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November 2001 >> **Your Technology Navigator**

THE BEST INDIAN
WEBSITES
DIGIT WEB AWARDS 2001

**Instant Messaging
The new addiction?**

**Your guide to Internet
Videoconferencing**

Test Centre
digit
NOVEMBER 2001

**10 CD-ROM Drives
15 IDE Hard Disks
5 Page Layout packages**

Understanding Nanotechnology

Following the Tech Rainbow

"It is necessary for us to be more realistic about what we expect from technology"

Every new piece of technology that comes to the fore today claims to be able to improve our lives for the better. It promises to increase our productivity levels with greater speed, the quality of our work through greater intelligence, and eventually promises a complete transformation of our lives.

Quite obviously this isn't something that is always true. However, this is something that we seem to have grown to expect.

But is this expectation realistic? Or are we now just willing to accept any pipe dream that is dressed as a technological advancement?

Has the technology that lies within each of our desktops today actually improved the quality of work that we are producing? And do we now really have more time to devote to our hobbies, friends and personal lives outside our workplace?

Many of us feel the need to upgrade to the latest version of applications like Microsoft Word but many choose to ignore something as basic as the Template functions in existing versions that could help us to organise ourselves better? Or the Commenting feature which can make collaboration between people who share documents so much easier. We use software like Microsoft Outlook as an e-mail client, but choose to completely ignore the contact and time management utilities, filtering features and the unified messaging platform that it provides.

To really unleash the potential of technology, it is necessary for us to be more realistic about what we expect from it. We need to look at it as something that can create opportunities, instead of expecting a magical packaged solution to all our problems. Technology can help make our tasks easier, but it is too much to expect it to provide us with a replacement for intelligence.

We need to look for smarter ways to utilise the technology that is already available to us.

Karan Manral

Karan Manral
Assistant Editor
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digit interactive

ON THE CD

Mindware

RESOLVE
TROUBLESHOOTING
FAQs on understanding Memory

WORKSHOP
Hands-on: A video workshop on tweaking your system

E-PAPERS
Working with PDFs and eBooks

SOFTWARE
DEVELOPERS
CRT 32 3.4 BETA 2
This Winsock terminal emulator supports both Telnet and remote login protocols

1 COOL BUTTON TOOL 4.1
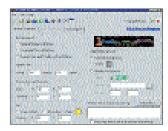This cool tool lets you create numerous button styles and

behaviours such as colour, depth, transparency, AU and WAV sounds and more

GRAPHICS
ALCHEMY GIF ANIMATOR V2.3.1
Create animated GIF images for the Web or even movies

CONCEPTDRAW V1.61
Provides easy illustration for your documents with diagrams, hyperlinks and schemes

CRESTOTECH PHOTOPOINT V1.1.0.17
This user-friendly software lets you create powerful image presentations with 150 special effects

HOME
ADVANCED DISK CATALOG V1.46
This program has an interface similar to Explorer and lets you catalog media such as CD-Roms, floppies, Zip disks etc.

BLAZE MEDIA PRO V2002
An all in one multimedia program, which features a playback combination of audio and video, generates

---

Software on CD

Mindware
SOFTWARE OF THE MONTH
Borland Delphi 6

DEVELOPER TOOLS
Etv Library (Shareware), OptiPerl (Shareware), Virtual X Class Library (Freeware), Visual SQL-Designer (Shareware), Web Chart Creator (Shareware)

GRAPHICS
PolyView (Shareware), SmartCapture (Shareware), Swish (Demo), Ulead Photo Explorer Pro (Demo)

HOME
Diary Keeper (Shareware), MemoirTracker (Shareware), MIDI 2000 (Freeware), PCDJ Silver (Freeware), Phonecomm. Pro (Freeware)

INTERNET
Download Wonder 1.55, (Freeware), GuildFTPd 0.992

■ contents

advanced playlist features and more

CDEX 1.40 BETA 8
This freeware application features an MP3 decoder and a new LAME encoder

INTERNET

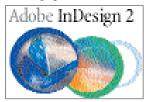#### COOKIE EATER
This utility shows all the cookies in your Internet cache and allows you to select and delete those you don't want

IN MAGAZINE
ADOBE INDESIGN 1.5.2
This software works well with Adobe pagemaker and

Photoshop files and even opens QuarkXPress files

OFFICE
602 PRO PC SUITE 2001
This integrated Office suite includes a Word processor, spreadsheets, a graphics editor and a visual desktop

ADVANCED OFFICE 2000 PASS-WORD RECOVERY (PRO) V1.02
A program that recovers lost or forgotten passwords for files created in Office applications

UPDATES
ACDSEE V4.0
A fast image viewer, browser and multimedia management application that lets you browse and organise images

UTILITIES
ACTIVE KEY V1.0B3
Create and manage your keyboard shortcuts for CD audio, Winamp, Media Player and more

IN PRINT
TEST DRIVE
Reviews of tested products

PRICEWATCH
PC component prices

UNDERSTAND RDBMS—CONCEPTS AND OVERVIEW
Tutorial for end-users

Complete, free course from

MINDMATTERS
EBOOKS
At the Earth's core and more eBooks

WHITEPAPERS
Whitepapers on RAID

TIPS & TRICKS
Tips and Tricks database

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Playware

GALLERY
Desktop delight: decorate your PC with these wallpapers, themes and Winamp skins

ARENA

GAMES
MAX PAYNE
Step into the shoes of a fugitive, undercover cop framed for killing his boss and best friend in this action packed game...

DRIVER
...then get behind the wheel of the most wanted getaway car for a Hollywood style car chase!

SURGE
Music from Double Star, Gulit and Mental Sky and feast your eyes on the latest trailers

CONNECT

SITEMAP
Surf on indolink.com

INDIA SITES
Some new Indian sites and ISP news

BOOKMARKS
Brush up your vocabulary with online dictionaries

NEWSLETTERS
Newsletters on download sites

DROOLMAAL
Time once again to feast your eyes on some hunky dory stuff

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◆ How to contact us

EDITORIAL
Products for Test/Review
Send a complete working copy of the product (not a 'trial' or 'demo' version) to the Digit Test Centre. Only products that are currently available in the Indian market will be considered. The products must have the complete name of the manufacturer or developer, details regarding the name of the model and its type and the end-user price. Product brochure and a complete specification sheet must be included, along with the name of a person to be contacted for information.

DIGIT INTERACTIVE
Contact Vaibhav Kapoor, Content Co-ordinator, Multimedia *(cdcontent@jasubhai.com)* for inclusion of software on Digit Interactive. A write-up detailing the features of the software, complete loading instructions and a letter certifying that the product is original must accompany the software. The software must also have the complete address, telephone number and e-mail of the developer.

CUSTOMER/ SUBSCRIPTION SERVICES
E-mail: Any queries or problems regarding Digit Interactive, subscriptions or other problems can be mailed to *help@jasubhai.com*
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Pager: **9624-329229** at Pune, Hyderabad and Bangalore

mark **'Customer Service'**. In case of subscription problems, please mention the subscription particulars.

MARKETING SERVICES
IT companies whose products have been declared winners in a Digit Test can use the Digit Test Centre logo. They must address their requests for licences, reprints and bulk orders of Digit to **Navin Sahni** (*navin_sahni @jasubhai.com*), at our Nerul office in Navi Mumbai.

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Phone: +91 33 2822183, 2827842, 2828016
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◆ Advertisers index

NEWS PULSE

hypethesis

Microsoft .Net

▲ What is it?

Microsoft is building a complete solution with .Net, which transcends Web services to deliver an Internet experience, from desktop and desktop services to content providers, Internet services and ultimately, payment.

▲ What is the technology?

The new .Net strategy aims to revolutionise the way Microsoft and developers, who work on Microsoft platforms, deliver software. Microsoft aims to phase out delivering software per se, and instead will deliver these as Web services over the Internet. Consumers of those services will license it as an on-demand service and the software will, at least theoretically, be installed automatically.

▲ Should I care?

Microsoft's desktop monopoly governs how over 96 per cent of the people worldwide access the Internet. If it successfully ties the desktop monopoly to Microsoft-held Internet properties, .Net will be a major force to reckon with.

SNAPSHOT

70 per cent of all Internet porn traffic occurs during the 9-to-5 workday (SexTracker)

The average time spent online by workers at the office (compared to average 9.5 hours at home) is

21 hours

Source: www.nielsen-netratings.com

Pump up the volume!

Loudspeakers conventionally come in heavy, cumbersome boxes that provide an air enclosure to absorb unwanted vibration and give a fuller sound. But now UK-based Ellula Sounds and US-based SoundTube Entertainment, reckon an inflatable box will do the job. SoundTube is developing inflatable speakers that bands can carry flat and inflate when they arrive at the venue.

A Loughborough University's student spin out company, Ellula Sounds has won the Best Innovative Product prize at the National Incentive Show in UK for the new speakers.

Adbusters get busted

Web site operators will soon have a new tool to block the blockers. Many Web surfers have been weeding out banner and pop-up ads by resorting to software such as AdKiller, AdSubtract, and Proxy.

Web site operators dependent on ads for revenue are now changing their act to counter these filters. And here's where AdKey comes in. This software, developed by MediaBEAM, is currently in the beta testing stage.

AdKey will allow operators to deny access to users who have installed ad filters. Such users will will get a message stating that they can either switch off the filter or pay a fee for advertising-free services.

Microsoft opens Passport ... a wee bit

Microsoft is being criticised for using its might to get users to sign up for its Passport service. The idea behind Passport is that users can use it to have a unified login to sites across the Web instead of having five, 10, or 20 different usernames and passwords across a variety of Web properties. To get the unification benefit, users must put their information into Passport, and Web sites must also use Passport to offer a login for their users.

A 'federated' model for Passport was announced by Microsoft with the goal being, "…to build an Internet 'trust network,' where a single, common authentication system [is] to be used across enterprise systems, Web sites and services." With this, users will be able to choose a third-party 'Internet trust network provider' to store the data.

Diposable Digital Camera

You don't have to drop the camera roll at the photo shop anymore. Just drop the entire camera. Three Japanese companies have decided to come up with an experimental commercial service involving disposable digital cameras. Pentax cameras, Sanyo Electric and Altech have announced the three-month trial.

Illustrations: Farzana Cooper

The service lets users pick up a 310,000-pixel Pentax digital still camera, take their photos, and then return the camera to the store they picked it up from. At the store, they can view all the photo images on a display screen and choose the ones to be printed.

These companies collect the used cameras from the stores, delete the image data, and repack the cameras for use again. Customers are under no obligation to return the camera to the store or collect their prints, once the service fee is paid. With the manufacturing cost of the camera more than the service fee, profitability relies on how many cameras can be collected and recycled. The companies plan to expand the services to the Internet for data distributing and printing.

◆ Salon.com begins charging ◆ Nero enables DVD creation, uses MP3PRO ◆ Sony unveils DVD Walkman ◆ Yahoo! to start charging for

Can you feel my *heartbeat*, baby?

The Food and Drug Administration in the US has approved a new type of pacemaker capable of sending cardiac information via remote transmission. The first of its kind, Biotronik's Home System can help doctors monitor a patient's condition between office visits. A short-range radio frequency transmitter sends data to a cell phone-like device that patients carry with them. The phone transmits the information to a company service centre, which correlates the data and sends it to the patient's physician.

And now MSN with vitamins!

Windows XP's messaging technology will undergo cosmetic changes, allowing a full range of emoticons, from the traditional smiley faces to cats and coffee cups. Windows Messenger users will be able to organise contacts by groups. Microsoft has also increased the number of contacts accepted by the messaging client from 75 to 150.

Microsoft has signed on Call Serve, Deltathree, Dialpad Communications, Net2Phone and Telus to offer people equipped with Windows Messenger, the ability to make Net-based phone calls over their PCs. It has also decided to collaborate with Groove Networks. These services will also be added to MSN Messenger, which will be available for download with the XP messaging client.

Agile in a Crisis, Robots shows their mettle

Robots are proving their mettle at the WTC blast zone. Their immunity to fatigue means they can work longer than even the most dedicated rescue worker. Some of the robots are small and compact enough to go down sewage pipes that are less than a foot in diameter. Others can flatten themselves to squeeze through tight spaces or position themselves upright to look over objects. Some have infrared cameras and all have video cameras, with images sent to rescue workers on the surface through a cable or wirelessly.

Most of the robots are experimental prototypes.

quicktake

Govind Misir, chairman and CEO, SLMSoft.com, talks about the company's e-commerce products

▲ What is SLMsoft.com?
It is a leading Canadian global provider of electronic financial transaction solutions for the e-commerce market. We provide e-commerce tools and transaction management products and services.

▲ What is SLMsoft's plan for India in the long run?
We plan to take Design Expo's revenues to $5 million from $1.9 million in the next 12 months. The first task is to enhance our existing products through R&D.

▲ What other technology solutions is SLMsoft introducing?

Our end-to-end transaction management solution, ESP-Link, empowers over 1,100 cus-

Govind Misir
Chairman and CEO
SLMSoft.com Inc

tomers in 55 countries. Financial institutions, retailers, government agencies and healthcare providers benefit from the breadth and convenience of SLMsoft.com's electronic banking and online transaction systems, enabling them to build rewarding relationships with their customers and thrive in today's wired marketplace.

▲ What are the voice recognition solutions you are planning to introduce in India?
Right now, we are working on different e-transaction products like Smart Cards, and the new products might use new technologies such as voice recognition solutions to enhance user-friendliness, efficiency and effectiveness of particular products.

online dating service ◆ Samsung cranks up RDRAM chip speed by four times ◆ Sanyo develops CD-ROM copy-protection system to

realitybites

> **"A**bsolute anonymity breeds absolute irresponsibility. We need a thumbprint Java card in the hand of everybody in the country"

Scott McNealy, chairman and CEO, Sun Microsystems, voicing his long-held belief that the US needs a national identity system

Yeah JAVA! Not Microsoft!

> **"I** think the Sun thing has absolutely no probability of mattering to the world. That's my non-emotional view"

Steve Ballmer, outspoken president and CEO of Microsoft Corporation, dismissing Sun Microsystems' efforts to compete with his company's Passport identity service as ''craziness'' built on a "weak foundation"

And my emotional view is: I WANT YOUR MONEY!

> **"W**e are delivering twice the performance at every price point"

Jen-Hsun Huang, president and CEO at nVidia, after announcing three new graphics chips: the GeForce 3 Ti 500, GeForce 3 Ti 200, and the GeForce2 Ti 200

This new technology won't remove lag or make the storyline any more interesting for FPS games

Sue-age

Last month Intel sued Via, followed by Via counter-suing Intel, but October saw a lot more action.

Imation filed a $450 million suit against storage rival Quantum, accusing the latter of monopolising the market for the digital tape used in its DLT drives. Daum Communications, Korea's biggest Internet portal, is seeking to ban the sale of Microsoft's new Windows XP operating system in South Korea, arguing that it will stifle its own Internet messaging product. Music and film studios in the US have filed a lawsuit against three file-swapping Web sites that enable users to download copyrighted music and films for free—MusicCity.com Inc., MusicCity Networks Inc and Consumer Empowerment BV, are in the line of fire. Novell Inc filed suit in federal court to stop competitor Microsoft Corp from spreading "false and misleading" statements that Novell was shifting away from software development to consulting services.

"Call ya later, I'm outta gas!"

Researchers at Motorola have demonstrated a methane gas-powered fuel cell, which can provide enough juice between two successive chargings for a month of cell phone calls. The fuel cell is essentially a miniature electrochemical plant where methane is stored for producing electricity to power the cell phone. Consumer electronics giants NEC and Sony are developing similar batteries. Motorola isn't predicting when it will sell the batteries on a wide scale. NEC expects to begin production between 2003 and 2005.

thermometer

Hot
MusicCity Morpheus
This P2P network grabs top spot in RIAA's hit list as Napster is crushed

Gprshot
It seems to be going far stronger than 3G as of now

Cold
Transmeta
It's expecting lower sales for its third quarter and is having trouble getting a new Crusoe chip out
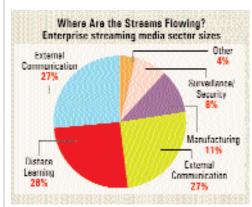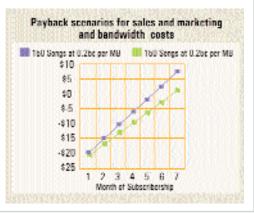
E-books
The industry admits most readers would still rather curl up with a book

thumbnail

Source: www.redherring.com

Streaming Media: Cost and Applications

Various uses of streaming media in an enterprise setting versus consumer willingness to pay for online music services

prevent burning onto CD-RWs ◆ Intel to offer Pentium 4-based Celeron next year ◆ US government mulls over Internet of its own

18 digit

November 2001

metrics

$92.6875

Microsoft's stock price

Bill Gates' wealth

$105 billion

In your face, dude!

Shoppers may soon be assaulted with the digital equivalent of mid-air blimps, thanks to a Hungarian-US firm that plans to manufacture a new type of projection device. An appliance the size of a vending machine will project still or moving images about 16 inches in size, which the human eye will perceive as floating in mid-air. The two-dimensional, high-definition colour images can be seen only at certain angles in front of the projection device.

The long-term plan is to have many of these terminals installed and managed by central servers and with thousands of such terminals installed it could bring in a lot of marketing dollars. The terminals will be installed in shopping centres and will sell airtime rather than the appliances themselves.

Mitnick warns fellow hackers against ‘Scapegoat sweepstakes’

The world's most notorious hacker says the US government should focus on securing its computer systems rather than snooping on citizens. Kevin Mitnick stresses that hackers should take extreme care given the sensitive political environment and the new laws defining hacks as acts of terrorism. He also warned that any hacker could win the ‘scapegoat sweepstakes' at any time, receiving a harsh sentence to serve as an example to other hackers.

Mitnick firmly believes the newly proposed Patriot Act is just an excuse for law enforcement to further its own agenda.

Mitnick calls the Patriot Act ludicrious, saying, "Terrorists have proved that they are interested in total genocide, not subtle little hacks of the US infrastructure. Yet the government wants a blank search warrant to spy and snoop on everyone's communications. The government does things like insisting that all encryption programs should have a backdoor. But surely no one is stupid enough to think the terrorists are going to use encryption systems with a backdoor. The terrorists will simply hire a programmer to come up with a secure encryption scheme."

tomorrows technology

Biometric ATMs

The analysis of certain unique body ‘signatures', such as fingerprints and retina scanning—known as biometric technology—could soon be put to use in ATMs for security purposes. The idea has for long been considered a viable option to personal identification numbers (PINs). Such ATMs, powered by BioID, could soon be providing service to Australian bank customers, with a promise of reducing personal identification overheads drastically.

BioID is a relatively cheaper option as compared to hardware-dependent biometrics requiring expensive hardware, as it just involves installing a regular Web camera and microphone. BioID 3.0 uses face, voice and lip-movement recognition for identification and authorisation.

The technology only requires the user's cooperation while being recognised and doesn't need him to give away any information. In comparison, fingerprint scanning means a user's fingerprints can be used and recognised without him actually being present.

There are already quite a few installations of biometric-enabled ATMs in the US and Europe that use fingerprint and iris recognition.

◆ B2B to reach $4.3 trillion ◆ Qualcomm ships its first Bluetooth-ready chipset ◆ Microsoft phases out Windows NT 4.0 ◆

Gimme more

I am a student studying in the second year of a BCA course in Hyderabad. I am quite interested in the hardware and software tests carried out by your Test Centre.

I request that you do an article in your magazine related to the basic components of hardware units, such as motherboards. Perhaps in these you could explain which are the various types (or formats) of motherboards available, explain the functions of the slots, compare the different architectures, etc. This should also be done for other components like RAM.

Perhaps you could also include a bit of history on these components.

ASHLYN D'MELLO
Via e-mail

di9it
Dear Ashlyn,
If you consider the October issue of Digit in particular, you would find that we already do a lot of what you have requested for.

If, for instance, you're looking to understand the choices available in motherboards, then just refer to the special Smart Buyer's Guide in the October issue. If you need more detailed information, however, then refer to the comparison tests in the Test Drive section, or some of the Insight articles.

Also keep an eye out for our workshops in the Wired section or the Hands-on video workshops that are included in the Digit Interactive Mindware CDs.

Safety first

Hi
I read your editorial titled 'Trading Freedom for Safety'.

From what I have read on the Net, most people seem to be willing to give up their privacy if it can help them protect from future terrorist attacks or any such danger.

One of them went to the extent of saying that he doesn't mind if someone sits beside him and reads his e-mail as he is checking them.

To be frank, I don't see why privacy is such a big deal. I think that most Indians would accept something similar if it could prevent any terrorist attacks from happening here.

Seems to me like we are just making a big deal out of a small issue.

PRASANTH
Via e-mail

di9it
Dear Prasanth,
Most of us are willing to give up certain liberties that are otherwise taken for granted because we feel insecure. While this is especially true in the United States at this point in time, there are many others in that country who consider this a mistake.

This is because while an environment like this might seem acceptable now, eventually it leads to an atmosphere devoid of trust and is not something that people in normal times will reconcile themselves to.

Missed take

Dear Sir,
Over the past few months Digit has been providing us with a staggering amount of information through the comparison tests of MP3 players, digital cameras, graphics cards and more. It is based on all these comparison tests and articles that I plan to upgrade my computer and buy new hardware in the future.

However, one category of products that you seem to have missed out on is the digital camcorder. So far, in all the issues of Digit that I have seen, there haven't been any articles that provide me with information or test results for digital camcorders.

Please consider including this in your forthcoming issues.
ARIEZ RAVI THOMAS
Via e-mail

di9it
Dear Ariez,
Guess we did manage to miss something out.

We find that getting buying advice on certain product categories is of more importance to the majority of our readers. These categories usually also feature a larger range of products for us to compare.

At this point in time, since there are several other categories that we feel meet these criteria better, we have not planned for a digital camcorder comparison test.

However, look out for reviews of these products in our stand-alone product review section (Radar).

Of greater value

Hello,
The A-List section in Digit informs us about the best products and their prices. But most of them are pretty expensive. Why don't you also list the products that offer the best value for money?

Buying the most expensive product isn't always the best option for us. I look forward to the latest version of the A-List in every issue, but it is disappointing not to see my favourite 'great value' products listed in there.

So please consider changing the focus of the A-List.
CHINMAY PANDIT
via e-mail

di9it
Dear Chinmay,
As you mention, the A-List is about the best performing product that we have tested up to a particular time.

