones trying to learn on their own—case closed!

Medindia.net

Definitely not just another site on medicine

Preethi Chamikutty

Sites offering information on Ayurveda, diet, nutrition, medicine etc. are scattered all over the Web space. However, you probably haven't come across too many sites where all such information is in the same place.

Medindia.net is one such repository of medicine-related information, all under one roof, and it's authoritative—it's been put together by the Medical Computer Society of India (MCSI).

The information on Medindia.net will be useful for the novice and the medical fraternity alike.



Medindia.net is a great reference site for information on everything on medicine

Look And Feel

Space management of the pages on the site is not up to the mark. However, after you get used to it there shouldn't be too much trouble finding what you're looking for. All topics are placed under simple headers; however, there seem to be too many headers!

The pages on the site have been divided into four columns, comprising an index list, information, ads, and related links. The pages have a series of toolbars at the top, which eat up about a fourth of the page!

Content

To put it in a few words—very good! It looks like the MCSI has thought about everything: Alternative Medicine, Legal Cell, Medical Glossary,

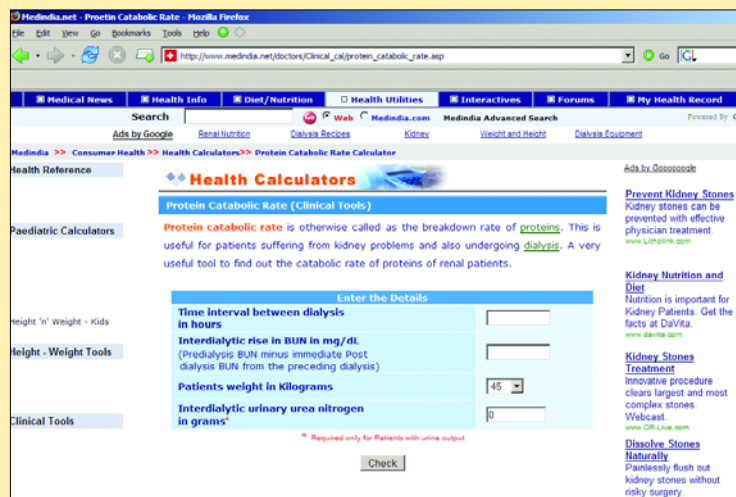
Resort Links, Journals and more. It would probably fill a few pages if we were to try and list out all the topics available. You will not be disappointed—you can find answers to most of your queries on various topics here.

News on Medindia.net talks about recent developments in medicine across the world. This is useful for medical professionals who wouldn't want to spend on subscribing to medical journals! Medical students will also find it useful. Apart from news, medical journals and health reports are the other value additions.

Medindia.net also provides links to various hospitals across India as well as abroad. The site has a facility for doctors to create their own



Alternate medicine such as Ayurveda is discussed in detail here



The health calculators on the site could save you a visit to your doctor

homepage where they can upload personal information. This can act as a good base for visitors searching for a specialist or someone with a particular skill set.

While the information for patients, doctors, etc. have been classified under different heads, Medindia.net also acts as an interface to link medical colleges across the country.

Apart from information, there is humour, health tips, nutrition utilities, information on how to spend your free time in summer, health calculators, organ donation information, blood donation information and more!

Medindia.net sports links such as a forum, matrimonial, healthcare jobs and other interesting links. You can read up about medical conferences, and landmark cases in medicine; students can get information about medical colleges and courses, buy medical books and so on.

Overall...

An extremely useful site with lots of information, Medindia.net could have improved upon its layout and navigation. People interested in the subject of medicine and related issues would do well to bookmark this site—only after visiting it a number of times will you start getting the hang of what lies where, and of the sheer amount of information available! ☐

preethi_chamikutty@thinkdigit.com

E-mail Clients

**E-mail clients are a mainstay of our virtual life.
Read on to solve any nagging issues you face with them**

Ram Mohan Rao

Problem: Outlook blocks certain attachments—they just cannot be opened!

Solution: Open the Registry Editor. Navigate to HKEY_CURRENT_USER\Software\Microsoft\Office\x\Outlook\Security. Here, x should be “9.0” for Outlook 2000, “10.0” for Outlook 2002, and “11.0” for Outlook 2003.

Next, go to **Edit > New**, and click ‘String Value’. Type in “Level1Remove” (without the quotes) for the new value. Press [Enter]. Right-click the new string value name, and click ‘Modify’. Type in the extension of the file type you would like to open in Outlook, for instance, “.exe” (without the quotes).

To specify multiple file types, use the format “.exe;.com” (without the quotes; note the semicolon). Click ‘OK’, quit the ‘Registry Editor’, and then restart your PC. From now on, Outlook will no longer block the attachments you specified.

Problem: There’s a problem copying the Windows 98 installation files to the hard drive to repair files damaged in an aborted installation.

Solution: The Windows 98 installation files are stored on the installation disk in the CAB file format. The best recovery method in such a situation is to boot the system from a floppy, run FDISK to repartition the drive, format the drive and then run the Windows 98 Setup.

Problem: Some features of Thunderbird don’t work, or there are problems starting Thunderbird after installing an extension.

Solution: Create a new profile. In order to start the ‘Profile Manager’, first close Thunderbird completely by selecting **File > Exit**. Next, select **Start > Run** from the Start Menu. Type in “thunderbird.exe -profilemanager” and press ‘OK’.

You should now see the ‘Profile Manager’ window. Click the ‘Create Profile...’ button to start the ‘Create Profile Wizard’. Click ‘Next’ and enter a name for the profile. Click ‘Finish’, and Thunderbird will create the new profile. You will be taken back to the ‘Profile Manager’, and the newly created profile

should be listed. Select it and click ‘Start Thunderbird’. You’ll now be running Thunderbird with the new profile i.e., all settings are reset to their defaults.

Problem: Clicking hyperlinks in Outlook Express does nothing at all.

Solution: This could happen if one or more registered file associations are configured incorrectly. To repair this, go to the **Control Panel > Folder Options**. Click the ‘File Types’ tab. Select ‘URL:HyperText Transfer Protocol’ in the list of file types.



You can set up user profiles in Thunderbird

Click the ‘Advanced’ button (in Windows XP), or the ‘Edit’ button (in other Windows versions). In the list of ‘Actions’, select ‘Open’, and click ‘Edit’.

The ‘Application used to perform action’ box should contain, including the quotation marks: “C:\Program Files\Internet Explorer\iexplore.exe” -nohome (This is assuming IE is your default browser.) If it contains a short name version of that path, or an incorrect path, change it to the above, again assuming that you want IE to open your hyperlinks. Now click ‘OK’ twice. Repeat these steps for the file type ‘URL:HyperText Transfer Protocol with Privacy’. Finally, click ‘OK’.

Problem: Outlook doesn’t open at all, or takes a very long time to open.

Solution: This is a common error with Outlook 2000 and 2002. Sometimes, it may take more than 30 seconds to open. This is often due to a corrupt ‘Outcmd.dat’ file—it stores custom changes you may have made to your toolbar buttons. You can rename or delete the file; but if the problem gets resolved when you do this, you will, of course, need to make your custom toolbar button changes again.

To remove the ‘Outcmd.dat’ file, simply search for the file and delete it. When Outlook next opens, it recreates the file (a non-corrupted one). Delete any instances of Outcmd.dat you find on your PC, and that usually, the file is in the ‘Application Data\Microsoft\Outlook’ folder.

Problem: Outlook sends out attachments called ‘winmail.dat’ that cannot be read by other mail clients.

Solution: You’ll need to turn off ‘Rich Text’ sending for messages in Outlook. Go to **Tools > Options** and click the ‘Mail Format’ tab. In the ‘Send in this Message Format’ list, select ‘Plain Text’ and click ‘OK’.

This will set your default sending method to plaintext, which means you’ll lose your special formatting—fonts, colours, and so on. But the ‘winmail.dat’ problem will be solved and all receivers irrespective of the mail client they’re using, will be able to read your mail.

There still remains a question: what if you want to view the winmail.dat—the mail the sender intended you to read, with all its formatting? A couple of programs can decode the file and allow you to view it. One of them is WMDcode for Windows, available at www.biblet.freeseerve.co.uk.

Problem: You receive mail in your mail client, but you cannot send mail.

Solution: This is a very common problem, compounded by the fact that many ISPs frequently change their outgoing mail settings. There are three things you can do.

First, check that your settings are correct—the outgoing mail server address, and see whether authentication is needed for the outgoing mail. You might think you have the settings right, but since ISPs can change the settings, you might have to call customer service and verify again.

Second, experiment a little. The customer service person may not know the settings, for instance, he or she may not know that outgoing mail server authentication is needed. Ensure that the e-mail address you typed is the one your ISP assigned to you, and see if it works.

And third, if you’re positive that your settings are right, then try to receive your mail first, and send immediately after that. This often works! ☐

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Windows XP

Hide Users On The Welcome Screen

When you add an account for certain users in Windows XP, their user names appear on the Welcome Screen. Sometimes a user needs to be added to a computer because they need access via a network to resources on the machine, but he or she will not be physically logging in to the computer.

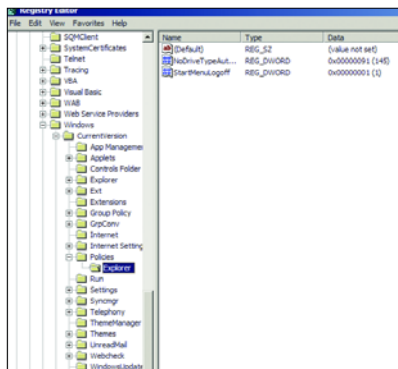
In such cases, you can remove his or her name from the Welcome Screen, while keeping the user account.

To do this, open the Registry Editor, go to HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Winlogon\SpecialAccounts\UserList\ Right-click in the empty space in the right pane and create a new DWORD Value. Name this new value 'Username' and enter '0' as the data value.

If you want to enable this user again on the Welcome Screen, either double-click the 'Username' value and change the Value Data to '1', or delete the value.

Remove 'Logoff' From The Start Menu

You might want to remove the 'Logoff' button from the Start Menu if you never use it. This involves a registry tweak. Go to the Start Menu, click 'Run', and type in "regedit". This will take you to the Registry Editor. (In all the tips that follow, we won't again mention how to start the Registry Editor.)



Remove 'Logoff' from the Start Menu

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Go to HKEY_CURRENT_USER\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\Explorer. Right-click in the right pane and create a new DWORD value. Name this value 'StartMenuLogoff'. Give it a value of '1' and restart your computer. 'Logoff' will no longer be visible in the Start Menu.

Bypass The Recycle Bin When Deleting Files

Right-click on the Recycle Bin and choose 'Properties'. In the 'Global' tab, check the box that says "Do not move files to the Recycle Bin...." That's it. No more taking out the garbage!

Get Rid Of The Recycle Bin

XP offers you a very clean desktop. Clearing it up is fairly simple; however, there's one item that sticks out like a sore thumb on your otherwise clean desktop—the Recycle Bin. You cannot get rid of it by just deleting it or through any menu options. Deleting it from your desktop needs a Registry tweak.

In the Registry Editor, delete the following key: HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Explorer\Desktop\NameSpace\{645FF040-5081-101B-9F08-00AA002F954E}

Restart your computer. The Recycle Bin will no longer be on your desktop.

Alternatively, instead of deleting the aforementioned key, you can change the value for {645FF040-5081-101B-9F08-00AA002F954E} to '1' at HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Explorer\HideDesktopIcons\NewStartPanel.

So after this, where does all your deleted stuff go? To the Recycle Bin, of course! You've just done away with the icon from your desktop. To delete something from the Recycle Bin, delete it from C:\Recycled or C:\Recycler (the name depends on the file system).

The 'Copy To...' And 'Move To...' Context Options

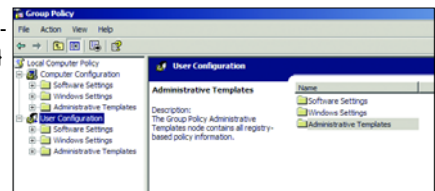
To add the 'Copy to...' and 'Move to...' context menu options, create the following Registry keys:

HKEY_CLASSES_ROOT\AllFilesystemObjects\shell\Copy To
HKEY_CLASSES_ROOT\AllFilesystemObjects\shell\Move To
For 'Copy To', set the value to "{C2FBB630-2971-11d1-A18C-00C04FD75D13}", and for 'Move To', set the value to "{C2FBB631-2971-11d1-A18C-00C04FD75D13}". Henceforth, when you right-click on a file or folder, above the 'Send To' option, you'll see the two new options—"Copy To Folder" and "Move To Folder".

Using this, you can copy or move files or directories to other folders.

Add The Administrator To The Welcome Screen

Open the Registry Editor and go to HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Winlogon\SpecialAccounts\UserList\ Here, create a new DWORD value. Name the new value 'Administrator'. Double-click this new value and enter '1' as Value Data. The new



An 'Administrator' icon in the Welcome Screen

user will be created on restart.


Get Rid Of Unwanted Items In "Open With..."

Ever wondered what help Internet Explorer could be when you want to watch a video file? But when you right-click any file, you're likely to see an option called 'Open With', which lists several available programs on your computer to open the file with. To clear up this list of unwanted items, or to remove useless associations like the one mentioned above, start the Registry Editor and navigate to HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Explorer\FileExts Under this, find the extension you wish to edit

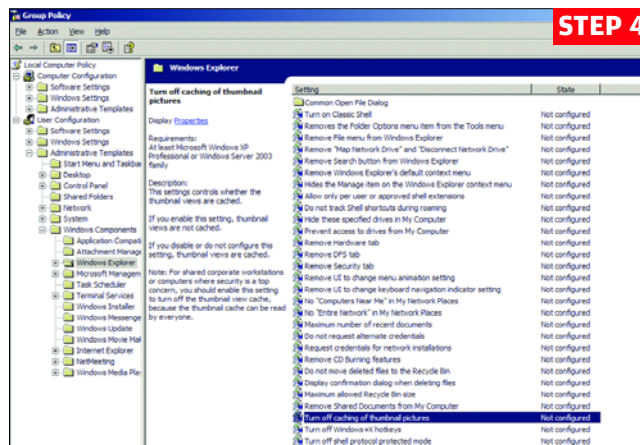
and click on the '+' sign to locate the key that says "OpenWithList". In the right pane, you'll see a list with the programs in the list, like 'explorer.exe' or 'notepad.exe'. Simply select the option you want to discard and delete it.

If you inadvertently remove an entry that you would need, you needn't fret; when you right-click a file there will be an option in the "Open With" extension that will let you choose any program on your computer to open the file. Once used, the option will reappear in the list of associated programs.

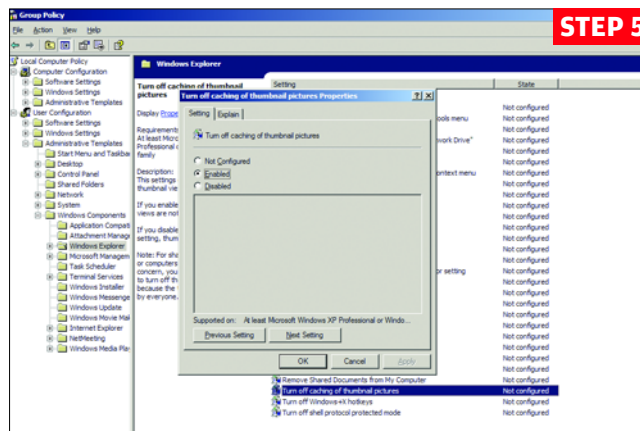
Turn off Thumbs.db

 Thumbs.db are files which are created in a folder with movies or pictures in them so you can view a piece of their content without actually opening them. In a nutshell, it is an option that allows you to have a thumbnail view of your files. This file makes sure you don't have to reload a thumbnail every time you browse a particular folder.

If you edit a lot of stuff on your machine, it could become a tad annoying to see them pop up in all your



Right-click on 'Turn off thumbnail pictures'



After the right-click, select 'Enable' from the radio buttons in the menu


image and movie folders.

Getting rid of this file is easy. Go to Start > Run, and type in "gpedit.msc". Click 'OK', and the Group Policy Editor will open. Go to User Configuration > Administrative Template > Windows Components > Windows Explorer. A rather long list will show up in the menu on the right. Double-click 'Turn off caching of thumbnail pictures'. Enabling this will do your job—no more Thumbs.db in your folders!

The above solution works for XP Pro users. Users with XP Home Edition will need to select Control Panel > Folder Options > View > Do Not Cache Thumbnails.


A point to note is that disabling thumbnail caching will slow down opening folders in thumbnail view.

Select The Theme And Colour Scheme For The Welcome Screen

 With this tweak, you'll be able to modify which colour selection of the


default theme shows up when your computer's startup screen is displayed. Start the Registry Editor and navigate to HKEY_USERS\ .DEFAULT\Software\Microsoft\Windows\CurrentVersion\ThemeManager, and locate the key 'ColorName'. Change its value from 'NormalColor' to 'Metallic'. Exit the Registry Editor and restart your computer. Your new colour scheme will come into effect! Of course, to go back to the old colour scheme, just change 'Metallic' back to 'NormalColor'.

Enable ClearType In The Welcome Screen

 Microsoft ClearType technology greatly increases clarity of text on laptop LCD screens. By default, this feature does not start until after you log on. But with this tweak, you'll be able to make it start just as Windows loads, so it will be enabled on the Welcome screen.


Start the Registry Editor and go to HKEY_USERS\ .DEFAULT\Control Panel\Desktop. Locate the key 'FontSmoothingType' and change its value to '2'.

Get Rid Of The 'Go' Button

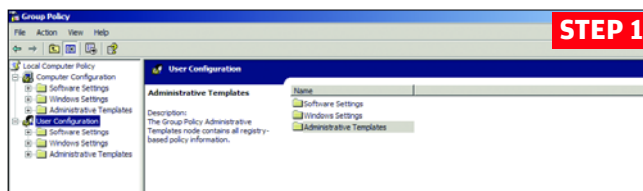
 When you add the address bar to the taskbar, or even the one in Internet Explorer, you can turn off the 'Address' button by right-clicking on the bar and de-selecting 'Show Title'.

However, to get rid of the 'Go' button, you have to do the following: Start Internet Explorer, click Tools > Internet Options, and select the 'Advanced' tab. Scroll down the list of options until you find the 'Show Go Button in Address Bar' checkbox. De-select it and you're done.

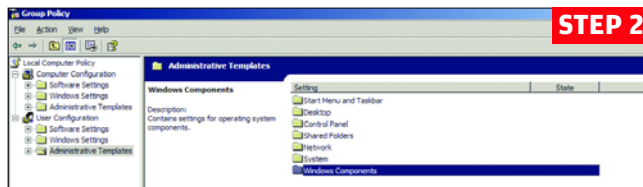
Turn Off System Restore

 XP includes the System Restore utility, which can help you roll your computer back to a pre-defined point in time, removing all changes made to the system since that point.

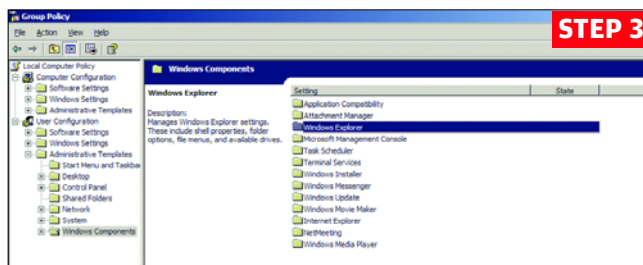
This can be an extremely useful feature for rescuing your PC from viruses or problems with faulty



To turn off Thumbs.db, start with 'gpedit.msc'—the Group Policy Editor



Select 'Windows Components'



Select 'Windows Explorer'



Create Your Own 'Best Of' Playing Moments

Revisit your craziest or most unbelievable gameplay antics!

Anup Nair

There has often been a need to capture a gaming moment as you play it. It is also important that the procedure doesn't involve installation of new hardware. The reasons could be manifold, including showing off your gaming skills, or showcasing a demo like we do on our DVD/CD.

GameCam is one such software—it's shareware—that enables real-time recording of a game (for DirectX 7, 8, 9 and OpenGL games) with incredible ease. The videos are stored in MPEG-4 format (.avi). Audio is available only when you purchase the software—it's \$24.95 (Rs 1,100). Capturing screenshots as JPEGs is also possible.

Recommended system requirements are Windows XP, a DirectX-compliant video accelerator card with 32 MB or more of onboard memory, 32 MB of RAM in addition to the game's requirements, and a 1GHz (or above) CPU.

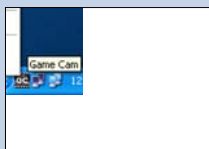
STEP 1 Download And Installation

GameCam v1.2 is available at www.gamershell.com/news/13956.html. Run the setup file and follow the simple installation procedure until you're prompted to install the Windows Media Player codec. This step is not crucial, as your PC may already have a few of them installed and you may want to skip this installation. But it's recommended that you continue to install the codec.

As Windows Media Component installation begins, remember to choose 'Upgrade newer components only'. In later steps, you will be prompted to choose the required components for installation.

STEP 2 Setting Up A Profile And Changing Preferences

Access GameCam through the Start Menu, right-click the icon that now appears in system tray to view a pop-up menu with the following options: Profile Manager, Preferences, Launch, Register,



Access settings from the GameCam icon in the system tray

About and Close GameCam. Of the above-mentioned options, only Profile Manager and Preferences help us set the GameCam.

In the Profile Manager, a game's executable file can be added as a profile by clicking on the 'New Profile' button.

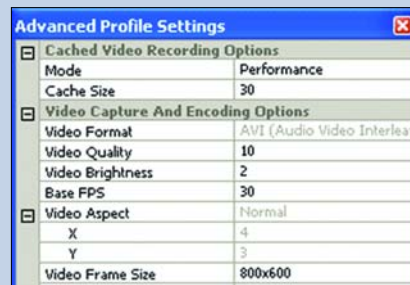


The Profile Manager, with the various audio and video capture options

A profile can be renamed as you like, leaving the 'target path' intact. Repeat this step to add more profiles (games). A slider is provided just beside the profile list to adjust the quality of video capture.

'Hot Keys' settings can be viewed by clicking on its button which is placed just next to the video quality slider. [R] is the default hotkey for video recording. It is recommended to change this since some games will need the key when playing.

Click on the 'Advanced' button to open 'Advanced Profile Settings' that displays GameCam's basic settings. If the version is not registered, some of the options are disabled. For instance, video format is restricted to AVI although the registered version can also record in WMV format. Video Quality, Base fps (frames per second)



Review the default settings and change them if need be

and video frame size can be changed to your liking.

CVR (Cached Video Recording) allows you to record a particular victorious moment or classy gameplay while recording is On. It is a timed recording, by which you can view that unbelievable gameplay as a separate recording, saving you the trouble of searching through a big game video.

Right-click the system tray icon for GameCam and choose 'Preferences' to modify the path to which the recordings are to be stored.

To change the directories for 'Videos' and 'Screenshots', click their respective buttons.

Videos and screenshots for games will be stored in separate folders making them easier to find.

STEP 3 Playing And Recording

To start playing and recording, return to the system tray icon of GameCam and use the left-click to view the game profile list. Choose the game you want to play from this list.

GameCam will load the game and also provide a preview window at the bottom right of the screen. The preview window helps you keep track of recording and other settings such as audio On/Off and the fps. Use the hotkeys to start and stop recording, to enable CVR and to capture screenshots without affecting the gameplay.

If you can't recollect the hotkeys, just hit [F1] key to view them.



A preview window appears at the bottom of the screen. [F1] shows the hotkeys

To capture game video or a screenshot using GameCam, you must run the game through GameCam only.

There you go... you're all set to display your victorious moments of how you fragged your friend in a multiplayer match-up. Show your competitors your mettle! ☑

anup_nair@thinkdigit.com

software, but it also eats up a large amount of disk space.

As the default setting, System Restore reserves a huge 12 per cent of each drive for itself. You can reduce this amount by cutting back on the number of restore points the utility sets for itself. You can also turn off the feature if you wish to.

To adjust the System Restore settings, right-click 'My Computer' and select 'Properties'. Choose the 'System Restore' tab.

To disable System Restore, simply check the 'Turn off system restore on all drives' box. Otherwise, highlight a drive and click 'Settings.'

Using the slider, you can set how much space on the drive System Restore will use for its restore points.

Decreasing this number will limit some of your flexibility in restoring your system should it be necessary, but reducing the amount down to about five per cent should still be safe enough for anyone with an 80 GB hard drive.

Click 'OK' when you're done. Remember to choose 5 per cent if you're unsure.

Delete Unwanted Screensavers

Windows XP comes bundled with a number of annoying and/or useless screensavers. There's no menu that helps delete them.

To delete these, go to C:\Windows\System32\dllicache. This is a hidden folder, so you'll need to type the name

Bet You Didn't Know

Cleaning Out The Prefetch Folder

XP uses a system called 'prefetching' to organise and preload some of the data necessary for commonly-used applications and files.

A folder called 'Prefetch' is used to store the information XP needs to carry out this operation. After several months, the 'Prefetch' folder may become overloaded with references to files longer in use.

It's a good idea to manually empty the older files out of the 'Prefetch' folder every few months or so. To do this, go to 'C:\Windows\Prefetch' and delete all the .PF files that are older than a week or two.

out in the address bar, or 'run' it from the Start Menu. Once there, delete the screensavers you want to discard. (If you have lots of files in this folder, you can locate screensavers by looking for .scr files.)

Note that deleting these files from the System32 folder does not help—they will reappear!

Altering The Page File

Page files are one or more areas of your hard disks that XP reserves for virtual memory. Put simply, these reserved areas are used to contain data that may spill over from main memory.

Virtual memory is

accessed by Windows just like physical memory, but is many times slower because of the much slower speed of hard drive data transfer as compared to RAM.

XP actually uses the page files continuously, regardless of the amount of free memory on your system, so optimising these files can have a positive effect on your computer's performance.