The problem is that the perception of value is something that can differ according to the personal preferences or requirements of an individual. So even though we think that a 100 GB disk drive that costs Rs 14,000 is a great value offering (considering the low cost per megabyte), this might not be true for someone who is quite happy with the 20 GB of disk space that a drive costing Rs 5,000 would give him. Basically, whether a product offers great value depends on the user's specific needs. This is something that can be explained in detail in the course of a comparison test, as we do using the Decision Maker, but is not possible in a product listing.

Performance on the othr hand, is something that can be objectively calculated and compared, which is why it will remain the focus of our A-List.

IE, IE, ya…suku suku!

Hi,

I have a complaint about the browser test ('Surf Wars') in your October issue. Firstly, the browsers were not properly categorised. Opera, which has its own engine, download manager, instant messenger (ICQ) as well as an e-mail client, should have been placed in the Internet Communication Suites category.

Secondly, you have over-hyped the performance of Netscape 6.1. All your benchmarks indicated Internet Explorer as the best performing browser. The only areas that I can see where it lost out were in terms of installation size and the lack of an HTML Editor, which is not too important. Also, there are programs like Hotbar that allow you to skin Internet Explorer.

I have used almost all the browsers you tested and am well acquainted with their performances. Internet Explorer 6, without a doubt, should be adjudged best browser.

GURU SABHARWAL
Via e-mail

digit

Dear Guru,
Let's start with your point about Opera. While as you say all of those features (e-mail client, instant messenger, etc) have been included in new versions of Opera, it just has a fraction of the functionality that is offered by similar components in other programs. In addition to just checking whether a feature is present, it is important to consider whether it is implemented well enough for you to consider shifting over to it. In that sense Opera does not challenge the likes of Internet Explorer and Netscape, at least not yet.

We believe Opera is a really neat piece of software that excels as a standalone browser. This is the reason that it ended up winning in the other category.

As you mentioned, Netscape 6.1 took nearly twice as long as IE to render Web pages. However, if you consider that most of us use dial-up connections where the availability of bandwidth is what eventually determines performance, then it doesn't really make sense to give an extremely high weightage just to the performance in the rendering speed tests.

The skinning feature in IE, even using Hotbar, is limited to being a simple background for the toolbar, whereas Netscape 6.1 lets you modify the appearance of everything ranging from the icons, the mail client, the menus and even the progress-indicator bar. Thus the customisation can give the browser a completely new look and feel.

And let's not turn a blind eye to the security issues that IE and Outlook come with. Vulnerabilities in these have been repeatedly exploited by a variety of worms and viruses. Also, IE uses a crippled version of the JVM, and doesn't entirely comply to W3C specifications when it comes to HTML rendering.

So…we know that Netscape 6.1 is the best browser around, at least for now.

To Agent 001, with love

Hi,

The Undercover article in the August issue ('The Perfect Match') talked about Agent 001's experiences while trying to get a great price/performance deal on a motherboard and CPU combination. This inspired me to sell off my AMD 450 MHz processor and build a new Duron 850 MHz system.

However, when I got to Mumbai's hardware Mecca, Lamington Road, I got into a bit of a jam. The prescribed motherboard was out-of-stock, and the several (pretty expensive) alternatives had me pretty confused.

Which is when I had a brainwave!
"Hello, Digit? Can I speak to Agent 001 please?" They told me he was "undercover" but transferred me to someone in the Test Centre who discussed some options with the vendor and helped me select a model. Then he went ahead and helped me bring the price down and 10 minutes later I was dashing back home to assemble my new PC!

You guys will be glad to know that my PC is working great and as a Digit fan, I am delighted that you have such helpful guys on your team. So, here's a special thanks to the Test Centre, and to Agent 001!

BILLI KASH
Via e-mail

digit

Dera Billi,
Agent 001 would have loved to have answered your question himself but was called away on another assignment. But he did ask us to say that it's great to hear that you got what you wanted for your PC. Anytime that you find yourself in a situation like this again and need advice on how to get a good deal, just flip to the Undercover article in the magazine for Agent 001's take. And if you still can't make head or tail of the situation, we're just an e-mail away.

Short Bytes

Diverse drivers
Dear Karan,
It would be nice if you could include the latest versions of popular hardware drivers on the Digit CDs once in a while. I am certain this will be welcomed and appreciated by many readers.
T. Chinnadurai
Via e-mail

Peek-a-boo
Hi Digit,
You guys have really improved on this magazine since the first issue of Digit. The CD contents have improved remarkably and the new look in October is phenomenal. It would be nice to receive information on the forthcoming issue of Digit via e-mail every month.
Anshul
Via e-mail

If you have suggestions on how to make Digit better, come participate in the reader survey at http://www.thinkdigit.com/survey/betterdigit

A deadly gang

They've got a PhD in pain and a Masters in disaster. *Quake* masters and quad gods—that's The Unholy Alliance in a nutshell

SRIRAM SHARMA

Saturday afternoon. Semi-finals at the *Counter-Strike* (*CS*) tourney at Surf's Up. In progress is one of the most exciting CS games ever played. The map is de_dust. (TUA) Wile is the last man standing from the Terrorists camp. All the CTs (Counter-Terrorists) are storming the bomb defusal spot. Wile snipes a CT 100 feet away, switches to his pistol, guns down another CT at close range, grabs his assault rifle, and shoots another CT with it. He throws the rifle and picks his AWM back again to snipe another CT. Four dead bodies in less than three seconds. Terrorists win.

No other gaming clan elicits so much fear, admiration and respect as TUA—The Unholy

The Unholy Alliance: (*L to R*) CyAnide, Strider, Wile, JBI, Fragbait, Mad_Toothbrush

"We've been watching and studying matches played at most large international meets and feel that we do match standards favourably"

Alliance. To the FPS clique at Kawabonka, they are gods.

TUA started off as a *UT* CTF/DM (*Unreal Tournament* Capture the Flag /Deathmatch) clan on Kawabonka.com in late 2000 when Kawabonka.com was only a few months old and *UT* was the game to play. The name 'The Unholy Alliance' was suggested by CyAnide, a TUA member and picked from an old strategy game called *Dominus*—"Deep within the craggy mountains of Kplithor, an Unholy Alliance was forged.…"

Seeing them dominating the *UT* CTF scene

every night, the rest of Kawabonka quickly realised what TUA was all about. They were beating the living daylights out of the opposition and they were here to stay. A few members of the initial line-up dropped out and new members came in. Today the TUA stands as Wile (Dhruv Parpia, Pune), JBI (Rahul Rohira, Mumbai), Strider (Siddharth Seth, Delhi), Fragbait (Sameer Shetty, Mumbai), CyAnide (Prashanth Raju, Chennai), Mad_Toothbrush (Ram Balmur, Pune), Ricky (Ricky Kapur, Delhi).

Geographically far apart, the members come together at kawabonka.com to practice. And each one brings along his own flavour. Wile used to lead 'Massive Destruction', the best *Quake III* CTF clan in the world while he was in the US. Mad_Toothbrush is another *Quake* master, who gets calls to join foreign clans every time he cleans base with a 150 ping on foreign servers. A natural leader, he comes up with the TUA calls and strategies. Ricky, who runs kawabonka.com, is versatile with all weapons, while JBI aka Chief has a 'take no prisoners' attitude. Strider is the silent sniper, CyAnide, the elite-speak techie and Fragbait is the wisecracking smart guy. Individually they are powerful, but as a team they're invincible.

The TUA is a generation weaned on Ataris and Spectrums. They know their PCs like the back of their hands and their gaming arsenal includes special configurations, binds, overclocked PCs, and gaming mice and they are passionate about graphics cards and bandwidth. As far as their game is concerned, Mad_Toothbrush says, "It's practice, practice and more practice. Nothing is easy."

TUA is all set to take the step from being an elite clan to pro-gaming. World Cyber Games, the gaming Olympics, will begin in Korea in December 2001, and TUA will be there to find out where they stand. Wile is optimistic about their chances: "We've been watching and studying matches played at most large international meets. I have played in Singapore, and feel that we do match standards favourably." Right now TUA is busy getting more proficient in *CS* and preparing to take part in the Games. "The future's bright, the future's definitely not orange," quips Mad_Toothbrush. Way to go, TUA! ▫

Activating products or problems?

Windows Product Activation is the latest implementation by Microsoft against software piracy.
Vidyaramanan S. speaks with industry representatives to gauge if it will be a success

The underlying principles of Microsoft's software licensing policy have not changed. Microsoft's End User License Agreement (EULA) has always stipulated the number of PCs that software can be installed on, and this remains the case for Windows Product Activation (WPA) as well.

Karthik Padmanabhan
Marketing Manager,
Microsoft Corporation India Pvt Ltd

while building the WPA technology. Under WPA, no personally identifiable information is collected.

Product Activation is not a single 'silver bullet' solution to global piracy and is not designed to target sophisticated and organised criminal counterfeiters. It is aimed at countering casual copying by ensuring that the copy of the software product is installed on a PC in compliance with the EULA.

"WPA is aimed at countering casual copying. This simple process requires minimal effort by the end user"

Kudos to WPA! The blue screen of death is now going to be succeeded by Windows Product Activation (WPA) as the most annoying experience. Most anti-piracy schemes end up causing problems rather than aiding the consumer and preventing piracy. Microsoft's WPA scheme is also headed the same way. Software hackers and pirates will always find a way to crack the encryption schemes used to protect software.

"Most anti-piracy schemes end up causing problems rather than aiding the consumer and preventing piracy"

installation, you might end up in quite a tug of war on installing a RAM module or a new graphics card.

Piracy is a big threat to any software company and Microsoft is trying to defend itself by introducing WPA. But it will cause unnecessary hassles right from getting the product registered and all along the

Mayank Sarup
Partner,
Periclestech

WPA can tolerate a certain degree of change in hardware configuration, which allows users to change their hardware without the software believing it is on a different PC from the one it was activated on. However, if the hardware is substantially different, reactivation may be required. Reactivation in this case, is easy and can be completed by contacting a Microsoft customer service representative to obtain another confirmation ID.

Microsoft gives increasing importance to protecting customers' privacy and user privacy was a paramount design goal

The process for Product Activation is a simple four-step procedure that requires minimal effort by the end user— there is no reason a genuine customer should find it tedious. It is unobtrusive, significantly more sophisticated than past methods and is not easy for would-be pirates to circumvent.

Additionally, we have tested this technology with our Indian customers with the launch of Office XP, where the product activation system allows a user to install a copy of Windows XP only on one computer, and haven't received any negative feedback from them. ◾

Activation can be done via the Internet or the phone. For this, Microsoft's activation servers will have to be accessible round the clock. Nothing could be more annoying than getting a cryptic error without competent help at hand. And if you choose to activate the product over a toll free number, you would have to read out the key on the CD or the accompanying pamphlet and there is enough room for confusion while doing so. A simple mistake would force you to go through the process all over again. Though Microsoft claims that minor upgrades will not require you to re-activate the

course of its use. Every time you re-activate your installation, you have to contact Microsoft. Yes, no private information is transferred but it also means that any time Microsoft decides not to support XP, you could be left in the lurch. Corporate customers are in a two-year loop— why not the same for the retail customers?
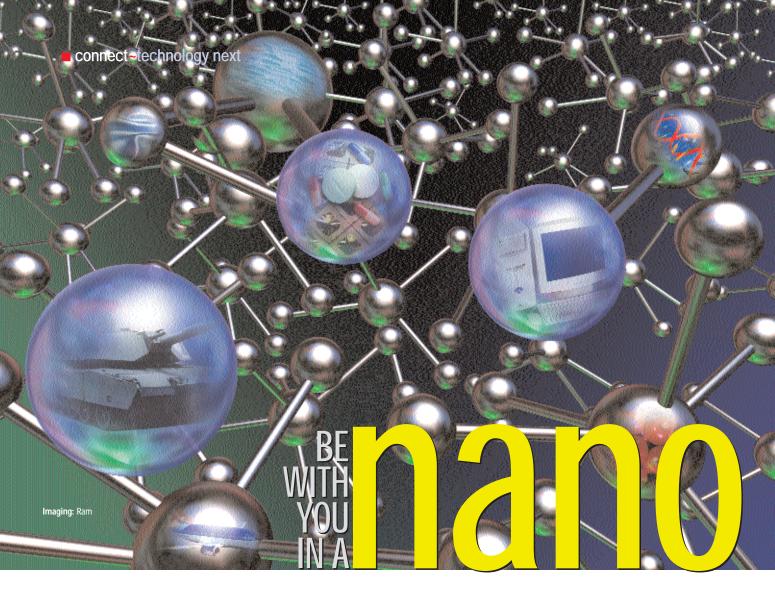
People are too comfortable with Windows, which is why Microsoft is not too worried about a mass defection to other OSs. The way I see things, eventually people will upgrade to XP, experience the annoyance named WPA, sigh and go on. ◾

Imaging: Ram

BE WITH YOU IN A nano

The industrial revolution, electricity, airplanes, computers, nuclear power, the Internet and now the next big thing: Nanotechnology. Get ready for the atomic world

ANIL PATRICK R.

It would help if you've seen the movie *Inner Space*. Try imagining a small doctor travelling inside your body fixing up whatever's wrong. Or envisage yourself stuck in a traffic jam and being guided by the computers in your shirt's threads to a clear road. Or alternatively, think of chameleon-like soldiers blending in perfectly with their surroundings and sensing all oncoming attacks. All these are not mere imagination—they would be realities in the brave new world of Nanotechnology, a technology that would usher in this and so many more things we haven't even dreamed of. All this is going to happen sooner than we expect.

Nanotechnology, which deals with matter at atomic levels, is not just restricted to the field of medicine. In fact, it will change almost everything we are used to—right from the roads we walk every evening to the food we eat every day and down to the clothes that we wear.

Nanotechnology puts the power of creation into human hands. But contrary to popular perception, the immediate goals of Nanotechnology are not to further life and conquer death. It is more of a quest for discovering nanostructures that may have excellent electrical, chemical, mechanical or optical properties. Don't wonder too hard about what it is. Come take a look.

Small, smaller, smallest…
When we think of small things, there is a limit to how small we can think. A speck of dust or maybe particles, which can be seen only with a magnifying lens. This is where Nanotechnology differs. It deals with the most basic building

blocks of matter, at the atomic and molecular levels. Think of taking each molecule one by one and arranging it to get what we want—something like Lego. This is exactly what Nanotechnology can do. Build from the basic building blocks.

Nanotechnology deals with particles of size in the nanometer range (10^{-9} metres). More precisely, it deals with particles of the size of 1 to 100 nanometers. These particles are manipulated and controlled to build materials to the standards we need.

This means that many of the micron level technologies being called Nanotechnology do not really fall into this group at all. When compared to a nano-sized particle, a particle of micron size is nearly 1000 times larger. That's almost like comparing a 1-metre diameter sphere to one with a diameter of 1 km. Or think of a nano particle as something solid, which is one-billionth of a meter in size. Ergo, think twice before reading or listening to someone who is talking about Nanotechnology in the micron range.

Nano tools

So how do we get down to the molecular level and tinker around with atoms? Researchers use tools such as Scanning Tunnelling Microscope (STM) and the Atomic Force Microscope (AFM) for this purpose. STMs and AFMs belong to the group called Scanning Probe Microscopes (SPM).

The STM has a very fine metal tip, which is used to get the images of surfaces to be scanned by applying voltages. When voltage is applied, electrons jump or 'tunnel' across the gap between the tip and the surface. This results in a small detectable current. The current will vary as the distance between the tip and the surface being scanned changes. Researchers get an accurate image of the particles (atoms and molecules) that make up the surface, their behaviour and properties this way. STM can also move individual atoms and molecules into desired positions.

There's a limitation when using STMs: the surface under study has to be a good conductor of electricity. AFM takes care of this since it involves actual contact between the tip and the surface for the imaging. Imaging of the surface is done by measuring the tiny force of contact which has to be kept constant while the tip moves up and down over the surface. This mode

of operation of the AFM is called the contact mode. In addition to this, AFMs also have the 'tapping' mode of operation where the tip is lowered to a particular point and then pulled up and lowered to the next point of the surface. AFMs are used to get the image of non-conducting surfaces such as biological tissues, plastics, glass, etc.

Now let's see what's possible with these tools at the nanometer level.

Nanocomputers

As of now, Nanotechnology is focusing on projects which can be implemented in bettering our lives. Pervasive computing is an area where a lot of Nanotechnology projects are currently active. For example, if you want to design a chip to fit into your fingertip for controlling a music system, then the solution lies with Nanotechnology.

While making a microprocessor, we handle big groups of semiconductor molecules and structure them into the form we need. This form of handling of matter produces severe limitations as to how small these circuits can be made. Present day lithographic technologies (used in the latest desktop processors) are at 0.13 microns. After the 0.13-micron limit, it is very difficult to etch the circuits precisely and effectively on the silicon substrate. This is where Nanotechnology steps in. Whether it is a matter of using DNA for computing or arranging semiconductor atoms to form logic circuits, Nanotechnology offers convenience hitherto unknown to bulk technology (most of today's technology can be termed as 'bulk technology' as it involves manipulation of atoms and molecules in bulk rather than one by one).

Computing giant IBM has come up with a new kind of memory called 'Millipede technology', which makes use of an array of AFM probes to make marks on a polymer surface for storing data. Each tip writes a 'bit' of 50 nanometer on the polymer which stores the data. Reading and erasing of data is also done by the same arrays. Today's best storage devices are capable of a memory capacity of 2 gigabits per square centimetre, whereas this technology has made possible densities up to 80 gigabits per square centimetre using a single AFM tip. This is about 40 times greater than the memory densities available now. These devices are not so far away either. One of the first steps in this direction was the Microdrive from IBM, which has 1 GB mem-

Ethics in Nanotechnology

Nanotechnology deals with the most basic assembly of matter. This is like delivering the power of creation into human hands.

Consider the concept of self-replicating robots that traverse the human body providing all sorts of cures. The only self-replicating mechanisms we know of are the reproductive mechanisms of living cells. Even in their case, we are not really clear about the intricacies involved. So it is quite possible that accidental damage could be caused by unleashing something which we can't control, as our understanding of the complexities involved is limited.

Chances of a deliberate misuse of this technology are even higher. One only has to think of the immense destructive potential that biotechnology has brought about through weapons of biological warfare.

Some experts have called for banning nanotechnology, but this will be like killing one of the greatest developments in technology even before it's happened. This is where ethics takes the centre stage.

The Foresight Institute has laid down a set of guidelines for nanotechnology research and development. The guidelines are reviewed yearly and new guidelines are formulated as research brings up newer issues.

Monitoring Malignant Cells

Nanotechnology can help monitor and cure abnormal cell conditions using 'nanorobots' which can travel inside the body

ory capacity in a matchbox-sized drive. Big Blue's next step is to make gigabyte drives as tiny as one square centimetre. This means that music aficionados can store their entire music collection on something the size of a watch a few years from now. There are also plans to build a smart version of Millipede. This will have electronics coupled to the Microdrive so that the whole package can act as an independent system on a chip.

That was just the tip of the iceberg. Molecular switches and transistors were first developed in 1998. These breakthroughs are showing a path on which a completely new kind of computer architecture is being developed. This approach makes use of objects called Quantum dots for their operation. (*See Box: Quantum dot cell operation for more information on this new architecture.*)

The main advantage of using approaches such as the Quantum dot cell, other than the small sizes, is the power consumption. In an era where we are strapped for power, nano-powered devices will be a big help as they consume next to nothing in terms of power.

Here, there, and everywhere

Materials technology is another major area which will be affected by Nanotechnology. A nanotube is one such innovation which can change almost all the areas that we are familiar with. These are single walled molecules made from buckyballs. We'll see what buckyballs are in detail later on. The main advantage of using these nanotubes is that it is possible to control the way these crystals are developed for particular applications. Electrical and other properties of materials made using nanotubes can be made to fit precise specifications. This makes it possible to use them for practical applications, from clothing to superconductivity applications to spacecraft design.

Nanotechnology has been in the market for a while now. Toyota and Nike use Nanotechnology in some of their products. Toyota started using a nanocomposite material early in the 1990s in their engines. This material, made out of reinforced nylon, withstands high engine temperatures and is cheaper than other forms of similar plastic. The Nike trainers, which are so commonly available, make use of nanoengineered cushioning material in the soles of some Nike shoes.

Miracle drugs

We all dread operations, but we might not have to in the near future, not with Nanotechnology.

The concept here is Microencapsulation, a Nanotechnology concept, which will help doctors control precisely the rate at which medicines are supplied to the patient's body. One of the major medical breakthroughs in this area is a composite structure of carbon called buckyballs, or C_{60} molecules. Buckyballs were discovered by Richard Smalley of Rice University in Houston for which he got the Nobel Prize in 1985. The main advantage of using buckyballs for medical purposes is that they are extremely small and are non-toxic. These spherical particles are a nanometer long and very smooth. They are easily excreted by the body, which makes them perfect as drug delivery mechanisms. Researchers have developed a family of structures known as Fullerenes based on buckyballs. These are tube-like structures which could turn the entire medical field around because of their immense potential in the way treatment is administered.

Using Fullerenes, medicines could be delivered to the body orally and the body then eliminates the Fullerenes without any side effects. It is possible to attach the needed drugs on the buckyball structure as required for the particular disease. This is much easier and effective than the conventional capsule approach. In capsules, a mixture of drugs is delivered into the body, a major part of which is eliminated by the body. When using mechanisms like buckyballs, it is easy to ensure that they are tailor-made to deal with the specific cell disorder that the disease causes.

Drugs that make use of buckyballs for the

treatment of AIDS could be out by 2003. One of the daunting challenges faced by researchers in fighting the HIV virus has been the inability of drugs to attach themselves to the virus and stop it from reproducing any further. Nanotechnology-powered medical techniques like buckyballs have the ability to fix themselves to the virus, thus preventing further reproduction.

Yet another exciting (though futuristic) prospect that Nanotechnology presents is the ability to have minute machines travelling inside our body protecting us from the inside. These 'nanodoctors' will be able to find and repair damage at the cellular level. For this to be possible, molecular assemblers—with better capabilities than the current scanning tunnelling microscopes—are needed. They have to have the capability to move atoms and molecules faster and more precisely than present day STMs. However, these nanodoctors won't be calling on you for the next 15-20 years, to say the least.

The concept of Nanotechnology-powered doctors inside the human body has a long way to go before it can become a reality. The Centre of Biotechnology at the University of Michigan is working on a technology that could diagnose and monitor malignant cancer cells. This is more of a monitoring use of Nanotechnology for detecting and monitoring tumours. (*See illustration, 'Monitoring of Malignant Cells' for more details.*) The technology is aimed to target cancer cells and sometimes even suggest cures. It will then monitor the effect of the medication taken by the patient on the cells.