To optimise the page file(s), the following are a few options you can consider:

The NTFS File System

The NTFS file system, introduced with first version of Windows NT, is a completely different file system from FAT. It provides for greatly increased security, file-by-file compression, quotas, and even encryption. It is the default file system for new installations of Windows XP, and if you're doing an upgrade from a previous version of Windows, you'll be asked if you want to convert your existing file systems to NTFS.

Page File Placement

Since page files require disk access to write and retrieve information, putting them on the same drive as the operating system can compromise the performance of both.

Since most systems contain only a single hard drive, this is not usually something that can be changed. But if your system has more than one hard disk, consider placing the page file on the non-OS disk and

removing the one on the disk that has the OS.

To do this, right-click 'My Computer' and select 'Properties', then the 'Advanced' tab. In the 'Performance' section, click 'Settings', then select the 'Advanced' tab. In the 'Virtual Memory' section, click 'Change.' From here, you can choose individual drives and customise the size of the page files you wish to create.

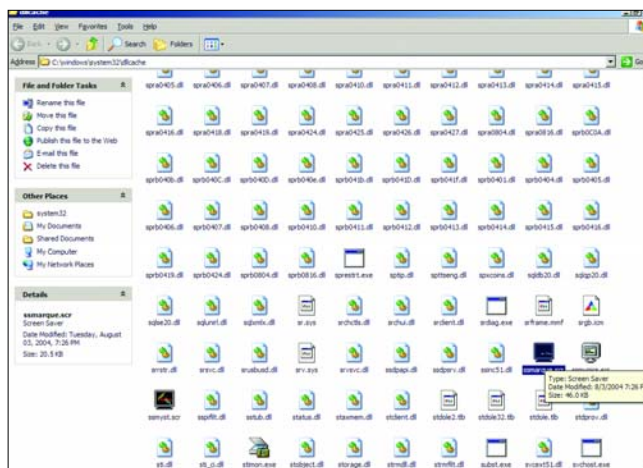
Set Priorities For Individual Programs

If you regularly multitask while working with some applications requiring more memory than others to work effectively (for example, using Photoshop along with Word or other less demanding programs), you may consider setting custom priorities for applications that use more memory.

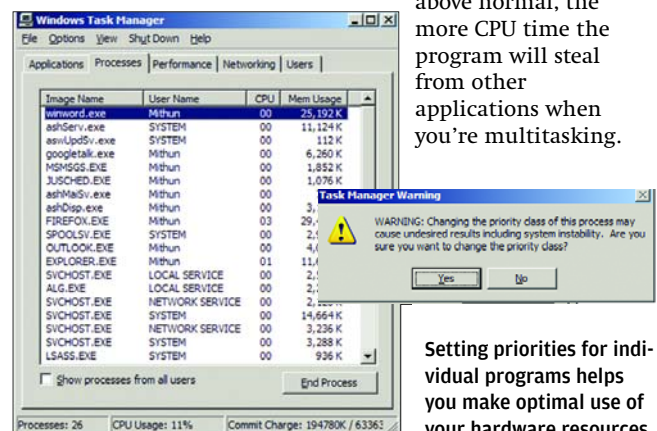
Priority is how the OS determines how to share processor time among applications. Most applications default to normal priority, so by setting your high-demand applications to a higher priority, you can increase its performance when multitasking.

To do this, load the program you wish to change the priority for, and press [Ctrl] + [Alt] + [Del] to bring up the Task Manager. Select the 'Applications' tab and highlight your program. Right-click the program and select 'Go to process.'

Now right-click on the highlighted process, and choose 'Set priority'. The higher you set the priority above normal, the more CPU time the program will steal from other applications when you're multitasking.




Just delete the screensavers you don't want



Setting priorities for individual programs helps you make optimal use of your hardware resources


The Page File Size

 By default, page files are created with a starting size and a maximum size. These values allow Windows to resize the paging file as the system's need grows. It is more efficient to set an identical starting and max value so resources are not wasted by resizing a file.

To do this, choose 'Custom Size' for each page file, and set the initial and maximum sizes as identical.

As for what size to set them at, the best bet is to leave them at or slightly below the default 'Maximum' setting the system assigned, with a ceiling of 1 GB. This will be the amount of space reserved for the file, regardless of its current size. If you're creating multiple page files, split the amount between them.

Clean Up Unwanted Startup Programs

 Several programs run automatically when you turn on your system, and the number of such programs grows as you keep using your computer.

This leads to a gradual reduction in startup speed. Also, having programs that you only use selectively—or not at all—load automatically is a waste of resources.

To top it all, spyware, viruses and Trojans install themselves into the automatic start locations to ensure they run at startup.

To prevent the slowing down of your machine, you must take a look at the software that loads every time you start your PC, and disable what you don't need or can't identify.

The process is simple. Go to **Start Menu > Programs > Startup**. This is the directory XP uses to launch application shortcuts on bootup. If you remove the shortcuts from this directory, the apps will not load on startup.


This directory can also be a repository for spyware and viruses, so if there are files here that are not shortcuts and you don't recognise them, you should consider

removing them, as Windows will not place critical files in this directory.

The other way to remove unnecessary startup files is via the handy 'msconfig' utility. To use it, go to **Start > Run** and type in "msconfig". The 'Startup' tab in msconfig provides access to several other applications that start up at bootup and run in the background. By examining their filenames and directories, you should be able to get a feel of what is necessary and what is not.

Another method for removing programs from startup is through the programs themselves; many applications, such as MSN Messenger, offer the option of not starting at bootup.

Disable The Disk Performance Counter


 XP contains an inbuilt performance monitor that examines various areas of your system. This information can be called up using the performance monitor application, found in **Control Panel > Administrative Tools**. Most of us have little interest in this sort of performance statistics monitoring, that being more the territory of system administrators.

XP, however, is still monitoring away, and some of its observation tools use a considerable amount of resources. Disk monitoring is an example of this, and it's a good idea to turn the disk monitors off if you are not

planning on using the performance monitor app.

To disable the performance counter, go to **Start > Run**, type in "cmd", and type in "diskperf -N". This does away with the unnecessary monitoring that eats up valuable resources. To turn it back on, all you need to do is go back to the command prompt and type in "diskperf -Y".


Check And Set DMA Mode

 XP occasionally sets IDE hard drives and CD drives to the PIO transfer mode by default, which is slower than the standard DMA (Direct Memory Access) mode used by modern drives. To make sure your machine has not been slowed down, it makes sense to check your drive settings.

To check your drives, right-click 'My Computer' and select 'Properties', then 'Hardware' and then 'Device Manager'. Expand 'IDE ATA/ATAPI controllers'. Highlight 'Primary IDE channel' and click 'Properties'.

Go to the 'Advanced Settings' tab, and ensure the transfer mode is set to 'DMA if available'. Repeat these steps for the secondary IDE channel.

Mount A Hard Disk As A Folder In The C: Drive

 This tip works for any partition of any NTFS formatted drive except the partition with the Windows system files on it.

Windows XP, like Windows 2000 before it, allows you to 'mount' drives as folders in a pre-existing logical drive. So if your computer has a 20 GB disk formatted as a single partition and volume (drive C:), you could purchase a second drive, partition and format it through the Disk Manager, and then instead of giving it its own drive letter, add it to your C: drive as a directory.

Any files added to that directory would, of course, be stored on the new disk.

This can come in handy—certain applications such as databases are extremely large, but may not support storing data on a logically separate drive.

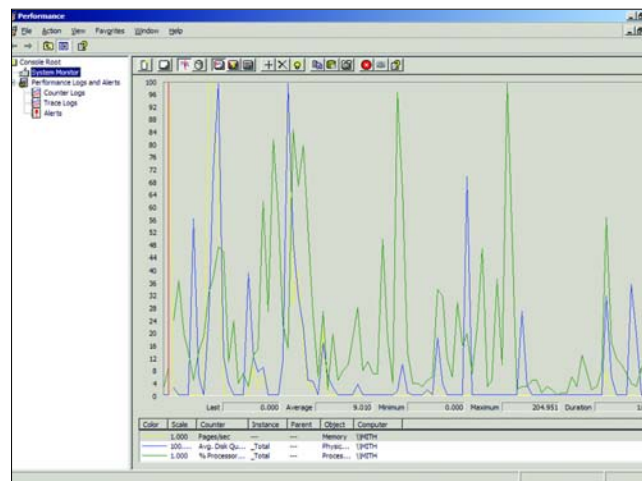
As far as Windows is concerned, a drive mounted as a directory is just a directory. This can also cut down on storage confusion and it's easy to do, though it can only be done with NTFS-formatted partitions.

Also, obviously, the boot partition cannot be used this way, although other partitions can be added to the boot partition.

If you have installed software on a partition you plan to mount as a directory, it is best to uninstall and reinstall it, since the move may stop the software from working correctly. Windows will warn you about this.

To mount a partition as a directory, go to **Control Panel > Administrative Tools > Computer Management > Storage > Disk Management**. Then right-click on the partition you wish to mount as a directory in the lower pane of the graphical partition window. Select 'Change drive letter and paths...' Remove the current option (if any), then click 'Add'. Choose 'Mount in the following empty NTFS folder', browse to the desired volume, and add a directory for your drive. Click 'OK'.

If you wish to return things to the way they were, simply repeat the



XP continuously monitors your hard disk performance!



Watch DVD Movies On Your Pocket PC

A Windows Mobile-powered PDA phone lets you watch movies

Deepak Dhingra

With the increasing popularity of Windows Mobile devices and the emergence of brands such as O2, Krome, and Imate, users are now opting for high-end handhelds and PDA phones running the Windows platform. Apart from the ease of use, this platform enjoys great third-party application support, and there is a whole range of software available in various categories.

There must have been times when you wanted to do more on your Pocket PC... watch a movie, for example. Now you can!

Though there are many software that let you convert DVDs and other video clips for Pocket PC, here we'll tell you about Pocket DVD Wizard—which is probably the easiest way to watch videos on your mobile device. This software also lets you convert videos for other popular mobile platforms such as Palm OS and the Sony Playstation Portable (PSP).

1 STEP Get The Software

Download and install the trial version from www.pocket-dvd-wizard.com/download.html.

The free trial version lets you convert five minutes of a video track to be played on your handheld. The full version can be purchased for \$28.95 (Rs 1,300).

It is also recommended that you install Microsoft Windows Media Encoder. This results in higher-quality output and faster video processing speeds. The above component can be downloaded from <http://snipurl.com/digit301> or <http://snipurl.com/6823>.

2 STEP Getting Started

After the installation is done, you are presented with the main screen. There are two large square buttons displayed. Click on the one on the left if you want to convert DVD video or the right one if you want to convert any other video file format such as AVI, MPEG, or WMV. The two buttons are neatly labelled, so there's no chance of confusion! We chose to convert an MPEG file already stored on the PC.

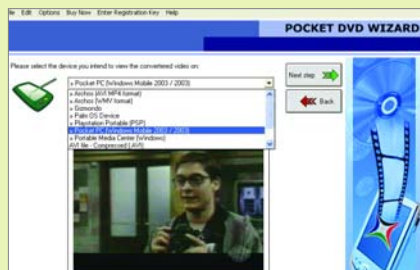


The main Pocket DVD Wizard window

3 STEP Select the Video

After clicking "Select a video file", you can choose the video file you want to convert and, even get a preview in the ensuing window.

From the drop-down list above the preview, you can select the device you intend to view the converted video on.

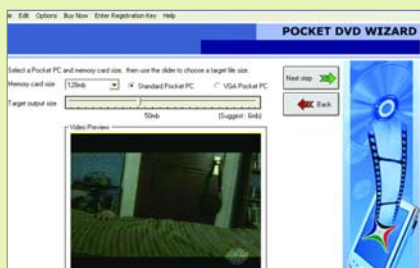


Select the format for your device/platform

Pocket PC is selected by default, but you can choose from other options such as Palm OS, PSP, Archos, and more. Click "Next step" to continue.

4 STEP Preparing To Convert

The next window that pops up lets you set the type of Pocket PC device you have and the approximate size for the output file. Select either 'Standard Pocket PC' or 'VGA Pocket PC' depending on the type of device you have.



Select the target output size

Click on the drop-down to choose the size of the memory card you have—options available are 128 MB, 256 MB, 512 MB and 1 GB or larger.

Next, use the slider under the drop-down to select the target output file size. This would depend on the free memory you have on your memory card. The file size (and therefore the quality) of the output video will be scaled accordingly. Click "Next step" to continue.

5 STEP The Conversion

The next window lets you specify the destination folder where the output will be saved and the name of the converted file. You can change these settings here or continue with the default.

Next, "Start the backup" to begin the conversion process.



Start the conversion

6 STEP Finishing Up

The conversion process will start, and you'll get a message when the file is ready. All you need to do now is copy the converted file to




It's all done!

your Windows Mobile device using Activesync or Bluetooth, and you're set. The file can be played using Windows Media Player, which is already on your device. Enjoy! ☑

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procedure, removing the directory location and choosing a drive letter instead. The data on the drive will be unharmed.

Running Older Software On XP

 XP can be set to mimic various OS environments for a program. If you have a program that simply refuses to work on XP, give this a try: after installing the application, right-click on the exe file or on the shortcut to it, and select 'Properties.' Choose the 'Compatibility' tab. The first section in this window, 'Compatibility mode', covers mimicking various OS environments to try and make your application more comfortable.

You can also set the program to run in 256 colours and/or 640 x 480 resolution, which many older software titles require.

'No To All' When Copying Files

 Have you noticed that XP gives you the 'Yes to all' option in its file copy dialog box, which is useful if you would like to overwrite files in a directory with newer files of the same name from another location, but fails to offer a 'No to all' option for doing the opposite? Annoying, if you think about it.


What if you have a lengthy file copy operation partially finished, and wish to restart it? If you use the default options, you essentially have to recopy every file, since saying 'No' to every duplicate file will take just as long.

Fortunately, there's a way to tell XP not to copy all duplicated files, with a single command.

To do this, when the file copy dialog box appears asking you whether you wish to overwrite the first file, hold down [Shift] and click 'No'. This will automatically answer 'No' for all the files that follow!


Note, however, that XP will ask you again for the first new folder it encounters. Follow the same procedure to answer 'No' automatically for all the folders.

Create A Link To Shut Down Your PC

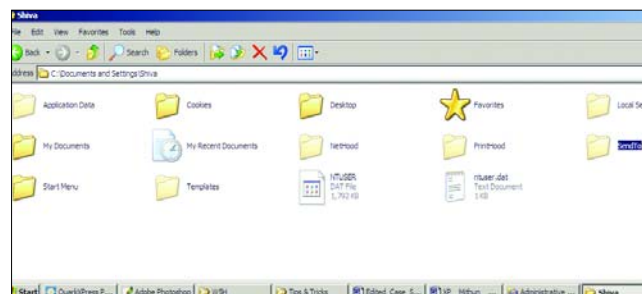
 To create a useful link desktop link to shut down or restart your PC, right-click on an empty area of your desktop, and select **New > Shortcut** to open the 'New Shortcut' wizard.

When prompted for the location of the shortcut, enter "shutdown -s -t 01" to shut down the system, or "shutdown -r -t 01" to restart the system. Name the shortcut and give it an appropriate icon from the '%SystemRoot%\system32\SHL32.dll' location.

Add Items To 'Send To'

 First enable the viewing of hidden files and folders. XP, like previous versions of Windows, has a handy 'Send to' option in the menu that appears when you right-click an icon in Windows Explorer.

By default, this contains only a few options, none of which are particularly useful except for creating shortcuts.



The 'Send to' folder can be viewed only if you choose to view hidden folders and files


However, you can easily add your own destinations to the 'Send to' menu. Very useful if you have a folder you use for backing up files, for example, and you want to periodically move different files or folders to a location.

To add items to the 'Send to' command, navigate to 'C:\Documents and

Settings\Username\Send to'.

Any shortcuts to folders or applications placed in this folder will appear in the 'Send to' option when you right-click an icon.

Block Incoming Attacks Without A Firewall

 Limit your exposure to attacks from the cyber world by blocking incoming connections. Go to **Start > Settings > Control Panel > Network Connections**. Right click on 'Local Area Network' and go to 'Properties'.

In the scroll box, click on 'Internet Protocol (IP/TCP)' and then click 'Properties'; in the new window, click 'Advanced'.

Then in the other new window go to the 'Options' tab, click on 'TCP/IP Filtering' and hit 'Properties'. Uncheck 'Enable TCP/IP filtering (all adapters)'.

Next, in the above 'TCP Ports', check the radio button that reads 'Permit Only', and then add in the ports you want people to be able to access.


This way, you close the ports you don't need. An alternative to this tweak could be running a firewall or enabling Windows' inbuilt firewall.

regarding your surfing habits and are impossible to delete using normal deletion methods. Even deleting your cookies and the history file retains these index.dat files.


To delete them, you'll need to first reboot your computer. Go to the advanced booting options by pressing [F8] or [F5]. You'd now need to choose 'Safe mode with command prompt'; log in as Administrator and then delete these files.

You delete them by going to the root and typing in "del index.dat /s". This will delete all the 'index.dat' files on your computer.

Convert FAT32 Partitions To NTFS

 To change from a FAT 32 to NTFS file system for more stability, security and less fragmentation, open the command prompt and type in "convert C:/FS:NTFS", with C being the drive you wish to convert. Make sure there's a space between the "C:" and the forward slash. Once you press [Enter], it will ask you for a confirmation; press [Y]. Then press [Y] and [Enter] once more to reboot. This works for all versions of Windows XP.

Decrease System Loading Time By Changing Your Network Settings


 When you start up your computer while you are connected to a LAN, and your computer is set to DHCP, it has to search for the DHCP server and then request an IP address and all other configurations.

This process takes some time and slows down the time it takes to boot the computer up. Following the directions below will help you set a static IP address.

Even if your ISP asks you to use DHCP this tweak may still work for you. Go to **Start > Run**, type in "cmd" and click OK.

At the DOS prompt, type in "ipconfig". This will show you the current IP addresses that your NIC and PPPoE adapters have. Take note of

Completely Remove Index.dat

 Index.dat files store all the information

your Ethernet Card Adapter, not the PPP adapter.

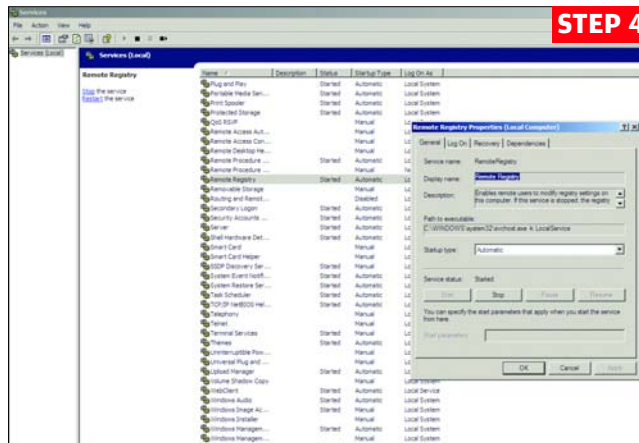
Next, right-click on My Network Places and select 'Properties' from the drop-down menu. This will open up the Network Connections window. Here, locate your Local Area Network connection and right click it, select 'Properties' from the drop down menu. In the next window, select Internet Protocol (TCP/IP) and click on 'Properties' at the bottom. In the next window, and click on 'Use the following IP Address'.

This is where that DOS window comes in handy. Copy the same exact IP address from your Ethernet card (in the DOS window) and place it where it says 'IP Address'.

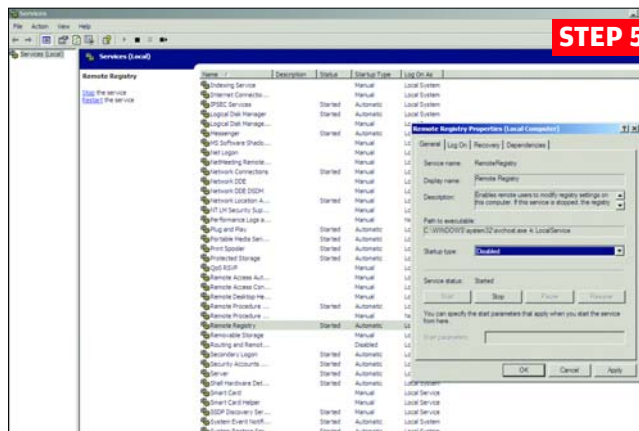
The same goes for the Subnet Mask and Default Gateway. If your Default Gateway is blank, then just leave it blank. In the DOS window, type in "exit", then hit [Enter] and reboot your system.

Doing Away With Remote Registry Editing

Windows XP lets remote registry editing by



Right-click on it and select 'Properties'



In the 'Startup type' option box, select 'Disable'

Bet You Didn't Know

Fun Toys For XP

PowerToys are additional programs that developers work on after the product has been released to manufacturing, but before the next project has begun. These toys add fun and functionality to the Windows XP experience.

the list on the right. Right-click on it and select 'Modify'.

Change the value to something lower. Note that a setting of '0' is virtually instantaneous, and you might find it difficult to use the Start Menu! So experiment with other settings and settle on a value you're comfortable with. Once you're done, reboot your computer.

Contiguous File Allocation Size

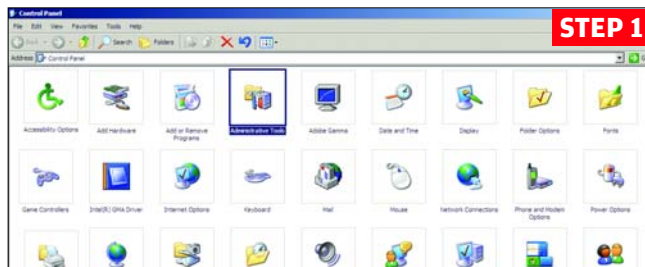
This setting optimises the contiguous file allocation size for the file system, and can be especially useful for disk-intensive applications such as image manipulation, video editing and 3D graphics rendering.

Open up the Registry Editor and go to HKEY_LOCAL_MACHINE\System\CurrentControlSet\Control\FileSystem. Create a DWORD value called 'ConfigFileAllocSize' and set the value to 200 in hexadecimal.

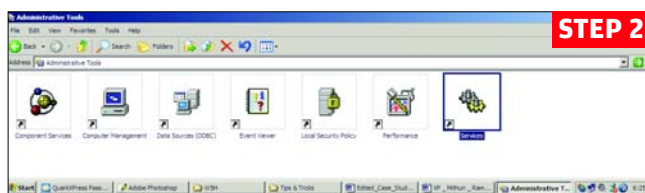
Faster Startup

And at last, a tweak that'll help your PC start up faster. Go to Start > Run, and type in "msconfig". In the Startup tab, click 'Disable All', and in the 'Services' tab, check the 'Hide All Microsoft Service' box and then click 'Disable All'. Restart, and XP will restart with only the system services and applications running.

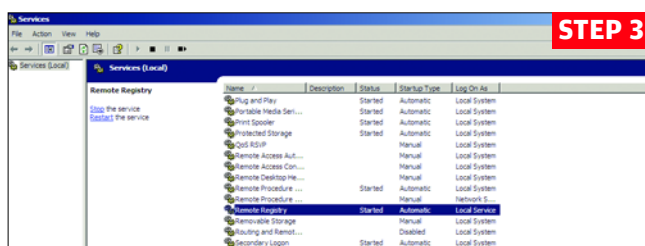
This tweak will disable all non-system startup services and applications so if you have anything you want to run in the background, such as anti-virus software, do not disable that item. ☒



Go to the Control Panel and click on 'Performance and Maintenance'



Select Administrative Tools > Services



On the right panel, find the service called 'Remote Registry'

running a service for it. Below we give you a step-by-step method to disable this security hole:

1. Go to your Control Panel and click on 'Performance and Maintenance'.
2. Select Administrative Tools > Services
3. On the right panel, find the service called "Remote Registry".
4. Right-click on it and select Properties.
5. In the 'Startup Type' option box, select 'Disable'.
6. Reboot your computer.

Speed Up Menu Display

When using the Start Menu, you'll notice a delay between different tiers of the menu hierarchy.

You can make the different tiers appear instantly: start the registry editor. Navigate to HKEY_CURRENT_USER\Control Panel\Desktop, and select 'MenuShowDelay' from

Kingston's Data Traveller II Plus Migo Edition

Working Was Never Easier

Here's an easier way to carry your work—the Kingston Data Traveller II plus migo edition. The concept of this USB 2.0 Flash Drive is to store your PC's settings and then give you the freedom to work on different computers in different locations, using your own machine's Microsoft Outlook contents, Internet Explorer settings, favourites and history, plus your files and folders.

The 'Main Computer' is the primary computer on which you would normally save most of your files and a 'Guest Computer' is any other desktop or laptop that you would temporarily access. The whole idea is to personalise the Guest Computer to look and feel like your Main Computer. All this is possible thanks to the implementation of 'migo'.

Migo helps you synchronise the Main Computer into the Flash drive, and then allows the customising of a Guest Computer to look like your desktop. Migo also saves your Internet Explorer settings, Microsoft Outlook contents, Desktop settings, and of any other file.

Kingston also provides software known as the SecureTraveller, which is a configuration utility program

that works on Windows, allowing users to set up a public and a password protected privacy zone within the Flash drive. The privacy zone is invisible to Windows, and it can only be accessed by entering a password. It therefore provides powerful data security for home and office use.

On the 512 MB version we tested, transfer of 100 MB of assorted files and a single file was timed at 15 seconds and 6 seconds respectively. Results of the SiSoft Sandra test were also positive, with sequential read and write speeds of 26 Mbps and 19 Mbps respectively.

All in all, the DataTraveller II plus is a fast USB Flash drive that offers data-securing capabilities and the option to synchronise your data with any Windows-based machine anywhere in the world.

Company **A A Infoways**

Price **Rs 2500 (for 512 MB)**

Phone **011-26442261**

E-mail **pramod@aainfoways.com**

Web site **www.kingston.com/asia**

Rating



New & Notable

Sony PlayStation2

Gamers Rejoice!

Unlike in most parts of the world, console gaming is still in its infancy in India. It has been limited to Nintendo clones such as the Little Master, which were popular in the early '90s.

With Sony and Microsoft having launched their respective consoles last year, it was time for a change! Since the launch of the PlayStation in the US and Japan back in 2000, Sony has sold an astounding 90 million units.

The PlayStation2 is an incredibly slim-and-slick black box. There's an Ethernet port for games, which supports online multiplayer gaming. It has two memory card slots to save game states and configurations. But Sony's decision to stick with Magic Gate (its proprietary data encryption technology) is irritating, as it prevents you from using any standard memory card format with the console.

The PS2 can even play PS1 games, and doubles up as a CD/DVD player. And the Dolby Digital surround sound support will foil an enemy soldier's attempt to take you by surprise from behind!

At the heart of the PS2 lies the powerful Emotion Engine, a 128-bit CPU with integrated graphics processing capabilities. Sony designed this souped-up rig keeping in mind its primary function of simulating 3D environments. We played a few games on it and were totally floored—menu

backgrounds are incredibly dynamic, simulated fog looks like the real thing, transparency effects are invoked regularly, human faces are life-like, and Batman's cape casts an unearthly shadow.

The PS2's massive game library includes such best-selling titles as *Tony Hawk Pro Skater*,

Grand Theft Auto, *Final Fantasy*,

Burnout and *Metal Gear Solid*. Titles such as the genre-defining *Gran Turismo 4* (700 different cars ranging from Ford Model T to Nissan Skyline, over 50 racetracks, and real-life physics) and the *Katamari Damacy* have catapulted the PS2 to the top of a gamer's wish-list.

Sadly, Sony doesn't include a memory card, a second controller or a game with the package. While the PS2 is available in the US for as low as \$130 (Rs 5,850), it's selling in India for almost double that price. And with the next generation of consoles—the Xbox 360 and the PS3—only months away, this price is not justified.

Company **Milestone Interactive Software Ltd**

Price **Rs 12,990**

Phone **022-2820 3319**

E-mail **sales@milestoneinteractive.com**

Web site **www.sony.com**

Rating



MSI Sky Talk

A Wire-Free Existence

Bluetooth, a feature earlier available only in high-end mobile phones and PDAs, has now made its way to mid-range models as well. More users want Bluetooth-enabled phones to transfer data and images, synchronise contacts and install applications on their devices wirelessly.

MSI Sky Talk is an all-in-one solution for such users. Its Bluetooth headset and USB dongle let you use your Bluetooth phone the way it should be used—*sans* wires. The headset has a main button and volume controls. There are three options to charge the internal rechargeable battery—the power adaptor, the USB cable, and the car adaptor.

A blinking LED on the front indicates various status modes—‘standby’, ‘pairing’, ‘charging’, ‘battery low’, and so on. Once paired, you can accept and reject calls, redial the last dialled number, and even voice-dial (if your phone supports it)—all from the headset itself.

We paired the headset with a few phones and found the device rather decent in terms of voice clarity, range, and battery life. The USB dongle confirms to Bluetooth v1.1. You just need to plug it into a PC or notebook, install the drivers, and voilà—you’re ready to live the wire-free life!

Company **Micro-Star International**

Price **Rs 4,500**

Phone **011-51758808**

E-mail **info@msi-india.com**

Web site **www.msi-india.com**

Rating



Wipro LittleGenius Ultra Slim WLGCPU SL

The LittleGenius WLGCPU SL is part of Wipro’s Ultra Slim range of notebook PCs—it weighs 1.35 kg and is 27 mm thick. Based on the Centrino Mobile technology, it is powered by an Intel Pentium M 1600 MHz processor with 256 MB of DDR RAM. It has a 12.1-inch monitor with a resolution of 1024 x 768. There’s an external combo drive, which, quite unusually, is a top loading drive.

Connectivity options for the WLGCPU SL include three USB 2.0 ports and a high-speed FireWire port.

There’s a slot for PCMCIA Type II cards.

There’s no Bluetooth or infrared, but there is Wi-Fi b+g and a 10/100 LAN with a standard 56 Kbps modem. Its memory card reader supports SD, MS and MMC cards.

In the ZD-Bench Business Winstone 2004 test, it scored 16.4—an ordinary score for a laptop. In the battery life test, it lasted an hour and 34 minutes. Although bundled with Windows XP Professional SP2, eTrust Anti-Virus, Nero Burning ROM and Unistal Data Recovery software, the Rs 84,990 price tag will make buyers think twice.

Company **Wipro Limited**

Price **Rs 84,990**

Phone **1600 3453312**

E-mail **littlegenius@wipro.com**

Web site **www.wipro.co.in**

Rating



Philips PET710 Portable DVD Player

Calling All Movie Buffs!

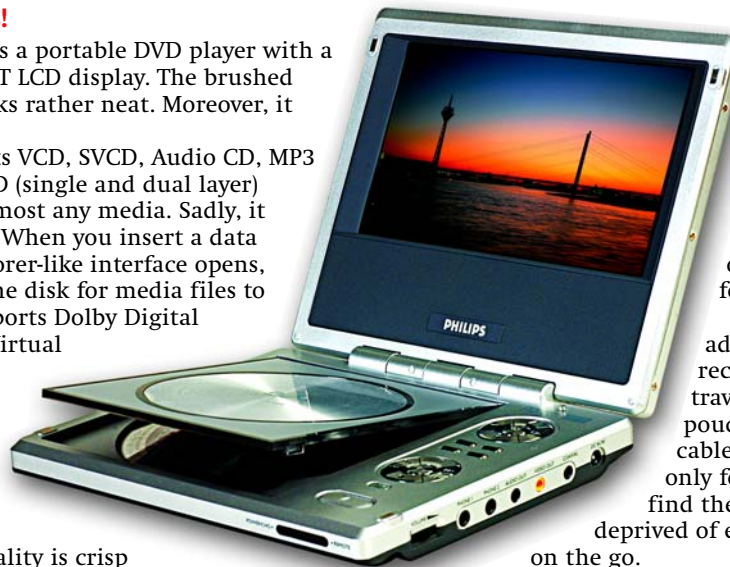
The Philips PET710 is a portable DVD player with a seven-inch wide TFT LCD display. The brushed aluminium finish looks rather neat. Moreover, it weighs just 0.8 kg.

The player supports VCD, SVCD, Audio CD, MP3 CD, Photo CD and DVD (single and dual layer) formats burned on almost any media. Sadly, it doesn’t support DivX. When you insert a data disk, a Windows Explorer-like interface opens, and you can browse the disk for media files to play. Moreover, it supports Dolby Digital audio in addition to Virtual Surround sound.

A full-function remote control is also provided; however, the buttons are a bit too stiff and hard on the fingers.

The LCD image quality is crisp and bright. One thing we noticed is that it is fairly viewable even when used outdoors. The speakers, though, sounded tinny and produced all treble and no bass!

The unit functions as a regular DVD player when connected to a TV with the TV-out and audio-out using the supplied cables. There is even a digital coaxial audio-out, and dual headphone jacks so you can connect two headphones simultaneously.



This DVD player can be powered using the bundled power adaptor or a rechargeable Li-ion battery. When we tested it, the battery lasted three and a half hours, which surpassed the battery life claimed by the manufacturer by a good one hour. More than enough for any movie out there!

The PET710 comes with a car adaptor in case you wish to recharge and view it while travelling. It comes with a leather pouch along with all the necessary cables. Retailing at Rs 19,990, it is only for serious movie buffs who find themselves crippled when deprived of entertainment even when on the go.

Company **Philips Electronics India Limited**

Price **Rs 19,990**

Phone **022-56912000**

E-mail **gautam.dalal@philips.com**

Web site **www.india.philips.com**

Rating



Sony PlayStation Portable

Gaming On The Go!

The moment you hold this marvel in your hands, you're struck by the large screen and glossy black exterior. Measuring 17 x 7.4 x 2.3 cm and weighing just 280 gm, the PSP is a tad bulky and not really convenient for carrying around in your trouser pocket! The screen apart, the front panel sports directional buttons, with an analogue stick on the left and four control buttons on the right.

The tiny stereo speakers are placed at the bottom edges of the screen, but we'd advise you to use the bundled earphones for better audio.

Below the speakers, you'll find smaller buttons for 'Home', volume, screen brightness, 'Sound', 'Select' and 'Start'.

The left and right trigger buttons are placed on either side at the top. Made of clear plastic, they look part of the design, and it takes a while to realise they're buttons!

A power-cum-hold switch is placed on the right whereas the Wi-Fi switch is located on the left of the device. Yes, it has 802.11b wireless integrated, which lets you play multiplayer games with another PSP! You can find the mini-USB connector and an eject button for the UMD slot on the top as well.

Apart from playing games, you can use the PSP to watch videos (MPEG-4 format), view images and listen to MP3s. It has an MS Duo Pro card slot. A 32 MB card is included with the package but is hardly enough to store anything substantial. The memory card is also used to store game



data such as user preferences, saved games and more. The 4.3-inch widescreen LCD can display 16.77 million colours, and is easily the best feature of the device.

The playing experience is amazing and the PSP feels perfectly balanced when held in both hands in the playing position. It also uses the proprietary 1.8GB Universal Media Disk (UMD) on which more games and now, even movies are available. These mini disks are enclosed in a plastic casing inserted in the UMD drive at the top rear. We tried a few sample games including the *Ridge Racer*—its great graphics and immersive soundtrack kept us at it for hours.

The PSP is powered by a user replaceable 1800 mAh Li-ion battery that can be charged using the bundled AC adaptor. You can expect about three hours of continuous gameplay, depending upon the screen brightness and audio levels.

Overall, the PSP is a great device for portable gaming, but does not excel as a multimedia player. The high cost of the device and UMD disks may deter many buyers, except for the hardcore gamers.

Company **Milestone Interactive Software Ltd**

Price **Rs 19,990 (Games on UMD - Rs 2999)**

Phone **022-2820 3319**

E-mail **sales@milestoneinteractive.com**

Web site **www.sony.com**

Rating



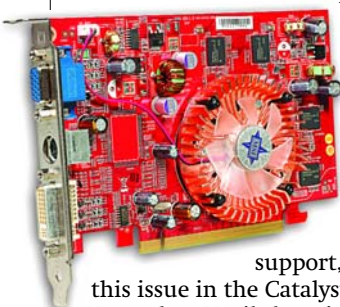
MSI RX1300 Pro 256 MB

Finally, ATi has brought out a graphics card supporting the Shader Model 3.0. The RX1300 Pro is based on the budget-oriented X1300, part of the new 1XK series. Manufactured using the 90 nm fabrication process, it has an entirely new architecture. ATi has implemented Ultra-Threading technology, which distributes the workload efficiently among numerous shaders.

It is CrossFire (a multi-GPU system) ready, just in case your hunger for graphics happens to grow. It also has the AVIVO display platform, which improves video playback quality.

In *Doom 3*, it scored just over half of what a GeForce 6600 scores. In *FarCry*, it came close to the GeForce 6600. But in *3DMark05*, the RX1300 finally outgunned the GeForce 6600, scoring 2,598.

ATi has had weak OpenGL support, but it has promised to address this issue in the Catalyst 5.11 drivers, due for release this November. Until then, it is best to wait and watch if this hot new card will really be the GeForce 6600 killer.



Company **Micro-Star International**

Price **Rs 8,000**

Phone **011-51758808**

E-mail **info@msi-india.com**

Web site **www.msi-india.com**

Rating



ACi Securezza

In The Name Of Security

The Securezza from ACi is a business laptop targeted at the security-conscious. Inside lies an Intel Pentium M 2.0 GHz, 512 MB of 333 MHz DDR RAM, and a 60 GB hard drive.

The 14-inch widescreen display supports 1280 x 768. On the connectivity front, there's high-speed Wi-Fi IEEE 802.11 b+g, a Gigabit LAN port, and integrated Bluetooth. A PCMCIA Type-II slot is present along with a slot for an SD memory card. It also has a fingerprint swipe sensor and a swivel camera!

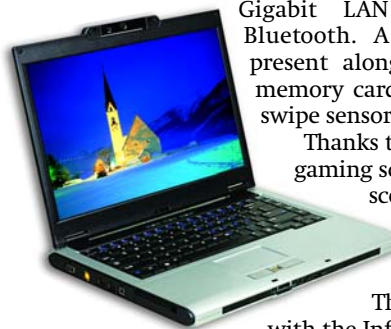
Thanks to the GeForce 6400 Go, the gaming scores were high. It also scored well in ZD-Bench

Business Winstone 2004.

The battery, however, lasted only 98 minutes.

The notebook comes loaded with the Infineon Security Platform

Solution software, a comprehensive toolset that provides additional security to this TCG (Trusted Computing Group) compliant laptop.



Company **Allied Computer International (Asia) Pvt. Ltd.**

Price **Rs 84,999**

Phone **022-56407000**

E-mail **sales@aci-asia.com**

Web site **www.aci-asia.com**

Rating



AMD's Athlon 64 X2 4800+ and Intel's Pentium D 820

Duel Of The Dual-Cores!

We've been talking about dual-core processors for some time now, giving truckloads of *gyan* about how two cores are better than one and how this will usher in a new era in desktop computing. We managed to grab hold of two of these—one each from AMD and Intel—and we put them to the test to see if all the hype is really worth anything.

We would like to make it clear at the outset that although this is not a head-to-head comparison, the Athlon 64 X2 is the best that AMD has to offer. And the Pentium D 820 is the lowest dual-core processor from Intel, and is aimed at the budget-conscious consumer.

The tests we conducted are an indication of the kind of performance that can be expected from these processors. First of all, though, we will shed a little light on what lies inside each of the CPUs.

The Athlon 64 X2 4800+ is a 939-pin processor and is fabricated using the 90 nm technology. It is clocked at 2.4 GHz and has 1024 KB of L2 cache. It fits on any existing Socket 939 motherboard, though a BIOS update might sometimes be necessary.

The X2 4800+ is essentially two K8 cores of Athlon 64 4000+ processors on a single chip and hence, a model number increment of just 800 might seem a bit too conservative.

It has all the popular instruction sets such as MMX, 3DNow!, SSE, SSE2 and SSE3 (it has all SSE3 instructions except those pertaining to HyperThreading, an Intel-specific feature). The SSE3 has been incorporated into the Athlon 64 line since the revision E3 or the Venice core.

Intel's Pentium D 820 is an LGA 775 processor and is also an 90 nm part. It runs at 2.8 GHz and has a L2 cache of 1 MB. It fits on almost any LGA 775 motherboard, but this particular model has some issues with the nForce4 chipset. The Pentium D 820, based on the Smithfield core, is in fact two Prescott cores on a single chip.

These are the same as two Pentium IV Extreme Edition CPUs stuck together. The only difference is that these cores are not HyperThreaded, which means that each core runs a single thread.

Unlike the 820, the Pentium Extreme Edition 840 has two HyperThreaded cores which translate to four threads running at the same time. It is needless to add that both processors have 64-bit architecture and native support for 64-bit operating systems as well as applications.

To run the benchmarks, the Athlon 64 X2 was mounted on a motherboard with NVIDIA nForce4 Ultra chipset with 1 GB DDR RAM whereas the Pentium D 820 was mounted on an Intel 955X based motherboard with 1 GB DDR2 RAM. All other components were the same.

In the gaming tests which included *Doom 3* and *FarCry*, the X2, along with the GeForce GT, scored fluid frame rates while in 3DMark05, the X2 scored 6,792 CPU marks. This means that the X2 will be definitely get you closer to gaming nirvana!

In the CineBench 2003 test, where we evaluate multi-threaded 3D rendering, the result was no different with the X2. This proved that the X2 has raw strength to efficiently handle 3D applications such as AutoCAD, Maya and so on.

In the number crunching benchmarks from ScienceMark, SiSoft Sandra and Everest, the X2 proved its mettle by racing ahead of every processor we had tested so far, proving its supremacy in computational power. Finally, in the Multimedia Content Creation benchmark, the X2 scored a huge 38.8, the highest so far, which shows that it is well suited to handling multimedia applications like 3D Studio Max and Adobe Premiere to name a couple.

On the Intel front, the Pentium D 820 was no wimp, and it scored frame rates good enough for most

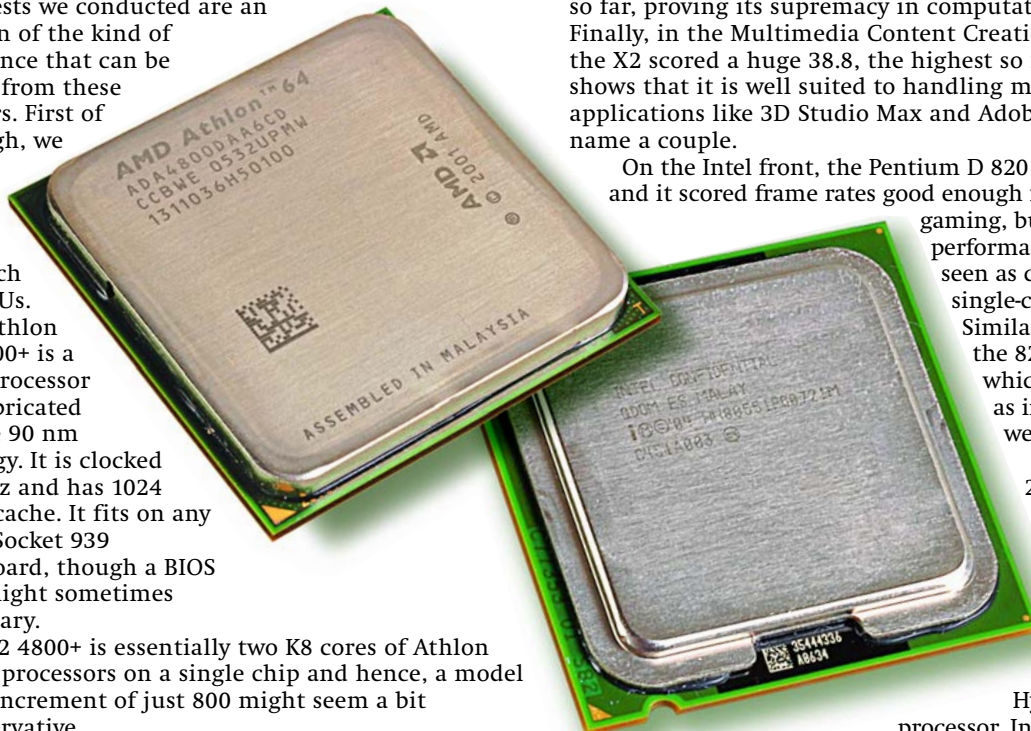
gaming, but not much performance gain was seen as compared to its single-core counterpart. Similarly in 3DMark, the 820 scored 5,385, which again, was not as impressive as we'd hoped.

In CineBench 2003, the 820 once again performed slightly better than a normal

HyperThreaded processor. In the number crunching benchmarks, though, it was ahead of the single-core Pentium IV by a comfortable margin. In the Multimedia Content Creation test, it scored 27.9, which is just a little better than the P IV.

The Athlon 64 X2 4800+ is the highest offering from AMD, and is in direct competition with the Intel Pentium Extreme Edition 840. On the other hand, the Pentium D 820 is in a strange three-way-fight against the lower priced Athlon 64 X2 4200+ as well as the single core Athlon 64 4000+, and it is a little unfair to compare it with the monster that the Athlon 64 X2 4800+ is.

Currently, only the price is in the favour of the Intel Pentium D 820: its AMD counterpart is much more expensive. If AMD doesn't lower the prices of its low-end dual-core processors, budget-conscious enthusiasts will be forced to buy the mediocre but affordable Intel Pentium D 820.



AMD Athlon 64x2 4800

Company **AMD Far East Ltd (India)**
Phone **080-51372400**
Web site **www.amd.com**

Intel Pentium D820

Company **Intel Technology India Pvt Ltd**
Phone **080-25075000**
Web site **www.intel.com**

Motherboards

Gigabyte 8 Sigma Series GA-K8NXP-SLI

- ⊕ Top class performance, SLI
- ⊖ Expensive

Contact Gigabyte Technology
Phone 022-26526696
E-mail sales@gigabyte.in
Price Rs 12,300



MSI P4N Diamond

- ⊕ Good performance, SLI, Creative Soundblaster Live! 24-bit on-board
- ⊖ Very expensive

Contact Micro-Star International
Phone 011-51758808
E-mail info@msi-india.com
Price Rs 17,500



Graphics cards (High End)

XFX GeForce 7800 GTX 256 MB

- ⊕ Extreme performance, great price, exotic features
- ⊖ None

Contact Rashi Peripherals
Phone 022-28221013
E-mail navinderc@rptechindia.com
Price Rs 35,000



Hard drive based MP3 Player

Samsung YH-J70

- ⊕ Good audio quality, video playback
- ⊖ Average bundled earphones

Contact Samsung India Electronics Ltd.
Phone 011-51511234
E-mail subrotah.b@samsung.com
Price Rs 22,900

PDA Phones

02 XDA II Mini

- ⊕ Small, thin and pocketable
- ⊖ One-handed operation not possible

Contact Creative e-biz
Phone 022-23828100
E-mail creative@goldkist.net
Price Rs 32,000

Cell Phones

Sony Ericsson W800i

- ⊕ Feature rich and fast phone
- ⊖ Can do with better colour combination

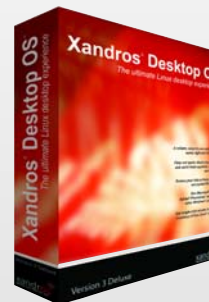
Contact Sony-Ericsson India
Phone 124-2560808
E-mail dhiraj.soni@sonyericsson.com
Price Rs 24,999



Linux

Xandros Desktop OS 3

- ⊕ Simple to use
 - ⊖ Paid
- Contact G.T. Enterprise
Phone 080-2669 5890/91/92/93/94
E-mail gtcdrom@vsnl.com
Price Rs 3,914



SuSe 9.3 Linux Professional

- ⊕ Up-to-date software bundling
- ⊖ None

Contact G.T. Enterprise
Phone 080-2669 5890/91/92/93/94
E-mail gtcdrom@vsnl.com
Price Rs 4,398



The A-List



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

Graphics Cards (Low End)

Gainward GeForce 6200 256 MB

- ⊕ Good performance, Shader Model 3.0 support, good value for money
- ⊖ None

Contact Mediatech India
Phone 022-26361111
E-mail digit@mediatechindia.com
Price Rs 3,950

Graphics Cards (Mid Range)

XFX GeForce 6600GT 256 MB

- ⊕ Great performance, good features
- ⊖ High price

Contact Rashi Peripherals
Phone 022-28221013
E-mail navinderc@rptechindia.com
Price Rs 15,000



Flash based MP3 Player

Samsung YP-T8

- ⊕ Feature packed, video playback
- ⊖ Average bundled earphones

Contact Samsung India Electronics Ltd.
Phone 011-51511234
E-mail subrotah.b@samsung.com
Price Rs 14,900



YES YMP-910

- ⊕ Excellent audio performance, extra features
- ⊖ Average quality earphones

Contact Thakral Computers
Phone 022-24914090
E-mail prashantgoel88@gmail.com
Price Rs 7,640

CRT Monitors (17-inch)

Acer AC715

- ⊕ High resolution of 1600 x 1200 @ 75 Hz, good reproduction of finer details
- ⊖ None

Contact Acer India Pvt.Ltd.
Phone 080-5219520
E-mail rajesh.aiyar@acer.co.in
Price Rs 6,995

CRT Monitors (19-inch)

Samsung SyncMaster 997DF

- ⊕ Good colour reproduction, compact
- ⊖ None

Contact Samsung India Electronics Ltd.
Phone 011-51511234
E-mail marketing@samsungindia.com
Price Rs 13,999



LCD Monitors (15-inch)

Acer AL1512

- ⊕ Very competitively priced, good contrast ratio
- ⊖ No vertical swivel

Contact Acer India Pvt. Ltd
Phone 080- 5219520-23
E-mail rajesh.aiyar@acer.co.in
Price Rs 9,500

LCD Monitors (17-inch)

Acer AL714sm

- ⊕ Light, good greyscale reproduction
- ⊖ None

Contact Acer India Pvt Ltd
Phone : 080-5219520 / 23
E-mail rajesh.aiyar@acer.co.in
Price Rs 14,999



Price Rs 20,9

Hard Disk Drives**Hitachi Deskstar
HDS722525DLA380 250 GB**

- ⊕ Good performance, Feature Tool utility
 - ⊖ None
- Contact Cyberstar Infocomm Ltd.
Phone 080-51266808
E-mail hitachi@cyberstarindia.com
Price Rs 7,500

**Western Digital Caviar SE
WD2500KS 250 GB**

- ⊕ Good performance at decent cost per GB
 - ⊖ None
- Contact Western Digital Corporation
Phone 09321029204
E-mail amarjit.singh@wdc.com
Price Rs 7,500

**Home Inkjet Printers
Pixma iP1000**

- ⊕ Economical; decent photo printing.
- ⊖ No output tray; no PictBridge

Contact Canon India Ltd
Phone 0124-5160000
E-mail www.canon.co.in
Price Rs 3,195

**Office/ Photo Inkjet
Printers****Canon Pixma iP 3000**

- ⊕ Fast, excellent photo and text printing
- ⊖ No LCD

Contact Canon India Ltd.
Phone 0124-5160000
Web site www.canon.co.in
Price Rs 7,495

**Colour Laser Printer
Epson AcuLaser C1100**

- ⊕ Duplex printing, network ready, excellent performance
- ⊖ High Cost per page

Contact Epson India Ltd
Phone 080-3051 5000
E-mail aculaser@eid.epson.co.in
Price Rs 36,500

**Mono Laser MFDs
Canon MF 3110**

- ⊕ High speed, low price
- ⊖ No fax

Contact Canon India Ltd.
Phone 0124-5160000
Web site www.canon.co.in
Price Rs 19,995

**Office Inkjet MFDs
Lexmark X7170**

- ⊕ Full featured MFD, fast printing and copying speeds. decent quality photo prints
- ⊖ No memory card reader; B&W LCD screen

Contact Lexmark India Ltd
Phone 022-26057755
Website www.lexmark.com
Price Rs 14,999

**5.1 Speakers****Artis X10 Mini**

- ⊕ Compact, sturdy, clear sound
- ⊖ Slightly weak bass

Contact Kunhar Peripherals Pvt Ltd
Phone 022-56345758
E-mail salesbom@kunhar.com
Price Rs 13,400

**Digital cameras
(Mid Range)****Sony Cyber-Shot DSC-W5**

- ⊕ Reproduces some great photographs, good features to close the list
- ⊖ Relatively expensive in its class

Contact Sony India Pvt. Ltd.
Phone 011-55006600
E-mail mktginfo@ap.sony.com
Price Rs 18,990

**Digital cameras
(High End)****Sony CyberShot DSC-P200**

- ⊕ Compact, 7 Megapixel performance oriented camera
- ⊖ None

Contact Sony India Pvt. Ltd
Phone : 011-55006600



E-mail mktginfo@ap.sony.com

**Mono Laser Printers
Canon LBP 2900**

- ⊕ Great Performance, price
- ⊖ Lacks Duplex printing and network capabilities.