One such attempt is being made by IBM's Dr Christoph Gerber, one of the inventors of AFM on biological cells. His group makes use of an AFM's imaging tip along with ultra-small lasers. The tips are attached to cantilevers, which are small springs with movements that help measure the force of each atom. Another researcher, Peter Vettiger, from IBM's Zurich Research Laboratory, believes that this movement can be used to build nanomachines that will be able to act independently. These nanomachines could be used to deliver treatment to cells in the form of microcapsules. For example, specific proteins of cancer cells will be producing a certain amount of force which will help identify that cell. The nanomachine will detect that cell and attach itself to the cell. Then it can release the right amount of anti-cancer drug to the exact location.

Quantum Dot Cell Operation

Quantum dot cells are basically small semiconductor or metal boxes that hold a defined number of electrons in them. Remember that small means cells just a few nanometers across. Electrical fields or insulation is used to hold electrons in place in these dot cells. A string of dot cells one next to the other is proposed to act as a wire across which data can be sent.

As you can see from the figure, each cell has two electrons in them with two of the quantum dot cells left unused. This arrangement of quantum dot cells was proposed by Lent and Porod of Notre Dame. Now if a signal is applied to the left end, the signal propagates itself through the wire as shown. It simply passes on through each of the cells when one cell exerts a force on its neighbouring one to pass on the signal.
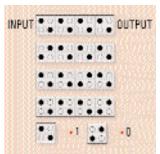
Lent and Porod have also come up with an inverter gate which will produce the opposite of the input signal as the output. Combining the inverters and other forms of gates will eventually make nanocomputers a reality soon.

Life after death?

Did you dismiss Austin Powers coming back to life after 30 frozen years as science fiction that happens only in movies? Welcome back to reality. People are already queuing up to have their bodies frozen in cryonic suspension facilities after they die, hoping they'd be back to see life again in the future. Cryonic suspension basically freezes dead bodies to -320° Fahrenheit using liquid Nitrogen. The body fluids are replaced by a glycerine-based solution, which protects the body systems from damage due to freezing. However, remember that Nanotechnology won't be bringing you back to life anytime soon.

Many of the concepts that Nanotechnology presents may look impossible now, but they may not be so far away after all. Could any of you who've been through the 1970s have predicted that the computers of 2001 would have been so powerful? Or would you even have thought of something like a television in the 1960s? Likewise, Nanotechnology is nearer than you can think. The nano-storm will catch you quietly. The only difference being that it will come in a silent and subdued manner, much like how we embraced and used artificial fibres over the years without knowing it. And it will make a tremendous impact on our lives.

SET YOUR
SIGHTS
ON 'EM

Welcome to November. This time around, we pick the coolest toys from the personal tech spectrum. Hot memory-free MP3 players, shrinking PDAs, portable printers, the works. Go ahead, indulge
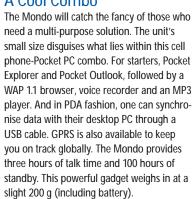
← Archos Technology MiniCDRW
The Ultimate in Portability
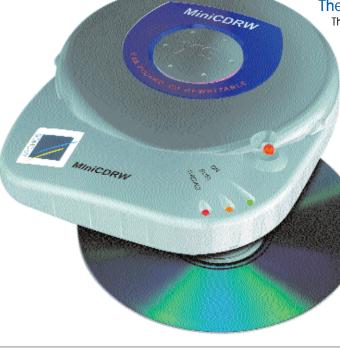
The MiniCDRW provides a solution to store data, music, video or other large-capacity files at home or while on the road. Its flexibility allows it to connect to a variety of interfaces such as USB, PC Card, CardBus and Firewire. In addition, you can use MiniCDRW across platforms, be it the PC or Mac. The maximum burning speed rates are 8x/4x/24x and you can write a maximum of 700 MB of data. Adaptec's Easy CD Creator software is included with this sleek portable writer weighing 500 grams.

Web site: www.archos.com

Trium Mondo Pocket PC ↑
A Cool Combo

The Mondo will catch the fancy of those who need a multi-purpose solution. The unit's small size disguises what lies within this cell phone-Pocket PC combo. For starters, Pocket Explorer and Pocket Outlook, followed by a WAP 1.1 browser, voice recorder and an MP3 player. And in PDA fashion, one can synchronise data with their desktop PC through a USB cable. GPRS is also available to keep you on track globally. The Mondo provides three hours of talk time and 100 hours of standby. This powerful gadget weighs in at a slight 200 g (including battery).

Web site: www.trium.net

BPL *Presents*

LOEWE.

Ricoh RDC-7 Digital Camera
A Visual Treat

This multi-function camera not only takes still pictures but captures 320x200-pixel full motion video as well. And if its 3.3 megapixel resolution isn't enough, the RDC-7 features a 'Pro' resolution mode that effectively doubles CCD pixel count producing 3072x2304 pixel images. A 2-inch TFT LCD viewfinder is featured which swivels around 270 degrees. An 8 MB SmartMedia card is included for storage of images and video and can be upgraded to 128 MB. Images can be then transferred back to your PC through USB or serial interfaces. The RDC-7 can also be connected to a TV in order to watch captured videos.

Web site:
www.ricohzone.com/Product_RDC7.html
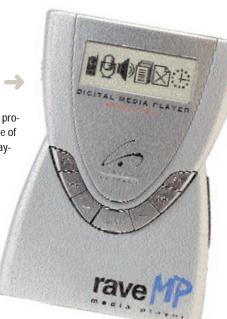
Sensory Science rave:mp 2300
Something to Rave about
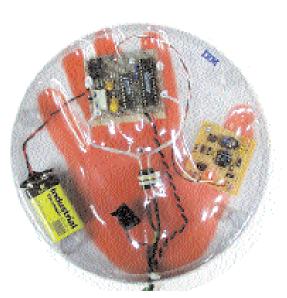
This MP3 player uses Iomega's Clik! disk to provide 40 MB of storage on each disk (capable of storing about 75 minutes of music). This player features a built-in microphone to record 2.5 hours of voice messages. In addition, you can download MS Outlook names, phone numbers and e-mail addresses on to Clik! Media. The rave:mp 2300 offers USB connectivity and features upgradeable firmware which provides support for future music formats.

Web site: www.sensoryscience.com

IBM BlueEyes Emotion Mouse II
Understanding Mice

Can a mouse ever know how you feel? Yes, says IBM. You need to simply touch the Emotion Mouse II, and the computer will be able to determine your emotional state, says Big Blue. Sensors in the mouse sense the physiological attributes, which are correlated to emotions using a correlation model. The application of this technology in games could help one add personalised challenges, adding to realism. Automobiles also benefit from this technology by taking crucial decisions based upon a person's emotional state.

Web site: www.almaden.ibm.com/cs/blueeyes/mouse.html

What makes us Tick?

That's the question scientists are trying to answer while working on the human gene,
aided by supercomputers and biotechniques

The world is filled with nearly 6 billion people, each different from the other and yet sharing a lot of traits in common. These traits are handed down from one generation to the next through genes, the units of information inside the cells of your body.

What if we can modify the gene itself for a stronger build or affect the gene such that it is more resistant to diseases? How does a set of instructions work to create humans and other forms of life? A quest to the answer of these questions led to the formation of the Human Genome Project (HGP) in 1990. This project is coordinated by the United States Department of Energy and National Institutes of Health. It was initially scheduled to last for a period of 15 years.

More than 18 countries are now participating in this quest which involves identifying the genes that are believed to make up the human DNA. The Human Genome Organization (HUGO) helps to coordinate the widespread international collaboration in the genome project.

Illustration: Solomon Lewis

Where does it stand today?

Numerous sections of the genome map have been completed and an entire human genome sequence, together with its analysis was released in February this year. The outcome from HGP would comprise a resource of detailed information about the structure, organisation and the functionalities of the human DNA. But let's first understand what a genome is.

The nucleus of each cell in the human body contains the set of genes that provide a complete set of instructions for making you you—sex, colour of eyes, physical structure and even your temperament and talents. This set of codes is the genome. The information of the genes is organised into strings of DNA called chromosomes. Each chromosome carries several thousand genes. Identifying on which chromosome a specific gene is located and where along that chromosome it can be found is called 'mapping'.

DNA is made up of four similar chemicals (called bases or nucleotides), which are abbreviated as A, T, C, and G. These bases are repeated millions of times, as combinations, throughout a genome. The human genome for instance has 3 billion base pairs that are arranged in an order that's unique to each individual. The process of finding out the exact order in which the base pairs occur is called 'DNA sequencing'.
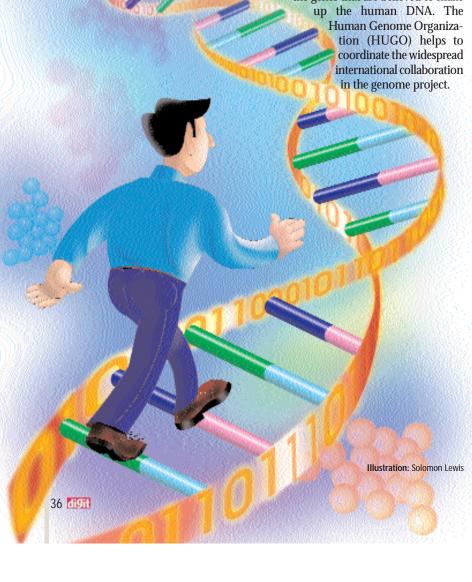
As you can imagine, it is a Herculean task. It is estimated that a hundred thousand patterns of the DNA would be revealed by simulating the process of DNA sequencing using the information already gathered in the databases.

Computers and biotechnology

Considering the sheer volume of data that researchers working on the HGP have to deal with, computers and other advanced electronic technology are an essential part of the Project.

Laboratory automation involves the use of robots to handle the genetic material along a 'production line'. Electro-mechanical systems, lasers, sensors, and sophisticated computers all play key roles in analysing and recording the results. For speed, efficiency and accuracy, computers are used in the process of DNA sequencing, which involves reassembling small fragments of DNA into a complete sequence to find the shortest sequence containing all the fragments.

Dynamic programming is used during the

mapping process. First, two DNA sequences (fragments) are aligned. Then, to determine the accuracy of the alignment, the computer takes a random alignment of genes at any location, in any sequence, and assigns scores to each character-to-character comparison. The aligned pair with the highest score is then reported.

Another aspect of the use of computers in biology-related sciences is the use of information management systems, analysis tools and communication networks. Collectively known as bioinformation infrastructure, it incorporates bioinformatics (the use of huge databases of biological information) and computational biology (the use of algorithmic tools to facilitate biological analyses). Basically, bioinformation infrastructure bridges the gap between observations (the raw data), the analysis of this data to arrive at an understanding (information) of how the processes function and finally, the application (knowledge) of this information. Put simply, it helps us discover new, hitherto unknown relationships between data.

The tools

The study of the complex genetic structures that living organisms are made up of require specially developed software tools that would assist in the analysis of the large quantities of biological data. Special design tools are required to adapt commercial databases to meet the special needs of genome researchers. One such tool is called ERDraw, which is a graphical editing program for describing data in biological terms.

The scientists at Lawrence Berkley National Laboratory have been engaged in building large-scale data management systems, of which one of the first was the Chromosome Information System (CIS). It works in a manner similar to CAD (computer-aided design) software and lets biologists study chromosome maps and related data with the help of pictures and text.

In the CIS, data is easy to access and manipulate through an interface called GenomeGuide which is shareable through a management system called GenomeBase. Researchers can trace back information on a map to its experimental origins, and get more information about specific entries with this interface.

Other computer language based tools such as OML (Ontology Markup Language) are being developed by open source software groups, universities and software development firms to further the research and development on the biological fronts. Big Blue has been making supercomputers for this effect; the Department of Energy's Oak Ridge National Laboratory (ORNL) has acquired an IBM RS/6000 SP supercomputer system. The initial system, configured to perform 100 GigaOPps (1 billion calculations per second), will later be upgraded to 400 GigaOPps.

Computer scientists from ORNL and IBM are also working on developing new programming tools and techniques to support this highly sophisticated machine. They will also be expanding their collaborations in data storage and digital libraries to include parallel programming environments and Web-based supercomputing.

Compaq, Sandia National Laboratories and Celera Genomics are collaborating on developing system hardware and software solutions to address the demands of computational biology. The alliance will use Compaq Alpha processors—a family of RISC-based, 64-bit CPUs and computer systems—connected in a massively parallel configuration with extremely high bandwidth and low-latency mesh interconnects. The goal is to achieve 100 trillion operations per second (100 TeraOPps).

What next?

After the proper sequencing is complete and we get an actual map of DNA sequences, are we ready to retell the human story? Not quite. The quest doesn't end here; mapping the human genome is just the first step. Analysis of the human genome could help scientists in developing new medicines, crops, materials and solutions to challenges in energy development and environmental cleanup.

The information gleaned from HGP can be used to pinpoint the source of the dysfunctions that cause certain diseases, including cancer. This would lay the foundation for enormous advances in diagnosis and treatment of diseases.

Take, for example, the research on drugs. Many drugs used in treatment target the proteins at the cellular level. They bind with certain proteins to either enhance or inhibit their activity, thus controlling intracellular reactions.

The effectiveness of a drug depends on its ability to specifically bind to the target protein in order to minimise undesired side effects. Drug companies are hoping to employ the knowledge gained about the genetic code to predict which protein a particular gene sequence produces and which drugs or diagnostic tests may be effective.

Computers are playing an increasingly important part in helping researchers use models of the genetic, nucleic and other biological data to simulate the effect that new experimental drugs will have. Computers can help find out about possible biological functions of a protein by comparing it to databases of proteins with known function. Understanding the biological or biochemical mechanism of a disease often suggests the types of molecules needed for new drugs.

We still don't know what makes us tick, but computers can help us get mighty close to it. Till then, let's be content with what's in the genes. Us.

DNA Computers and Us

The need for speed has prompted miniaturisation of the conventional silicon wafers used in computer processors and prompted researchers to look for materials that could surpass the existing speed limits.

Living organisms have millions of supercomputers—DNA molecules—in their body. DNA resembles a computer's hard drive in the way it stores data. Data transfer using DNA molecules is much faster than that in even the fastest supercomputers.

Adleman, a computer scientist, was the first to discover the computing potential of the DNA. He used DNA to solve the well-known Hamiltonian path problem. This revealed the computational and storage capabilities of DNA molecules in solving complex mathematical problems. Logic gates, which form the basis of all calculations in a computer, were formed using DNA molecules.

Developing microchips embedded with DNA instead of silicon poses many advantages: they are cheap, do not use toxic compounds, and are abundantly available. Furthermore, using DNA, miniaturisation of computer processors is much more feasible. Unlike the normal serial computing computers, DNA computers perform parallel computations. Soon computers with tens of gigabytes of speed would be available even for home users.

Are you a whiz at processing information and visualising graphical representation of data? A career in GIS could be right up your street

AVINA LOBO

Think maps, and we'll bet what first pops up in your mind are all those humongous, dusty, tattered maps from your eighth standard geography class. Most of these paper maps carry all the information right there on the surface. But now picture a digital map containing all necessary information in a database—for instance, a city map packed with information on its transport network, census information or even its sewage plan. The digital map integrates all this data in different layers within the same map. So you can do away with hunting for the right map to find what you want. Simply select the information you want to view and a map representing the requisite data will be generated accordingly. Behind such dynamic and versatile digital maps are programmers, data architects and analysts who use GIS or Geographic Information Systems. GIS is a set of powerful tools and processes to capture, manipulate, analyse and display spatial or geographically referenced data. Today, GIS is being projected as a field that holds enormous potential for growth in the days to come in the Indian IT sector.
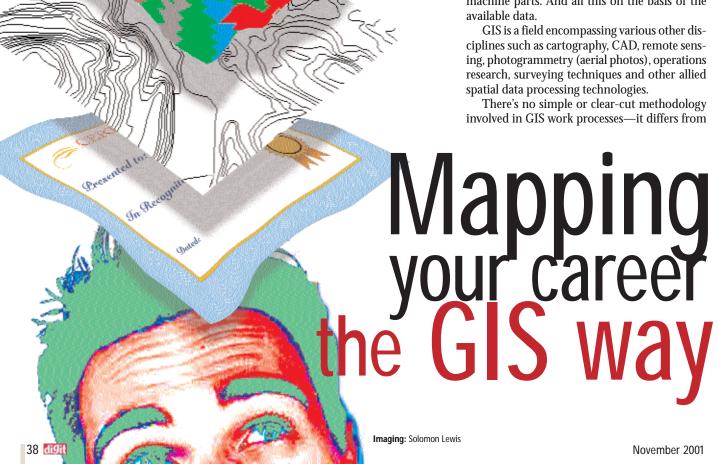
So what's GIS all about?

GIS isn't simply 'mapping software' nor is it the same as cartography. Cartography has just one aspect to it—using data to design a map. There are two distinct aspects to GIS: one has to do with the graphical output (the map or screen display) and the other with the database, which contains all the data. A database used in GIS contains both spatial (geographic) and attribute (statistical) data. With this database attached to a map, you can generate a map carrying the information you want based on a 'geo-query'. A geo-query works like a search engine, usually involving clicking your mouse anywhere on a map with all data for that field instantly popping up.

GIS is flexible enough to map any kind of terrain, not just physical geography, right from mapping the human body to a graphical representation of instructions to assemble machine parts. And all this on the basis of the available data.

GIS is a field encompassing various other disciplines such as cartography, CAD, remote sensing, photogrammetry (aerial photos), operations research, surveying techniques and other allied spatial data processing technologies.

There's no simple or clear-cut methodology involved in GIS work processes—it differs from

Mapping
your career
the GIS way

Imaging: Solomon Lewis

project to project and according to the applicability of GIS in different industries. Broadly speaking, there are three distinct work areas: data conversion, GIS Application Development and GIS Analysis. Let's look at each stage in relation with the work areas to understand the processes and people responsible for getting a GIS project up and running.

Where's my data?

Data input, both spatial and statistical, for a GIS project varies according to industry requirements and the company for which the GIS solution is being customised. Data can be sourced from existing digital maps, satellite remote

*I*T professionals can easily make the transition to IT-enabled GIS. A fair knowledge of GIS fundamentals and software will serve as an easy passport for software professionals into GIS

Yogendran S.
GIS analyst, IIC Technologies, Hyderabad

sensing, photogrammetry, purchase of databases from commercial data vendors, surveys or even paper maps. In India, physical data isn't readily available or accessible. Besides, most of the data is not available in a digitised form. Hence, a chunk of the manpower involved in a GIS project is involved in digitising data and data conversion—processing and digitising images from remote sensing and aerial photos, map digitisation or digitising manual records. Map digitisation involves scanning or digitising existing paper maps to a vector or a raster format, which can then be loaded onto a GIS platform.

Digitisation is a low-end job for which you need proficiency in CAD software such as Auto-Cad, AutoLisp or Microstation. "Map digitisation is more labour-intensive and the technical skills and domain knowledge required to do the job are comparatively limited," says Maneesh Prasad, Director of Gisdevelopment.net. "The pay is not high and one can become a supervisor, a data editor, or be in charge of QC (Quality Control). If you're involved in digitisation, you should enhance your skills as it will give you more options for career advancement," adds Prasad. "Diploma engineers fresh from college with skills in Microstation, or GIS software such as Arcinfo or Geomedia can opt for data conversion," says Manoj Thakur, president and CEO of Nucleus Netsoft & GIS India. "As far as aptitude is concerned, an analytical mind and the ability to extract information from maps are

needed. A background in mathematics would help you with the mathematical analysis in GIS projects."

Programmed to customise

GIS application developers or programmers of varying skills are required on spatial projects for coding applications or customisation after a map is digitised by a CAD operator for graphical display. Customisation can be in the form of creating menus or algorithms to find the shortest route between two points to facilitate easy decision making for users.

To become a developer, you need to have a background in computers with thorough knowledge of software engineering tools and programming languages such as Visual Basic, C, C++, Visual C++, COM, EJB and JSP. For complex applications, you must have a knowledge of MDL (for Microstation), AutoLISP (for Autodesk), Arc Macro Language (AML) in ARC/INFO (for ESRI platforms), Avenue in ArcView XML and GML or software such as MapObjects or ArcSDE. Knowledge of GIS fundamentals and familiarity with spatial databases and database systems is essential as is awareness of algorithms and data structures.

"GIS application development is getting diversified into two areas: Application GIS and IT-enabled GIS," says Yogendran S., a GIS analyst at IIC Technologies, Hyderabad. "IT professionals can easily make the transition to IT enabled GIS irrespective of their field. A fair knowledge of GIS fundamentals and software such as ArcInfo, MapInfo and GeoMedia will serve as an easy passport for software professionals into GIS."

Designs on data

A GIS closely integrates two databases: a spatial database containing coordinates related to location and an attribute (statistical) database comprising, for instance, demographic data or statistics about a particular location. Database design includes the planning and development of a database for storage of spatial and non-spatial data attributes, data structures, linking the database model to the application model, and so on. Database building involves different spatial database structures (both vector and raster), topology, search algorithms and trees (binary and spatial). The role of the data

architect is to develop, design and maintain spatial databases. If you plan to step into the shoes of a data architect, familiarity with spatial data models and their architecture is essential. "Since Oracle is a popularly used database, proficiency in Oracle is sufficient and knowledge in the latest version of Oracle Spatial is advantageous," says Yogendran. Robins John, a GIS professional with Speck Systems, says that attribute data linked with spatial data makes 'intelligent data', which aids decision-makers in

An analytical mind and the ability to extract information from maps are essential. A background in mathematics would help you with the mathematical analysis in GIS projects

Manoj Thakur
President and CEO, Nucleus Netsoft & GIS India

querying and analysing information. The attribute data related to the spatial data may be stored in any RDBMS such as Oracle, MS Access or mySQL.

Analyse this!

Data analysis in GIS uses the spatial and non-spatial information in a database to answer queries and provide solutions. Data analysis is done in the following areas: database query (selectively retrieving and displaying information from a database), overlaying of maps (vector-to-raster and raster-to-vector conversions), network analysis, surface modelling, geo-calculations, geo-statistics and others.

GIS analysts or professionals are the ones who carry out data analysis in a project. "A key requirement for a GIS analyst is domain expertise and the ability to visualise GIS-based structured solutions," says Prasad. "A crop monitoring system needs an expert in agriculture with a doctorate in one of its sub-domains and good knowledge of image processing and GIS," he continues. Strong analytical skills and versatility to adapt to project requirements on an industry-to-industry basis have to be the strong points of a GIS analyst. "Formal qualification definitely comes into the picture with GIS data analysis. This needs specific educational qualifications and experience in the related field," says John. According to him, for analysis, a degree or post graduation in Geology, Geography, Environmental Science, Remote Sensing, Geo-Information Technology, Town planning or Civil

Engineering is desirable, supplemented with knowledge of CAD and GIS software.

Yogendran's job profile as a GIS analyst in Marine GIS involves project planning, execution, management and client interaction. He works on digitisation, data capturing and creation of nautical charts using a GIS software called CARIS as well as compatibility of charts with standards adopted by the International Hydrographic Organization. "GIS application development and GIS analysis are the hot and happening areas and promise growth," he states.

Is there a business opportunity ?

If GIS fascinates you but you don't want to be involved with the technical aspects, there's another avenue open—business development. "Opportunities exist for marketing GIS software and 'concept selling' of the technology and its applications," says John. The qualifications required would be an MBA with sufficient knowledge of the GIS field. John adds, "The career advances are like that of any marketing executive." He started out in the data conversion field but is Resident-in-charge of the Botswana office of Speck Systems, a GIS company based in Hyderabad.

What must I do to go the GIS way?

Sufficiently interested to consider GIS as a career option? You can now avail of formal education as

Tools of the Trade

The software and tools used in a GIS system range from creating the front end map to GIS software used for data analysis and visualisation. For the front end graphical output or the maps, CAD software such as Microstation and Auto CAD Map is used. The most popular GIS packages are ArcInfo and ArcView GIS from vendors like ESRI, Geomedia from Intergraph, CARIS GIS, SICAD, MapInfo, MapObjects and ArcSDE. The choice of software depends on the industry applications. For instance, CARIS is used for marine GIS and electronic navigation systems.

ERDAS is the software used for processing satellite remote sensing images and aerial photographs.

GIS data can also be Internet enabled. For this the software used are Auto CAD Map Guide and MapXtreme.

well as a wide variety of short-term training courses in GIS software. The qualifications and training required depends largely on the area you want to work in—application development, analysis, data conversion, etc.

Courses offered by most software training institutes concentrate more on training in GIS software, rather than on the applications of GIS. However, some institutes do offer training in the applications of GIS technology. If you're serious about a career in data analysis then you should consider a formal degree or a post-graduation in earth sciences from a reputed institute. (*See box on GIS training courses*)

The buzz about GIS

GIS has been used in India since the mid 1960s primarily by government and research sectors in areas such as natural resource management and environmental planning, urban planning, transportation and civil engineering. With data represented graphically in the form of maps acquiring importance in many industries as a decision making tool, GIS technology is finding wider acceptability in many industries—health, business management (where it is used to map existing and potential clients), assigning sales territories, distribution facilities and so on. And here's the bright side. "The global market for GIS has been estimated at over $7 billion and the domestic market in India itself is worth over Rs 750 crore," says Prasad. But there is a shortage of skilled technical manpower to execute GIS projects.
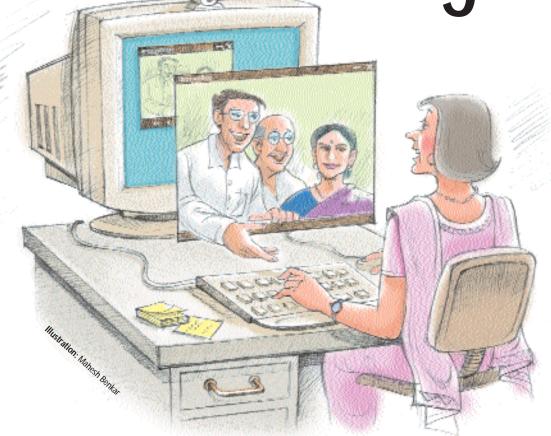
Thakur says, "Around 30 to 40 per cent of the domestic GIS market is concentrated on the sale of software, applications and hardware and approximately 70 per cent of the business comes from providing services." He adds that most of the GIS services in India cater to the overseas market, particularly the US. "There's very little work being done for the Indian market and most of the GIS projects are commissioned by the government sector." Prasad, however, estimates that in India alone over Rs 6,000 crore will be spent on GIS in the next five to seven years. He says, "Municipal planning, forestry and environment, telecommunications and rural land records are the areas wherein the action is already on." The GIS project for Bangalore Water Supply and Sewerage Board, GPS based transport system for Banaglore, Early Warning System for crop monitoring by the Ministry for Agriculture, Disaster Management for Delhi are some of the examples of projects carried out in India. Thakur feels that areas such as location-based services, remote sensing and photogrametry are areas in which demand will outstrip supply and Prasad agrees with this. So what's holding you back? Get set to ride the GIS wave! d

LOOK
who's talking!

Illustration: Mahesh Benkar

Don't reach for the phone the next time you want to call a friend—instead just get out your headset and start videoconferencing

VIDYARAMANAN S.

The telephone was a milestone in the field of communication, but it has now been overshadowed by Internet chat. Voice over Internet, although illegal, gives you a minimal bill for frequent overseas calls. But now you no longer have to be content with just listening to the voices of your near and dear ones—thanks to videoconferencing, you can see and talk with your son or daughter settled abroad, over the Internet, right there on your PC.

The right gear
The first thing that you need to do is check the hardware. The bare essentials you would need are a PC, an Internet connection, a Web camera and a speaker-microphone combination.

Choose a camera that would give you the best performance (*see box, 'Buying a Web cam?'*).

There are certain tweaks that could help your camera take better pictures, but tweaks don't always work. A cheaper camera wouldn't deliver a good image to the recipient and you would just be adding another piece of hardware to your collection. Opt for a better camera, though such a camera would be priced higher.

After you've arranged for all the hardware requisites to start a videoconference session, what you need is software that will help you use all of these gadgets together and talk with a person in another corner of the world. A search on the Internet can get you a good number of video chatting software.

Videoconferencing software can broadly be classified into two categories: software that evolved from Instant Messengers and programs that started off as a video chat client itself. Yahoo! and MSN messengers fall into the former

category while other software such as Eyeball, Im4cam, Paltalk and the like fall into the latter. Though all these software integrate text, voice and video, they differ in the balance of the features that they offer.

Go fishing on the Web

First up, the chat tools that we are familiar with. Yahoo! and MSN both provide the facility for video and voice chat. You can choose either of these conventional clients depending on which one you are more used to. All chat software recognise the default video input device and auto-configure themselves to the available input device.
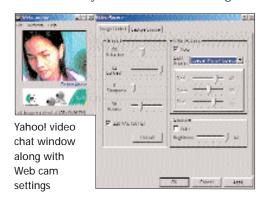
Installation isn't a major hassle with Yahoo!. It has an easy-to-grasp interface, which doesn't confuse you with too many options to choose from. To enable video chatting, all you have to do is plug your camera into the appropriate socket in your computer and choose 'Start Web cam' from the Tools menu. A small window pops up in which you can see the image captured by the camera. Camera adjustments such as brightness, contrast, gamma, saturation, etc can be done from the Preferences option in the Tools menu.

Once your camera is all set up, you will see two buttons pop up in the window. If you want your friends to see you on the Web cam, click on the broadcast button and the messenger connects you to Yahoo! video server, which delivers the video directly to the person who requests to see your camera. Viewing privileges can be set in the same Preferences option as above.

Once you start broadcasting, your status message automatically changes to the default message, 'View my Web cam'. This message can be changed or disabled from the Preferences for the Web cam. Disabling the status messages while on camera helps you avoid unwanted peeping toms. Yahoo! also lets you report any abuse that you

might come across while videoconferencing by simply clicking on the Report Abuse option in the video window of any person who is trying to send you objectionable material.

Netmeeting is Microsoft's proprietary software for videoconferencing. MSN uses Netmeeting, which is a separate program that launches when you start videoconferencing. You

Yahoo! video chat window along with Web cam settings

can download Netmeeting from Microsoft's site. You don't need any additional installations to use this program, except for a one-time configuration, which might require you to fill in a registration form, certain details regarding your connectivity and related information.

After launching the software, enter the MSN passport of the person you would like to conference with and click on the Call button. Once the connection is established, the person's picture will be visible on the right-hand window.

Others in the Net

Now on to video chat clients. Installing Eyeballs software is very simple. Register with the Eyeball service and login with your ID and password. Eyeball has a glamorous, graphics-rich and complex interface. You can add friends as in any instant messenger and also search for chat

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Buying a Web cam?

Be smart. Apart from good looks you should check out other features while purchasing your Web cam. The list given below will give you an idea of what kind of Web cam you should opt for:

Resolution: A camera's quality is weighed against the resolution that it supports and offers. So choose one that offers a good resolution. Look for one that offers the capability of capturing images at 640x480, at the very least.

Connectivity: Check for USB connectivity as USB is faster and is far easier to configure than other interfaces.

FPS at high resolution: Watch out for the frame rates that the camera supports at high

resolutions. This is important as otherwise the video quality would be poor when in high-resolution mode—15 fps is a good frame rate for videoconferencing.

Software and drivers: You might get a better deal for a cheaper price but may not be able to get the accompanying drivers and software. You would do better to buy a camera that comes with software drivers, which would reduce the headache of hunting the Net for the desired drivers.

Price: Needless to say, buy something that suits your pocket but keep the above points in mind while making an investment so that you get your money's worth.

groups at www.eyeball.com. Clicking on the Groups button in the interface takes you to the site where groups are listed. You can enter any of these chat groups and start video chatting with people instantaneously. The site tells you a user's status, using different colours in the displayed names. For example, a name displayed in orange would indicate that the person is in a videoconferencing conference with another user, blue indicates that the person is logged onto the Eyeball software and is available for video chat and grey indicates that the person has just come to the site to chat but is not logged on to the software. You can browse the room and if you wish to video chat with a particular user, click on the video button and the software automatically launches from your computer. Once you log in , a request is sent to the user you want to chat with and if the user accepts, a chat window pops up and you can see him/her.

All at once!

Im4cam stands apart from the conventional videoconferencing software. It isn't a one-to-one videoconferencing software; instead, it is more like entering a video chat room. It has an array of 10 windows, which help you see the people in

Colour differences in Eyeball show user status

a particular room. You could either use the common window to send messages or right-click the user name to send a personal message. What's different about this software is that each user can hear all the others. This is an excellent piece of software for personal videoconferences and could prove useful to an organisation which requires its personnel from various parts of the world to collaborate. You can create a personal room, and you could restrict access to a chosen few by applying a password. You can get together with relatives or even your girlfriend abroad, without anyone else butting in!

Let's get pally!

While Paltalk functions similar to Im4cam, it doesn't have a multi window display. This, again, is a chat room setup where you can click on any user and initiate a chat. The best thing about Paltalk is that it has child protection enabled. Hence, if someone types an obscene word in a

Collaborative use of Im4cam

general chat room, it automatically boots him/her from that room. This is a good feature if your children use Paltalk to talk to their friends or relatives. If you subscribe for Paltalk's premium services, you can see the video in the main window, which reduces the hassles of going to private chat to see a person's cam. This software also lets you create locked rooms and you can choose to invite people to join your group. There are other benefits that you could gain if you become a premium services member by paying an amount upfront.

How to pick?

So how do you go about picking the best? Some software boast distinct features but lack in certain aspects. For example, Im4cam lets you have multiple people in a conference but lags in speed of text delivery and is also prone to crashes. While choosing a videoconferencing software, you should base your judgement on your requirements and certain other parameters. For example, if you want ease of control and also the ability to hold multiple one-to-one conferences simultaneously, then Yahoo! serves the purpose quite well. Netmeeting doesn't allow you to have multiple video exchanges simultaneously but it has a unique 'picture in picture' feature that is missing in the others.

Organisation-based videoconferences can be held using the Im4cam multiple window software. Voice and video can be exchanged simultaneously between 10 people at a maximum. But, neither of these software has the facility to report abuse on the usage of Web cams, except for Yahoo!.
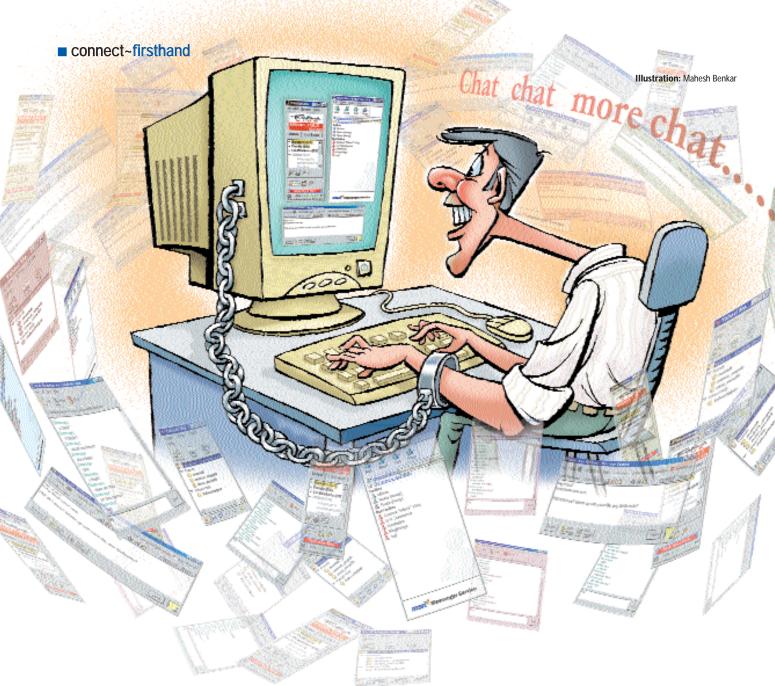
Videoconferencing is a huge tidal wave engulfing people all over the world. Choose the software that suits your purpose, get the basic gear in place and start conferencing with your pals and peers, one-to-one or one-to-many. The best part is it doesn't leave much room for paranoia; so the next time you're chatting with foxy-chick_22, you can find out for certain if the person belongs to the female species! **d**

Trapped in the Web

Instant Messengers: a boon or a bane?

SRIRAM SHARMA

It's 1.00 in the night, and you meet the same bunch of anonymous names at IRC. Behind the pixelated glare of the screen, the distinction between inner and outer worlds almost disappears. You sit almost motionless, your hands typing away to cryptic names who are as immersed in this world as you are.

Topgun: Hey look guys we got a newbie in our midst!
Necromancer: How often do you come here bookitty?

Bookitty: I'm new here don't borg me o sages of lotekville.
Topgun: Hey, poots! You still here? Get a life!
Poots: I don't have one, tops!
Necromancer: Hiya Smokey! You back again? I saw you this morning.
Sir Smokalot: I needed another fix... LOL!
(Writer's note: sic sic sic!)

Studies conducted of late seem to confirm various anecdotal accounts of people being 'hooked' to the life online, at the cost of their

personal or professional life. The sweet lure of instant communication technology is stimulating, hard to resist, rewarding and thrives on the fact that most people don't know when to stop.

What was once considered a disorder for computer enthusiasts and college kids high on bandwidth is now a widespread social phenomenon. A report, 'Teenage Life Online', details the rise of what it calls "the instant-messaging generation".

Internet usage has multiplied many times over with the rise of instant messengers or IMs. It all began as a simple, quick way for teenagers to swap brief, synchronous messages over the Internet—make small talk, crib, complain, and flirt. But in four years, instant messaging has grown to become the biggest 'killer app' of the Internet after e-mail. And the market is growing every day: AOL's IM and ICQ services alone account for about 750 million messages each day. AOL's AIM and ICQ software claim to have 130 million users, while Microsoft reports 18 million users. Yahoo!, another leader in the field, declines to reveal its total instant messaging user base.

For the uninitiated, instant messaging allows you to maintain a list of people you wish to interact with. You can send messages to any of the people in your list, often called a buddy list or contact list. Sending a message opens up a small window where you and your friend can type in messages that both of you can see.

IMs allow you immediate, quick-hit communication, just like a phone conversation, and provide ability to converse with many people at the same time. IMs bring the best of both worlds, the expanse of the Web and the instantaneousness of the phone. This is why instant messaging has gained such unprecedented popularity.

Raahila, an Internet veteran, who started using messengers about two-and-a-half years ago to chat with friends abroad says it has become an indispensable part of her daily routine now: "My friends abroad don't seem so far away and that includes online friends too since they've become a part of my everyday life. It's an easy and cheap way to keep in touch."

Humans have an intrinsic ability to multitask; it's no surprise this seemingly benign technology has enmeshed itself into our lives. Rukmani Saradha, an EEE student, always keeps her messenger on whenever she surfs, be it for fun or academics. She feels that chatting has helped her know a lot about people. "I've got so many new friends—people who study in my college. I was not so close with them earlier, but after chatting I've come to understand a lot more about them. It's not just the matter of getting new friends, you learn facets about people you didn't know before."

Chat in the workplace
No longer just a tool for exchanging information and interacting, instant messaging has swamped the workplace where professionals swap industry information and gossip—all in the blink of an eye. Instead of traipsing down the hall, making a phone call, or waiting for an e-mailed response, employees can communicate with one another via online text, 'pinging' each other questions and requests, speeding up reaction rate and increasing productivity. According to a recent Jupiter Media Metrix report, more than 11 million people use instant messaging services at work. For employees working on location and supervisors stationed outside of home offices, instant messaging is rapidly becoming indispensable.

Using IM at the office does have significant advantages, as long as it's a planned part of your infrastructure. For brief, immediate communication, it beats a phone call or e-mail. So what's the problem with free IM programs? Productivity, for starters. Are your employees gossiping with their friends or using IM strictly as a means of business communication?

Tripti Awade, CEO of Alnishsoft, feels that IMs have extended the professional grounds for her business contacts and considers it a wonderful CRM tool. But she remains sceptical about its purpose. "Chat should be banned in the workplace as it hampers productivity and slows down work, especially among junior members who tend to use it for whiling away time."

Picking favourites
The spillovers in the battle for the instant messaging market have left many users confused with a range of software applications. Yahoo! and MSN were clear favourites; many people loved Yahoo!'s feature of leaving offline messages and MSN for its simplicity. The early adopters, however, depend on ICQ because of the sheer number of contacts and applications possible. But heavy Internet users pick no favourites among messengers; they just turn them all on. Companies like Trillian, Jabber and Odigo provide some relief by making instant messengers interoperable.

Chandrashekhar, an avid Linux enthusiast and long time netizen, uses GAIM when he's on Linux and Jabber when he's on Windows. Laila, on the other hand pledges her loyalty to ICQ because, as she says, "with ICQ you can see exactly what the person types without any corrections, it has a history log, and it's the closest you can get without actually being face to face. Yahoo!'s beta version is cool too". She was not too keen on chatting in public chat rooms though: "You hardly find any interesting people. It's like a free-for-all".

Messengers are getting more indispensable thanks to connectivity on mobile devices like cellular phones and PDAs. It won't be long

Habbo Hotel: a virtual five-star hotel for teenagers

Are you Addicted?

Internet Addiction Disorder (IAD) refers to pathological, compulsive Internet usage. The criteria for this disorder are similar to those for substance abuse disorders.

IAD is different from Pathological Computer Use (PCU), a condition where someone is pathological about any aspect of computers, and includes uses that are not social in their nature.

The following criteria were used for assessing IAD in a large initial study of this problem. If a person meets four or more of the 10 criteria, he can be diagnosed as suffering from IAD.

■ Do you feel preoccupied with the Internet or online services and think about it while offline?

■ Do you feel a need to spend more and more time online to achieve satisfaction?

■ Are you unable to control your online usage?

■ Do you feel restless when attempting to cut down or stop your online usage?

■ Do you go online to escape problems or relieve feelings such as helplessness, guilt, anxiety or depression?

■ Do you lie to conceal how often and how long you stay online?

■ Do you risk losing a significant relationship, job, or educational or career opportunity because of your online use?

■ Do you keep returning even after spending too much money on online fees?

■ Do you go through withdrawal when offline, such as increased depression, moodiness, or irritability?

■ Do you stay online longer than originally intended?

before instant messengers start to offer seamless connectivity. Platform, software and connectivity are all issues, which will sort themselves out soon. It's only a matter of time before computer, telephone and video technology will merge into one—perhaps highly addictive—beast.

Why the addiction

E-mail discussion groups, chat rooms, bulletin boards and MOOs (Object Oriented Multi User Dungeons) offer people an opportunity to experience a form of social contact and make virtual friends. But none of them match the industrial strength addictiveness of the GMUKS (graphical multi-user konversations). GMUKS, or visual chat in simple terms, are something of a cross between a MOO and a traditional chat room.

As social environments, GMUKS are unique in that they are graphical. Rather than limiting users to text-only communications as in most chat rooms, multimedia programs add a visual element that creates the illusion of movement, space, and physicality. It allows people to express themselves visually, rather than just through written words. The opportunities for self-expression and social interaction are much better, giving room for subtleties and complexities not seen in text-only chat rooms. One such haunt is the online multimedia community known as the 'Palace'. Combining features of MOOs and chat rooms, the Palace is a visual and spatial environment where members

Invisible says:
well, it wasn't really bad, it just prevents you from having a real life
Invisible says:
if you do it too much
invisible says:
but that applies to most things

Chandrasekhar
Pathological Net addict

interact with text, sounds, and graphical representations of themselves called 'avatars'.

GMUKS have had a huge impact on MMORPGs (Massively Multiplayer Online Role Playing Games) like *Everquest*, *Ultima Online*, and *Asheron's Call*. These games focus entirely on the social aspect of multiplayer gaming, and most of the time is passed making acquaintances and socialising. The team element is extremely vital to getting ahead; you have to partner up to destroy fire breathing dragons and monsters. It's the social aspect that makes the games so addictive.

Is the Web addictive or do addicts use the Web?

The significant difference between Net relationships and ones maintained by other existing tech-

nologies (telephones, mail, fax) is that the Internet allows for, and even encourages contact with, relative strangers. The probability of any real-life repercussions for online social activity is very low, and that makes people feel free to express themselves in an unrestrained manner. This is a naturally exciting, stimulating and reinforcing aspect of the Internet.

However, finding regular escape in cyberspace also has side effects—missed deadlines, lost jobs, low grades and loss of weight. It's only after you get unplugged that you realise the ramifications of this addiction, especially when they manifest themselves in the form of phone bills.

John Suler, PhD and faculty member in the Rider University Psychology department, has written some extensive papers on the psychology of cyberspace relationships. In his papers on Computer and Cyberspace Addiction, he writes, "A teenager who plays hooky from school in order to master the next level of Donkey Kong may be a very different person from the middle aged housewife who spends $500 a month in AOL chat rooms—who in turn may be very different from the businessman who can't tear himself away from his finance programs and continuous Internet access to stock quotes. Some cyberspace addictions are game and competition oriented, some fulfil more social needs, and some simply may be an extension of workaholicism."