Contact Canon India Ltd.
Phone 0124-5160000
Web site www.canon.co.in
Price Rs 9,995

**Brother MFC-8440**

- ⊕ Good print and scan quality, Sheetfed and CIS scanner
- ⊖ Low scan speed

Contact Brother International
Phone 022-25797470
Web site www.brother.co.in
Price Rs 35,000

**Brother HL 6050D**

- ⊕ Excellent performance, duplex printing, economical printing
- ⊖ Not Network Ready

Contact Brother International.
Phone 022-25797470
Web site www.brother.co.in
Price Rs 35,100

**Photo Inkjet MFDs
HP PSC 2608**

- ⊕ Inexpensive, excellent and fast text and photo printing
- ⊖ None

Contact Hewlett Packard India Ltd
Phone 0124-2566111
Website www.hp.com
Price Rs 14,999

**Lifestyle Ultra Portable
Laptop****Sony VAIO VGN-S46GP/S**

- ⊕ Good looks, Great performance, excellent LCD display
- ⊖ None

Contact Sony India Pvt Ltd
Phone 011-55006600
E-mail mktginfo@ap.sony.com
Price Rs 99,990

**Lifestyle Workhorse Laptop
Acer Ferrari 4002**

- ⊕ Great looks and flaunt value, great performance
- ⊖ None

Contact Acer India (Pvt)Ltd
Phone 080-25219520
E-mail ailenquiries@acer.co.in
Price Rs 99,999



Q&A

Your Questions, Our Answers

Dual Boot Woes

Q My PC runs two OSes - Windows ME on the C drive and XP SP2 on the D drive. I'd like to change the time for which you can select the default OS or the other one. With my OS combination, I'm not able to find boot.ini. Is there a software to change the setting?

Patel Kinjesh, via e-mail

A To access boot.ini, you need to boot into Windows XP. Go to Start > Run, type in "%systemdrive%/boot.ini" without the quotes, and press [Enter]. The boot.ini file will open in Notepad. You can now edit it; but be aware that messing up with system files such as boot.ini without knowing exactly what you're doing might cause the computer to not boot at all.

Memory Problems

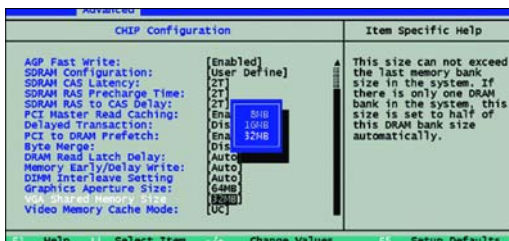
Q I have an Intel Pentium IV 1.70 GHz with 256 MB of RAM and Windows XP Professional SP2. I have the following problems in my system:

- (a) When I add an additional 128 MB of RAM, it becomes $128 + 256 = 384$, but the system keeps restarting.
- (b) I have only 8 MB share of VGA. How can I increase it?

Vibhav V H, via e-mail

A As far as your first problem is concerned, the newer RAM module you installed does not match with the older RAM module, so the system keeps on rebooting. You'll have to get the newer RAM module replaced by a module that is compatible with the older module.

Since you have not mentioned whether you are using onboard graphics or a separate AGP card, we'll provide you with solutions for both alternatives. If you are using onboard graphics, you may be able to increase the shared memory



Set VGA shared memory size in the BIOS

Another year,
another
outstanding
performance

size of the onboard VGA in the BIOS. Enter the BIOS, and go to 'Integrated Peripherals'. Here you'll be able to modify the amount of memory shared by your onboard VGA. Again, this depends on the motherboard and BIOS version, so it may or may not be present in your case.

If you're using a separate AGP card, there is no way of increasing the share memory, since AGP cards have dedicated onboard memory. You may be able to increase the AGP aperture size using the CMOS setup (by going to 'Integrated Peripherals'.) In either of these cases, since you have only 128 MB of system RAM, avoid setting the shared memory or AGP aperture size to more than 32 MB, as this will degrade your system performance.

Noisy PC

Q I have a Pentium IV 3.0 GHz with HT, an 80 GB ATA Seagate hard drive, and 512 MB of DDR2 RAM on an Intel 915GAV motherboard. Whenever I open a game, my processor's fan speed increases, and is very noisy. What should I do? Also, my retailer told me that I can't install Windows 98 on my system. Is that true?

Ankit Mathur, via e-mail

A The new generation of Intel processors heat up too quickly - especially on load - and need a high-rpm fan. However, since a higher-rpm fan makes more noise, Intel introduced a smart fan that throttles the fan rpm as per the need. When you're gaming, the processor is under high load, so the fan spins at its maximum rpm and could be noisy. One way of controlling the noise is proper ventilation of the cabinet near the processor area so the temperature is maintained, and so the fan won't throttle to higher speeds.

The Intel 915GAV chipset does not support Windows 9x/ME, and you will not be able to install these OSes on motherboards based on this chipset.

I want it Back!

Q I have a 40 GB Seagate hard disk. I installed Red Hat Linux on one partition that Linux created during the installation. After a few days, I decided to remove Linux. When I started fdisk, it said my hard disk had only 30 GB, with the 10 GB Linux partition not showing up. I later installed Windows 98 SE (on the 30 GB partition). Then I used Seagate Disk Manager (DM), but DM shows the error "BIOS.ovl file couldn't open". How do I reclaim the full 40 GB capacity of my hard disk?

Vikram Dan, via e-mail

A You should be able to reclaim the full 40 GB using Seagate's Disk Manager. If you do not have the latest version of the Disc Wizard Starter Edition (DWSE), download it from the Seagate Web site. Run the downloaded file to create the DWSE disks - you'll need two floppies for this. When the bootable DWSE disk is created, you will be able to boot with the floppy, and the Disk Manager will start. From here, you will be able to

use the Disk Manager as you have done before.

The "BIOS.ovl file couldn't be opened" error that you encounter is due to the file 'BIOS.ovl' not being properly copied onto the DWSE floppy, which could be due to bad sectors on the floppy.

Fix My Boots!

Q I have two OSes installed on my PC - Windows XP and 98SE. A few days ago, my PC started showing the error "UNMOUNTABLE_BOOT_VOLUME" while booting into XP. What is this?

Parikshit Rao, via e-mail

A The error "Unmountable Boot Volume" occurs while booting into XP when the boot.ini file is corrupt. You will require a Windows XP installation CD to correct this error. Boot using the XP installation CD, and when you see the "Welcome to Setup" screen, press [R] to repair XP. You will get a DOS prompt. Here, type in "chkdsk /f" without the quotes and press [Enter]. This will start the Check Disk utility, which will check the system drive and automatically repair any errors it encounters.

Next, type in "fixboot" and press [Enter]. This will write a new boot sector to the system partition. Now type in "exit" and press [Enter]. The system will now reboot into Windows.

Moving too Fast

Q I have Windows 2000 and Windows XP installed on my computer. All programs are running well on both systems but the problem is that when I play an MP3, MPEG, DAT or any other sound file, it plays fast, as though it's fast-forwarding. I've formatted the disk and again installed the OS, but the problem persists.

Kanchan Subba, Nepal

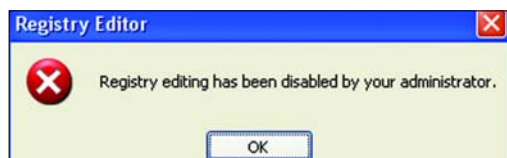
A It seems you've installed the audio or sound card drivers before installing the Intel chipset software. Whenever you install Windows, you must install the Intel chipset drivers before installing any other drivers. You will now need to uninstall the sound card drivers and then install the chipset drivers. After a reboot, install the audio drivers, and sound files will play normally.

Enable registry Editor

Q Whenever I try to run the Registry Editor, a message appears saying the registry editor has been disabled by the administrator.

Mudresh Tripathi, Jhansi

A Open Notepad and type in the following in the text file.



Registry editor has been disabled

```
[HKEY_CURRENT_USER\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System]
"DisableRegistryTools"=dword:00000001
```

Save this file and change its extension from .TXT to .REG. Now double-click on this file and when prompted about whether you wish to add the information to the registry, click 'Yes'. Restart Windows, and the Registry Editor should be enabled.

Capturing Issues

Q I have a P IV 3.2 GHz, an Intel 915-based board, 256 MB of RAM and a 60 GB hard disk. I have installed Windows XP SP1. I have a Frontech TV tuner card based on the Philips HLL7130 chip. Recently, after installing DirectX 9.0b, I have begun experiencing problems with my TV tuner card - my screen looks black and I am unable to capture anything. Should I uninstall DirectX 9.0b?

Ankur Patil, Malad

A It is not necessary to uninstall DirectX 9.0b. DirectX 9.0b causes several TV- Tuner capture card/driver combinations using video formats other than NTSC (NTSC-J, PAL, SECAM) to not initialise correctly on Windows 2000, XP, and Windows Server 2003. The symptoms include loss of capture functionality and potential inability to set/retain device capture settings. There are two solutions for this problem, the first of which is to install DirectX 9.0c. You will also need to download and install the latest drivers for your TV tuner card from the manufacturer's website. If you do not wish to upgrade DirectX, Microsoft has addressed this issue via a hotfix, which you'll have to download and install:

<http://download.microsoft.com/download/f/c/9/fc9b3b60-d7d4-42c6-ac64-f28ea70fabb9/DirectX9b-KB825116-x86-ENU.exe>

Terrorised

Q Two files - 'folder.htt' and 'desktop.ini' - are appearing in each and every folder of my computer. This is making it run very slow. I think it's a virus. If I delete all the files, they reappear after a few days. My OS is Windows 98SE, running on a Pentium III 650 MHz with 192 MB of SDRAM.

Rohan Mondal, via e-mail

A Your machine is infected by VBS.Terrorist, which infects HTML files. It targets files that have the .htt, .htm, .html, .asp, .php and .jsp extensions. In addition to other things, It also modifies the %WinDir%\Web\Webview.css, %WinDir%\Web\Desktop.ini, %WinDir%\System32\Desktop.ini and %WinDir%\Desktop.ini files, so the file 'Folder.htt', which is a copy of the virus, is executed when the folder is viewed in Explorer. It replicates itself in each folder that you view later. The system slows down noticeably.

To get rid of the virus, simply scan your computer thoroughly using an anti-virus such as McAfee or Norton, with the latest updated virus definitions.

Anup Nair

DIGIT NOVEMBER 2005

Help for Help?

Q Whenever I try to open a help file for example, 'cfbooks.chm' from the 'C:\Program Files\Macromedia\Macromedia 8\Help' folder, I get the following message: "Cannot open the file: mk: @MSITStore: C:\Program Files\Macromedia\Macromedia 8\Help\cfbooks.chm". This message is being displayed for all help files with the .CHM extension.

Goutam Ghosh, Orissa

A This problem occurs in Windows 98. It happens when the 'Hhctrl.ocx' file version is wrong. To resolve this problem, you will have to extract and register a new copy of the 'Hhctrl.ocx' file. Follow the steps below:

1 STEP Identifying the version of Hhctrl.ocx
Go to Start > Settings, and click 'Folder Options'. Click on the 'View' tab, then check 'Show all files'. Now clear the 'Hide file extensions for known file types' checkbox and click OK. Look for 'hhctrl.ocx' - in the 'Look in' list, click 'My Computer'. In the list of items that are found, right-click on the Hhctrl.ocx file in the C:\Windows\System folder, and click 'Properties'. Click on the 'Version' tab and note the number that is displayed next to 'File version'. The version of Hhctrl.ocx included with Internet Explorer 5.0 or Internet Explorer 5.01 is file version 4.73.8412.

2 STEP Obtain a new copy of the Hhctrl.ocx file for the version of Internet Explorer that you have, to the Windows\System directory.

If Internet Explorer 5 is installed, extract a new copy of Hhctrl.ocx from your Windows 98 CD-ROM. To extract the file, go to Start > Run. Type in "sfc" and press [Enter]. This launches the System File Checker utility. Select 'Extract one file from installation disk', enter "hhctrl.ocx" in the dialog box and click 'Start'. In the next dialog box, enter the path to the Windows 98 installation files in the 'Restore from' dialog box and the path to the System directory of Windows in the 'Save file in' dialog box, and click 'OK'. You will then see the dialog "The file has been successfully extracted." Click OK to complete the process and restart the computer if prompted.

If a different version of Internet Explorer is installed, extract a new copy of Hhctrl.ocx from the Hhupd.cab file from the Internet Explorer installation files, or install the latest update for Windows HTML Help.

3 STEP To register the Hhctrl.ocx file, do the following:
Quit all running programs. Go to Start > Run. Type in "regsvr c:\windows\system\hhctrl.ocx" (assuming that the file is in c:\windows\system), and click OK. The following message should appear:
"DllRegisterServer in c:\windows\system\hhctrl.ocx succeeded."
Click 'OK' and restart your computer.

BSOD

Q My PC automatically reboots while running some applications. Windows shuts down and flashes a blue screen saying that it encountered a serious error and needs to shut down to avoid further damage. The error message says "PFN-LIST-CORRUPT".

Jitesh Babel, via e-mail

A This error indicates that there is a memory corruption in a driver, or that the Page Frame Number (PFN) is corrupt. Such an error is usually seen on systems under heavy stress. In such a case there is nothing that can be done to stop the error. The error also occurs if a RAM module is bad - in such cases, changing the RAM module(s) will solve the problem.

Media Issues

Q I have a Sony DRU-710A DVD-Writer. I have a DVD which has Fedora Core 4 (in four ISO images) on it. Please suggest a method as to how I can write all these four images onto a single DVD. I am aware that there are many software available for extracting ISO image contents, but I do not know how put the contents of each ISO on a single DVD.

My second problem is that I have huge collection of videos in VCD (DAT) format which I wish to convert to DVD format. I have a bundled edition of Nero 6. When I try to make a DVD of these videos in Nero Vision Express, it shows me an estimated encoding time of approximately 26 hours. Please tell me if there is DVD burning software available that can decrease the encoding time.

Kuljit Singh, Via e-mail



A The Fedora Core 4 ISO images provided on the Digit DVD are meant to be burnt on CDs, as these are CD images. There is no way to convert these images to create a Fedora Core 4 DVD. Even if you extract the contents using software, the DVD that you might create will not be bootable and will not be able to install Fedora.

Encoding to DVD video format means encoding to the MPEG-2 format, and this takes a lot of time. This encoding time depends to a large extent on the power of the CPU, so even if you use any other software, the time it will take to encode will remain more or less the same.

Infected

Q Of late, my computer has slowed down a lot. I found 'my_picture.scr', 'pic.scr' and 'see_this!.pif' in the root of my C drive. I suspect my computer is infected by a virus.

Mahesh Bangare, Via e-mail

A Your system is infected by WORM_MYTOB.AC, a worm that sends a copy of itself as an attachment to e-mails, which it sends using its own SMTP engine.

The worm can be removed quite easily. Bring up the Windows Task Manager and navigate to the 'Processes' tab. Find 'rnathchk.exe', click on it and click 'End Process'. This will remove the worm from memory. Now delete the files you mentioned from the C drive. Also delete the file 'rnathchk.exe' from the Windows System32 directory. Install a good anti-virus such as Trend Micro AntiVirus or Norton AntiVirus with the latest updates and run a thorough system scan to completely remove the worm. ☐

Get Help Now!

E-mail us your computing problems along with your contact details and complete system configuration to sos@jasubhai.com, and we will 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!

Shoot To Capture!

For once, Agent 001 needed advice on how to go about buying camcorders. Well, now he knows—and so will you

For a long time now, I have been getting mails requesting information and buying advice on camcorders a.k.a. handycams. Camcorders are certainly not my cup of tea. Although I have used them occasionally, they've never appealed to me. But with the festive season almost here, I knew there would be an increase in interest in buying camcorders. And I wasn't going to let my lack of knowledge stand in the way!

To get going, I tracked down my Steven Spielberg wannabe friend, Vinod, who'd just returned from northeastern India after shooting a documentary. The camcorder thing was long overdue, so I headed over to his place.

A long chat and some *chai* later, I felt empowered thanks to the *gyan* Vinod shared with me. According to him, before you choose a camcorder, there are some questions you need to answer and some stuff you need to know. You should be aware of things like the recording format, types of sensors, multipurpose capability, etc. Don't be intimidated—I'm here to help!

The consumer camcorder world offers several recording formats, which often breeds confusion when a consumer is making a buying decision.

Mini DV format is the format of choice for most consumer camcorders. Any camcorder supporting this format requires a small cassette called the MiniDV for recording. Being widely used, the MiniDV format is well supported by most video-editing software, and specialised DV cassette players, too, are available. Moreover, even semi-professional camcorders use this format to record high-quality HDV content. According to Vinod, this is the format you should opt for.

On the other hand, entry-level camcorders use the Digital8 format for recording high-quality video and they do this on Hi8 cassettes. The problem here is the cassette is bigger in size and hence, the recorder itself tends to be a touch bulky. The good news is that they are on their way out, so as far as possible, avoid such recorders. MiniDV is the new format used by ultra-compact camcorders since they require a smaller cassette.

But again, these formats cannot be directly played on a consumer DVD player. This led to the introduction of Mini DVD-R and DVD-RAMs to be used directly for recording content in MPEG2 format.

Vinod's advice—avoid these, since there are compatibility issues, and also, if one chunk of data gets corrupted, the whole DVD ends up as a nice coaster.

There are two types of camcorders based

The consumer camcorder world offers several recording formats, which often breeds confusion when a consumer is making a buying decision

on sensors: those with a single CCD, and those that have three. In a three-CCD camera, there's one sensor for each of the primary colours. Advantages? Well, three-CCD cameras have better colour reproduction, and are a must-have for professional work. Strictly speaking, single-CCD models are good enough for typical home or vacation use. But the good news is, three-CCD technology is now available in models that cost less than Rs 50K, which is a boon for amateurs.

Professionals should pay some attention to the resolution a recorder supports; for high-resolution video, opt for a camcorder that supports the HDV format.

Can camcorders shoot stills? Well, according to our expert, they can, but take this with a pinch of salt. Most camcorders have fast enough sensors to deliver jerk-free video; however, the sensors are noisy and have low resolution since the display unit is generally a TV, which does not require higher resolution. Such sensors are bad at still images and don't deliver. In fact, they are pathetic when compared to even an entry-level digital camera that retails for Rs 9K to 10K. Expert advice: you can use the still images for Web-related activities, but not for printing.

Finally, what about transferring those home videos to a PC? You'll need a FireWire port or a USB port, depending on what your camcorder supports. A FireWire capture card is suggested.

Decent enough video-editing software is usually bundled with camcorders, but if you are a professional, it's better to get one of the better software such as Adobe Premiere, or Pinnacle's Liquid Edition Pro for Windows and Final Cut Pro for Mac. ☐

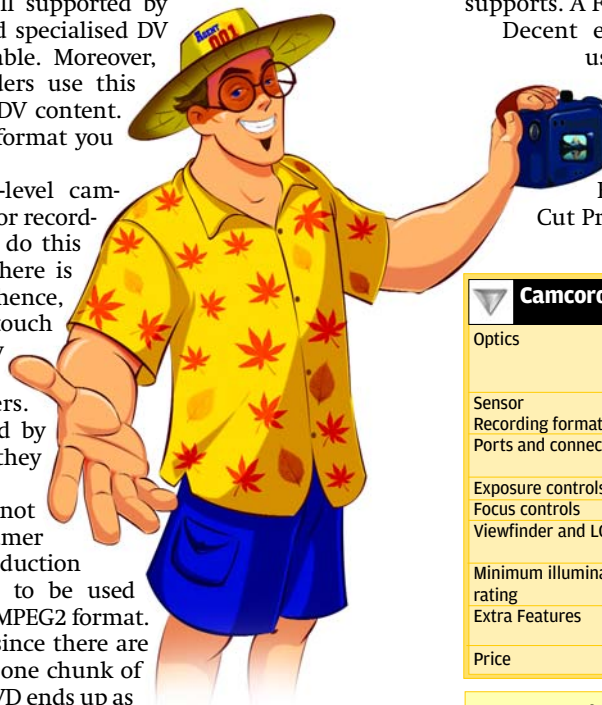


Illustration Pradip Ingale


Camcorders For Home Videos	
Optics	10X or greater optical zoom controlled via slider; preferably with electronic image stabilisation
Sensor	1/6-inch CCD
Recording format	MiniDV
Ports and connectors	FireWire (IEEE 1394); S-Video; microphone terminal and A/V
Exposure controls	Automatic; exposure shift
Focus controls	Automatic
Viewfinder and LCD	B&W or colour viewfinder and/or 2.5-inch colour LCD
Minimum illumination rating	7-lux or lower
Extra Features	Remote control, video-editing software, pouch, extra battery pack
Price	Rs 25,000 to Rs 35,000

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

IR Or USB, That's The Question

Q I recently bought a Sony-Ericsson K508i cell phone. I want to transfer images from my PC to the phone. How do I do this? What should I opt for: an infrared dongle or a data cable? Is there a way of increasing the memory capacity of my phone?

Dhiman Chakrabarti

 The K508i offers an infrared transceiver and a USB port for PC connectivity. The choice between IR and USB depends on what you want to transfer and how often. IR is slower as compared to USB. If you plan to move stuff between the phone and PC often, IR could be a pain, and I'd suggest you go in for a USB cable.

If you're looking for a clutter-free way of transferring files and don't mind the slow transfer speeds, you can opt for an infrared dongle. You need the DCU-11 data cable for your phone, which retails for around Rs 600.

As for the USB dongle, just grab any make, but make sure it's compatible with your PC's OS—for example, some dongles don't come with drivers for Windows XP.

An IR dongle sells for Rs 400 to 500. And no—you can't increase the memory of your phone; it doesn't support a memory expansion port.


Is Windows 98 Really Dead?

Q I'm assembling a PC for my friend. He wanted to go in for an Intel solution, and we decided on the following components: a Pentium IV 3.0 GHz, 256 MB of RAM, an 80 GB hard drive and a combo drive.

We decided to settle for a 915G chipset-based motherboard, but the dealer insisted on us going in for an 845 chipset-based board, saying Windows 98 doesn't install on the 915 chipset board.

I was not convinced, and asked for an 865-based motherboard. Which of the three would you recommend? We will be using this PC for animation, gaming and video too. Do we need a graphics card as well? Also, please suggest a good 17-inch monitor.

Sumant S Puranik

 Your dealer was right. You can't install Windows 98 on the new 915 chipset-based motherboards. Microsoft has officially discontinued support for Windows 98 and hence, many hardware vendors have stopped offering drivers for Windows 98—and without the proper drivers, you won't be able to run Windows 98.

I don't think you should go in for the 845-based chipset motherboard—it's got one leg in the grave. I'd suggest the 915 board and Windows XP; it's much better than Windows 98.

If you plan to do some gaming, the onboard graphics controller on the 915 motherboard will do fairly well—you can play most of the new games, but don't expect too much. As for the monitor, go in for a Samsung 17-inch; the DF-793S should do well for your purpose.


TV-Tuner: Internal Or External?

Q I have an HP-Compaq V2136AP laptop with a Pentium M 1.6 GHz processor, 256 MB of RAM, and a 60 GB hard disk. I want to buy a TV-Tuner card. Is it possible to fit an internal TV-Tuner card, or do I need

A laptop is a good tool for light workloads, not if you want to do graphic designing and 3D gaming

to go in for an external solution? Also, will I be able to record TV programs if I opt for an external solution? My budget is Rs 2.5K to 3K.

Salil Natekar

 I don't think integrating the TV-tuner card into your present laptop would be possible. But you should check with HP-Compaq for more details on this. As far as an external TV-tuner card for your laptop is concerned, you have two options: an external USB device that hooks up via a USB port, or a PCMCIA bus TV-Tuner card.


An external USB TV-Tuner card will allow you to capture TV programs, but good solutions will set you back by at least Rs 6K to 7K.

Pinnacle and Avermedia have external USB solutions for around Rs 7K. Aver also has a PCMCIA-based solution called the AverTV cardbus. I don't see these fitting your budget. If you don't mind the brand, Techcom has an external USB TV-Tuner that retails for Rs 3K. It performed just about average in our tests. I'd suggest you check the quality of reception and recording. If you're satisfied, you could consider it your only option.

A Laptop As A Desktop Replacement

Q I am interested in buying a laptop—preferably a Centrino with a 1.8 GHz processor and a 12-inch screen. My primary use for this laptop would be as a desktop replacement, and I will use it for at least eight hours a day. What model would you suggest?

George

 Today's laptops can easily parallel desktop PCs when it comes to computing power and features. However, comfort over an extended period of use does not rule in the laptops' favour.

In a laptop, the display is attached to the base unit, so you're forced to look down. With extended working hours, there's a high chance of discomfort.


A laptop is a good tool for light workloads, not if you want to do such things as graphic design, 3D gaming, and so on. If your usage includes heavy workloads, it's better to opt for a desktop.

One more thing: 12-inch screen laptops are generally ultra-compact and more suited for frequent travellers. If you're insistent on a laptop, get one that has at least a 15-inch screen, and which offers a variety of connectivity options. I'd recommend a Lenovo Thinkpad any day.