A person by the name Solz in #bookwarez (a channel in IRC) spoke at length about being a chat addict. "It's a wolf in sheep's clothing, really. Sure, it's fast. It's free. It's easy. You can leave it on all day if you have cable Internet like I do. Everyday, I wake up, I turn on my computer, I check my e-mail, and I sign onto Instant Messenger. Then I start chatting. It's an addiction, really. I have to, almost need to, be at my computer when in its presence."

Chandrasekhar messages me in the wee hours of the night as I write, "You know what really sucks? You can't really make out anything about the person on the other end when you really want to, and you don't know if any of it is true. It freaks out paranoid people like me."

Net evangelist Howard Rheingold makes a good defence: "One might think the Net a cold place, and yet it need not be. In the impersonal isolation of our large cities, where people often live separated from kin or lonely amid the multitudes, the Net can become a surrogate social-life—a vital source of interpersonal contact despite its non-physical nature. ◗

The best Indian dotcoms

Dying dotcoms, flagging e-commerce sites—they're all around us. So does the Internet still make a difference? Or have people given up hope in the Internet as a medium that can make our life easier, enabling us to take care of tasks that used to be expensive and time-consuming? Wrong! If you look beyond the R.I.P signs in the dotcom graveyard and the 'not-so-sunny' outlook for anything online, you'll realize that the Internet is growing and maturing. People in India and across the globe are using the Internet more than ever, not just for information and communication, but also for education and entertainment. This is corroborated by numerous Internet surveys conducted by firms such as Gartner and IDC, as well as by online polls conducted by us for the Popular Choice Awards, which saw an unprecedented number of Internet users voting for their favourite sites.

What are Web Awards 2001?

The Digit Web Awards 2001 confer honours on the most popular Indian Web sites—those sites which have kept their promise of delivering quality to the audience—from fields as wide as information, aesthetics and usability to services like shopping, education and travel. Digit Web Awards 2001 acknowledge these achievements, tell what's really good in the various sites, and try to bring the masses closer to the Internet.

The Digit Web Awards 2001 have nominations in 12 categories: Health, Entertainment, Shopping & Auction, Sports, E-learning & Education, Search Engines, Information & portals, Communication & Mail, Jobs & Careers, Travel, News & Analysis, and Banking & Finance.

These sites have been picked by our editorial team from the plethora of popular Indian sites keeping in mind parameters like content, aesthetics and usability. 'Made in India' is the most important criteria to make it to this space; hence the absence of Indian versions of prominent International Web sites like msn.co.in or monster.co.in.

The judging process

The final judging process to select the winners of the Digit Web Awards involved the examination and evaluation of all the nominated sites—a total of five in each of the categories—across parameters like Quality of Content, Ease of Navigation, Aesthetics and Design. The judges were in-house and selected by the Digit editorial panel.

Popular Choice Awards

Almost 10,000 Internet users voted for their favourite Web sites during the course of our online polls for the Digit Popular Choice Awards. The voting, which took place over a period of 15 days beginning from the 1st of October 2001, saw close to 10,000 people vote. While some categories like Information & Portals and Jobs & Careers witnessed really close battles, others like Communication & Mail and Sports had the popular sites winning by a considerable margin.

Banking & Finance

Whether you're a newcomer to the complex world of finance and money management or a seasoned hand at trading, these sites can offer you value for money. They pack in useful tips on how to put your money in the right places, tutorials on the basics of insurance, tax planning, shares and stocks, mutual funds and so on. For the more experienced, they offer detailed and reliable research on securities and markets, and insurance and portfolio management. No more standing in queues to pay your bills or to file your taxes or visiting banks endlessly to procure loans. From online loan approval to bill payment to filing tax returns online, these sites will get it all done for you online.

THE ABSOLUTE WINNER
JUDGES CHOICE & POPULAR CHOICE

www.timesofmoney.com

Scout for the best personal finance options with Click and Compare

Does talk about NAVs, equity or insurance befuddle you? If you need to learn more about investing and where to put your money then Timesofmoney.com is a great place to start. The site is divided into sections such as consumer finance, investment and an NRI centre. Scouting around for information on where to get loans at attractive interest rates? The consumer finance section has all the dope—from personal loans, home loans and auto finance to applying for a credit card online. You can also read up on the basics of how to apply for loans, compare loans and read tips and handy pointers on shopping for the best deal and what to look for in the fine print before you sign on the dotted line.

If you want to make your money grow, then you should head to the investments section which has information on how to put your money in mutual funds, apply for insurance, stocks and bank deposits. The site has tutorials on how to get started that function like a 'how-to' of investing in mutual funds and shares. It also has stock quotes, fund search, fund analysers, market commentary and hot trading tips.

You can buy and sell shares online and manage your portfolio too. Besides this, Timesofmoney also has online bill payment, tax planning and 'Remit to India' services.

Top of the Web (% votes)	
Timesofmoney	34
Apnaloan	22
Kotakstreet	15
Equitymaster	15
Personalfn	14

THE OTHER NOMINEES

www.kotakstreet.com

Kotakstreet offers online trading services as well as news and information about the stock markets. The site provides market commentary, in-depth analyses, stock trading tips and company research. You can trade, buy and sell stocks and make payments online. It has tools to manage your portfolio and keep track of the buying and selling record in your online account. Sign up for Kotakstreet's daily bulletin to be updated with the latest happenings in the ring and hot juicy tips on what stock to pick up.

www.personalfn.com

Personalfn has information, news and services on everything to do with personal finance—insurance, mutual funds, loans, housing, credit cards and so on. The content on the site is comprehensive and every subject is explained in a manner that's easy to understand. You can shop around for the best options as well as apply online for loans, credit cards and insurance. Personalfn has handy tools such as loan calculators, marriage planners, education, retirement and PPF calculators.

www.equitymaster.com

Think stocks and equity and Equitymaster is what comes to mind. This site is one of the best online resources for research on stocks and equity. It has detailed stock quotes and online trading, besides detailed market reports, graphs and analyses to help you make all the right decisions. Trade online from the convenience of your desktop and keep track of your choicest stocks through Equitymaster Portfolio Tracker. The site also keps you updated with stock tickers

www.apnaloan.com

Apnaloan is perhaps the best bet if you are seeking to satisfy your personal finance needs. The site has tie-ups with some of the biggest banks and financial institutions in the country in order to bring you loans at reduced rates for a variety of purposes—homes, automobiles, household goods, for the purchase of land and for travel. You can apply for a loan online (which is sanctioned after furnishing the relevant documents) and you can even check your loan status online.

The Final Verdict on Hardware & Software the **digit** mark of excellence
December 2001

Communication & Mail

E-mail has transformed communication in the twenty-first century. And the Indian sites offering e-mail services have held their own against the mighty 'foreign' sites and created a decent number of user base. These sites offer more just an e-mail services; they present communication solutions that are reliable and, more importantly, fast. Message composing options, advanced folder management, mail filtering, and integration with your other mail accounts are just few of the services that they provide, besides the ability to send mails in any language.

THE ABSOLUTE WINNER
JUDGES CHOICE & POPULAR CHOICE

www.rediffmail.com

Use voicemail; grab a mike, hit 'record' and attach a voice message to your e-mails

Lightning fast e-mail that reaches its destination seconds after you Hit 'Send'. That's Rediffmail. The inbox has an uncluttered design and a neat layout. The pages are light and don't take forever to download into your browser.

Rediffmail offers folder management to store your mail. You can also create your own folders. The address book has options to store mails of individuals or groups so that one can send out group e-mails. You can change your display name in messages according to your preference—it doesn't depend on what name you entered in the registration form. You can also add your signature to e-mail messages.

Rediff has a mail filtering option which lets you block senders by entering their e-mail address. In case you are going on vacation or are so swamped with work that you can't reply for a while, set your vacation mail to notify your friends.

You can also send voicemail from Rediffmail. All you need is a microphone and a couple of clicks and in seconds a voice message will reach your friends.

You can use Rediffmail to download mails from other POP3 accounts. Just add in the settings and you'll be able to keep track of multiple accounts through one account.

Top of the Web (% votes)	
Rediffmail	51
Indiatimes	22
Epatra	10
Indya	9
Sify	8

THE OTHER NOMINEES

mail.sify.com

Sifymail has helped bring e-mail to a wider Indian audience. Apart from English, it supports mail in eight Indian languages. The interface is intuitive and has options for you to customize the appearance of your inbox by using different colour schemes. It has an address book and settings for signatures as well as mail filters and the mail search option. You can also access your POP3 mail account through Sifymail.

mail.indiatimes.com

Indiatimes offers 10 MB of free space and a whole host of innovative features and services. The latest is the 'Videsh se Sandesh Seva' for NRIs in the US who can send letters anywhere in India through their Indiatimes mail. Indiatimes also has calendars, appointments, reminders and a briefcase where you can store your files online. Indiatimes mail composer is really good with formatting options for your message text like background, fonts, etc and you can send HTML mail through your Indiatimes account.

www.epatra.com

Epatra is a multilingual e-mail service that supports Hindi, Marathi, Gujarati, Punjabi, Malayalam, Assamese, Bengali, Tamil, Telugu, Kannada and Oriya, besides English. Even if you use another e-mail service, you don't need to download Indian language fonts to read a mail sent through Epatra. It lets you choose the language you are comfortable with as your default language, and you can use other languages as well. It also has a post-a-mail option that lets you send a mail by post.

mail.indya.com

The e-mail service at Indya looks like just another e-mail service with the usual features, but it's not. It comes packed with an address book, a calendar, a To Do list with features like spam filter, safety filter, vacation reply, automatic filing, and tools to manage your mailbox better. Indya mail has some pretty good external mail settings—you can activate up to three POP3 mail accounts and assign a colour to them to know instantly which mailbox the mail is from.

The Top Performers on the Toughest Benchmarks the **digit** mark of excellence December 2001

E-learning & Education

Doing homework certainly has changed, thanks to the Net. Education and e-learning sites leverage the power of the Web to enrich the learning environment of students in schools and colleges. Utilising study tools like online encyclopedias, tutorials, and informative articles, these sites do a great job of networking teachers, parents and students. They also make education fun and provide aid for college students to pursue studies further. They also facilitate professionals to get a shot at continuing education and upgrading their skills online at affordable rates.

WINNER — JUDGES CHOICE

www.netvarsity.com

Test your knowledge with online tests and then read up in the library

Is your day so busy that you can't make time for a full time course or even spare a couple of hours a day to upgrade your IT skills?

Netvarsity is the perfect place to learn at your own pace. It has a wide range of both short and long-term courses as well as IT certifications like MCSE and MCSD at affordable rates. Netvarsity also has online tests to help you test your understanding of subjects. The site offers tips on e-learning which helps you get accustomed to learning on your own. Chill out at Netvarsity's 'Coffee Shop' where you can try your hand at fun tests, post graffiti on the Wallmag, read up on book reviews and bond with other students at Netvarsity. Techrag helps you catch up with the latest news and updates on what's happening in the IT world, while you can read up on how to make the right career choices at 'Career Post'.

Top of the Web (% votes)	
Egurucool	36
Netvarsity	27
Gurukulonline	16
Schoolnetindia	11
Zeelearn	10

eGurucool leverages the Net to enhance your education and learning experience. The site's 'Smartstudy' has e-courses to match the requirements of different school education boards like ICSE and CBSE. Smartstudy is available for schools in India and in the Gulf. You can pay for the course and get it activated online. The site also has resources to help students prepare for entrance exams like test papers for medical entrance exams. It has a wide network of learning centres all over India to supplement online courses. The site's

WINNER — POPULAR CHOICE

www.egurucool.com

eConnect service connects teachers, students and parents with services like eAssignments and eClassnotes.

www.zeelearn.com

Zeelearn brings together some of the best educational resources on the Web like Campusmatters.com, schoolsahead.com and e-learning from Zeduniv which has courses and modules on IT learning—all in one window. The link to Campusmatters displays information on universities in India and abroad; Schoolsahead has online tutorials and learning aids. Zeelearn has a section on offbeat careers and offers the facility to chat with career advisors.

www.schoolnetindia.com

Homework will never be boring again, not if you get it done at Schoolnetindia. This site makes learning fun with projects, quizzes, interactive tools and utilities, online tests, tutorials and links to sites that aid learning. There's a section for parents with articles and ways on how to help their kids enhance their education online. You'll also find directories and Web pages of schools, e-dictionaries and online encyclopedias.

www.gurukulonline.com

Gurukulonline provides interactive e-learning solutions for IT skills and online training for the corporate sector. The site has a wide range of courses, from computer basics to solution architecture. Gurukulonline online courseware is comprehensive and supported by graphics for comprehension. Virtual classrooms ensure that your online experience is fruitful. You can download applications like the Gurukulonline e-learning assistant to aid learning.

2001 awards — The Best Products of the Year — the digit mark of excellence — December 2001

Entertainment

I f you think there's not enough entertainment online, these sites will prove you wrong with online games, contests and promos, and of course, the added lure of prizes. These entertainment sites keep you in touch with the latest buzz in the entertainment industry—movies, music, and theatre—with news, views, reviews and interviews. You can also catch up on movie release dates and trailers, and sing along to hip new numbers as well as golden oldies. For the couch potatoes, there's news on the hottest soaps and movies on the boob tube.

WINNER — JUDGES CHOICE

www.hungama.com

Win cool stuff like mobile phones at the Hungama sweepstakes

You'll never get tired of freaking out at Hungama. This site has loads of attitude. Cool contests and promos which get updated on a regular basis give you a shot at winning some great prizes. Hungama's Trivia section has questions on Bollywood, business, sports, movies, and history. Questions are updated several times a day to give you a chance to win Hungama points, besides preparing you for the 'hotseat' at KBC. If trivia's not enough for you, chill out and win loads of points at the Hungama Gaming Zone. You can redeem your points at the Redemption Centre or enter the Hungama Sweepstakes and bid for stuff like cell phones and music systems with your Hungama 'Cyberpoints'. Hungama also has sections where you can catch up on Hollywood and Bollywood buzz. Read up on book reviews at the Hungama Bookshelf and buy some of your favourite titles. You can also send e-greetings and buy music and CD titles.

Top of the Web (% votes)	
Indiafm	63
Hungama	18
Contests2win	11
Indiagames	5
Glamsham	3

WINNER — POPULAR CHOICE

www.indiafm.com

This site has the juiciest gossip in tinsel town, plus reviews, news, trailers, and movie stills of the latest flicks. A watering hole for the star-struck and the goggle-eyed—one can read and listen to interviews, catch up on favourite actor's birthday and head for links to Web sites on stars in the film industry.

The online jukebox at Indiafm has clips of the latest Indipop songs. The site also has lyrics to sing along with the audio clips, in addition to downloads, wallpapers and screensavers of the latest Hindi flicks.

THE OTHER NOMINEES

www.glamsham.com

Tinsel town, glamour, music, and theatre—that's what Glamsham is all about. The movies section of the site has reviews, previews, trailers, news snippets and links to movie sites. It also has a list of star birthdays and interviews. If you're a theatre buff, there's plenty happening in English, Marathi, Hindi and Gujarati drama, including a listing of schedules and reviews. Glamsham also has music charts, lyrics and audio files of popular songs.

www.contests2win.com

This is the place to try your luck at winning prizes. Contests2win hosts some well designed interactive promos and contests and lets you keep track of points and credits that you win while participating. From the Contests2win family come sites like Quiz2win and Polls2win where you can answer trivia questions and win prizes.

www.indiagames.com

Indiagames' genre lies in *videshi* action games with an exclusive 'made in India' tag. Examples are *Yoddha* (the warrior) and *Aakraman* (attack) and several multimedia games with a Bollywood or a festival theme. The site has games for kids as well. You can sign up, create your profile, and keep track of your scores. The site also facilitates interaction with other online gamers through message boards and instant messaging.

Health

A portal a day keeps the doctor away. You might still need a doctor in real life but updating yourself on health and fitness will ensure that you maintain a well-balanced lifestyle.

Online portals have demystified medicine by making it more people-friendly. What used to be a nervous visit to the family doctor to settle anxieties or minor queries is now supplemented by online heath portals which update you about ailments, solutions available, and how to contact doctors for help.

WINNER — JUDGES CHOICE

www.allayurveda.com

The site which can help you adopt Ayurveda in your life

Everything you ever wanted to know about Ayurveda and how it can help you live longer is present in Allayurveda. The ayurvedic approach to diagnosis and treatment of ailments and diseases helps you understand your body and incorporate this ancient Hindu science of health and medicine in your lifestyle through food and diet planning, Vastu Shastra, meditation and spiritual remedies like mantras and music therapy.

The different sections of the site contain Ayurvedic solutions for common ailments, home remedies, health tip of the week and recipes for eating healthy. Allayurveda has a Herb dictionary listing the A to Z of herbs used in Ayurvedic treatment. You can also buy herbal products at Allayurveda. The site has alternative treatments like Acupressure, Reiki, Aromatherapy and even Laughter Therapy.

Then, you can keep yourself updated on the latest research findings of ayurvedic physicians and institutions in India and abroad.

Top of the Web (% votes)	
Healthlibrary	27
Apollolife	26
Doctorsaab	23
Allayurveda	14
Askdrshah	10

The virtual medical library at Healthlibrary.com is a one-stop resource for information on health and medicine. The site has the world's largest consumer heath library online as well as fully unabridged medical textbooks and health magazines available absolutely free for reference.

Healthlibrary has reading rooms that you can enter to research specific topics on ailments and diseases. The library also contains directories of hospitals and doctors in India as well as medical equipment manufacturers, pharmaceutical companies and blood banks,

WINNER — POPULAR CHOICE

www.healthlibrary.com

medical bookstores and libraries and medical associations in India.

www.doctorsaab.com

This site takes care of questions you wanted to ask but didn't know whom to approach. From human health and diseases to fitness and nutrition, and from the basics of medicine to applying first aid, Doctorsaab explains everything simply and clearly. Don't miss the 'Home remedies' section which lists panaceas for common disorders and illnesses. 'Doctor's corner' is a place where doctors can exchange views and information.

www.apollolife.com

Apollolife caters to people seeking medical information as well as doctors, hospitals, and NRIs. The homepage lists information of health and diseases while links on the homepage take you to separate sections for the relevant target audience. Navigate through the Cancer or the Allergy Centre or read up on Ayurveda. Apart from information, Apollolife has useful health tools like a calcium calculator or a diabetes risk test.

www.askdrshah.com

For those who prefer to take an alternative path to medicine, AskDrShah is all about the use of homoeopathy to cure illnesses and staying healthy. The site has information about homoeopathy and its advantages, and strives to provide a better understanding of the science through FAQs, myth-busters and information on sources of homoeopathic medicine. It displays information on health and diseases and how homoeopathy can be a panacea for bodily disorders.

Information & Portals

With hundreds of thousands of Web sites floating around in cyberspace, haven't you wished that there was a single site through which you could access the best? That's what portals do for you. Online portals are our windows to the Web world. They are single-access points, which help us explore the Net and find what we're looking for. These Indian portals bring you all that you need from content to online services like e-shopping, auctions, as well as communication tools like e-mail, chat rooms, instant messengers, forums, message boards, etc. These portals are also popular hubs where surfers can converge together and be a part of an online community where they can exchange ideas and views online.

THE ABSOLUTE WINNER
JUDGES CHOICE & POPULAR CHOICE

www.rediff.com

With its positioned content, services and communication tools, Rediff is India's 'Window to the Web'

Rediff is the undisputed king of Indian portals. It's probably one of the few sites to live up to its name in Indian cyberspace in terms of the quality and services offered to online users. The site is fairly well laid out. Whether it's producing content in-house or partnering with other Web sites, Rediff is constantly innovating to offers users nothing short of the best, be it news, buying information, finding a job, making financial decisions or just meeting people. The site also has an online shopping section featuring books, music, apparel, cassettes and CDs. It has services such as e-mail and Rediff 'Bol', an instant messenger.

Rediff has channels on news, finance, money, astrology, contests, e-cards, movies, women, contests, matrimonials and auctions. Rediff's Guide to the Net is a neat tool and so is Rediff Matchmaker. The latter is a great place to find the love in your life. If you are looking for information on a particular topic and have absolutely no clue as to where to start, then the Rediff search should be helpful. The search results are fairly accurate and it also has a fairly good Web directory.

And don't miss Rediff's 'hot keywords'—use this to locate some great sites.

Top of the Web (% votes)	
Rediff	37
Indiatimes	34
123india	11
Indya	11
Sify	7

THE OTHER NOMINEES

www.123india.com

123india.com has a wide variety of sections—cricket, contests, games, jokes, shopping, movies, music, news, finance, horoscopes and others. The online clubs are an interesting feature of 123india. They enable you to bond online with people who share the same interests as you. If clubs aren't your scene, then find the love of your life at the 'Love and Romance' nook. The site also offers services like e-mail, forums, chat, e-greetings, homepages, but you need to pay to use these services.

www.indiatimes.com

This portal from the Times Group offers an exhaustive range of sections covering information on a variety of topics ranging from entertainment to finance to services such as shopping, auctions, travel, bill pay and online education. It's also a great place to hang out, virtually speaking, and make friends using online dating clubs and chat rooms. Play your favourite strategy and word games online and if playing alone bores you, you can play games online with your friends.

www.sify.com

Sify has a large number of sections in addition to an aggregation of a number of sites belonging to the Sify network. The site is quite well laid out and doesn't confuse you. Navigation is a breeze with drop-down menus and a well-categorised homepage. It provides services such as search, e-mail, e-greetings, shopping, news and so on. Check out 'The Café', which offers you a medium for communication with people online through clubs, messengers, chat, and mail services.

www.indya.com

Apart from the usual sections found on a portal, Indya also has channels such as Law, Health and Art. Couch potatoes will definitely love the TV guide in Indya, which features channels from the Star TV network. Read up on previews, schedules and even sign up for reminders for your favourite 'not to be missed' TV programs. If you are in search of screensavers or wallpapers or would like to take a sneak peek at cricket scores while you're working, you'll get all the necessary tools and utilities at 'Downloads'

The Best Products of the Year — the digit mark of excellence

Jobs & Careers

Time was when one had to scan 'recruitment' ads and classifieds in a newspaper, put resume in an envelope, post it, and then start the wait. Not so with online job sites. All you need to do is use tools to build your resume, browse for lob listings and apply for the job with a couple of clicks. These sites make you accessible to thousands of potential employers all over the world who might have a dream job for you. For employers, job sites are a cost effective way for selecting personnel from thousands of resumes to fit the profiles exactly.

THE ABSOLUTE WINNER
JUDGES CHOICE & POPULAR CHOICE

www.jobsahead.com

Get an instant job alert as soon as a vacancy arises

Jobsahead is the perfect place to drop anchor when it comes to advertising and searching for jobs. The site has a job search which helps you look for jobs using a three-criteria approach—location, function and industry. The search results display a brief description of the job with links to find out more, as well as a brief description about the company. You can also search within results and do a 'One click search' where you just click on a link to view jobs for freshers or even for senior management positions.

Jobsahead sees itself as more than just a job site—it's a site that makes the entire experience of looking for a job easy. The Resume Builder makes creating CVs a breeze. All you need to do is fill out various fields like personal details, education and work experience. Jobsahead also offers services like Right Resume, a professional resume writing service and Resume Blaster, a resume forwarding service. You can track your applications, interview calls and rejected applications from 'Myjobsahead'. You can also sign up for Job Alert newsletters which keep you notified about new job openings, or the Job messenger which sends you job alerts suited to your skills.

For employers, Jobsahead provides access to a huge database as well as ensures visibility to job seekers for a fee.

Top of the Web (% votes)	
Jobsahead	36
Naukri	32
Careerindia	14
People-one	11
Deevajobs	7

www.careerindia.com

Search for job openings at Careerindia through a simple search by location, job function or industry. You can create up to five resumes, hide or activate your resume or set up job alerts according to your requirements. You can even read up on employer profiles.

Careerindia has information and interesting articles on career development and career options in various industries. The site also offers career counseling and the best ways to succeed.

www.naukri.com

Put your resume on Naukri and you can be pretty sure that it will be seen. This famous job site has a huge database of job vacancies which can be searched by location or a keyword search. You can also browse through jobs by category or upload your CV to the Resume Manager at Naukri which brings you job alerts. Want your resume sent out to 800 placement agencies? Sign up for the Resume Zapper. The site also has career advice for students as well as for professionals.

www.people-one.com

People-one has job openings spanning a number of industries. It also has resume creation tools. The site features some insightful articles on career development, relocating and working abroad, interviews with HR managers, and tips on job hunting. This site also has good articles on what it takes to get into different careers or lines of work.

If you're confused and can't figure out a career option, 'Ask Anjali' and she'll help you sort out your choices and come to a decision.

www.deevajobs.com

Deevajobs lets jobseekers browse for job openings and employers find good workers with absolute ease. You can search jobs by category or skill and read guides on how to create an e-resume and how to handle interview questions. The research desk carries articles on companies. The site also has resume builder and a 'job flash' for job seekers while employers have tools to manage applicants and an e-secretary to help them correspond with job applicants.

News & Analysis

If you're a news junkie who can't wait to get your hands on *taaza khabar* as it happens, then your doorstep isn't the only place where you'll get it.

Online news sites aren't just about reporting news. They're about leveraging the versatility of the Web and using different means such as multimedia, infographics, video or news tickers to give users their dose of current affairs, business or opinion on what's happening in the world. Apart from catching up with news, these sites are a forum for people to exchange views and opinions through message boards, chat and instant messengers.

WINNER — JUDGES CHOICE

www.thenewspapertoday.com

Customise your newspaper and catch news as it happens

This e-newspaper is truly a great place to catch up on news updates on politics, business, sports, travel, entertainment, weather and people. The site is well designed and easy to browse through, considering the volume of content online. The layout is attractive and the navigation is well planned to let you sift through what you want with ease.

Apart from reports, interviews and exclusives, you'll find interactive info-graphics, maps and photo-essays. Check out the video clips of recent important events that you can stream to your desktop.

The Newspapertoday also features live chat with celebrities, weather updates and polls. You can also sign up for its newsletter to get news delivered and you may even download the news ticker that will run news on your desktop. Newspapertoday can be customised to your needs—just sign up and select the topics that you want to keep yourself informed about. The site also offers tools such as tax planners, portfolio tracker, e-mail and instant messenger.

Top of the Web (% votes)

Timesofindia	30
NDTV	23
Rediff	22
Tehelka	13
Thenewspapertoday	12

WINNER — POPULAR CHOICE

www.timesofindia.com

If you missed reading your morning newspaper, you can catch it online and you won't miss a thing. It's all here at Timesofindia.com. This site isn't just about articles from the newspaper uploaded on to the Web. It offers you the complete experience of reading a newspaper online—the interface has a feel similar to a newspaper. The news coverage is extensive and it covers the same sections as in the newspaper.

You can also read the supplements with the newspaper online as well as check out the classifieds section. You don't even need to miss your daily crossword—it's all there.

THE OTHER NOMINEES

www.rediff.com

Which is the place you're most likely to head to for to catch the latest news in India? Rediff's news coverage is vast with reports, analysis, interviews and commentary on the happening events in India as well as worldwide. The site has an image gallery with slide shows of the latest news events. It has a good archive that you can browse through to catch up on what you've missed. Rediff's news specials are their best feature.

www.ndtv.com

NDTV, better known for its presence on television, has a fairly good online presence. It offers extensive coverage on politics, business, sports and entertainment. NDTV has video clips and live news broadcasts that you can stream to your desktop. Check out Photofeatures for 'news in pictures' and videos of NDTV special investigations and exclusives. NDTV.com also has a news ticker that you can download.

www.tehelka.com

Always in the eye of a storm, Tehelka has marched into areas where others fear to venture. Investigative reporting and news analysis is its forte. But Tehelka also has a great lifestyles and entertainment section covering the buzz on what's happening in tinsel town, society and travel. If you love reading you'll find it hard not to like the literary section on Tehelka with its extracts, reviews, profiles on authors, and essays on the written word.

The Top Performers on the Toughest Benchmarks — the digit mark of excellence — December 2001

Search Engines

How many times have you been on the verge of going crazy hunting for sites on a particular topic? Or nearly torn your hair out exasperated with search results that were exactly the opposite of what you were looking for? Powerful search engines help us navigate through the maze of information in cyberspace avoiding dead ends or dead links. Comprehensive Web directories build huge repositories of Web sites categorised into different sections that are a ready reference point. All you need to do is browse through and you'll find what you're looking for. The search engines listed here bring you the best of the Indian Web with the least effort. They are your 'compass', helping you navigate through the tangled web of online information.

THE ABSOLUTE WINNER
JUDGES CHOICE & POPULAR CHOICE

www.khoj.com

The India Directory in Khoj has a great selection of indigenous sites

Khoj, part of the Sify network of sites, packs in a Web search powered by Google, a Web page search for Indian sites and a news headlines search which searches news headlines from Sify. The results are fairly accurate.

But Khoj is best known for its Web directory service. It has has two comprehensive Web directories. The India directory is well categorised and has a good selection of Indian sites. The categories cover government, sports, science, engineering, veterinary science, and online communities of Indians, to name a few. There's a brief description of the site with a link that opens up in another window, ensuring that you don't lose track of where you started out. The world directory has a large number of sites categorised alphabetically and subject-wise. If you're simply browsing around and not looking for anything in particular, check out the site's 'what's hot' keywords to update yourself on what's new and happening and what everyone else is looking for.

'Ask Sify' question search is another great way to look for information and sites. This directory has more than 10,000 questions for which you'll find the answers here. You can either ask Sify a question or browse through sites category-wise. Khoj also has links to the Open Directory Project at www.dmoz.org.

Top of the Web (% votes)	
Khoj	42
123india	31
Searchindia	13
Appuonline	7
Bharathseek	7

THE OTHER NOMINEES

www.searchindia.com

Searchindia is a good search engine for locating Indian sites. Although, the homepage has only a search box with a couple of links, don't let that fool you. This site has a Web directory that carries some neat sites and it offers easy navigation that helps you ferret out the best sites you want. You can choose to search through the Web directory using the keyword search or browse by category. The site also has a city guide, a directory of hotels in India and weather forecast for Indian cities.

www.123india.com

The search feature at 123india has a simple keyword search. The advanced search option lets you define how you want the keyword to be matched and offers case sensitivity too. You can browse through the Web sites in the directory either by category or use the directory search—a feature that lets you search for Web sites through the directory or even within a particular category. If you want to find the latest Indian sites, all you have to do is head for 'What's New' at 123india.com.

www.bharathseek.com

This site contains a search service and a Web Directory. Bharathseek search is a keyword search, but its Web directory is pretty good, covering a variety of categories from entertainment and culture to science and society. These categories contain a fairly large number of sites (but Indian only) and Web pages. You can also use the search box to search through the Web directory. The site has news, weather as well as links to other sites on music, e-greetings and forums.

www.appuonline.com

Appuonline is one of the best online guides to Indian sites. The keyword search throws up search results containing sites that are both Indian and non-Indian. Appuonline's Web directory is its best feature, providing links and descriptions of the Web pages. Another good feature of the site is its categorisation of Web pages from the directory all through the site in a manner so as to suit a particular interest (such as shopping or travel) or a certain section of the population (women, children and so on).

Shopping & Auction

Online shopping promised a smooth path from your desktop to your doorstep. It was about getting the best deals on everything, right from cars to a pack of detergent, online, in just a few clicks without having to elbow your way through crowded shops. It was about creating an entire community of people using the Net as a medium to buy and sell products and services. Online shopping and auction sites today have come a long way from being merely Web pages with a limited range of products and a telephone number to online malls which provide you the best products and brands, convenience, prices and security.

WINNER — JUDGES CHOICE

www.fabmart.com

Fabmart couples good reviews and a choice of products with reliable service

Slow but steady. The tortoise in the crazy race among the various shopping and auction sites promises to offer consumers everything they need online. Fabmart started small, with only an online music store, but today has expanded into a number of categories such as books, computers, jewellery, groceries, movies, toys and watches. On Fabmart, you can find what you need quickly with its well-planned navigation and searches.

Every product here has extensive information listed, like reviews on music, songs, or books. Titles in the music store have 30-second audio clips so you can sample a song before buying it. This site ranks high on personalisation—you can create and save shopping lists, make wish lists, maintain address books or view purchase history. Little extras such as free gift-wrapping for toys make it a delight to shop here. It has a wide range of payment options and ships goods to over 850 locations India. Efficient customer service is one of Fabmart's strong points.

Top of the Web (% votes)	
Baazee	48
Fabmart	18
Rediff	15
Bidorbuyindia	11
Easybuymusic	8

Baazee.com is a virtual paradise if you are scouting for stuff that you can't simply enter a store and buy off the rack (alternatively it's also a great place to get rid of stuff you don't want). Coins and stamps, antique furniture to second hand cell phones and musical instruments—it's all here and you can end up buying something at a throwaway price.

The bidding process is made easy on Baazee with features such as Autobid, which you can set to increase your bid by a particular amount so you don't

WINNER — POPULAR CHOICE

www.baazee.com
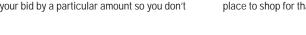
have to manually enter a bid each time. Bazee is a good place to shop for that special something.

THE OTHER NOMINEES

www.easybuymusic.com

Whatever e-commerce pundits had visualised e-shopping would be, Easybuymusic seems to have come the closest to achieving it. The site sells cassettes and CD titles of various genres of music—reggae, film music, classical, instrumental music—as well as movies and CD ROMs. Music buffs will enjoy reading the latest on the music scene in India and abroad. Easybuymusic also offers excellent discounts on certain titles on the site.

www.bidorbuyindia.com

Bidorbuyindia has a large number of categories and products and is always buzzing with activity, contests, crazy auctions—a glance at the homepage will tell you that. Navigation is a strong point here. The City Search feature helps you search for auctions within your city, and the efficient site map ensures that you don't get lost in Bidorbuy. It also has a gift shop. The best feature of this site is its bargain hunter.

Shopping.rediff.com

Rediff's vast product range, convenient payment options and reliability make it an ideal place for shopping online. You can buy music, food, clothes, furniture, flowers, etc. Rediff also has a number on online stores featured such as The Bombay Store, Nike and Compaq. Rediff's gift centre has gifts for almost all occasions. Use the Gift matcher to help you make a decision according to the person you want to give a gift to and the occasion.

The Final Verdict on Hardware & Software — the *digit* mark of excellence

Sports

Can no one come between you and your television on the days there's a cricket match or a Wimbledon tournament going on? Are you in heaven when you see Tendulkar crack the ball way beyond the boundary or Kournikova work her magic on the courts?

The Net can't really compete with what television can offer in terms of action, but online sports sites come pretty close with live updates, scoreboards, player profiles as well as game or match statistics.

So the next time you miss a match on TV while at work, don't curse and wring your hands in despair! Just log on to your favourite sites and catch some action online.

THE ABSOLUTE WINNER
JUDGES CHOICE & POPULAR CHOICE

www.khel.com

With live score tickers from Khel, you won't miss a four again

Khel, a part of the Sify.com network, is the one-stop guide if you want to stay tuned to events in the world of sport. It provides excellent coverage of sports such as cricket, tennis, golf, football, hockey, chess, motor sports and cue sports such as billiards. All sections on Khel, from tennis to hockey to Formula One, are filled with news about the tournaments, news updates, match schedules, photos, columns and several links to player profiles, statistics, rankings, interviews and quizzes.

The cricket section offers live cricket scores for one dayers as well as test matches and is updated every minute. It has a desktop score ticker which refreshes every 2 minutes to give you the latest scores. Khel has a section on golf that not only carries information on the Indian golf scene, but also covers the origins of the game. The motor sports section mostly covers Formula One racing with news on races held around the world and in India too. You can sign up for Khel sports updates and download screensavers and wallpapers with sports themes. Khel specials contain polls on your favourite sportsperson, and you can read about what it takes to be a sportsperson, and about young and budding sportsmen in 'Little Khiladi'. Don't forget to check out entertainment hotspots for fun sports such as bowling, go-karting and pool in major metros in India. And that's not all. Khel's photo galleries help you get a glimpse of the great moments in sport.

Top of the Web (% votes)	
Khel	40
Clickcricket	27
Criclive	18
Magiccricket	10
Golfindia	5

THE OTHER NOMINEES

www.golfindia.com

Do you consider golf a boring sport? That's probably because you don't know much about it. Log on to Golfindia.com—it might change your perspective on the game.

This site helps you keep up with the golf scene in India with its schedules and details of golf events, information on golf courses in India as well as profiles and statistics of Indian golf players.

Golfindia also has a newsletter you can subscribe to and links to other golf sites.

www.criclive.com

The homepage contains the scorecard of big games being currently played in India. You don't have to visit the site if you download a desktop score application, which gives you the score right away.

The site features updates on the game, along with interviews, a fact file of teams currently playing, player profiles as well as an image gallery, wallpapers, and other goodies. Criclive even has a database of past matches that you might want to catch up on.

www.clickcricket.com

Clickcricket carries news, interviews, columns, records of previous matches and information on forthcoming series. Shop here for cricket gear or accessories at the Shopping Mall or bid for cricket memorabilia at the Auctions counter. Other interesting things you can do is check out the height and weight charts at the Fitness corner, read Sourav's thoughts in his Clickcricket Diary and have fun with astrology, quotes, Clicketoons and the hottest cricket gossip on 'Masala'.

www.magiccricket.com

Magiccricket has team and player profiles, a database of test records and a 'Cricket Calendar', listing all the one day and test matches played around the world. Let the scores come to you via the score ticker or subscribe to 'Score Flash' and the newsletter to get updates in your mailbox.

Magiccricket has polls and chat, along with fun sections such as a 'Test your CQ' Caption contest, a 'Gamezone' with a crossword, and other interesting cricket games.

Travel

eaving on a jet plane for your dream holiday isn't as easy as it sounds. Ticket reservations, travel documentation and all those details associated with even the simplest of trips can bog you down and rob you of the excitement of enjoying your holidays. Here's where online travel sites step in. They can help you plan your trip down to every last detail—from destination information, maps and weather to tools such as itinerary and route planners. These sites also take care of all your booking and reservations online, travel documentation such as visas (and applying for them), passports, travel insurance, foreign exchange and even loans and finance for your holiday. You can do all this online, avoiding travel agents and sleepless nights.

THE ABSOLUTE WINNER
JUDGES CHOICE & POPULAR CHOICE

www.traveljini.com

Plan your itinerary in a jiffy with smart finders

Traveljini comes out the best in Indian travel sites, offering a wide range of services from domestic and international flight tickets to hotel reservations, domestic and international tour packages, documentation and so on. It is well structured with sections on flights, hotels, cars, tours and easily navigable links to services and planners. The search link for the entire site can help you look for accommodation, shopping, and hotels either by state or by city. If you're not in a hurry and want to hold out for a better deal, you can bid for Traveljini packages and walk away with a holiday at a throwaway price. Traveljini has an online flight search for international flights. The Flight Route Finder locates flights within India and the Smart Fare Finder checks international fares for tickets from India to destinations worldwide. In this section you can also check for the days on which flights from different airlines operate.

The Rail Route Finder helps you with information about train routes within the country, including the arrival and departure time for every station it halts at, and the train fare. Traveljini also has an excellent database of domestic and international hotels and packages. It offers destination information as well as information on visa and passport requirements. And if you have a specific query about a place, the answers to which you can't find on the site, just ask a 'jini' (expert on a particular location) and you'll get your answer.

Top of the Web (% votes)	
Traveljini	31
Outlooktraveler	22
Makemytrip	16
Travnova	16
Airticketsindia	15

www.makemytrip.com

Makemytrip is a one-stop travel shop, which takes care of all your travel arrangements—flights and train tickets, hotel reservations, car rentals and luxury cruises. Read up on destination information as well as check out video clips on destinations in India and Australia.

Makemytrip also offers travel documentation services such as obtaining passports, visas and insurance. It has a facility that helps you apply for a loan if you want to travel now and pay later.

www.travnova.com

A well-designed site, Travnova offers easy navigation though sections on Indian and international destinations, tour packages, weekend deals, adventure tours, etc. Travnova's destination information is among the best around with its exhaustive information on Indian destinations. You can search for a flight and book tickets in real-time through an airline central reservation system. Interactive tools on the site include currency converter, distance finder, STD/ISD finder and passport office finder.

www.outlooktraveler.com

Outlooktraveler is best for affordable hotel packages for destinations within India and abroad, as well as packages to theme destinations—eco-tourism, pilgrimage and so on. Read up their destination information, honeymoon hideaways, and weekend getaways.

The Outlooktraveler Airshop offers flight bookings, excursion fares, and car rentals among other services. The site also features a list of restaurants that you can search for according to location and cuisine.

www.airticketsindia.com

Airticketsindia has online air reservations and Indian and world travel guides. You can search for flight availability and make online reservations in real-time. The site also has information on baggage allowance and frequent flier programs offered by airlines. It has an India as well as a world destination guide and its travel planner section has links to international rail schedules, exchange rates, a currency converter, time zones, and weather reports to help you plan your holiday effectively.

StarOffice is back with its 'new improved' version. Let's find out if it's worth ditching MS Office yet

AVINA LOBO

You've been constant companions through the years—been together during the good times and seen each other through the bad. We're not talking about your childhood buddy or your pet dog. For most of us Microsoft Office is the 'one and only' solution to all our desktop processing needs, whether it's that assignment that's going to get you a top grade or a presentation that's going to help you close a deal.

But hey, wait! StarOffice is back with its 'new improved' version and it's ready to take on Office! So can StarOffice do all that Office can?

Customising StarOffice: Like Office, StarOffice applications have a common customisation interface that can be accessed from Tools > Options. Here, apart from the obvious customisation options such as user information, printer, security, language or font settings, you can customise the look and feel of StarOffice. For instance, you can give StarOffice a Macintosh or an OS/2 look and feel, set mouse scrolling and positioning, get the middle button of your mouse to act as a scrollbar, etc. Global settings for all StarOffice applications can be done from this one dialog box.

Tools > Configure lets you configure the functions

A Window to StarOffice 6.0

Probably not. But the important thing is, can it do the tasks you most depend on Office for? Let's find out.

Kick(Star)ting Office 6.0

StarOffice is a free office suite from Sun Microsystems which runs on Windows 9x, Me, NT, 2000 and XP. It also runs on Linux and Solaris platforms. If you've used StarOffice 5.2 and often found yourself cursing its 'integrated desktop'—well, its long gone. StarOffice 6 behaves better and has as good a design as Office.

The StarOffice suite comes packed with a word processor, a spreadsheet, an HTML editor, presentation and a drawing tool. Each application runs separately and you can launch them either from the Start menu or Quickstarter in the system tray.

Illustration: Mahesh Benkar

you want on your menus or change keyboard shortcut keys and configure your status bar. Toolbars can be knocked off in this dialog or through View > Toolbars and you can also customise the toolbar by clicking on Customise in the same menu or simply right-click the toolbar and select visible buttons to uncheck the buttons you don't want. You can also view your document as a print layout (that's the default layout in Writer), online layout and a full screen layout.

You can even customise toolbar buttons and set functions to them. Get rid of those old buttons and create your own (make sure they are in BMP format, sized 30x30 pixels and don't have more than 256 colours) and add them to 'staroffice6.0/share/ config/Icon' directory—every time the Buttons bar is clicked, StarOffice will automatically search for new icons in that folder.

Template management: Like MS Office, StarOffice also has a template management interface. This can be started through the Quickstarter in the system tray. StarOffice doesn't have as many readymade template choices as Office but its

interface is quite easy to navigate and helps you pick the right template for an invoice, fax or presentation. You can open a new document or template, browse through folders to pick a template, preview template details and layout and open existing documents from your 'My Documents' folder right from this one navigation window.

Autopilot in StarOffice is the equivalent of the 'Template Wizard' in Office. It can be found in the File menu of all StarOffice applications. Autopilot isn't as advanced as the wizards in Office but runs you through the basic steps of customising templates the way you want them.
Database integration: StarOffice has support for internal (StarOffice 5.2) as well as external data sources such as Netscape, Mozilla or Windows System Address book. They can be integrated into StarOffice at the time of installation or manually through Autopilot > Address Data Source. This makes mailing out documents to multiple recipients (or a mail merge) a breeze.

Writing off Word

The interface of Star Writer, the word processor, does feel a little different from Word but the most commonly used functions in Word are available here as well.

Writer easily imports and handles different file formats from different versions of Word as well as text documents for Macintosh and Unix without losing out on much of the text formatting. It's only while importing StarOffice documents into Word that you might lose some of the formatting. To save documents in HTML, go to File > Send > Create HTML document.
Formatting text: If you're looking for the familiar Format menu options as in Word, you'll find them all organised quite neatly in StarOffice.

Format > Page takes care of your page size, margins and page background. For the background you can either choose solid colours, images from the StarOffice clip gallery or your own background.

You can add and set the size (in centimetres) and the style of different page elements such as headers and footers, borders, columns and footnotes. This dialog has a small page preview option that gives you a glimpse of how these elements are going to look against the page.

Backgrounds, borders and shadowing effects can be set for Headers and Footers. The shadowing option for the page and the Header/

Footer borders is especially neat as you can set the distance to determine the shadowing effect.