Just A Great Mobile Phone

Q I'm on the lookout for a mobile phone with a camera and an MP3 player, expandable memory, and a large phone book. My budget is about Rs 25K.

N Sarvesh Rao

 I'd strongly recommend the Sony-Ericsson W800i. It has a 2 mp camera with an inbuilt flash, and very decent MP3 playing capabilities. A 512 MB Memory Stick Duo is also bundled. The phone book capabilities are good. The W800i only comes in a white-and-orange colour combination. If you can't live with that, I suggest the SE K750i. Most features are same, except that the K750i has only a 64 MB card. ☑

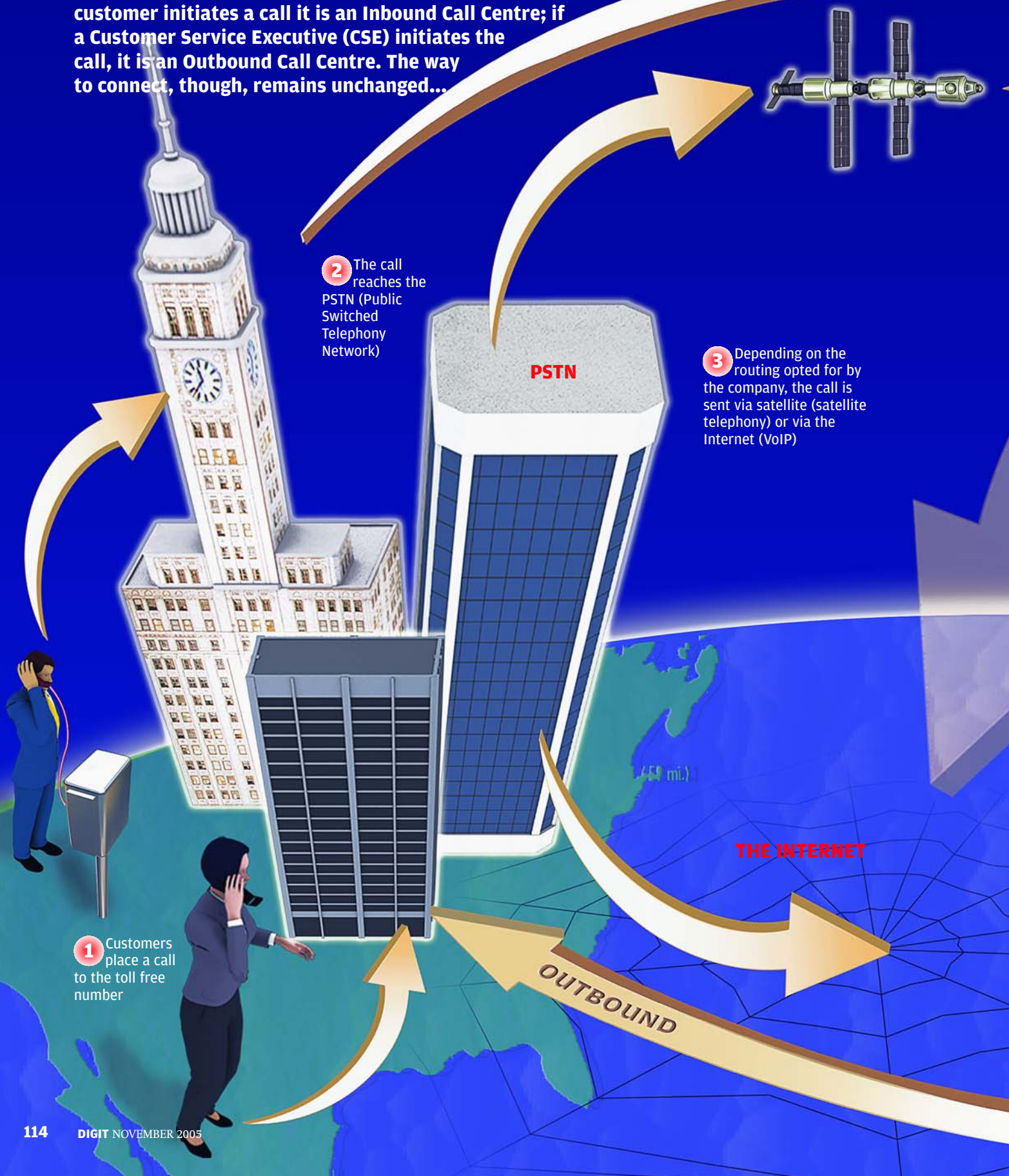


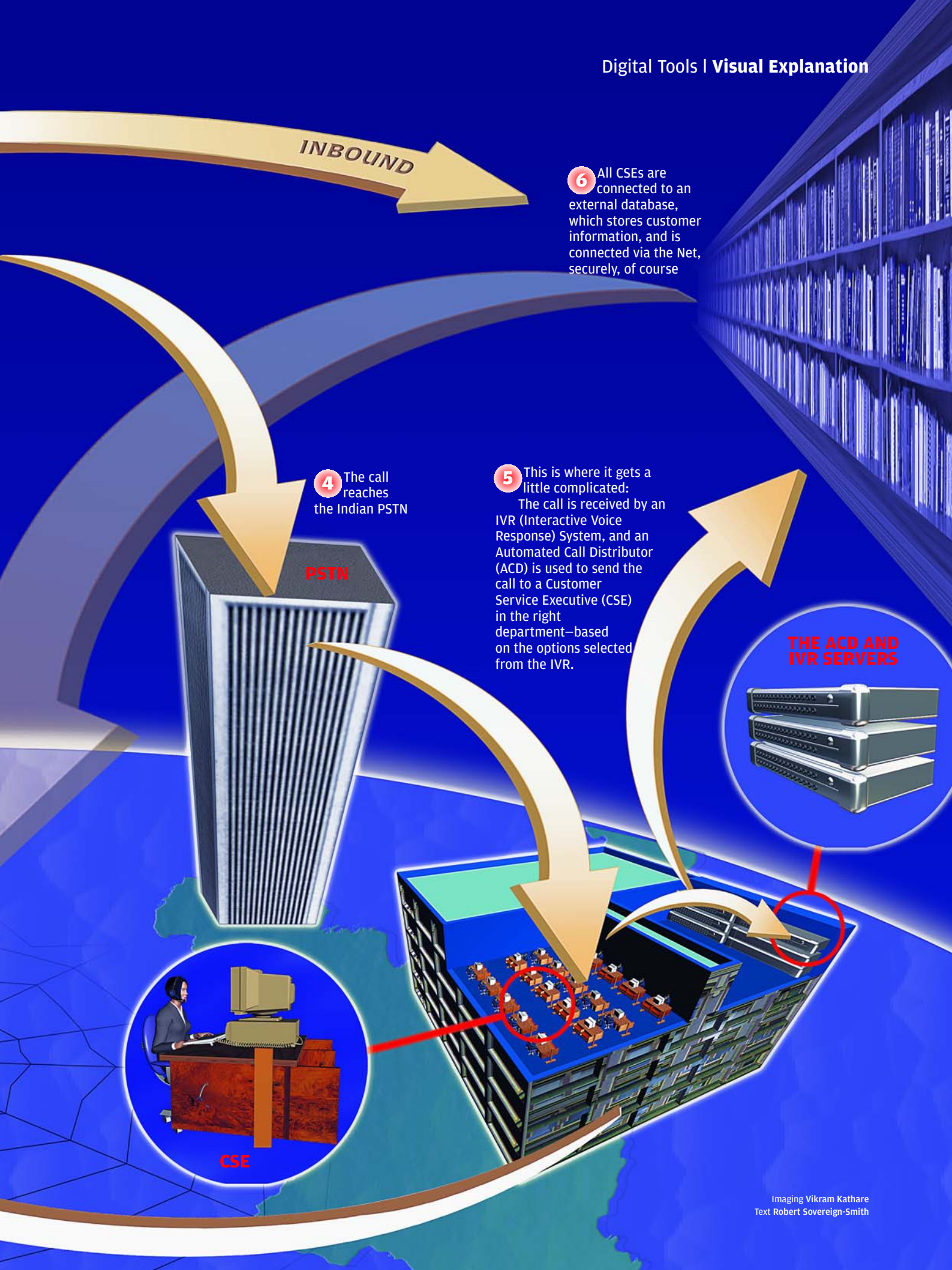
Ask Away

Want a tech product, but don't know how to go about buying it? E-mail agent001@thinkdigit.com with your complete contact details and get your queries answered. Please mention your PC's detailed configuration to ensure consideration for this section

How Call Centres Work

Here is a visual depiction of how a call centre works. If a customer initiates a call it is an Inbound Call Centre; if a Customer Service Executive (CSE) initiates the call, it is an Outbound Call Centre. The way to connect, though, remains unchanged...







124 Insecure
At Work?



128 You Saw It
Online First!



130 VoIP At Work

Digital Business

How Technology Can Help Your Organisation

Case Study

The First Page

As a business, it may be time to consider search engine optimisation for your site—if you haven't already. Here's how an online payment gateway, CCAvenue, benefited from it

Ram Mohan Rao

What would you do if you were an online payment gateway looking for more sign-ups? Advertising offline would be fumbling in the dark, because your potential clients are all online and Net-savvy. Advertising online in the form of banner ads is an option, but since your potential clients are actively looking for solutions on search engines, your best bet would be to hope that you show up when they search.

Actually, simply hoping will not do it. CCAvenue, an Indian online payment gateway, did not just sit hoping. They got their site professionally optimised, and the results are patent. When you type in "credit card processing india" (without the quotes) into google.com or google.co.in, CCAvenue comes up first. And even something like "set up a merchant account" brings CCAvenue up third on google.com and second on google.co.in, and "credit card payment setup" brings it up sixth on google.com and first on google.co.in (in all this, we're not talking about sponsored links).

CCAvenue doesn't rank so high for these keyword searches on the other search biggies—the ranks on MSN are just around the 10 mark. With Yahoo!, the ranks are somewhat lower.

It's remarkable that an Indian company tops the search with such generic keyword searches. And it's all courtesy the search engine optimisation (SEO) that eBrandz, an SEO company based in Mumbai, did for CCAvenue.

Advertising, SEO, And More

We've mentioned SEO briefly in *The Future Of Search* (Digit, August 2005). By a popular Web definition, SEO is "the term used to describe the marketing technique of preparing a Web site to enhance its chances of being ranked in the top results of a search engine once a relevant search is undertaken. A number of factors are important when optimising a Web site, including the content and structure of the Web site's copy and page layout, the HTML meta-tags and the submission process."

We turn to the relationship between advertising and SEO. Advertising works differently in the online world. Offline, advertisements are there for everyone to see; but who sees them, and do they act upon what they see? Online, if you consider your page listing on a search engine as an ad, who sees the ad is not an issue—you know that the people who see it are actively looking for you. The issue is whether they see it at all.

The issue thus becomes one of visibility, and ad campaigns become online visibility campaigns. There are several approaches a company can use. One amongst these is organic SEO campaigns—organic search results are the natural results that occur in search engines, the left-hand results.

Getting back to the point: how come "credit card payment setup" brings up an Indian contender—CCAvenue—first in Google, when there are so many global players out there?

Small Companies Can Beat Global Giants

"You have the potential to get lots of recognition for a reasonable price," says Vishwas Patel, CEO of Avenues (the parent company of CCAvenue), about search services such as Google's. "You might not have a big budget,



We were clear that it would be a waste of money to rely on traditional methods of communication to bring in new customers

Vivek Nayak
CIO, CCAvenue.com

but if you know your way around, you can beat any Fortune 500 company in the visibility game."

Small companies beating global giants in marketing and advertising? That would sound like a happy pipe dream for most CEOs of small or medium-sized companies. But it's not all that far-fetched, because there's a fundamental difference in the way visibility on the Internet works.

In a traditional marketing campaign, a large organisation typically unleashes a multimedia campaign across a city or area, hoping their target audience will notice. But 50 per cent of advertising money is wasted: the message does not reach the intended audience. Pioneering Philadelphia retailer John Wanamaker, considered the father of the department store and of modern advertising, is credited with this infamous comment about advertising: "Half of the money I spend is wasted; the trouble is, I don't know which half."

Exactly. The problem is, not even the best brains in the business—including expensive media consultants—have a clue about which 50 per cent is wasted.

Now consider the value of a medium that tells the marketer exactly who is viewing the message and what effect each message has. Yes, the Internet has the power to let you intrude on a potential buyer's attention. But more than that, it has the power of presenting your product to him in a shopping cart, taking his money and closing the sale in an instant.

So naturally, the marketer who brings his message best to the customer will be the winner. Budgets are important, but the right techniques, much more so.

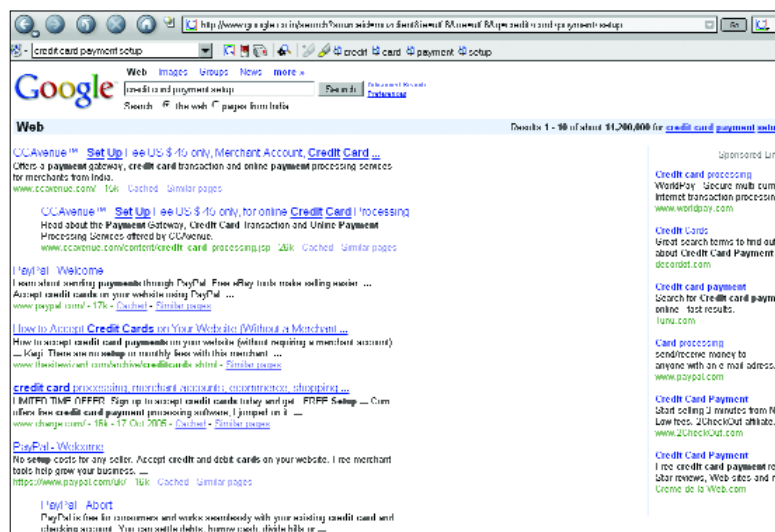
In this context, all a small company needs to do is bring in visibility experts in the online space and give them a brief. These visibility experts—the so-called SEO companies—specialise in search engine marketing (SEM) / SEO campaigns. If the campaign is successful, a company's Web site comes up tops for the keywords associated with their business. The audience is extremely targeted—they're actively searching for your product or service! And by having a presence on the first page of search engine results, an organisation can differentiate itself from the competition.

Because of cost limitations, therefore, what a small Indian company would be looking for is a good Indian SEO company. But after the Dotcom bust, there were very few left. Ideally, that shouldn't be the case, because doing good SEO boils down to superior human intelligence—raw smarts. And hey, who scores better in that department than India?

eBrandz.com is an example of an Indian SEO company that rivals the best in the world.

The Client: CCAvenue

At a basic level, Avenues (the parent company of CCAvenue, as mentioned) is a payment gateway services provider that enables Web sites to collect funds through credit cards or directly through customers' Internet banking accounts.



On Google.co.in, CCAvenue is at the top of the results for "credit card payment setup"

Avenues has an 85 per cent share of the Indian market. It is the largest integrated e-commerce solutions provider in South Asia. Headquartered in Mumbai, it has subsidiary companies incorporated in Singapore, Hong Kong and Delaware in the US. The Avenues support and development centre is based at Santa Cruz in Mumbai.

A partial customer list includes the Indian Ministry of Information and Technology, the Press Trust of India, The Indian Express, Business Standard, Greenpeace, The Leela Hotels and Palaces, and BharatMatrimony.com.

Relying On The Medium

CCAvenue's target audience is, naturally, e-commerce stores. It's physically impossible for them to have a sales team that can cover the length and breadth of the country and market their services to individuals or mid-sized companies. Nor did they think it advisable to advertise on popular portals.

Vivek Nayak, CIO at Avenues, explains: "Right from the outset, the management at Avenues was clear that in a specialised domain such as payment gateways, it would be a waste of money to rely on traditional methods of communication to bring in new customers.

"Since the Internet merchant base space was very small, we felt the best way to bring in customers was to use the various opportunities available within the medium itself. With this in mind, the Avenues management started looking for a partner who would assist them in their endeavour. There weren't too many credible players in this emerging space, and eBrandz seemed a serious player."

Nayak continues about eBrandz, "They were deadly serious about the domain. They were proactive in their approach and constantly pushed the CCAvenue content management team to fine-tune content. Their research process was the most comprehensive one we found. All in all, it came down to how passionate they were about the business." And thus, CCAvenue chose eBrandz as their site optimiser.

How They Did It

So what exactly goes on when an SEO company optimises a client's Web site? First off, the complexity of the optimisation process increases with the complexity of the Web site itself. If it's a simple site with static HTML pages, the process is relatively simple. If the site has programming or is database-driven, the SEO company has to understand the process flow and see if these processes, programming and database architecture are search engine-friendly. If not, the client needs to make changes to the logic.

Second, in the case of a multinational Web site that has a presence in several countries – say the USA, the UK, Canada and Australia, in addition to India—a company such as eBrandz would have to set up an architecture in such a way that the international Web site ranks on google.com, with the local site ranking well on the local engine: for example, the .co.uk site



SEO is effective. Period! The reason not everyone is doing it is because there isn't too much awareness about it

Milind Mody
CEO,
eBrandz.com

would rank well on google.co.uk, the .in site would rank well on google.co.in, and so on.

To improve the client's rankings (in organic SEO), eBrandz researched and understood how search engines work, and used that knowledge to improve the client's site, making sure search engine crawlers were able to properly read and understand the client's site. Such research is ongoing, because search engine algorithms change over time; you can't have it all figured out once and for all.

However, even after an all-out effort, organic SEO campaigns can fail, for a variety of reasons. Results cannot be guaranteed, but the first step is keyword research. For the CCAvenue campaign, eBrandz identified keywords such as "payment gateway india", "credit card processing", "merchant account india", and so on.

CCAvenue's initial Web site did have good content. It explained CCAvenue's strengths vis-à-vis that of their competitors, and the features and benefits of using their service. That should have been good enough, right? Actually, no. CCAvenue's Web copy did not have any of the keywords that eBrandz researched. eBrandz convened with the CCAvenue content management team and began the process of including many of those keywords in the Web site copy. eBrandz also completely rewrote all their <title></title> and other meta-tags to incorporate the keyword research and accurately describe CCAvenue's services to visitors as well as search engine spiders.

It also turned out that CCAvenue hadn't been maintaining server log files. Analysis of server log files can reveal crucial information like the number of unique visitors per day, the main traffic sources, the traffic from major search engines, major keywords from each search engine, the major keywords that generate signups (for each search engine), traffic from the top 50 cities around the world, how often major search engine robots visit the site, and even things like the number of times the site was bookmarked.

eBrandz started maintaining CCAvenue's server log files, and started keeping track of their visitors, signups, and the other statistics mentioned above. Apart from this, eBrandz also analysed which areas of the Web site visitors were clicking and which areas they were avoiding. eBrandz put a signup button in and around where visitor clicks were high!

When Do The Results Show Up?

Currently, for a new site, it takes about two months for search engines such as MSN to show results. Yahoo! shows results in about three to six months. Google takes much longer to rank new Web sites—approximately six to eight months. The time taken for results to show up also depends on the indexing cycles of the search engines.

For the CCAvenue site, eBrandz got results in about two to three months for India-related keywords such as "payment gateway india" and "merchant account india". eBrandz did not stop at that—they also got results for international keywords such as "payment

gateway”, “merchant account” and “credit card processing”.

eBrandz is still optimising the site: the payment gateway industry is very competitive, and the SEO company needs to keep competing to be one up on their client’s competitors.

Rich Dividends

After eBrandz (consistently, month after month) top-ranked CCAvenue on all the major search engines, in a span of two years, CCAvenue managed to sign up more than 4,000 Indian e-merchants—and grabbed 85 per cent of the Indian payment gateway services market share.

They did not spend any money on other forms of advertising nor did they open any offices elsewhere in the country. They didn’t suddenly go the conventional way and put their feet on the street to do proactive marketing either. They relied only on SEM for visibility, and it has paid off.

Nayak says, “Without any traditional marketing channels in place or extra visibility efforts, Avenues has grown to become the #1 player in South Asia. This has largely been possible due to the efforts and commitment put in by the eBrandz team.”



“We get about five signups every day, and the sole credit goes to the SEO work that has gone into the site”

Vishwas Patel
CEO,
Avenues

Vishwas Patel, in fact, goes so far as to say, “We get about five signups every day, and the sole credit goes to the SEO work that has gone into the site.” That’s testimony enough that SEO works!

Looking At The Future

The online advertising market was pegged at \$4 billion at the end of 2004. This figure is expected to jump to close to \$30 billion by the end of 2006. With such figures, we might well ask: can any site at all be optimised to reach the top 10 or 20? If everyone decides to use SEO, who will be on the first page?

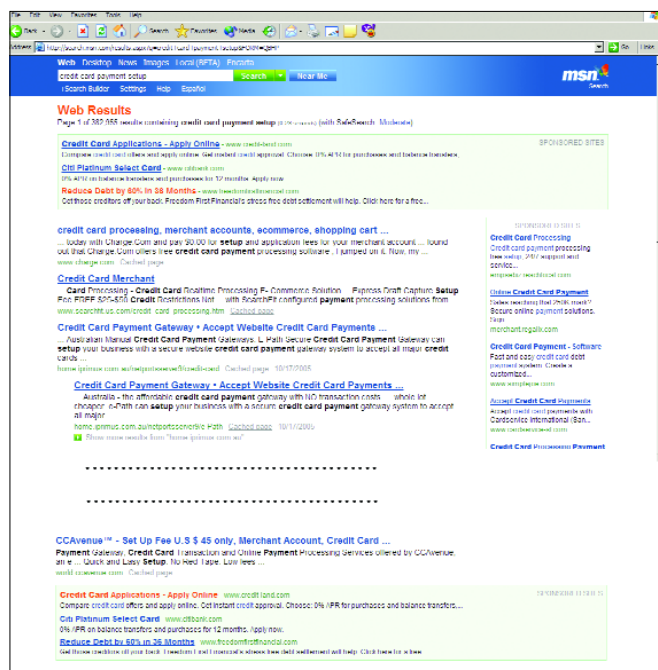
First off, the advantage of using SEO lies with small organisations. They are usually quicker on their feet—they can take quick decisions if they understand that by making certain changes, SEO can actually help in bring more business. Large corporate sites and Fortune 500 companies are rather unlikely to change their Web sites to gain the SEO advantage. They have a long decision-making process, and by the time they decide on anything, chances are search algorithms will have changed.

Now, Milind Mody, CEO at eBrandz, explains that if all companies in a domain—say payment gateways—decided to hire SEO companies, the job of ranking in the top 10 would become much more difficult. Only experienced (and knowledgeable!) SEO companies will be able to get their clients on the first page of the results. Like we mentioned earlier, it’s a question of raw knowledge superiority. We’re headed towards a global game that will reward luck less and less and brains more and more.

One related question we haven’t asked yet: if SEO is so effective, why doesn’t everybody do it? Mody avers, “SEO is effective. Period! The reason not everyone is doing it is because there isn’t too much awareness about it.”

“This is a very new industry. And it has not even reached half its potential. Many good SEO companies are working for themselves and not accepting any clients: they know how to get traffic online, so they create their own sites and promote them—then sell the business to offline merchants. “SEO companies are the kings of the online world.” That makes sense. If you’re talking about business in a world where anyone with a glorified typewriter can get on cyberspace, but where attention spans are limited to a minute or a page, it’s all about visibility. And if you can get someone else—or yourself—seen, you’re king! ☑

ram_mohan@thinkdigit.com



For “credit card payment setup”, CCAvenue does feature on the first page on MSN, but not right at the top

Cannon

Insecure At Work?

Simple security measures—including properly setting up shared folders and choosing good passwords—can reduce common workplace problems such as intrusions and stolen data

Robert Sovereign-Smith

As competition grows, businesses need to become smarter and warier. Often, we hear of employees being poached by the competition, of security lapses and data theft. Since computers took over managing our daily business chores, paranoia has reigned the masses; well at least the smarter ones...

Does this all sound alien? Are you wondering what on Earth we're on to? We certainly hope not, because it would mean that you haven't even been worried about confidential data that's stored on your company computers. Whether its employee PCs or the company's file or Web server, there's always some data the security of which keeps the bosses awake at night!

Most regular employees will probably be frowning really hard right now trying to comprehend, while most senior management people are nodding their heads off in approval! Sadly, that's the case in most companies across our country, with only a few corporates and even fewer medium-sized companies having a data security or protection system and process in place.

It's almost always the middle to senior management that's entrusted the task of securing their own data, and no training is given to the legions below. Why? It's either because we're too lazy, too paranoid, or just too ignorant of the risks.

Consider this: according to various studies conducted by research agencies such as the US Department of Commerce, as much as nine per cent of all data lost is stolen! So whether it's a teenage hacker, who could also be on a competitor's payroll, or your own employees and colleagues, chances are your data will be/has been/is being stolen, right from under your nose.

Who Wants My Files?

You'll be surprised at the importance of almost every company-related document you have, especially if you are at the middle management level!

Let's take, for example, your team's payroll file. Here's a file that only contains a list of names and their salaries. How could anyone but the accounts guys have any interest in that? Right? Wrong! Your team members may or may not discuss each other's salaries, especially if there is disparity in

amounts due to differing performances over the year. The last thing you want to do is have a team divided by jealousy just because you forgot to add the "\$" symbol when sharing the folder that contained the aforementioned file! Even if you don't think it's that big a deal, your bosses might not agree.

This however, is a very simple example! Perhaps none of us are stupid enough to do something like that. However, do you know there are tons of other ways you might unknowingly compromise the security and stability of your company? All it takes is a PC in the hands of a naïve employee to ruin things, and we hope that putting this article in his or her hands might solve some of those problems.

The Beginner Level

The first step is to secure your computer. More often than not, your PC is just *your* PC! There's no one else who is supposed to use it, and probably, in larger companies, a systems admin (SysAdmin) sitting somewhere far away watching characters (data and IPs) stream across his screen. To him (or her), you're just a number associated with the network IP or MAC address you were allotted. Anything that happens on that system is attributed to you, and, in the event of a disaster, all the protesting in the universe will not convince the SysAdmin that it just wasn't you trying to access all those confidential files from your machine!