You can either format footnotes while formatting a page or insert it through Insert > Footnote. You can set the footnote area, the separator line that separates the footnote from the document and number the footnotes.

Format > Character is where you set fonts, font size and font effects such as embossing and font position (subscript, superscript) while Format > Paragraph takes care of formatting blocks of text—alignment, paragraph indents and spacing, hyphenation, border and background for paragraphs, drop caps, etc.

'Bullets and numbering' has some pretty good styles. The standard bullets are the same but there are more options for graphical bullets in Writer. The options to align and control the spacing of the bullets are especially good.

The StarOffice Stylist, a window containing a library of styles, is present across all applications and provides another easy way to format text. All you need to do is select the text and double-click on the style in the window to apply it.

If you don't want to manually format text, there's always Autoformat and Autocorrect, both in the same dialog and with similar functionality as Word.

Tools consists of a spell checker, thesaurus, line numbering and macros. The Insert menu has the same elements as Word—Find and Replace, Comments, Bookmarks, Footnotes, Captions, Cross-reference and Hyperlinks. In addition you can also insert charts, diagrams and images. You can insert special characters and symbols into the text through Insert > Special Characters.

The comment feature isn't as good as in Word. It lets you insert a note at the cursor position, but the note isn't visible on a mouse over. You have to double-click on the note indication for the note to pop up.

Star Writer has a clip gallery with fairly good images. You can insert images into the document from a file or the StarOffice clip gallery.

Auto abstract is a neat feature packed into Writer that extracts the title, summary and sub-headings of a long document and saves it to a new document.

You can create a small table in Writer by selecting Insert > Table, selecting the number of rows and columns and entering the data. Alternatively, you can define table attributes at Tools >

StarOffice has a neat template management feature

Say it with XML
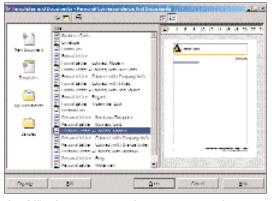
There's been a lot of talk from Sun about a new XML-based file format for documents in StarOffice 6.0 and the increased functionality that it would bring to its users. So what's this all about?

This means that parts of an Office document such as the content, layout and meta information are stored as separate XML streams along with embedded graphics and objects contained in the document. This is done so that they can be read, interpreted and modified independently of each other. This XML format is commonly used across all StarOffice documents, whether it's a spreadsheet or word processor.

How does this help the user? Well, for starters, it will ensure greater compatibility and interoperability of StarOffice file formats with other operating systems as well as with newer versions. With XML, the recipient of a StarOffice document will not be required to have StarOffice installed to view it.

XML also helps in document archiving and preserves the longevity of the document. Being a text-based and human readable format, it allows files to be read even if the original application or the OS that it ran on is not available anymore.

With the XML file format, the user can inspect the content of files being sent or received through the meta information, which is stored as plain text in the Windows Explorer context menu. So the next time you receive a suspicious attachment, you know what to do!

Options. Under the Text document heading, select Tables. Formatting a table is simple—just select the entire table and click on Format > Autoformat.

Frames don't mean the same thing as in Word. Here a frame is like a box that may contain text. Insert > Frames gives you the option to determine size, position and format the frame and text within it.

Making 'Impress'ive presentations

Need to create snazzy presentations that will floor the clients and clinch the deal? Star Impress can do the job just as well as its Office counterpart, PowerPoint.

For simple presentations, use a slide template or customise it using Autopilot. Autopilot will run you through the process of selecting your background, slide transition, slide duration and output medium such as overhead screen or paper, in just a couple of steps.

If you want to start out with a blank slide, Impress still shows you options for slide layouts, rather like PowerPoint. Choose the appropriate layout according to what you want to display—text, images, animation, charts or diagrams. Slide background options are few but they look good. You can also add your own background through Format > Area through the colour palette or insert your own slide background (Impress supports the most popularly used image file formats).

You can also add text boxes, resize them and fill in text. The same text and paragraph format options used in Writer apply here. Use the Insert menu to insert spreadsheets, charts, diagrams and images.

While creating a slide, you might constantly need to modify the slide layout, insert a new slide or perhaps duplicate slides. Instead of having to go to the menu several times, use the floating window that has all these functions. Slide view options are located towards the top right corner of the screen within easy reach so you can change slide views constantly.

Format > Font Work lets you play around with font effects—apply shadows rather like 'Word Art' in Word. You can rotate the font, change the angle or set it to curve in different directions. With Format > 3D Effects you can add 3D effects to the font selected, such as shading illumination, geometry, textures and material.

Files created in Impress can be saved as PowerPoint or StarDraw from File > Save As. If you want to save the slide as an HTML file, you'll need to select File > Export. This opens up an Autopilot dialogue, which takes you through converting and formatting the slide as a Web page. Use Insert > File to import an HTML page.
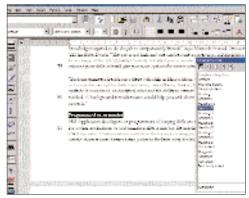
The slide show menu has all the animation, slide transition options and settings to help make your presentation more interactive. A simple way to apply this is to select the textbox and click on Effects or Interaction. Impress also has custom slide show options.

In addition to this, you can hide slides without deleting them through Show >Hide Slide.

You'll miss the Slide Sorter feature in Power-Point to view thumbnails of all the slides, with drag-and-drop to change slide order. StarOffice has an alternative—each slide is laid out like worksheets in spreadsheet applications like Star Calc and Excel. You can rename each slide or drag to change the slide order.

Impress handles organisation charts and flow charts pretty well. You can create them with text boxes and connectors from the Draw toolbar. The connectors move along with the boxes and hence managing them and moving the boxes around isn't difficult.

The 'Stylist' makes formatting text a breeze

Spreadsheets
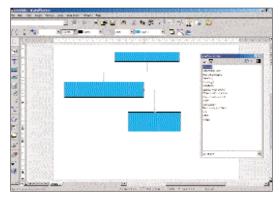
Star Calc is the spreadsheet application from the StarOffice family. The worksheet and workbook options work the same as Word as do basic file functions. Calc can import external data (Import > External Data) and save files created in Calc as Excel, dBase, CSV and Lotus 123 files.

Formatting functions include formatting worksheets, rows and columns and cells. The context menu is the easiest to use for inserting, renaming and deleting sheets or setting width or height attributes to rows and cells. Format > Cells takes care of the fonts, font effects, worksheet protection, cell border and background options and merging cells.

The delete option in Calc doesn't just delete the cell content. It pulls up a dialog box which lets you select what aspect of the cell you want to delete—format, formulae, or just the text.

You can customise the Autofill option in Calc as well as use and create your own sort lists to sort data alphabetically or as per your preference through Tools > Options under the Spreadsheet category. Calc also has options to group and outline cells in the Data menu.

Calc has Filters and advanced filtering

Use connectors to make flowcharts easily

options to let you filter data and view data for certain fields, which is handy with large spreadsheets containing lots of data. The Autofilter option works just fine with the entire spreadsheet or with selected rows or columns. The standard filter lets you set up to three conditions for filtering while the advanced filter lets you set up to eight filters.

As in Excel, you can represent the cell data in the form of charts. Selecting Insert > Chart brings up the Autoformat Chart dialog, which helps you choose between bar charts, pie charts or radar charts. There aren't as many chart options as in Excel, which has several formats with 3D effects.

Insert > Function List gives you a list of the functions in Calc. To insert functions, use the Function Autopilot on the toolbar menu. You can also use the Autopilot to create your own formulae.

Insert > Object > Formula activates Star Math. Once activated, you can use the toolbars in Star Math to add mathematical formulae to your spreadsheets.

So what's it going to be?

The free beta version of StarOffice 6.0 that we've looked at here is feature rich and packs in a lot of functionality, in spite of the fact that it doesn't include applications such as Star Mail and Scheduler, which you will find in the paid CD version of even StarOffice 5.2. Additionally, stability isn't one of the strong points of the StarOffice 6.0 beta version, hence you have to keep saving your work periodically. Documentation for StarOffice, in general, isn't too good and the Help files aren't easy to follow.

We suggest you wait for the release of the full version of StarOffice 6.0 before you decide to completely switch over. But till then, have fun fiddling with this version of StarOffice—try it, tweak it and use it. ◘

http://www

www.sun.com/staroffice/6.0beta/
Download StarOffice 6.0
supportforum.sun.com/star office
Feedback and discussion for StarOffice 6.0
www.staroffice.com
A StarOffice user group portal
www.openoffice.org
Home of the StarOffice Code
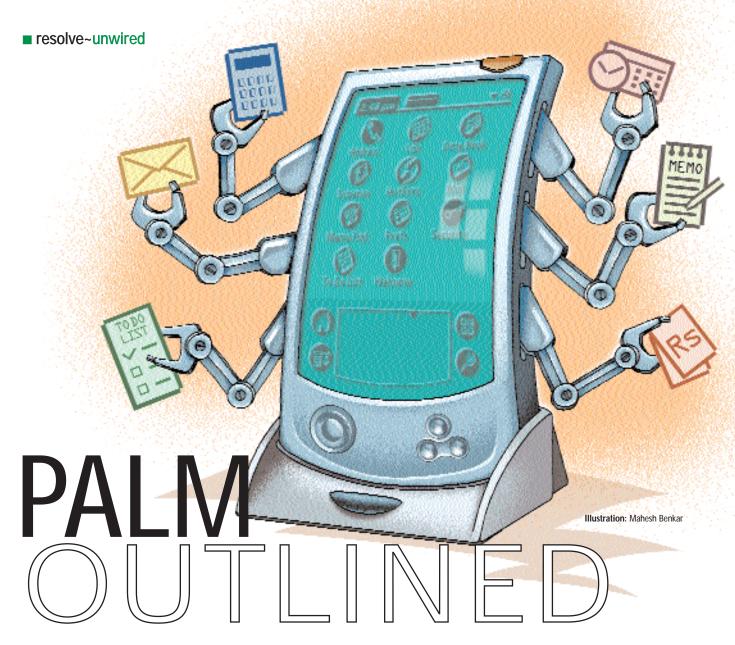
PALM
OUTLINED

Organising your
thoughts (and notes)
on Palm was never so
easy

ANIL PATRICK R.

I t's that time of the day when you have to look
up your appointments and tasks. You get your
Palm out, check your To Do list and discover
that you need to call a client. Then you go to
the Address Book to look up the contact details.
There, you discover a note in the Memo about
the details of the deal. You click once again to
look up the note. All this takes time. Shouldn't
your personal organiser be more organised to
keep you better organised?

With all the time and effort spent shuffling
between different tools on the Palm, don't you end
up wishing there was some way to get all the infor-
mation in one place. But hang on; it's not time to
take refuge in a notepad, not yet at least. Outlin-
ers are third-party programs for the Palm. (*See
box, 'History of Outliners' to get an idea of how
organiser programs for the Palm evolved.*)

We know that Palm has good organising tools
like Address, Data Book, Memo Pad, Expense, To
Do List, etc but when you need the information

at one place, organising turns into an exercise, a
cumbersome one at that. Outliner programs
help you organise things in such a manner that
you get an overview of all that you want to do.
These programs can link with applications such
as Memo Pad and To Do List to give you an
interface which helps you organise the contents
of all of them at a single point. If you're won-
dering how that'll help you, here's how. Let's
assume you're starting a new project, for
instance, a research report. You would need an
overview of the major areas of your research and
also of the subcategories under each area. A To
Do List will not be able to give you an efficient
overview. Here's where outliners can help you by
organising all the information you have and
placing it at your fingertips.

Hit a Hi-Note
Keep it straight and simple with Hi-Note. This
easy-to-operate organiser allows you to keep Notes
in text form as well as drawings. It is possible to put ➡

text in the drawings as well. You don't need to carry notepads around to make presentations, you can do it all on Hi-Note.

Install Hi-Note in your Palm using the Palm Desktop and you are ready. Simple. Start Hi-Note by clicking on the icon. Tap on the New button to start a new note. Select the type of note—text or picture. Start entering whatever you want in the new note that comes up. It stays simple. You can draw your diagrams by choosing the Picture note option. If you want to add a diagram to a note, it's as simple as adding a sub-note to it. Just tap on the note to which you want to add a sub-note. Now tap on the New Sub-Note item from the Record menu. Enter the type of note. Tap on Done and you are through with the sub-note. From the Options menu, set Title (of the note) and Picture Size. If you want to look up telephone numbers, do that using Phone Lookup in Options.

Hi-Note's simplicity makes it a must for people who like things efficient and easy. You can drag-and-drop all the notes to structure them the way you want. If you need to import data from the Memo Pad, use the Import option in Record. Alternately, you can export data from the note you just made into Memo Pad using the Export option.

Palmy BlackForest

How do Trees, Branches and Leaves make up an outline? No, we're not joking. A hierarchical structure, which has elements called Trees, is used for Outlines in BlackForest. Branches and Leaves are the sub elements in the outline. You can have as many leaves as you want in a branch.

To create a Tree, tap on the Create button in BlackForest after installing it using the Palm Desktop.

Name the tree and tap on it to open. Go to the Tree option in menu and select the New Branch option to create new branches. New leaves for branches can be made in the same manner. Notes can be attached to the branches and leaves using the Attach Note option in the Tree menu.

You can set the priority of a branch and leaves using Details. The items which you have fin-

Creating a new tree

ished working on can be marked using the check box next to the leaf or tree. Dragging and dropping branches and leaves is a standard feature of BlackForest.

A major drawback of BlackForest is that it doesn't provide linking to other Palm applications such as Memo Pad. This is inconvenient if you are dealing with projects that rely on data from these applications.

Arrange(r)

Arranger makes use of a tree-hierarchy for making outlines. Creating a tree structure in Arranger is

Adding new items to the Outline

child's play. First, install Arranger on your Palm using the Palm desktop. Now click on the Arranger icon to open it. Tap on the New button to start an outline. Enter the information and tap the OK button. Specify the category of the outline, if you so wish, through Details in Options.

Now that the master outline has been made, it is time to add new items to it. For adding new items tap on the Open button.

In the drop-down Edit menu, tap on New item. This brings up the new item, which will be added to the outline. Click on OK. You can also use other options such as New link to Address, Date Book, Memo, Expense, and To Do to add items to the outline from these utilities. Add all the items you want to outline using the same method. A plus sign in the box on the left side of the outline shows that items have been added to the outline. You can open the outline by tapping on the plus sign. You can also drag and drop items to act as child items of the ones in the outline.

The interface of Arranger is not as user-friendly as that of Hi-Note. It requires some time to get used to. Importing and exporting of items from and to Memo Pad can be done via Options menu.

Keep it simple

There are some things you need to keep in mind when using an outliner program. Firstly, break up the task you have in hand into simple steps. This will help you prepare a better outline. Always remember to keep the information in the outline as simple as possible. After all, it doesn't make sense to write a whole page of information for a single task, does it?

Keep these tips in mind and you can make the best use of your outliner. Your outliner is like a reliable secretary who can help you breeze through your busy day without your having to juggle between all those to-do lists, memos, project reports and others. So choose the outliner for you and put it to task right away.

Troubleshooting

Trying to retrieve your password, wondering how to uninstall autodialers, tracing a missing scanner? Go ahead, shoot. You'll find all the bullets here

Windows
➕ Of lost passwords

I use MS Office 97 and I had assigned passwords to my Excel and Word files through File > Save As > Options > Save Options. The problem is that the text file in which I wrote the passwords got deleted. Is it possible to get back the passwords?
Rishi
Via e-mail

℞ There's a password recovery solution available for cracking Word and Excel passwords. You can get a trial version at www.lost-password.com/excel.htm.

Applications
➕ Internet Explorer woes

I recently installed Internet Explorer 6 from the October edition of the Digit Mindware CD, but it doesn't seem to be working. It says that some components are missing and tries to download an 11 MB file from the Internet. Please help.
Shankar
Via e-mail

℞ It appears that instead of installing the program from the CD, you copied the main installer to the hard drive and then tried to run it. As the full installer has all the components bundled along, try reinstalling from the CD.

Windows
➕ Shut down queries

I own a Celeron 433 MHz system (Windows 98 preloaded). Its system cabinet is of MicroATX type. I recently installed Windows Me. Its Shut Down menu does not show the Hibernate option, while the MSCONFIG/Advanced menu says that the Standby and Hibernate features are enabled. Previously, while using Windows 98, pressing the power button on the cabinet resulted in a regular Windows shutdown. But now it directly shuts off. Is this due to some utilities that were preloaded in the OEM machine? I have updated the BIOS, but nothing has happened. Please help me.
Girish
Via e-mail

The Hibernate option in Windows

℞ You have probably not enabled your Hibernate option correctly. In order to enable the Hibernate option, go to Power options under Control Panel. Select the Hibernate tab and select OK. You will now be able to see the Hibernate option whenever you try to shut down Windows. As for your second question, there is nothing to worry about as your system is working perfectly fine. When you had installed Windows 98, the ACPI was not enabled. However, on installation of Windows Me, it gets enabled by default. As a result, the machine will automatically shut down without you having to manually shut it down.

Applications
➕ Erroneously yours

I have recently installed Adobe PageMaker 6.5. I am running Windows 98 SE on a CPU 300A (Intel) Celeron, with 64 MB RAM and an 8.5 GB hard disk. However, when I access PageMaker 6.5 it gives an error message: "Cannot start PageMaker. Unable to load icon DLL for this screen 8027.6623." In the error message, the reference 'icon DLL' is not a file name as I couldn't find it in the CD or the hard disk. This may be a reference to a *.DLL file dealing with the PageMaker icon. Please help.
V. Ravchandran
Via e-mail

℞ This problem has arisen probably because you are not using the original copy of Adobe PageMaker. The pirated copy, which you may be using does not seem to have copied the software properly and hence, the appearance of these errors. We would strongly advise you to purchase the original copy of the software.

Applications
➕ Uninstalling autodialers

I have a P-III 866 MHz machine with 128 MB RAM, running Windows 98 SE. I had installed VSNL Auto Dialer and Satyam Intellidialer on my computer, but I found them cumbersome to use. Therefore I deleted the autodialers. However, the icons of VSNL and Satyam autodialers still remain on my desktop and I cannot delete them. How can I get rid of these unwanted icons?
Nagarajan
Via e-mail

℞ To install or uninstall programs, you must go to the Control Panel and then to Add/Remove programs and uninstall them. You can then delete the folders of the programs uninstalled manually. We suggest that you reinstall the programs and then uninstall them in the right way.

Hardware
➕ So you upgraded your CPU and RAM?

I recently exchanged my old PC for a new one. The old one was a P-III 500 MHz with 128 MB RAM and a 10 GB hard disk, while the configuration of my new PC is P-III 800 MHz, 256 MB RAM, 40 GB hard disk. Yet, I don't find much difference between the performance of the two systems. Even while playing *Quake III*, it doesn't perform any better. On the other hand, it has a much lesser frame rate. What's wrong with my new PC? There was no extra card on my old PC, nor on this one.
Ankit
Via e-mail

℞ You seem to be under the false impression that by upgrading just your

CPU and RAM you will obtain better performance from your machine. You may see improvement in various other applications like office suites, but to get optimum performance, all the components such as hard disk, motherboard and graphics card should be of good quality.

In your case, the graphics card is the bottleneck, not the CPU or the RAM. As far as gaming is concerned, the improvement in performance is more or less directly proportional to your graphics card. Even a Celeron 400 with a TNT2 card would be able to give 60+ frames per second in low to medium resolutions, but a Celeron 400 with a SiS 6326 will not even touch 10 fps, making the game practically unplayable.

You should upgrade to a better graphics card. We recommend going in for a GeForce2 MX, an economy-level graphics card available for approximately Rs 4,000 or slightly above.

Internet & Communications
✚ No go mail
I am unable to send mail using Outlook Express. The following error is displayed: "An unknown error has occurred. Account: 'satyam', Server: 'mail.satyam.net.in', Protocol: SMTP, Server Response: '502 unimplemented (#5.5.1)', Port: 25, Secure (SSL): Yes, Server Error: 502, Error Number: 0x800CCC64." However, I am able to receive mail. My ISP is Satyam Online.
Frederic St. Andre
Via e-mail
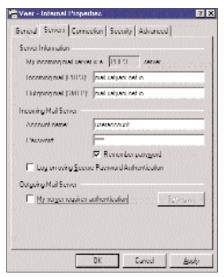
℞ The error shows that in the account settings, you have SSL enabled for the SMTP server (outgoing server). This needs to be disabled as the ISP does not support this kind of mail transfer. Open Outlook

Configure your mail settings the right way

Applications
✚ While the CDs burnt
I have connected my CD-R/RW drive (16x/10x/40x) as the secondary slave. I have Windows 98 SE installed. I use Adaptec Easy CD Creator 4 to burn CDs, which was bundled with the CD-R/RW. I have burnt 650 MB CD-Rs and CD-RWs and they are working fine, though in My Computer it showed the total size of the blank CDs as 648 MB. However, My Computer shows the size of blank 700 MB CD-Rs also as 648 MB, though the user manual of

Express and click Tools > Accounts. Select Satyam and click on Properties. Switch to the Servers tab and under the Outgoing Mail Server area, uncheck the box marked 'My server requires authentication'.

Hardware
✚ A reluctant printer
I have a P-III 600 MHz system with 192 MB SDRAM and Windows 98 SE as the operating system. My problem is that my computer hangs (and I'm forced to make a hard reboot) whenever I try to take a printout. It usually hangs after printing two-and-a-half or two-and-three-fourth pages. It occasionally has no problem in printing about four pages in economy mode. The timeout settings are set to a maximum of 60 seconds each. The printer LPT port properties show basic configuration 0000 with input/output range 0378 - 037F, 0778 - 077B, interrupt request 07 and Direct Memory Access 03 with no conflicts. I have tried reformatting and reinstalling the printer from the CD provided with the printer and even updating the printer driver from the Windows 98 CD and from the Internet. Please help me.
Jacob George
Via e-mail

℞ Go to your BIOS settings and check whether your parallel port is configured as ECP mode+EPP mode. Next, check whether your printer is assigned IRQ7 and whether any other hardware is utilising the same IRQ.

In case your printer is not assigned this IRQ, make sure you assign it and change the IRQ of any other hardware that uses it.

my CD-R/RW says that it is compatible with 700 MB CDs. How can I use the full 700 MB capacity of the CD-R?
Sachin Dalvi
Via e-mail

℞ The problem lies with your software and not your CD Writer. Easy CD Creator will burn 700 MB CDs but it will not show the data to be 700 MB while burning, as it cannot natively detect CDs of this kind. To solve this, it would be advisable to upgrade your software to the latest version or shift to another CD burning software such as Nero.