It's as simple as walking away from your seat without locking your computer! If someone really wanted to get you into trouble (or keep themselves out of trouble) all they would have to do is look for a free PC. When the coast is clear, and a malicious user is sure of not being noticed, he (or she) would use your computer for nefarious purposes—trying to access restricted security areas (files or folders), do some damage to a network or file server, steal data, or even something as silly as surf for pornography.

In the end, whatever is done on your computer by others will be attributed to you. If we haven't made ourselves clear, lock your computers when leaving your desk. Put boot passwords to prevent unauthorised startup, and if you use Windows XP, make sure the default Administrator password isn't left blank!

If your office has shifts, and computers are

Whatever is done on your computer by others will be attributed to you

shared by multiple users (a typical BPO setup), make sure to create separate logins for each user that uses a particular machine, and allocate each machine to only a fixed number of users. In this case (BPOs), chances are this has already been done at your office, or you use a system that makes each user log in to identify themselves. Just make sure to stress on the importance of each user keeping his or her password to themselves, and not share it with friends.

E-mail Security

Though e-mail is generally considered the least secure of all daily tasks, there's still a basic level of security you should adhere to. You need to make sure that your e-mail client is secured with your anti-virus, because the last thing you want to do is be the cause of a big, bad virus entering the office network.

Viruses apart, there's still the need to keep e-mails private. Whether it's accolades or criticism you receive from your bosses, personal mails from your significant other, jokes from your friends, or confidential information passed on by your bosses and colleagues, you don't want just anyone accessing these mails. Make sure to use an e-mail client that offers password protection for both the e-mail client as well as the stored e-mails.

Microsoft Outlook is perhaps the most popular e-mail client, and it has both features. Just make sure you password-protect both the 'outlook.pst' as well as the 'archive.pst' files. You can do this easily by right-clicking on your 'Personal Folders' folder and selecting 'Properties'. Go to General > Advanced > Change Password. Now enter a new password and click 'OK'.

Password Strengths

More often than not, we use passwords that are not really secure or creative. Most people use passwords that are specific key combinations, such as "asdf" or "abc123". Such passwords are not hard to guess, and any password cracker out there will do so in a jiffy. What you need to do is make sure that passwords are a mixture of numbers and letters, have no obvious sequence, and are not public knowledge. For example, if your name is Ram Rao, with the username set to "Ram", the first password people will try is "Rao"; the very next thing will be "r40", "ra0", "r4o", and other combina-

Proper Policies

Bigger businesses will have heard of the ISO 17799 security standard. Getting ISO 17799 certification can mean the difference between being thought of as a small-time player and a 'proper' corporate entity. For those of you who haven't heard of it, here's a brief description, as taken from ISO's (International Organisation of Standardization, a.k.a. International Standardization Organisation) Web site www.iso.org:

"ISO/IEC 17799:2005 establishes guidelines and general principles for initiating, implementing, maintaining, and improving information security management

in an organization. The objectives outlined provide general guidance on the commonly accepted goals of information security management. ISO/IEC 17799:2005 contains best practices of control objectives and controls in the following areas of information security management:

- ☐ Security policy;
- ☐ Organization of information security;
- ☐ Asset management;
- ☐ Human resources security;
- ☐ Physical and environmental security;
- ☐ Communications and operations management;
- ☐ Access control;

- ☐ Information systems acquisition, development and maintenance;
- ☐ Information security incident management;
- ☐ Business continuity management;
- ☐ Compliance.

You can find a lot more information at www.17799.com, which is a community forum for the standard, and www.iso17799software.com. The entire standard description is not available for free download, and you will have to pay approximately \$155 (Rs 6,800) to get it. If interested, you can buy and download it from <http://snipurl.com/iso17799/>.

tions of the same (FYI, 4=A if you're substituting numbers for letters).

Sometimes people are complacent and set their passwords to their mother's, spouse's or pet's name. These should be easy for anyone who knows you well enough to guess, and are thus a bad idea. Using your date of birth is also a big no-no. An example of a good password would be "R4o!s!nD4h0u53" (Rao is in da house) using numbers, letters and an exclamation mark! You could even set a cryptic enough hint to this password, such as "All Hail me...I have arrived".

We should reiterate that a lot of intrusions and security lapses happen only because of weak passwords.

Networks

This is perhaps the biggest boon and bane of the IT world! If we all had standalone computers, we would have no security problems. At the same time, we wouldn't have PCs in the first place then anyway! Networks have brought us everything we now take for granted: the Internet, ATMs, LANs, Wi-Fi, hackers, viruses, spam... you get the picture.

Your office LAN is where most of the attacks come from. Whether it's from your colleagues or

your shares just by browsing through the network. Windows users, too, have several small software, available for free download, that can scan a LAN to find computers and their shared folders—simple shares or dollar shares.

So it could be someone looking for some new music that accidentally stumbles across your shared folder that contains your team's appraisal sheet, or data meant only for your boss to see! In such cases, perhaps the internal e-mail system would be much more prudent to use.

Of course the risks are increased by orders of magnitude when you have a wireless LAN, since you not only have to worry about the users in your office, you also have to worry about guests and people outside. A good site plan when setting up a Wi-Fi network is a must, and good security should be used—like 128-bit encryption at access points. Make sure you have access lists set by MAC addresses, and that you supply users with fixed IP addresses, rather than using the Dynamic Host Controller Protocol (DHCP), where IP addresses are assigned upon connection.

Read up on Wi-Fi networking and make sure to follow all security measures properly, or else you could get intruders in your LAN. The damage could be as simple as increased bandwidth due to unauthorised client PCs accessing the Internet, or as severe as data being corrupted and going missing, or even company secrets and policies being stolen. *Digit's* book *Fast Track to Wi-Fi*, provided with the May 2005 issue, should tell you more about Wi-Fi security.

Finalising Security

For companies that base their marketing on the level of security their data has, a good thing to do is ISO certification. For information security and management, you should look to get your company ISO-17799 certified. (See box *Proper Policies*).

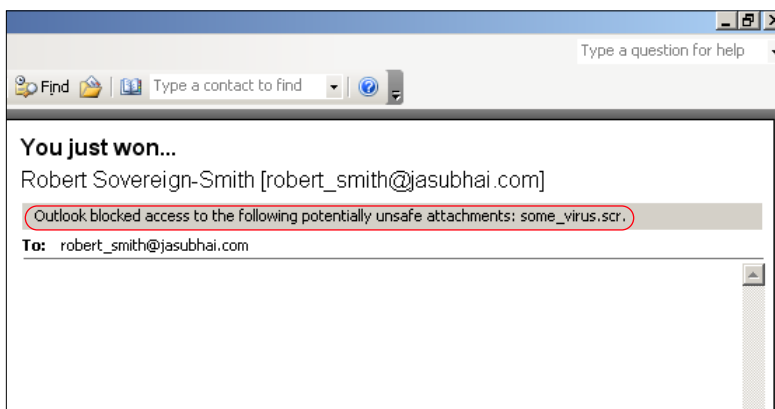
Since getting this certification will most certainly be expensive, smaller companies might not want to opt for such drastic measures. That's where scouring the Net for information on security policies and reading up on case studies of companies with proper security training techniques will help you.

Remember, your company's security is only as strong as the weakest link, which most often is at the executive level. So make sure you train your employees well. We've just given you a refresher in the basics, mainly due to the fact that every business has its own individual security requirements.

Online businesses, for example, need a way to secure their Web server and databases. Offline businesses will have a security requirement for their accounts and offline databases. Who has access to what information, and who uses which computer, is something your company security policy needs to decide. BPOs need to limit the amount and type of data that different levels of employees access; the list is endless.

Once you figure out what data needs to be kept secure, you can start looking for security loopholes and then decide upon a strategy to plug them all up. Meanwhile, you can start at the lowest level by teaching your employees about the necessity of personal data security. ■

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Beware of e-mail attachments—especially those with EXE, ZIP, SCR and PIF extensions

from an unknown hacker across the world who has got into one system and is trying to explore the network. A virus on one colleague's PC could infect an entire office if you don't take basic security seriously. Things like anti-virus software are now a given, and no office is without one, but what about anti-spam software? And what about anti-adware or anti-spyware software?

Most offices are vulnerable via e-mail, and that oh-so-cute PowerPoint presentation you received in a mail might just contain a new Trojan that your anti-virus knows nothing about. So think twice (or two hundred times) before you blindly forward it to your entire office—or perhaps you should consider not opening these things at work in the first place.

Sharing is another hassle. Some of us learn of dollar shares, and think, "ahh, perfect!" We then promptly share important stuff with a dollar at the end of the name and then tell our bosses where to find them. Unfortunately, dollar shares are far from secure. Just because you haven't told anyone the name of the shared folder doesn't mean people will not find your shares. For example, anyone on a Linux computer can find

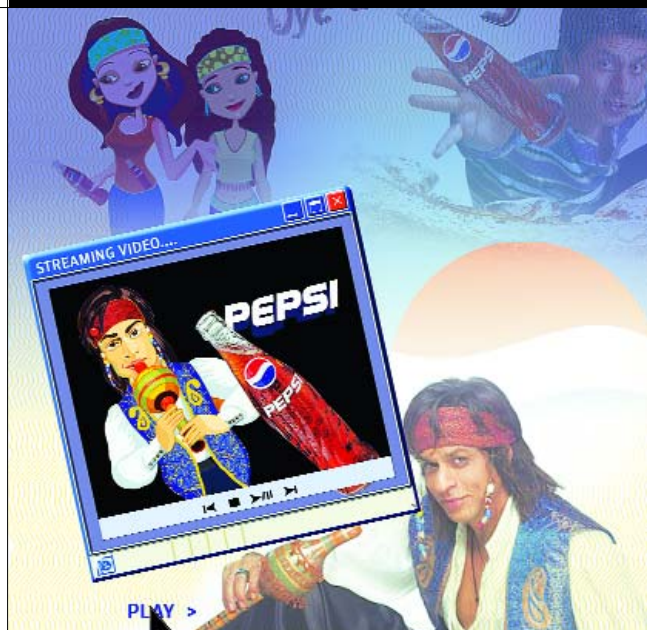


Nawal Ahuja
Co-founder and Director,
Exchange4Media.com

The trend of using the Internet as the 'first point of interaction' with a consumer is increasingly catching on. Fortunately, the better quality PCs and increased connection speeds allow for streaming on a relatively larger number of PCs. Using cross media combinations such as TV-cum-print or print-cum-outdoor to launch new campaigns is an age-old phenomenon but the TV-cum-Internet combo is as an effective medium.

Streaming content is a powerful way to target the audience. Many movie production houses worldwide use it to promote their offerings. Using the same technology, we are in the process of launching a service on our website where TV channels can air promos of their latest shows and introduce their wares to the ad fraternity.

The Internet is primarily a youngster's medium. It's interactive—a feature no other medium offers. A well-executed ad on the Net can help the brand provided it's seamlessly



YOU SAW IT

Product commercials in the form of 'webisodes' are launched online prior to being shown on the television. Is the uptake for online advertisements better than that of other media?



Vishal Chinchankar
Business Director,
mOne Worldwide
(Media Buying Agency)

Playing commercials first on the Internet before airing them on the TV is a concept that's still in its initial stage in India. Nevertheless, this trend is catching on rather quickly as there are Web sites that offer this option.

Some major advertisers who use the Internet extensively are dotcoms such as Shaadi.com and Naukri.com. Financial brands such as ICICI and Citibank also use the Internet to advertise as they target individuals with high net worth.

As for youth brands such as MTV and Pepsi, most of their target group comprises the 'Upper Sec A1' or youth from urban centres, hence, online advertising is a preferred option.

Currently, online advertising is popular among media planners and clients and they are exploring innovative ways of interacting with consumers.

The Internet is the only medium that provides for engaging and interactive content; take for instance, the recently aired Pepsi Web commercial. Moreover, the industry has seen a consistent growth year after year in online advertising as advertisers realised its tremendous potential. I see more innovative trends emerging in the sphere of Internet advertising.



Pearl Uppal
Director, Sales,
Yahoo! India

Streaming and Flash-based content and promos are used extensively by many companies. The move of 'first contact' with the consumer, from traditional media such as TV and print to the Internet has begun in right earnest.

The recent Pepsi webisode on Yahoo! is a classic example. We introduced the idea to Pepsi and they were eager to implement it. The webisode had a trickle-down effect and the TV promos were widely watched. In fact, on the Web, the television version of the commercial was viewed by more than 1,40,000 users.

In online advertising, the consumer becomes a part of the experience; it also supplements and supports campaigns carried out in other media. This medium has a great reach and is target-specific. The primary audience for advertisers on the Internet is the youth. Hence, online interactive advertisements can leverage the incredible potential the Internet offers.

Yahoo! has a number of Rich Media products on the cards for advertisers that will enhance the viewer experience online. The Pepsi campaign is just the beginning.

A low PC and broadband penetration is not an issue as most metros have a decent broadband access courtesy the ubiquitous cyber cafes. Nevertheless, an improvement in the existing scenario will surely increase reach.

ONLINE FIRST!



Vikas Gupta
VP, Marketing,
Coca-Cola India

The age of Internet marketing is here and every company that wants to connect with its target audience will have to use this medium. We, at Coca-Cola India, have recognised the power of Web promotions, and have made it an integral element in all our marketing communication.

We have also used this platform for film-related promotions—*Kuch Na Kaho*, for instance. Our site carried movie-specific content, games and downloads. We received an overwhelming response with more than seven million people visiting the site.

Online advertising or 'digital marketing', as we like to call it, is a platform to connect with your audience. Undoubtedly, it's a widely used medium. The target audience of most of our brands is in the age group wherein the Internet and mobile phone usage is the highest. So, it's imperative that whatever we do in the regular media needs to be extended to the digital platform. While Hungama manages the site, the creative content is an output of the consumer or brand team.



Rajat Ohri
Senior Vice President,
J Walter Thompson
(Advertising Agency)

Using the Internet as a medium to conduct promotional activities is definitely a trend. Advertisers want to connect with their audiences and interaction is the key to retain a brand following and even to build a new consumer base.

It's important to create a buzz around the product and to take the consumer into account during every campaign. The digital medium is a requisite for such an integrated promotional campaign. The Pepsi webisode featuring Shahrukh Khan, a youth icon, was a great hit.

There was a trickle-down effect and the webisode got a large number of hits. The interactive content developed by marketers and advertisers today help to keep consumers in tune with the brand. The Internet gives consumers a choice and brands that are in tune with consumer views will naturally adopt this medium.

Most youth brands today target what we call the 'Upper Sec A1' or the urban youth. This section has extensive access to computers and broadband Internet connections.

*As told to Mithun Kidambi
(mithun_kidambi@thinkdigit.com)*

VoIP At Work

VoIP (Voice over Internet Protocol) technology enables transmission of voice and data over the Internet. Is it advisable for workplaces to implement VoIP extensively?

VoIP is a great way to increase productivity without major hassles

IBM Global Services offers end-to-end solutions ranging from hardware to software, services and consulting. Since its inception in India in 1992, IBM has expanded its operations to include regional headquarters in Bangalore and offices in 14 cities. IBM Global Services has extensively deployed VoIP technology in all its offices across India.

"There are three ways to place a VoIP call—using ATA (Analogue Telephone Adaptor), IP phones and PC-to-PC communication. The practical upshot of using VoIP technology is that the freely available (and free to use) software allows callers to entirely bypass phone companies and associated costs for making a telephone call.



Praveen Cherian
Country Manager, Networking
Services, IBM Global Services

"By using IP phones to make long-distance calls, we spend just a fraction of the amount that we would normally spend when using the traditional telecom network"

With VoIP, we can call wherever there's a broadband connection. Business travellers can carry IP phones for ready access and instant connectivity. For us, VoIP is a great way to increase productivity without major hassles. The biggest benefit is the savings in communication cost. By using IP phones to make long-distance calls, we spend just a fraction of the amount that we would normally spend when using the traditional telecom network.

VoIP allows optimum utilisation of network resources. Even with a LAN connection, VoIP can be deployed on all PCs in an office, either by implementing it over a LAN, or creating a separate Virtual LAN. The former provides more bandwidth, and the latter keeps voice and data networks separate. PC-to-PC communication is the easiest way to use VoIP. To make long-distance calls, all you need is software, a microphone, speakers, a sound card and an Internet connection. And the cost? Just the monthly ISP fee.

Like any emerging technology, VoIP needs to overcome certain challenges. As it uses an Internet connection, it is susceptible to the problems associated with broadband services—such as transmission errors that affect call quality. Nevertheless, as developers keep refining VoIP, it will eventually replace the current phone system. We feel VoIP will continue to be implemented by enterprises and over time, it will benefit consumers."

The usage of IP telephony is still limited in this country

Founded in 1984, Intellicon Pvt Ltd delivers solutions to diverse industries and on a wide spectrum of technologies including telecommunications, barcoding, data capture and specialised software services. At present, Intellicon does not use VoIP technology.

"Firstly, the usage of IP telephony is still limited in this country. You simply cannot integrate your PSTN Lines (traditional telephone lines or PRI/BRI ISDN lines) and Internet connection in the same system (whether EPABX system or integrated voice/data switch).

"In other words, you need to have two parallel voice switching systems—one for inter or intra-office traffic



Chetan Turakhia
Head, Telecommunications
Division, Intellicon Pvt Ltd

"IP phones cost much more than the regular phones. Even if the cost of the VOIP card or gateway is not too much, the overall costs are high because you need IP phones at each point"

and one to communicate with the external world. This in turn would increase the cost and hence it is not a practical option unless you have huge amount of internal traffic.

"Secondly, IP phones cost much more than regular phones. Even if the cost of the VOIP card or gateway is not too much, the overall costs are high because you need IP phones at each point.

In a professional setup, it is important to have a smooth uninterrupted flow of communication (without breaks and jitters or any other type of delay). Hence, while voice traffic occupies very less bandwidth, with VoIP technology, when the Internet connection is erratic or, say, dedicated bandwidth is not available, the quality of calls gets affected.

Of course, one cannot deny that there are some advantages associated with VoIP. For instance, the major advantage is cost. Once you set up the LAN/WAN infrastructure, the usage cost is almost nothing as far as intra-office communication is concerned. In certain industries the internal traffic is very high. In such cases, VoIP makes a lot of sense. For example, Banks, Railways, Airlines have their own Wide Area Network. So, essentially, VoIP usage is an industry-specific thing.

*As told to Renuka Rane
renuka_rane@thinkdigit.com*



it's a free portal for both the donors and the needy.

Somani sums up the purpose of the site: "There are many NGOs doing excellent work in India. We wanted to support them in whatever capacity, be it online or offline, in volunteering, distributing materials or providing strategic advice. NGOs are largely understaffed. We hoped that visitors to Karmayog.com, who may be experts in their own field, could provide their valuable time and efforts to support a noble cause."

Volunteers, mentors, corporates, and service providers can list the availability of their time, talent, materials, services and money, and indicate their interest in specific humanitarian projects.

The Karmayog team co-ordinates events and seminars that includes contacting NGOs, citizens, the BMC, the Mantralaya, and corporates—and all forthcoming events are listed on the site.

The Team

Apart from Somani, the Karmayog team has five other members. There's Vibha Singh, the content developer, a journalist with eight years of experience in mainstream media and in the social sector. What prompted Singh to join Karmayog?

She replies, "The media doesn't have scope for follow-ups. For instance, if I reported a rape, the story would be printed, but that would be the end of it. How the victim was rehabilitated, and other such relevant issues would go unnoticed.

I realised then that it were the NGOs who finally rehabilitated the victims—of rape or otherwise—and they were the ones who actually did the follow-ups. I wanted to do something more constructive than just report facts as they stood. I chose to work with Karmayog.com since other similar Web sites seemed inadequate."

Other team players include management student Burzin Mistry, who handles the Web site development. A post-graduate in social work, John Matthew is the researcher. Jayant Upadhyay manages accounts and administration, along with Falguni Chauhan, the accounts executive.

On The Technical Front

The Web site itself is constantly undergoing change. While it doesn't have a forum, there's a full-fledged Yahoo! Group with more than 3,000 active members.

As Mistry says, "When first launched, Karmayog.com was a purely HTML site, a database model. We developed it over time into a fully-functional portal. For now, we have outsourced the programming work. We also send out a free daily newsletter. We use Google's AdSense for revenue generation, and have also implemented SEO (Search Engine Optimisation). We get more than a thousand page views daily."

An Information Database

Visitors to Karmayog.com can find volunteers, advisors, employees, materials, services, sponsors, Indian and foreign donors, and get support for



Visitors to Karmayog.com who may be experts in their own field, could provide their valuable time and efforts to support a noble cause"
Vinay Somani
 Founder,
 Karmayog.com

events and publications. There is also a list of companies in India involved in Corporate Social Responsibility (CSR).

Highlights of Karmayog.com include 'Hot Topics', wherein urgent social issues are floated online and users can add their views, suggest solutions or offer assistance. Other links include 'Issues/Causes', 'Actions for Citizens' including 'Contact your ALM (Advanced Locality Management)', and so on. Under 'Services' are listed emergency numbers, help lines, 152 support groups and an all-India hospital list.

A recent addition is the 'NGO Council', a representative body of the NGO sector in Mumbai. An open committee, it comprises a mix of 69 organisations. The Karmayog team has extensively mapped and sorted the NGO sector in Mumbai by location, area of work, capacity, activities and so on.

Singh adds, "As a Web site, you need to have the latest information. This involved personally visiting hundreds of NGOs and calling others to check if their services, addresses and phone numbers were still valid. To post data about non-NGOs, we took up whatever existing lists there were, of say, blood banks, media firms and hospitals. Then, we called up every institution to verify the details and uploaded those on to the site."

A Web Presence For NGOs

NGOs in India can get a free, permanent, self-manageable online presence at the site: the NGO is given a URL such as—

www.karmayog.com/ngoname. The NGO can update its details daily, put up requests for volunteers, and announce job openings amongst other details.

Somani explains, "Being on the Web increases an NGO's reach. The details of the listed NGO have been presented in such a way that it gives users a quick profile of the organisation. As of now, Karmayog has up-to-date listings of more than 2,000 NGOs in Mumbai alone—and more than 3,000 NGOs from the rest of India."

Karmayog also lists volunteers and donors. There are more than 350 registered volunteers, and the number is rising. Those who would like to get volunteer IDs from Karmayog need to fill an online form mentioning their name, work and home



The Karmayog team (standing from left to right): Burzin Mehta, Vinay Somani, Jayant Upadhyay, John Matthew and (seated from left to right) Falguni Chauhan and Vibha Singh

Photograph: Jiten Gandhi

location, areas of interest, languages known and prior volunteering experience.

Networking Citizens

The Mumbai floods swung the Karmayog team into action like never before. From getting donors who sponsored lakhs of rupees worth of medicines, to others who could bodily help victims, to allocating funds, Karmayog became an information interface. All the team members were available for contact 24/7.

Somani refers to a PIL (public interest litigation) filed by a citizen in the court over the bad condition of roads in Mumbai. The court retaliated by asking for solid evidence on the same. Ever since, Karmayog has been bombarded with mails from several infuriated citizens—with actual pictures of potholed Mumbai city roads in a state of utter neglect!

Somani also cites another example: the stray dog menace. On the one hand, Karmayog received passionate letters from animal lovers, and on the other, those who had been bitten by canines poured out their woes on the site!

“Being an online medium, Karmayog can enable cross-fertilisation of ideas—there is a sharing of views—and thus people can find a balanced approach to their problems and live harmoniously. By and large, the judiciary gives inflexible solutions to problems, the government cannot help everyone, and its policies are lopsided; in such a scenario, citizens will have to help themselves.

NGOs do not want to preach to the converted—those who are already helping with charitable causes—it is essential to leverage those who are sympathetic to the cause but have hitherto been unable to help,” says Somani.

Networking With NGOs

In terms of information, resources and activities, Karmayog.com has all a donor or volunteer would ever require.

To get a better idea, consider this: under the ‘Issues/Causes’ link, there are 40-odd other links dealing with issues as diverse as AIDS and drug abuse. Under one of the links titled ‘Disabilities—Hearing’, there’s information on the hearing and speech-challenged sector. There’s a list of hearing aid makers in India, links

to useful Web sites, libraries of articles, Acts, laws, Government schemes, and an e-group.

And under ‘Mumbai’ alone are listed 24 schools for the hearing challenged (with ratings), 18 other NPOs (with ratings), 95 ENT Hospitals, surgeons, doctors and clinics (with the respective consulting fees), 50 hearing aid clinics and suppliers (with ratings), and profiles of hearing-challenged individuals and training institutes.

As you can imagine, such a compilation is of immense help. For instance, parents of a hearing-impaired child searching for a suitable school would be easily able to locate an NGO that meets their criteria through the listings on Karmayog.com.

Channelising Resources

“NGOs are doing fantastic work, and even a little support can multiply their effectiveness. But NGOs need to find people who can help and people also need to know how to support them. Due to lack of information and co-ordination between NGOs, there is often duplication of work, inadequate and fragmented knowledge.

“It is here that, as a readily accessible online resource, Karmayog.com acts as a facilitator between NGOs and people,” says Somani. Karmayog also independently evaluates and recommends NGOs. Since January 2005, it started the ‘Non-profit-of-the-month’ idea, wherein it carefully profiles and recommends one deserving NGO every month, in most cases, a low-budget one.

Here, in addition to the general details about the NGO on the site, the Karmayog team personally visits the NGO and notes the administration, upkeep and facilities, and then gives the rating. This, in turn, helps donors directly help NGOs—as donors need to be assured that their contribution will reach the actual beneficiaries.

You Can Reach Out!

You may feel strongly about civic issues and you may also have the empathy to do good, but not always have the means to reach out. With Karmayog.com, you need not be a mute spectator any longer: you can play an active role to make our world, clichéd as it may seem, a better place to live in. ☑

renuka_rane@thinkdigit.com

Harold's Legacy

1 The body of the new Nokia 8800 phone is made up of which metal?

- a) Titanium
- b) Aluminum
- c) Steel
- d) Nickel



2 What is the code name for Microsoft's office suite to be released in 2006?

- a) Vista Office
- b) Office 12
- c) Office 360
- d) Ice Off

3 Who has Google tied up with to conduct research and set up a campus?

- a) NASA
- b) FBI
- c) FCC
- d) ICANN

4 Which device of the following won the Emmy award for Outstanding Achievement in Technology and Advanced New Media?

- a) iPod
- b) Sony PlayStation
- c) Blogs
- d) Satellite Radio

5 Which of these Internet majors is part of the Open Content Alliance?

- a) MSN
- b) AOL
- c) Yahoo!
- d) Google

6 In September 2005, which company did Oracle buy for \$5.85 billion?

- a) SAP
- b) Siebel
- c) PeopleSoft
- d) iFlex

7 Which of the companies given below is not a mobile phone handset maker?

- a) Innostream
- b) Mistubishi
- c) Bird
- d) Thomson

8 Frank Nuovo is the Chief Designer of which technology giant?

- a) Apple
- b) Motorola
- c) Nokia
- d) Sony

9 Which of the following is not a game released by EA Sports for Xbox 360?

- a) FIFA 06—Road to the FIFA World Cup
- b) NBA 06
- c) Need for Speed—Most Wanted
- d) Batman Begins

10 An 8:1 compression ratio will reduce a 1 MB image file to approximately:

- a) 1 Kb
- b) 15 Kb
- c) 128 Kb
- d) None of the above

The Bluetooth technology is named after the Danish king Harold Bluetooth, who reigned during the 900s. He was responsible for consolidating Denmark and Norway into a single kingdom.

Did You Know?

Got an interesting question? Send it in with the answer to tq@thinkdigit.com Mark 'TQ' in the subject area.

Answers

- | | |
|------------------|---------------------|
| 10. 128 Kb | 5. Yahoo |
| 9. Batman Begins | 4. Sony Playstation |
| 8. Nokia | 3. NASA |
| 7. Thomson | 2. Office 12 |
| 6. Siebel | 1. Steel |

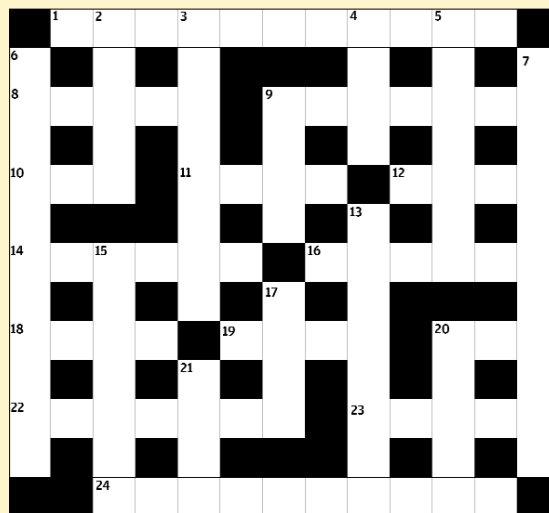
Crossword

Across

1. Virus—"john roaster" anagram (6,5)
8. Making an _____ inserting an item (5)
9. Paggers (7)
10. Information Awareness Office (abbr) (3)
11. A programme interrupt (4)
12. _____ wall-security policy (4)
14. Communication command or response requesting data to be retransmitted (6)
16. Circle or dot separating items in a list (6)
18. Strong desire for Net use (4)
19. Asynchronous Data Link Control (abbr) (4)
20. Self Extracting Archive (abbr) (3)
22. Programs that allow files to be read only and not changed (7)
23. Short for Integrated Database API (5)
24. Locates an organisation or other entity on the Internet (6,4)

Down

2. _____ and proportion (5)
3. Cursor control device in computer games (8)
4. _____ or close files (4)
5. _____ Interest Groups (7)
6. Curved line connecting a series of points (6,5)
7. Relative vertical and horizontal sizes in computer graphics (6,5)
9. Java _____ (4)

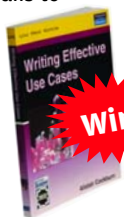


13. 'F1' key (8)
15. Gopher search facility similar to 'Veronica' (7)
17. Distributed Denial-of-Service (abbr) (4)
20. Structured Systems Analysis and Design Methodology (abbr) (5)
21. Laser _____ (4)

Send your answers to the crossword with complete contact details to TQ@thinkdigit.com on or before November 15.

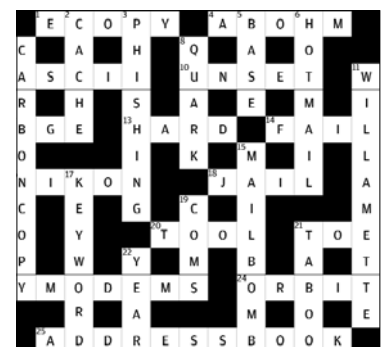
One lucky participant will win: **Writing Effective Use Cases**

by Alistair Cockburn
Published by Pearson Education (Singapore) Pvt Ltd
(Indian branch in Delhi)



Win!

October 2005 Solution



The winner for the October 2005 crossword is Lt Col P V Sivaram, Vadodara, Gujarat.

Crossword by Nitta Jaggi

Fore!

It's time to tee off with *Tiger Woods PGA Tour 06* in what is arguably the best game of golf you will ever play—indoors, that is!

First things first: I'm no good at golf. And playing this game for a period of about three weeks has further confirmed the belief that I perhaps never will be. Even against the computer. Why? Because *Tiger Woods PGA Tour 06* is just too realistic! If I wanted the wind to swerve away every drive, or bow to the whims and fancies of every putting green, I would go to a real golf course and not waste time trying to cheat the computer, would I? Oh well, call me geeky if you will, but I would, and I did!

Anyway, the fact that the game is too realistic is perhaps its greatest USP. In fact, I would go so far as to say that this game could even be enjoyed thoroughly by those who actually play the real thing. The physics is simply marvellous, and things like the angle at which your club hits the ball in the downswing also affect the final outcome of your shot.

Creating a player is one of the most enjoyable experiences of this game. Unfortunately, you can't upload your own photo to make it more realistic. What you can do, however, is choose his hair length, colour, cut style, clothes, shoes, glasses, cap, wrist band, height, weight, face characteristics, eyebrow length, size of the mole under your left eye and the weight around the midsection. I'm not kidding!

There is \$100,000 allotted to a pro-level player (if that's your choice of level) or \$10,000 to a novice to buy all the equipment and compete in the first year. Any earnings you make along the way are added, and this is used to determine your standing in the money list of the PGA Tour (or the Hacks Tour).



There are many ways you can tee off and start playing. You could choose an existing player—anyone, from Arjun Atwal to Tiger Woods—and just get on the tour and compete with the best. Or, you could put your name on the scoreboard and risk losing some pride! Trust me, playing in this game, you will!

If you really want to get a hang of the game and learn the ropes, you can start as a novice and work your way up the local league (including friendly matches against office managers!) and earn your Tour Card.

Playing the game is easy, and you can choose from one of four available modes of hitting the ball—TrueSwing (Horizontal or Vertical), 2-Click and 3-Click. The TrueSwing modes are the best: they give you realistic control over how hard and accurately you hit the ball without having to keep track of rotating dials and power bars.

Player animation and the details on the golf courses (eight of them) are fantastic. One hitch here is that the player face (as seen on the scorecard) and the actual face (the one that is playing) don't match—a bug perhaps.

On the whole, though, if you like greens and have a strong heart, this is Rs 1,299 well spent.

A word of advice: Keep all warm beverages out of reach when playing, especially when teeing off! ☒

aditya_kuber@thinkdigit.com

Publisher: EA Sports
Minimum System Configuration: Pentium III or Athlon 1 GHz, 256 MB RAM, 32 MB OpenGL Graphics Card, DirectX 9.0c compatibility
Price: Rs 1,299
Available in India through: Gayatri Impex



Seriously, Now!

Perhaps the most awaited sequel of this year, *Serious Sam 2* is finally here. We reviewed the demo, which is provided with this magazine's CD

To begin with, the demo seemed really small in terms of file size! Just about 250 MB for a proper FPS game demo is sort of odd these days. I crossed my fingers and installed anyway.

The test bed was an AMD Athlon 64 3200+ (939 pin), 1 GB DDR 400 MHz Transcend RAM, MSI RS480 MII motherboard, 80 GB SATA Seagate Barracuda hard drive, and a 256 MB 6600 GT PCIe graphics card. The intro cut scene was funny, as usual, and then the killing began!

Before I tell you more, you should know that *Serious Sam* has always been anything but serious! Don't expect realism and don't think that it's anything like *HalfLife 2*, *DOOM 3* or *F.E.A.R.* This game is, and always has been, a funny FPS with stupid-looking monsters, weird weapons and great 3D backgrounds!

The settings interface is clean and easy to navigate. The game automatically sets the ideal graphics settings for your configuration—of course, I changed it all to the highest settings, not really giving a damn if it framed, so long as it was beautiful!

I entered the game and these weird-looking things shot green blobs at Sam. Of course, Sam promptly picked up weapons and ammo and began the carnage. Soon after, he picked up a parrot, (yes, a parrot that carries a bomb). Eager to use this cool weapon, Sam went looking for more monsters! The search didn't last long—as soon as he approached some enemies, stupidly standing around doing absolutely nothing, the game froze.

The sound looped, the video stayed still: the game had just hung! I pressed [Esc], hoping I wouldn't have to do a cold reboot. It worked! The game menu popped up after 10 seconds, and I clicked 'Resume Game', hoping the bug would just go away—but it didn't. I quit the game and immediately went online, searching for some feedback from others. I found that many people were facing the same problem. Then I saw a patch for the demo. Oh well!

Anyway, long story short, even the patch didn't work, and the game kept hanging intermittently.

I still played it anyway, exiting after every hang, and then restarting and continuing from where I had left off. Yes, the game was fun enough for me to bear with such nonsense—the other *Digit* team members in my bay had to put up with sudden screams of anguish (and expletives), but I couldn't care less—after all, this was *Serious Sam 2*!

So how is the game?

With advanced features such as High Dynamic Range (HDR) rendering, the Serious engine is great for this game. CroTeam, the Croatian developers of the game and the engine, have done a decent job with everything. Even the AI is not completely stupid, though nowhere near intelligent. *Serious Sam* has always been about hordes of easy-to-kill enemies attacking at once, not about a few smart enemies that are hard to kill!

Overall, the enemy bosses look too easy to kill... the monsters have weird flat textures, which is only funny for a while, after which it starts to look shabby! There's already a *Serious Sam 2 Demo #2* out, which fixes the bugs of the first demo and adds a level to shut up the dissenting fans—in our humble opinion, you're better off downloading the second demo. We'll provide it on our December DVD.

If you just cannot wait, like me, install this demo and give it a try. If you're a *Serious Sam* fan like I am, it will be worth it—well, barely worth it. If you're not a fan, wait till we provide the second demo, because this one just does not do justice! ☒

robert_smith@thinkdigit.com



Like in the first part, you're still always attacked by hordes of baddies



The scenery is great but the enemy bosses look a little stupid—but then again, this is *Serious Sam*. At least the audio is great, and will keep you entertained!



5

TOP SELLING GAMES

1. FIFA 2006

Rs 1,299

Gayatri Impex

2. Cricket 2005

Rs 999

Gayatri Impex

3. Brian Lara International Cricket 2005

Rs 1,299

MicroWare

4. Moto GP 3

Rs 699

E-xpress Interactive Software

5. Counter-Strike: Condition Zero

Rs 499

E-xpress Interactive Software

List Courtesy: Crossword Mumbai

TechCritique

GAMES

Forbes.com, October 5, 2005

A Better Way To Search?

DAVID A ANDELMAN, executive editor, Forbes.com, speaks about the changes Yahoo! is incorporating into its search engine after they realised that they "are not the verb today"

I tried Yahoo!'s latest attempt to take on Google in search over the weekend, and I was underwhelmed.

Yahoo! and Google, the top two search engines, are just 6.7 percentage points apart, though it's true that the latest ComScore MediaMetrix numbers show that Google increased its market share in the past year by 1.2% to 37.3%, while Yahoo! shed 1%, coming in at 29.7%. Not too shabby, considering the two Big Kahunas of search together bring in two-thirds of all search traffic in the average month.

Still, Yahoo! wants more. "We are not the verb today," says Bradley Horowitz, director of media search for Yahoo! "We're not synonymous with search." The company is doing everything that the fertile imaginations of their software engineers can muster in order to persuade people to search with them first.

Before we get to Yahoo!'s "social search," let's step back and look at search in general. The goal is to find a particular Web site or factoid that answers a question or need. This

information is sitting somewhere on the billions of Web pages that exist in cyberspace, and the goal of search engine providers is to find the desired Web pages with the fewest clicks of the mouse.

The goal of any search engine is to become the destination of choice for these searchers, who will see the advertisements that make the search company rich every time a page is loaded. Yahoo!, like other Web portals, dropped the ball by not recognizing there was very big money to be made from this simple concept.

Google "crawled up on our backs," says Horowitz. Yahoo! helped give Google its legs by incorporating the search engine into its portal. "About two and a half years ago, we realized we made a mistake" by not recognizing the value of the search market sooner. So Yahoo! "bought up all of the remaining relevant companies" in the search market in order to catch up.

Moreover, with the growing conventional wisdom that search has turned into a commodity—albeit an essential one for any portal—Yahoo! also sought a better, and more expensive, way of distinguishing itself from Google, not to mention from Microsoft's MSN and InterActive's AskJeeves (which will soon be dropping "Jeeves"), which are in third and fourth place, respectively.

What Yahoo! has in mind is, at first blush, quite appealing: A search "community" that can create personal Web pages and link them directly with other searcher's pages. They call it MyWeb 2.0.

First, the idea behind MyWeb (now in beta version) is to create your own personal Web universe with the center being your own page, which includes all of the Web pages and links you've downloaded and stored there—basically, a snazzier set of bookmarks. In turn, these pages are searchable whenever you like.

For the complete column, visit <http://snipurl.com/digitoct1>



Variety.com, October 9, 2005

Old Media Reaches For Tech Tonic

"EVERYBODY IS NOW in competition with everyone else," Says Elizabeth Guider, executive editor of *Variety* in Los Angeles. Over the past 15 years, Guider has written extensively on entertainment and media subjects, and her questions are based on some firm grounds

Is it just me or has the pace of technological change picked up dramatically? The progeny of Hal the computer in Stanley

Kubrick's "2001" have become smarter, faster and more versatile than most of us probably were prepared for.

And am I wrong to think that every "old media" company is rethinking its business model as a result?

Not a day goes

by but some media company doesn't pitch out its rule book or take a page out of a rival's playbook. The upshot: Everyone is trying to eat everyone else's lunch. I guess that's what they mean by convergence. As one media analyst put it last week: "Everybody is now in competition with everyone else."

Five years after the tech bubble burst, puncturing momentum in the process, media companies are charging full steam ahead.

Old-school media mogul Rupert Murdoch is enthusing like a 12-year-old about Internet companies he's instructed News Corp. to gobble up. He told Wall Streeters two weeks ago that he expects his company's revenues from broadband to skyrocket fivefold in the next five years.

He's hardly alone.

Once-uptight telco types are loosening their ties and ordering up original video material; Hollywood studio chieftains are waffling on about narrowing or collapsing windows so as to better squeeze out ancillary revenues; exhibitors are digitizing at the rate of 300 moviehouses a month.

Just last week things really heated up.

Google said it would provide free wireless high-speed Internet access in San Francisco, allowing users to bypass cable or phone hookups they traditionally pay for in favor of wi-fi links. eBay and Microsoft are planning similar forays.

Yahoo's Santa Monica-based media unit started hiring former TV producers to help inch the company into the content creation biz.

And this is just in the U.S.

Parts of Asia and western Europe are ahead of the game in several key areas.

The South Koreans can do all kinds of high-speed Internet acrobatics while traveling on their bullet trains. The country is building a so-called "ubiquitous" city outside Seoul where even the doorjams will be digitized. Europeans enjoy all kinds of audio and visual data on their mobiles, and they have hardly penetrated Stateside. Consolidation in various industries is picking up, usually a prelude to expanding high-tech services.



washingtonpost.com, October 9, 2005

Security Suites Are Rife With Problems

ROB PEGORARO ASKS the basic question of why we're paying extra for securing Windows when security should be built into the operating system

If security software is so necessary in Windows—as it is—why are we supposed to pay extra for it?

For years, that's been a paradox Windows users have been able to mull over as they sat through installations of other companies' security software on their computers.

Symantec's and McAfee's security software programs have long benefited from Microsoft's oversights. Both firms supply the antivirus programs offered in trial form on most new PCs—and which help advertise their full-fledged security suites.

But the 2006 editions of these suites—McAfee Internet Security Suite 2006, \$50 as a download or \$70 as a box for Win 98 or newer; Symantec's Norton Internet Security 2006, \$70 for Win 2000 and XP—look unworthy of that success.

For one thing, they face competition from Microsoft, which last year added effective firewall protection to Windows XP with its Service Pack 2 update and has since released a surprisingly good (though still in beta test) anti-spyware tool.

For another, the complexity of the Symantec and McAfee suites seems to cause them to fail in ugly and destructive ways,

according to readers who have written in to complain about these problems week after month after year. Most important, the latest McAfee and Symantec suites just don't work all that well.

Both excel only in their antivirus utilities—which you can buy separately from these all-purpose bundles. Each program correctly blocked viruses received via e-mail in two different e-mail applications and via AOL's AIM instant-messenger software. Each also automatically fetched updates to its virus database every day.

Symantec's Norton AntiVirus, however, was quicker about its business, cleanly killing viruses with just brief notifications afterwards. Symantec's installer, unlike McAfee's, also scanned the computer for viruses before setting up the program, a sensible precaution.

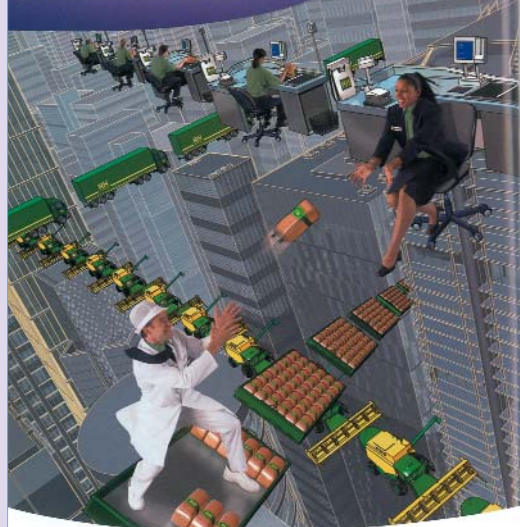
McAfee VirusScan, meanwhile, asked what it should do every time it found a virus—as if the choice should ever not be “delete”. Downloading antivirus updates manually required setting Internet Explorer as the default browser, turning off pop-up blocking and accepting the installation of an ActiveX program from McAfee's site—everything you shouldn't be in the habit of doing if you want to stay safe online.

Things get worse in the other McAfee and Symantec suites.

Their firewalls, intended to stop worms from crawling onto your computers, offer no more protection against intrusions than the one in Win XP Service Pack 2. Their advantage comes if a program has already moved in, when they can stop it from communicating with its creators. But these firewalls first need to learn which ones are safe so as not to nag you about the harmless activity of legitimate software.

For the complete column, visit <http://snipurl.com/digitoct3>

When information moves swiftly, your organisation can too with BT's networked IT services.



In the digital networked economy, convergence of IT and communications is now becoming a reality. However, with more ways of interacting than ever before, bringing together all your devices, networks and applications can be complex. With BT's networked IT services you can integrate and simplify your communications, improving efficiency and helping your organisation to be more competitive. By combining your voice, data and mobile applications in an integrated network environment, your people will be able to collaborate in real time and respond faster. To discover more about how BT's networked IT services can help your organisation



Flit Like A Butterfly

BT makes its point, portraying “how swiftly you can move” if the information flow in your organisation is smooth

He may not catch everything. But with the new Canon Digital Rebel XT, you will.

He's been dreaming about this moment for months. And when he does not catch everything, it's important that you do. That's why the new 8 megapixel Canon Digital Rebel XT is the perfect camera for moments like this. It's the fastest digital SLR. And with 8 frames per second shooting, 0.2 second start-up time and virtually instant shutter response, it makes great catches everyday.

digital REVOLUTIONIZED photography • we REVOLUTIONIZED digital

Missed!

The player missed it, but the photographer didn't. That's the beauty of using this camera! Nothing gets past the Rebel XT... no matter how fast it happens. Well done!

A Nanotech Golf Ball

NDMX, a golf ball designed by NanoDynamics, is slated to be released in late 2005. NDMX can fly much straighter than normal golf balls, since its internal weight can shift dynamically. This allows the ball to follow its natural angle of flight, like the golfer intended.



In da Bginnin...

The Bible has been translated into SMS-speak in Australia so as to make its message more accessible. It begins, "In da Bginnin God cre8d da heavens & da earth." Only the spelling of the Bible has been changed for the project, not the language. All 31,173 verses can be downloaded for free.



Escape

AMERICA VS THE WORLD

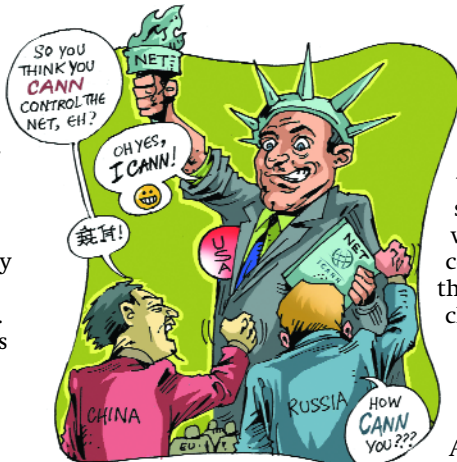
Who Should Control The Net?

If you thought there would be no regulation issues with the Internet given its very nature, you are mistaken. Of late, a storm is brewing and if you didn't know, here's the situation as of now: the Internet is currently the responsibility of ICANN, under the US Department of Commerce.

ICANN has more or less been in charge of the DNS since 1997, when the US Department of Commerce handed over limited control, in the hope that ICANN would move towards internationalisation. While this isn't the entire picture, in general, it is the US that's in charge.

Delegates at a meeting in Geneva on October 10 tried—but failed—to reach an agreement on who should control the DNS.

As might be expected, the meeting turned into a squabble over whether America had the right to



control the DNS. Countries were split into those who were for US control and those that were against.

No prizes for guessing who was for the US: little brother Great Britain, of course, and some others such as Australia and Argentina. The Aussie delegates spoke of a "hierarchical and bureaucratic approach" if the UN stepped in.

And no prizes for guessing who was in the opposite camp, either: the EU, with China and Russia.

Iran figures in the list of those who spoke up: it said it was concerned the US could cut it off from the Net any time it chose. Oh!

So well, who should control the Net, then? A summit this month in Tunis, Africa, will see the argument rage on even further.

IT'S ABOUT IMMERSION

Game Ads Are Spot On

Are you more likely to reach out for a Pepsi if a Pepsi banner flashed in front of you while you were playing a

UNUSABLE!

The Acrobat Plug-in For MS Office Products

If you have both MS Word and Adobe Acrobat on your system, you may think that you can easily create a PDF file from a Word document. Far from it!

It never seems to work. Different versions of Word, and different versions of Acrobat, and different combinations of these, bring up different errors—and that nice PDF document remains as elusive as ever!

The worst part is, on some systems, Acrobat actually makes a toolbar of its own in Word, which refuses to go away. However, there could be a registry hack for this.

On some systems, you may get the error "The Macro cannot be found or has been disabled because of your Macro security settings," when you click the convenient PDF button.

And unfortunately, when you try going to the **Tools > Macro** menu, you get trapped inside another labyrinth of options, none of which help you accomplish what you want. Then you refer to the Word Help on "Adobe" or "Acrobat", and nothing comes up.

On other systems, something seems to happen, then Distiller sort of gives up and you end up with an error message of a different kind.

It remains to be seen after how many versions of Word (and/or Acrobat) will we get real interoperability.

Win!

My Desktop

Think you have the most beautiful, most innovative desktop around? E-mail with subject **'My Desktop'** and your postal address to mydesktop@thinkdigit.com, and *Digit* will publish the most eye-catching of them each month.

This month's winner receives **Programming with Visual Basic 6.0**



The winner of this month is Sai Vardhan
E-mail: vishnuvardhan35@yahoo.com

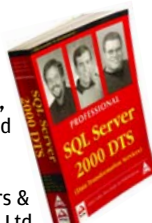
DigiPick of the month

"Burning the Midnight Coil"



This month's winner is
Dr Ranjan Sengupta
c/o Mr Balai Sarkar
Pioneer Park
Barasat, Kolkata 700124
West Bengal, India

He wins
**Professional
SQL Server
2000 DTS**
by Mark Chaffin,
Brian Knight and
Robinson
Published by
Shroff Publishers &
Distributors Pvt Ltd



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.

game? Or, when speeding along a highway in a racing game, would you notice an ad on the side of a truck whizzing past you? The answers are 'Yes' and 'Yes', according to a recent study.

This is not exactly a revelation: the impact an ad has depends heavily on the level of involvement of the viewer. And where is the involvement and immersion greater than in games?

But it's interesting to know to what extent ads are effective in games. The study found that there's a whopping 60 per cent increase in awareness for a new product as a direct result of in-game campaigns. And interestingly, animated 3-D ads bring about twice the brand recall that static billboards do. We didn't know people were as measurable as this!

As the world gets increasingly virtual, advertising in games will, naturally become more important. "The study (proves) in-game advertising is a medium that brand managers across categories should be exploring, particularly if they want to reach the highly valuable 18 to 34-year-old male

audience," said Henry Piney, MD, Europe, Nielsen Interactive Entertainment.

The study was released by Double Fusion, a provider of in-game ad services, and Nielsen Interactive Entertainment. It looked at ads within the downloadable version of London Taxi, a PC game.

REEKING OF WEALTH

Wi-Fi Is A Right!

It could happen only in America, the richest and most powerful nation ever to have existed. The mayor of San Francisco, Gavin Newsom, has declared that Wi-Fi is a "fundamental right". Something like guns. Or maybe even food.

The statement was made in the context of the city's plans for its Wi-Fi development. San Francisco wants an affordable Wi-Fi network covering all the 43 hills and the entire 49 square miles of the city.

Did we mention that Google is one of the bidders? They plan to offer

it for free. The project would be funded through online advertising, a Google spokesman said.

Coming back to Newsom's statement: "This is inevitable—Wi-Fi. It is long overdue," he said. "It is to me a fundamental right to have access universally to information."

It's surprising we haven't seen much negative commentary about the statement: do San Franciscans—or Americans—actually believe something like Wi-Fi can be elevated to the level of a 'right'?

There is a redeeming aspect, though. Newsom also said that Wi-Fi was an alternative network that could kick in to provide emergency information in the event of a natural disaster. Now *there's* some method to the madness!

THE GOOD, THE BAD, ...

The Blocker Prize

An online self-publishing house called Lulu has announced the Blocker

People Who Changed Computing

Moore's Law

Gordon E Moore, born in 1946, in San Francisco, made the observation in 1965 that integrated circuits would double in complexity every 18 months.

The press called this "Moore's Law," and the name has stuck



Gordon E Moore

since then. Moore forecast that this trend would continue through 1975. Through Intel's technology, Moore's Law has been maintained for much longer, and still holds true.

After completing a B.S. in chemistry from UC Berkeley in 1950 and a Ph.D. in chemistry and physics from Caltech in 1954, Moore started working at Shockley Semiconductor Laboratory.

He left in 1957 to launch Fairchild Semiconductor. Soon, with Moore leading the production engineering, Fairchild was shipping its first transistors.

Fairchild was a successful company, but Moore left because of management changes in its parent company. In 1968, he co-founded Intel, initially serving as executive VP, to become the president and CEO in 1975.

He led the company to produce the world's first single-chip microprocessor, and went on to become the world's largest chipmaker. In 1997, Moore was named Chairman Emeritus.

Amongst other honours, Moore received, in 1990, the National Medal of Technology from President Bush. An avid fisherman, Moore enjoys visiting fishing-related Web sites.

Bluff

YOUR WAY THROUGH

Motherboards

Motherboards in our computers are reminiscent of *Star Trek*, the TV show from the '70s and '80s. Back then, they looked complex enough for space technology and performed complex operations.

The point we are making is the motherboard is the main man (!) as far as your PC is concerned. Honestly, everything that's involved in running the computer smoothly or enhancing its performance is either part of the motherboard or plugs into it via a slot or a port. It's like the "motherhip" that has all other vital components on it including the processor, memory slots, and many expansion slots for add-ons such as Graphics Card, Sound Card and so on.

A motherboard contains thousands of chips and capacitors that ensure each and every component is getting optimum electric supply from the main power supply for its functioning. This physical construction of chips and integrated circuits on a base is called the "chipset".

Chipsets have various designs; and different systems prefer different designs. Motherboards have come a long way over the last twenty years. The first motherboards held very few actual components. The first IBM PC motherboard had only a processor and card slots.

Here's some more dope to get you through a conversation as an expert: A typical motherboard today would have a PCI (Peripheral Component Interconnect) slot, AGP (Accelerator Graphics Port) slot, North Bridge, Processor Socket, South Bridge, BIOS (Basic Input/Output System), USB (Universal Serial Bus), FireWire and IDE (Integrated Drive Electronics).

Knowing names of motherboards or Graphic Cards by rote is like the MCSE of Geekiness and it would be handy to know "MSI K8N NEO4 Platinum", "ASUS A8V Deluxe" or "ASUS A8N-E". If you can roll these off your tongue, you're good to go!

Festivities And Celebrations

It's been yet another eventful month, and we all have had our share of fun. This time, the editor, Deepak was on a weeklong official tour. And we just stopped short of painting the office red!

The things we did included playing the guitar and humming songs—trust Raaabo and Vijay to perpetually have a guitar stashed away in their cubicles!

Just the other day, in fact, we also tucked into rich chocolate cake—no, it wasn't a birthday; it was Ishan's—our dear CD and DVD dude's—farewell. It's rightly said that parting is such sweet sorrow!

Most of us, Ram, Renuka, Raaabo, Vijay and Preethi in particular, were a happy lot; the reason being we got our machines upgraded—from swanky CPUs and monitors to higher disk space. We wanted more and finally we got more!

Then there was Dussehra. The occasion prompted us to give our

workspaces a revamp—we cleared all sorts of clutter. The *Digit* Test Centre in particular looked incredibly spacious—with all empty product cartons out of the way and the hi-tech gizmos in their rightful places, courtesy TC co-ordinator Gautami badgering reviewers to break away from their tech reverie and remove the sordid stuff for once!

Having the Dandiya Nite right on our premises gave us another chance for revelry. And now, the most awaited annual Diwali party is in the offing! Auditions are in full swing for the same and rest assured that *Digit* members have a few tricks up their sleeves!

As you can see, our relatively unconventional work ethos is accompanied by a rare camaraderie and a fervent passion. Here's wishing you all a very happy,

prosperous and safe
Diwali from all of us
@ *Digit*!

DIGIT DIARY

Prize—the first literary award for "blooks," which, unsurprisingly, are books based on blogs or Web sites. Hey, we didn't even know such books existed. Lulu is "the world's fastest-growing provider of print-on-demand books, including an increasing number of blooks," according to the site.

An FAQ on the Blooker Prize site says, "A blook is a book with content that was developed in a significant way from material originally presented on a blog, Web-comic or other Web site. This material includes the Web site's characters, themes, ideas or outline that end up getting published as a printed book."

The awards—in cash—will be in three categories: Fiction, Non-fiction and Comics. Surprisingly, there's no Poetry category. Each category winner gets \$1,000 (Rs 44,990 approx.). Moreover, the overall winner gets an additional thousand USD!

The FAQ continues: "Scores of blooks have already been published, both by traditional publishers and self-publishers. Indeed, traditional publishing houses, ever in search of the next big-name author, have begun to mine blogs and sites for new talent."

Lulu's site—www.lulublookerprize.com—has attracted a variety of writers. Titles range from "The Authoritative Encyclopedia of Scientific Wrestling"

to "Classroom Blogging: A Teacher's Guide to the Blogosphere" to "How To Cook A Peacock: Medieval Recipes by Taillevant."

Then there's "Cyberchild," described as, "In a war-torn country in Eastern Europe, the life of a young girl is radically changed when she encounters a lab animal freed from a medical experiment gone awry". eBay has to figure and it does: there's "Confessions of an eBay seller."

If these are anything to go by, it's a sad state of affairs for Internet writing. Not to say there aren't any good titles: there's "Metamorphosis of Prime Intellect," definitely worth the time and effort.

While the concept has caught on in the blogosphere, how many takers there are will be known only as the deadline approaches. Some rules for eligibility are also given. Visit the site for more. For now, we'll tell you that the deadline (yes, it's for real!) is January 30 of next year.

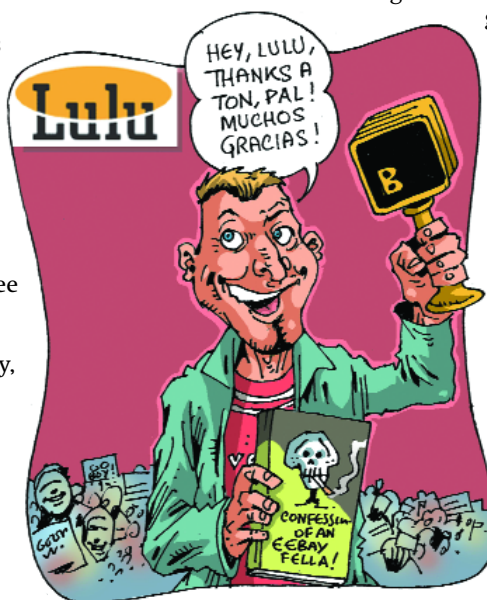


Illustration Harsho Mohan Chatteraj

whatweretheythinking.com

Stuffonmycat.com

We know the Internet is a place that offers a large audience anonymity, and the option of going absolutely crazy. Roll all these into one and what you have is www.stuffonmycat.com. What's that, you ask? How dare you? Have you not visited it yet? Loser!

The disclaimer and terms of service on the top say: "Do you like to put stuff on your cat? Stuff + Cats = Awesome. So do we, show us some love and head over to our submissions page to find out how to send us a picture. If your submission meets our 'rigorous' standards in the fields of quality and awesomeness we will put it up for all to see."

Rush now and don't forget to include a small donation through PayPal. What for we don't know yet.

The layout of this site is not the problem. It's pretty blog-like and offers decent navigation. It's the content and number of regular viewers that the site has which has left us baffled. For once, we also have to ask "What Were They ALL Thinking?" Sharing information about pets is all right, but getting

your pets to pose with atrocious stuff and photographing them to circulate on the Internet is totally uncalled for.

The links "Food on my cat" has felines heaped with assorted goods from pizza slices, beer bottles, bananas, corn cobs to noodles. And the 'Tech on my cat' link has it all—from floppy disks, CDs, keyboards to other gizmos dumped on the furry animals. The less said the better. Somebody needs to call PETA.



REMEMBER THE MISSION

Another 300 Years For Google

Remember Google's mission? The one about making the world's information accessible? It goes, "Google's mission is to organise the world's information and make it universally accessible and useful."

CEO Eric Schmidt was speaking at the US Association of National Advertisers' annual conference in Phoenix, when a member of the audience asked how long it will be before Google fulfilled its mission.

"We did a math exercise and the answer was 300 years," CNet quoted Schmidt as saying. There was a clause, however: "The answer is it's going to be a very long time."

So maybe he was joking about the maths. Schmidt estimated that out of the five million terabytes of information in the world, only 170 have been indexed so far.

It's an interesting exercise if one gets down to it: research on how much data is being produced every day, on how much data libraries contain, and so on. It could be fun, but probably not worth it.

How did Schmidt have the figure right there in his head? Well, he is the CEO of Google, but then again, something tells us he was speaking off the top of his hat.

There's another thought, though—pure fantasy, of course: what if Schmidt had *actually* done his math? What if *everything* were to be indexed one day? It's an exciting thought initially, but then, nah... we'll all be dead by then. ■

Compiled by Aditya Kuber,
Ishan Prakash, Ram Mohan Rao
and Renuka Rane

Blog WATCH

Life is unpredictable—this fact is reinforced by the poignancy filled comments of bloggers on the devastating South Asia earthquake

Teachers

<http://teachersol.blogspot.com/2005/10/south-asia-earthquake-another-deadly.html>

South Asia Earthquake: Another Deadly Disaster

I just woke up on a Sunday morning excited to have a hearty lunch at the Waterfront near Georgetown. I was so sure it's going to be an enjoyable weekend since tomorrow is a holiday, Columbus Day. I wasn't planning to blog today, I wanted to relax and spend some quality time with my family.

I started with my usual routine of checking my e-mail, and the Yahoo news caught me and got me engrossed clicking on the related news, photos, videos of the South Asia Earthquake which happened 50 minutes ago.

My heart was crushed even more when I read this part in one of the articles:

BALAKOT, Pakistan - Villagers desperate to find survivors dug with bare hands Sunday through the debris of a collapsed school where children had been heard crying beneath the rubble after a massive earthquake killed more than 20,000. (READ FULL STORY: Survivors Sought in South Asia Earthquake)

InsideOut and About

http://blog.insideoutmag.com/outabout/2005/10/pakistan_earthq.html

Pakistan/India Earthquake Coverage

We're sure you've heard about the terrible earthquake in Pakistan by now and are as sad as we are.

An earthquake of 7.7 magnitude hit Pakistan early on Saturday and the death toll could be as high as 20,000 if not more. The Associated Press reports "President Gen. Pervez Musharraf called Saturday's magnitude-7.7 earthquake the country's worst on record and appealed for urgent help, particularly cargo helicopters to reach remote areas cut off by landslides." Aljazeera is reporting up to 30,000. "There are cities, there are towns which have been completely destroyed. Muzaffarabad is devastated," minister Tariq Farooq told Aljazeera on Sunday, referring to the capital of Pakistan's sector of disputed Kashmir.

The Grape's Vine

<http://thegrapesvine.blogspot.com/2005/10/pakistan-quake-complicates-war-efforts.html>

Pakistan Quake Complicates War Efforts

The devastating earthquake that struck the Kashmir section of Pakistan has added major complications to the US lead War on Terror.

With estimates of a death toll possibly topping 30,000, the Pakistani military will naturally be redirected to provide much needed assistance in the ravaged region. Currently, the Pakistani military is being used to secure the border with Afghanistan and has been instrumental in the search of al Qaeda cells on their side of the border. (Washington Post: Up to 30,000 Feared Dead in Asian Quake).

~Phenom~

Warmed-Up Nerd

Location: CYBERYARD

Looks real coooooool. Waiting for the issue...

Kato

Warmed-Up Nerd

Location: Chennai

Looking forward to the tips and tricks section for windows movie maker (at least can make out wat it does) and flash mx 2004. And wanna see wats in the digital entertainment fast track. Will get it from stand by 2nd coz i got exam tommorow. I like the contents altogether though

rajivnedungadi

Warmed-Up Nerd

MY digit patron code is not working again this month and I will have to call the customer service for the third consecutive month to get that checked.

The Digit in PDF is the same as previous month, no change....The August and September Issues are not there at all.

tuxfan

Brainiac

Location: Mumbai

Quite a good issue. Lots in there to read. Change in editors is showing its impact now. I was in 2 minds whether to renew my subscription or not. I will send in the cheque on Monday. 2 attempts to renew with credit card has failed

But we need to have at least the DVD inlay cover with the subscriber issue. If not the case, at least send in that piece of paper!! That surely won't create logistics problems!

Digitall Charisma

Analogue Novice

Location: I'm Everywhere

No doubt the issue was astounding! But all ye digit guys dissappointed me in one article - the Windows Vista review. Just trying to spend time in one of friend's place I came upon the review of Vista by PCQuest. And u have to admit they devoted 3-4 pages on it. Surely you guys can do something better than that. C'mon.....

Retro

Analogue Novice

Location: ::The Jedi World::

This month was awsome, certainly better than the past 4-6 months issues. I don't find any considerable difference in the paper quality though.

I've always wondered, why is it that subscribers always get the book around 6th of a month while newstands get it before the 1st. Seriously, you should give some importance to Subs too.

rentacoder

Analogue Novice

October was really great. only gripe I have is that your sinpurl links NEVER work. so be kind and PLEASE provide original links.

Temptations

First of all let me congratulate, the entire Digit team for doing a great job. I never thought a magazine could get this tempting, that I won't do without buying every issue. The DVDs and CDs are just amazing and they are getting better every month.

Well I have a few suggestions, hope they are worth looking forward to. I work as a freelancer for web/print graphics and architectural modelling. What I am suggesting is why don't you guys divide the entire magazine and provide good articles on various different areas of computers. Including Networking, Web development and programming.

You can also provide demo versions of some software like ZBRUSH 2. There are a few people who still does not have access to a reliable broadband service, downloading such heavy files will be a headache. It would be beneficial to all those who are working in animation as well as students who are planning or have just started in this field. Animation is still on the developing stage in India, and I believe it really needs a boost!

It's really tough to get a good magazine these days, and I am glad Digit is always there. Once again, keep up the good job, always looking forward to get something great from Digit every month.

Dhanish Gajjar

Ahmedabad

Dear Dhanish,

Thanks for your kind words and we also like your suggestions. We will try and include the software you mention if possible and also include more articles of specialisation.

—Editor

Thousand Year Wish

I am a regular reader of Digit and wait for my copy every month. I tried many other magazines but the only magazine which provides full IT-related information is Digit. It provides the best information about newly launched products and software at a very low cost. the CD and DVD provided with Digit is full of excellent software. I hope Digit provide their services to next thousands years.

Khushi Sharma

Delhi

Dear Khushi,

Wow! A thousand years! That's the longest anyone has ever wished for us! We will certainly try to keep it up and improve with time.

— Editor

No Name, No Reply?

Firstly, I have a complaint that whenever I mention the fact that I am a regular reader of Digit, you reply to my query or letter, but whenever I forget to mention this, there is no answer from you.

What I am writing for, though, is while reading the Inbox section in the October 2005 issue I saw a letter from HRS. From the letter, I felt that he is a professional and not a student.

In his suggestions, he did mention some nice things, but I think that he should also have added the fact that you should carry information about some books on topics related to computers. Since many of your readers (I think) are students, it will be beneficial to us.

At the moment, we lack proper guidance about books and it would help us if you gave some information about it. Moreover, it will also help all readers and not just students.

Nitin Kumar
Danapur Cantt

Dear Nitin,

I would like to assure you that to us, all readers—regular or not—are just as important and we try our best to reply to all queries. Please accept our apologies if we have not replied to any of your queries.

As for the information on books, we will try to incorporate this into the magazine, but the way we include anything in the magazine is different. For any product (including books), we test it thoroughly before we write about it to ensure that the quality of the stuff included for our readers is the best. In the case of books, it is tougher since there are just so many and we cannot read them all. But, we will try and include some shortly.

—Editor

I Pay Rs 200

I am from Nepal and for Digit readers here, it costs Rs 200 every month. I don't know why people in India are complaining for having to pay Rs 125. Digit offers 1 DVD and 1 CD and Fast Track and is worth it.

I have also bought other computer magazines but they do not provide the latest software. I am buying Digit for past four years and it has helped me a lot. I would like to suggest the inclusion of a "Tip of the Week" box, which will help us know more.

Also, if you add the "Most beautiful desktop" in your CD, it would be great. Also, please add a full version of one



Write to the Editor

E-mail: editor@thinkdigit.com

Snail Mail: The Editor, Digit, D-222/2, Om Sagar Building, MIDC, TTC Industrial Estate, Nerul, Navi Mumbai 400 706

Digit will publish the best letters on these pages. Letters may be edited for clarity. **You must include your complete address in all communication.**

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Inbox

small and classic game every month just like you included Mario.

SMJ
Via E-mail

Dear SMJ,
(Please give your full name next time)
If you inspect the CD/DVD closely, you will notice that there are full versions of some smaller and older games every month. In case you have any particular request, you could also log on to the *Digit* Forums (<http://thinkdigit.com/forum>) and register your requests there. As for the "Tip of the Week", it would be "Tip of the Month" and these elements are present across the magazine although not marked so. Let me also thank you for your support despite the higher cost in Nepal.

—Editor

What About My Desktop?

I am a bit confused. what exactly do you want in your monthly contest "My Desktop"? Does this mean that one should create their own theme (I mean the entire coding)? Or is this only putting some unique wallpaper and a set of matching icons? Please tell me so that I can also take part in it. Also, how do I send this to you? By capturing a screenshot or by any other method?

Salil Natekar
Mumbai



Dear Salil,
We understand how hard it can be to actually create a desktop theme, and thus we do not have that as one of our requirements. At the same time, just anybody can get software such as WindowsBlinds, install a theme pack and then claim that their desktop should win. To prevent people from easily winning the prize, we would like to clearly state that preference is given to how much work we see being put in to a desktop. This means that although the winner may have a slightly uglier desktop than most others, he has put in a lot of work to get it to look that way, and not just installed a

theme software and downloaded a pack!

As advice to those who wish to have a chance of winning the competition: Try and find a way to mix and match freely available themes and skins, or create your own (preferably). Modify even desktop software's themes to come up with something that looks completely unique!

—Editor

Satisfied *Digit* Patron

Thanks for sending me the fresh CDs of Skoar! Fall 2003 after the initial CDs of the said magazine were not working. I mean, it is these little things that set *Digit* and its team apart from others in this materialised world! I hope it should keep you motivated as things like these are expected from a customer-friendly organisation like yours. I once again thank you for redressing my grievances at the earliest...

Pawan
Via E-mail

Dear Pawan,
A satisfied and happy customer is the biggest reward for us at the end of the day. The fact that you are happy makes us happy and we will continue to maintain these standards of customer satisfaction in the future too.

—Editor

Registry Concerns

I am a *Digit* subscriber for the last one year. Each *Digit* issue improves my knowledge. The Q&A and Tips 'n Tricks are both useful and help me in solving problems while working. Even the Fast Track book is good and helps me improve my knowledge.

If u publish information about Registry under a Fast Track title, it would be very nice.

Vikas Bondarde
VIIT, Baramati

Dear Vikas

Thanks for your compliments. From time to time, we do deal with registry related topics but on the whole, we do not get into the details since not too many people are aware of the pitfalls of one wrong entry into the registry file. If, however, you have any particular query, you could direct it to us at sos@jasubhai.com and we will surely clear your doubts.

Corrigendum

In our September 2005 issue's 'Letter of the month' we had inadvertently stated that **Mr. Subhendu Joardar** is a senior citizen who earlier worked in the R&D department of a multinational. This is not correct, we hereby clarify. Any inconvenience caused to him is deeply regretted.

Internet Inaccessible

I am reader of *Digit* for a few years and I cannot stop myself from writing about it! I use Internet 'Plan A' at my office and residence and it's a very effective option. But, today, I got a letter from Mahanagar Telephone Nigam Ltd (MTNL). The gist of the letter is as follows:

1. They stopped giving new plans.
2. Charges are doubled on all plans.

This means that I now have to pay Rs 1,000 instead of Rs 500. So what option we have?

Dump MTNL and go to cable which could have viruses? Do firewall and what not to secure ourselves? I believe MTNL and BSNL both have similar plans and why they are changing all of a sudden is the question. The Govt. keeps on promoting Internet and in fact, all ISPs have unlimited plans since MTNL introduced their Internet plans. I wonder if ISPs like Roltanet and VSNL would have any future left if dial-up is expensive...

An article on this would be appreciated. It's said that one should never trust the government and this is why! People using these plans would have to look for alternates, which are perhaps neither so reliable nor cost effective.

MTNL wants to sell its broadband but can a user who wants to stay online for long afford Rs 1 per MB? 250 MB limits can get used in just a few days... the download of Open office takes up 60 MB and in 1 year, I had downloaded 3-4 versions of it.

I had heard enough about cable net that it is not safe as it can be hacked so as a business user, I would never like to opt for such a connection. Also, speed often tends to be slower in lower plans.

I would urge you to forward such article to concerned ministries so they come to know about the same. As a net user, I would like Unlimited Plans which do not have per MB rates. They do not make sense. 1 MB data is transferred in few minutes as various online applications check various things (Messengers, for example).

Communication from MTNL (letter by post) does not even mention an e-mail address where one can address these queries.

Viren Gandhi
Via e-mail

LETTER
OF THE
MONTH

Tabloid TECH

People And Events That Grabbed Headlines—For Better Or For Worse

Show Off Drug Dealers Snapped

A gang has been charged with drug trafficking in Brazil after they took pictures of themselves with kilos of cocaine on their mobile phones. Police in Sao Paulo, Brazil, arrested the men acting on a tip off. On searching them, the Police found marijuana and cocaine on them but not in enough quantities to charge them with drug dealing.

But the police just had to switch on the gangs' camera phone to put them behind bars. As luck would have it, the gang had clicked pictures of them packing kilos of cocaine and with a large amount of marijuana.

A police spokesperson said: "We're glad they are such show offs! They helped us by registering their criminal actions... that was great."

PayPal No Gay Pal

Paypal, the pay via the net company, is back to moral policing and this time it has got itself a non-mainstream partner. The company has shut down the relief fund of 'Cruising For Sex', a free gay cruising organisation.

The site had been set up to solicit donations from the user base for "CoS" employees who lived in New Orleans. After four days, they got the boot for "violating PayPal's Acceptable Use Policy regarding Mature Audiences".

Paypal then restored the account for a brief period only to shut it back down. It remains closed even now. No

communication form the organisation could convince Paypal that an adult-oriented business could possibly do things that didn't involve sex and intended to help people.

Cruising for Sex has now sued Paypal and is seeking permanent restoration of the account and a declaratory judgment to force the point that they are doing things in line with Paypal's ToS.

They are also seeking damages for breach of contract and emotional distress. The outcome of this little battle should be interesting since this is the first lawsuit that targets Paypal for their behaviour.

Chip Deep Inside...

Computer chips that store music could soon be put into a woman's breast implants. One breast could hold an MP3 player and the other, the entire music collection. BT Futurology, which has developed the idea, says it could be available within 15 years.

An analyst at BT Laboratories said that flexible plastic electronics would sit inside the breast. A signal would be relayed to headphones, while Bluetooth,

using a panel on the wrist, would control the device.

But it's not just a song and a swing. The application can be used for a number of useful purposes as well. With an implant in such a strategic spot, scientists claim that the sensors around the body linked through the electrical impulses in the chips may also be able to warn wearers about heart murmurs, blood pressure increases, diabetes and even breast cancer.

Music to your 'ears'?

Caught In The Chat

In Belgium, all you need to do to prove adultery on the part of your partner is to show a copy of dirty e-mails sent by him or her, or their chat logs. Top judges in Belgium have ruled that erotic talk with a virtual partner in chatrooms on the Web can constitute proof of "grossly insulting behaviour" and can be used as evidence in a divorce case.

A local legal paper cited the example of a ruling by the Brussels Appeals Court, which recently accepted printouts of



an erotic chat as evidence in an adultery trial. Although the printouts were inadequate to prove anything, the judges found they could constitute grounds for divorce because the behaviour was found to be clearly "unworthy."

And we thought Belgium was liberal and all...

'Tis Better To Give...

A pensioner in Germany received a bumper bonanza of goods including four boats, 12 bicycles and a mobile home after an impostor posing as the senior citizen spent 400,000 (Rs 2 crore) on a series of eBay auctions in a wild night of shopping. Why Horst Lukas

was targeted remains a mystery; but whether he was a victim of a shopaholic, a prankster or an incompetent fraudster is the least of his worries just now. Lukas is fielding dozens of complaints—and even threats—after refusing to pay for the fraudulently-ordered goods.

3-Easy-Steps to Freebies!

- 1 Log on to www.thinkdigit.com/digitpatron to register.
- 2 Enter this 16-digit code and score points (you will find your code at this place every issue)
- 3 Your points get added every month and can be redeemed for exciting gifts!