Windows and Internet & Communications
✚ Of partitions and computers hanging
I have a P-III 667 MHz processor, 128 MB SDRAM, Intel 810i chipset and Windows 98 SE OS with FAT32 file system. I have three partitions: the primary DOS partition C: (5.16 GB), secondary DOS partition D: and extended DOS partitions E: (2.14 GB each). I would like to combine the two partitions of 2.14 GB into one. Can I do this without using third party utilities and without losing my data on the primary DOS partition?

I also have a problem with my 56 KBps V.90 compliant modem. Whenever I connect to the Net with my Rolta Dialer, the modem connects at a speed between 30-40 KBps. Also, when connected, my computer hangs. This happens every time I connect to the Net. My hardware vendor told me that there might be a conflict between my internal PCI modem and my PS/2 mouse, but there was none. He then replaced the motherboard as it might be faulty, but that did not help either. Please help.
Pranav Desai
Via e-mail

℞ To combine the data of the two partitions of your hard disk, you have to use a third party utility such as Partition Magic, which enables you to do this safely without losing your data.

About your second query, the problem is not with your motherboard but is most likely because of conflict with other hardware. Check for any sort of conflicts between your internal modem and any other hardware device such as the soundcard. If there is no conflict, you can try changing the PCI slot for your modem. If

that does not help, try updating the drivers for your modem from the manufacturer's Web site.

Internet & Communications
✚ No private key
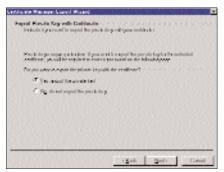
I recently signed up for a free digital certificate from www.digicerf.com for encrypting e-mail messages. It was working fine until I had to format my hard disk. I had taken a backup of the certificate, but when I tried to reinstall it, the message "You don't have the private key" was displayed. Is there any way I can backup a certificate along with its private key?

Amit Samarth

Via e-mail

℞ When you export a digital certificate, the wizard asks you whether you wish to

Back up the private key of your digital certificate

include your private key. By default, this option is selected. This will ensure that your private key is included in the backup. Be careful, though. Use this only for backup purposes. When exporting the certificate for distribution, make sure you don't include the private key.

Windows
✚ Shut down blues

I have machine with a P-III 733 MHz processor, i810e chipset based motherboard, 128 MB RAM, and 20 GB hard disk (ATX). Recently, I removed my RAM for cleaning. I placed it again in the same location on the motherboard. Now, every time I shut down my computer, it restarts. But when I shut it down again, it shuts down properly. I formatted my hard disk and reinstalled all the components but the problem continues. I am told that this may be because of a problem with my motherboard. Please give me a solution.

Sachin

Via e-mail

℞ The problem of the damaged RAM slot is unrelated to Windows behaving the way it is. Had the RAM slot been damaged

completely, your PC wouldn't boot at all. However, you can try removing the RAM and installing it in another slot. If this does not solve your problem then the trouble could be with your power management.

Try disabling power management and the ACPI from the BIOS. The ACPI can be disabled from the BIOS only if the option is available. Or you can even try disabling fast shutdown. Go to Start > Programs > Accessories > System Tools and click on System Information. In the Tools menu, go to System Configuration Utility and select Advanced in the General tab. Here select Disable Fast Shutdown, click OK, and then click OK. Restart the computer.

Windows
✚ In a flash

I have a PC with a Celeron 800 MHz processor, an 815e Mercury motherboard, 128 MB RAM, and a 20 GB hard disk. I had kept a password for the system, but unfortunately forgot it. To log in to the system, I removed the CMOS battery and tried to short it. I then put the battery back in the machine, but now I get an error message: "CMOS check sum error. Press F1 to load default or Del to enter setup." What's wrong?

Raju

Via e-mail

℞ You get this error message because your battery has been discharged. You should have your battery replaced to clear this problem. If the problem persists even after changing your battery, go to your BIOS settings where you will find an option to load the default settings. If in spite of doing this, you continue to get the error, there could be a high probability

that your BIOS is corrupt. You will have to flash your BIOS. To do this, find the exact model number of your motherboard.

Then go to the manufacturer's Web site, download the utility and the latest BIOS and save it on a floppy. Follow the instructions given on the Web site with regards to flashing your BIOS. Take great care while doing this as you could severely damage your motherboard if you do not flash it the right way.

Windows
✚ No driver for this one

I have four HP brio 410 P-III 933 MHz machines preloaded with Windows 98. When I uninstalled Windows 98 and installed Windows 2000 Professional on these PCs, I could not change my display settings from 256 colours to 16-bit, 24-bit or higher. I have a Matrox - PM133 PS Prosavage Display card. I could not locate the driver for this for Windows 2000.

Nilesh

Via e-mail

℞ Unfortunately the particular display card on your machine does not have any support for Windows 2000. You will have to stick to your previous OS or communicate with H-P directly regarding this matter.

Hardware
✚ Misbehaving monitor

I have a Celeron 433 MHz system with a 2 GB hard disk, 64 MB RAM, and an LG Studioworks 44m monitor. I am using Windows 98 SE as the OS. My picture tube began to have problems and so I got it changed. Now it can have 800x600 or 1024x728 resolution but not 640x480.

Applications
✚ Using multilingual fonts

I would like to use multilingual fonts on my Web pages, for which I want to use dynamic fonts. But I've heard that only Netscape Navigator supports dynamic fonts. What must I do to be able to use multilingual fonts that are also supported by Internet Explorer?

V. Srinivasa Reddy

Via e-mail

℞ In order to use dynamic fonts that are visible on Internet Explorer you will have to save them in .eot format. To do so you will require a utility called WEFT (Windows Embedded Font Technology) which is available on the Microsoft Web site (http://www.microsoft.com/typography/web/

embedding/weft3/default.htm?fname=%20&fsize=).
If you are interested in knowing more about this, you can go to http://msdn.microsoft.com/workshop/author/fontembed/font_embed.asp and read the details.

However, if I start Windows in Safe Mode it starts on 640x480. Please help.

Debabrata Das
Via e-mail

℞ First, go to your system properties and check whether your monitor is being detected correctly. If it shows default monitor or shows a monitor other than what you currently have, it means it's not getting detected correctly. If so, you will have to install the drivers that came along with the monitor. After this your monitor should be able to show you the option of displaying at a resolution of 640x480.

Internet & Communications
✚ Browser hang-ups

I have a P-III 800 MHz machine with 64 MB RAM and I am using Windows 98. My machine restarts when I am browsing. I have only 256 K cache. Please help me. I use Internet Explorer 5.0 and Netscape 4.04.

S. Sudhakar
Via e-mail

℞ To eliminate the possibility of your RAM being the cause of your problem, try running some games, or some other applications already loaded in your machine such as office application or Photoshop for at least half an hour and see whether your machine hangs or not. If it does not, then there is no problem whatsoever with your RAM. The 256 K cache that you have mentioned refers to the L2 Cache of your processor and has nothing to do with your machine restarting. The problem obviously lies with the installation of your browser. Reinstall the latest version of the browser and your problem will be solved.

Linux
✚ Missing devices

I have a P-III 800 MHz system with 128 MB SDRAM with a 40 GB hard disk. I am using Red-Hat Linux 7.1. I have a scanner (Umax Astra 2000P), which is not recognised by running SANE. It says 'Device not found'. My scanner is connected to the printer port. Help!

Tapas
Via e-mail

℞ Go to your BIOS settings and check whether the printer port is enabled and configured as EPP for optimal performance. The scanner you have mentioned

(the Umax Astra 2000P) is supported by SANE. If, as you have mentioned, it does not get detected, you can get a custom SANE built for your scanner from http://umax1220p.sourceforge.net/.

Internet & Communications
✚ Error terror
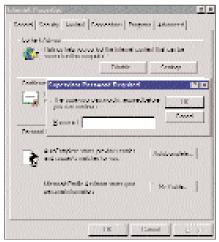
When I start Internet Explorer, I get the following error: Please check your Content Advisor settings for missing information. I am also unable to view offline Web pages. I had implemented a supervisor password for the Content Advisor and enabled it. How can I remove it?

Sawan Gupta
Via e-mail

℞ This happens if the Ratings.pol file is damaged or corrupted, or if there is more than one Ratings.pol file on the system. Make sure that Explorer is set to display hidden files, close all browser windows and check \Windows\System for the file. If there is one, rename the file with any other name. Open Internet Explorer and click Cancel when the error is displayed. Open Tools > Internet Options > Content and click on the Settings

Content Advisor in Internet Explorer

button under Content Advisor. Enter the supervisor password, set the ratings according to your preferences and click OK. Close the browser window and open it again to check whether the problem has been solved.

Windows
✚ Where have the thumbnails gone?

When I select the View as Web Page mode in Windows Explorer, I cannot view thumbnails of

JPG files. It is the same with PSD files, but there is no such problem with GIF and BMP files. Are there any settings for being able to view JPG, PSD, TIF, PNG, TGA, etc files as thumbnails?

Ramesh Pradhan
Via e-mail

℞ The problem you have mentioned is not related to your graphics files. Inability to view JPG file thumbnails happens quite often due to problems related to Internet Explorer. Go to Add/Remove programs, click on Internet Explorer and select Remove. It will prompt you to Remove or Repair the installation of Internet Explorer. Select to repair it.

If the problem persists even after doing this, then you should update your browser to Internet Explorer 6, the latest version of IE which is available in the October Digit Issue CD. This will definitely solve the problem. The other file extensions, however, cannot be displayed as thumbnails.

Internet & Communications
✚ Browsing blues

I recently went to Microsoft's Web site (www.microsoft.com) for a general Windows update and I got an error while viewing the site's content. I then added Microsoft's Web address in the Internet settings for trusted sites, guided by the error message on the site's Web page. I was able to view the page after that and started downloading the updates. Midway through this process, however, my connection came to a standstill and I had to disconnect manually. When I connected to the Net again and tried to resume the Windows update, I got the message: "The page could not be displayed." I get this error only when I click on Windows update or support; I can view the home page and other pages of microsoft.com. Please provide me with a solution.

Via e-mail
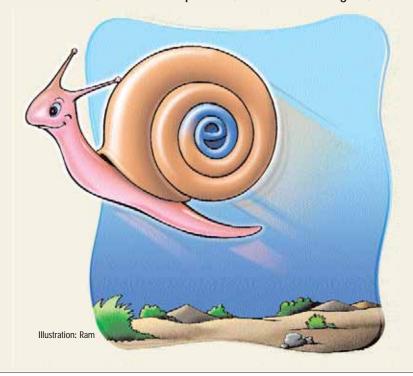
℞ Whenever one browses the Internet, certain files are stored in the Temp folder and others stored in the cookies folder. The problem you have mentioned could be due to the fact that since your previous visit, there is no newer version of the file stored in the temporary folder and hence it shows the previously visited page. Clear your Internet cache by going to Tools > Options > General where you can delete the cookies and the temporary files. This should solve your problem. ▫

tips & tricks

Improving
Internet Productivity

Utilise your time on the Internet in the best possible way with search tools, browser companions, download managers,…

Illustration: Ram

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41

Find it on
digit
interactive

Tips & Tricks
Compilation of tips
Troubleshooting
Understanding Memory, check out,
Mindware

SEARCH TOOLS

Demand what you want from the Net! Finding the information you need is
actually as simple as using these tools

Copernic 2001

Empower yourself with simultaneous search over the Web, newsgroups and e-mails. It has features to remove duplicate matches, eliminate invalid links, translate pages, etc.

🔥 Downloading required pages

You can directly save Web pages for browsing when you are offline. To save the ones you require, simply click on the required document while holding the [Ctrl] key. Now press the Download button. Alternately you can go to Results > Download or simply use [Ctrl] + [W] to get the Download Documents window. Select the Remove Unreachable option if you want to skip all unreachable pages in the

Select options for the type of download you want

Copernic 2001 shortcuts

[Ctrl] + [B] – Browse results
[Ctrl] + [I] – Validate results
[Ctrl] + [N] – New search
[Ctrl] + [R] – Refining a search
[Ctrl] + [T] – Track search
[Ctrl] + [U] – Update search
[Ctrl] + [W] – Download documents
[Ctrl] + [Shift] + [E] – Excerpts
[Ctrl] + [Shift] + [H] – Highlight key-words
[Ctrl] + [Shift] + [Z] – Show or hide search history
[F2] – Modify search
[F3] – Next search
[F9] – Duplicate search

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download. For quicker downloads, leave the Download Images option unchecked. If you want only the selected documents, make sure to check the Download Selected Documents Only option.

🔥 Exporting your search results

It is possible to save search results as HTML, text, XML, CSV (Comma separated variables) and dBase files. First, select the search you want to save by clicking on it. Give the result a name, select the type of file you want to save it as and mention the path where it has to be saved. That's it.

Net Snippets

With a drag-and-drop interface, this browsing tool allows you to select and save portions of the Web page you need, besides snippets from other Windows applications.

🔥 Adding snippets and images

Adding a new snippet from a page is easy. Make sure that Net Snippets is running by going to View > Explorer Bar > Net Snippet option in Internet Explorer. Highlight the snippet or image you want in the Web page. Drag and drop the snippet into the Net Snippets explorer window on the left hand side of the page.

🔥 Directly saving Snippets

You can save Snippets even without opening the Net Snippets Explorer. Just highlight the element you want to save and right-click. In the menu, select the

Save the Snippets you want directly

Add to Net Snippets option and save it.

🔥 Getting Snippets from other applications

Net Snippets has a feature called Drop Spot which allows you to drag-and-drop snippets from applications other than Internet Explorer. For enabling the Drop Spot toolbar, right-click on the Task Bar

Enable Drop Spot toolbar for other applications

and select Net Snippets Drop Spot from the Toolbars option. This will add a new toolbar called Drop. Now you can drag-and-drop snippets from any application you want into the Drop toolbar. This will help you save that particular snippet in the same manner as with Internet Explorer

Atomica 2.0

Atomica automatically analyses the context of a selected piece of text. It delivers reference information from a dictionary, thesaurus, or encyclopaedia.

🔥 Using Atomica 2.0 with Acrobat Reader

Atomica can be used to look up words in Adobe Acrobat Reader. In Acrobat Reader choose the Text Select tool by clicking on the Text Select icon or by pressing the [V] key. Now highlight the word or words to be looked up. Press the [Alt] key and right-click to look up the terms.

Ad will come

Use text select tool in Acrobat Reader to look up words

Changing key combination in Atomica

Don't want to use the default [Alt] key + Mouse Click combination each time you want to look up something with Atomica? Right-click on the Atomica icon in the system tray and change the key combination to the one you want in the Pref-

Change the default Alt key combination

erences box that opens. You have the option of changing key settings for Atomica.

Clearing history in Atomica

To clear the history lists in Atomica, right-click the Atomica icon in the system tray and select Preferences. If you want to clear history of only the present session, use the Clear History button to clear it. Check the Clear History After Every Session box if you want the history to be cleaned each time Atomica is used.

Surf Pilot

A browser companion with search capabilities, bookmarking features and a built-in browser.

Shortcuts

[Shift] + [Ctrl] + [N] – New file search
[Ctrl] + [R] – Refine search
[Ctrl] + [O] – Open session
[Ctrl] + [S] – Save session
[Shift] + [Ctrl] + [S] – Save as
[F2] – Export HTML report
[Alt] + [M] – Send
[Ins] – Create new records
[Alt] + [Ins] – Create new folder
[Ctrl] + [J] – Park
[Ctrl] + [D] – Unpark
[Ctrl] + [M] – Mark as read
[Ctrl] + [U] – Mark as unread

[Ctrl] + [Alt] + [D] – Record descriptions
[Ctrl] + [1] – Show all records
[Ctrl] + [2] – Hide read records
[Ctrl] + [3] – Only parked records
[Ctrl] + [4] – Show records with reached links
[Alt] + [0] – View threads by none
[Alt] + [1] – View threads by domain
[Alt] + [2] - View threads by title
[Alt] + [3] - View threads by source
[Shift] + [0] – Group folders by none
[Shift] + [1] – Group folders by keywords
[Shift] + [2] – Group folders by category
[Shift] + [3] – Group folders by package
[Shift] + [4] – Group folders by date
[Shift] + [5] – Group folders by search scheme
[Ctrl] + [W] – View categories bar
[Ctrl] + [Alt] + [W] – View log
[Alt] + [V] – Validate links in selected folder
[Ctrl] + [Alt] + [V] – Validate all links in session
[Alt] + [D] – Delete duplicates in selected folder
[Alt] + [U] – Delete records with unreachable links
[Shift] + [F4] - Search engine analyser
[Shift] + [Ctrl] + [F4] – Category editor
[Shift] + [Ctrl] + [M] – Mark records with folder's keywords
[F9] – Show Preferences
[F12] – Search mode switch
[Alt] + [Enter] – Show folder / record properties

BROWSER COMPANIONS
Programs to help you speed up browsing, disable pop-ups, and search the Web in a more efficient manner

NetSonic
Accelerate browsing by loading previously accessed Web pages from its cache. It features offline browsing, site exclusion, and customised chache locations.

Browsing pages offline
Close all the browser windows you've kept opened. Now select the Work Offline option from the NetSonic menu by right-clicking on the NetSonic icon in

Browsing pages while offline

the system tray. Launch the browser and make sure that the browser's Work Offline option is not selected. Then

just click on the favourites or links in history of the browser to view the pages when offline.

Excluding sites from acceleration
It is better to exclude sites like news from acceleration in Netscape. These sites are updated very rapidly and the cache may show old information. To exclude a site from acceleration, go to NetSonic options. Now select the Site Exclusion

Ad will come

Enter the URLs you want to exclude

option under the Settings tab. In the Site Location box feed in the URL of the site you want to exclude. Click on the Add button and you are through.

Use advanced cache settings
The default setting of NetSonic cache (memory for storage of Web pages in the hard disk) is 200 MB. If you think it is taking up too much or too less hard disk space, then you have an option to change it. For this, click on the Advanced cache button in the Acceleration option. This can be found under Settings in NetSonic Options. You can select the cache size from any capacity between 2 MB and 4294 MB using the slider. It is also possible to change the location using the browse button. Clearing up the cache can be done using the Browse button.

CrystalPort AppCapture
Browse the web faster with this browser companion which can manage multiple profiles, searches, etc.

Disabling pop-up windows
It is possible to disable pop-up windows in CrystalPort. For this, go to Tools and select the Disable pop-up windows. It is also possible to see one of the disabled pop-ups. For this, go to Tools > Disabled Pop-up Windows and select the window you want to view from the list of disabled windows.

Disabling media
Don't want to see all those animations, images, music, sounds, etc that slow surf-

ing? CrystalPort AppCapture helps you disable all of them. In the Tools option,

Disable media types for faster downloads

untick the required media types you want to disable. For example, if you want to disable sounds, unselect the Play Background Sounds option.

Translate Web pages
Thinking of getting a translator to translate Web pages? CrystalPort's Translate function does the job for you. For enabling this function, click on the arrow next to the Go button. Now select the translation you want performed.

Use translator to translate Web pages

Adding search engines
It is possible to add search engines of your choice to the custom search engine list in CrystalPort. For doing this, go to the search engine you want to add using the browser, and click on the Add Current Page option. At the Add Custom Search Engine box that opens, click OK to add the search engine.

It is possible to search the site from the Advanced Search Bar after it has been added.

Set up Paranoia
You can clear your Web history using the Paranoia tool in CrystalPort. It is possible to clear address bar history, search bar history, main history, Recent Documents, and your Temporary Internet files using Paranoia.
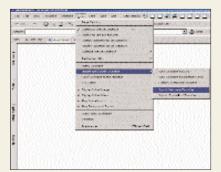
For setting up the Paranoia tool, go to Tools > Paranoia. In the dialog box, check all the boxes for the items you wish to clear. Next step is to click on the Clear Selected Items Now button and click OK. Paranoia can also be customised to clear items of your choice. For doing this, check the boxes you want to be cleared.

Now check the box next to Clear Selected Items every time the browser is closed. This option will clear the browser history every time you exit it. Click on Apply and then OK again. The items you've selected will be cleared every time you close the browser.

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Ad will come

Importing Netscape favourites

To add IE and Netscape favourites to CrystalPort, go to Tools > Select Import and Export Favorites. Select the Import Netscape

Import Netscape favourites into CrystalPort AppCapture

Favourites option from this, choose the folder you want to save, and click Finish. The bookmarks have been imported.

Allow multiple instances for new sites

If you are tired of every new window opening as a tab, then you have the option of multiple instances (open each new link as separate windows instead of tabs). For this, go to Tools > Preferences. Now select the multiple instances check box to have multiple instances of the browser.
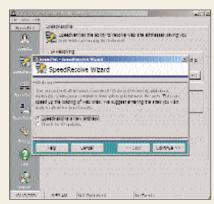
SpeedNet

Accelerates downloads, resumes interrupted downloads and resolves IP for faster site access.

IP Resolving

You can save time while accessing Web sites using SpeedNet's IP resolving feature. It allows you to enter Web addresses and IP addresses which saves loading time while browsing. For setting up IP resolving, click on the SpeedResolve button or go to View and select SpeedResolve. Now click on the Start Wizard button to start IP Resolving. There are two options for IP resolving. Select SpeedResolve with a new address option to add IPs of the sites you regularly visit.

The check for IP update option checks Internet settings and compares them with your SpeedResolve settings. If there is a change in the IP address, SpeedNet will accordingly update your settings. Click on SpeedResolve, add new address, and click Continue. In the location box, enter the URL of the site whose IP has to be resolved. For example, if you visit www.rediff.com a lot, enter the URL in this box. Click on Finish and you are done.

Just enter the URL to resolve its IP

The SpeedResolve wizard will now ask you if you want to add another IP. Click Yes if you want to add more addresses, else No.

Keeping SpeedCache updated

It's necessary to make sure that Speed-Cache doesn't show you content which was stored earlier. For this, click on the Settings icon. Now select the Acceleration tab and check the 'Delete files when I visit a new site' option. This will make

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Shortcuts for SpeedNet

[Shift] + [F1] – SpeedUp
[Shift] + [F2] – SpeedResolve
[Shift] + [F3] – SpeedCache
[Shift] + [F4] – SpeedRetrieve
[Ctrl] + [S] – Settings
[Ctrl] + [X] – Exit

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sure that SpeedCache does not show old files stored in it.

EasyMTU

Modify your PC's Windows registry for a faster Internet conncetion with this browsing companion.

Self-tuning for Windows NT users

If you are using Windows NT 3.5x/4.0, the TCP/IP stack is tuned automatically according to the connection conditions. If you want to change these and put in your own settings for DefaultRcvWindow and Default TTL, click on the Windows NT tab. Now check the Disable automatic settings option and fill in DefaultRcvWindow and Default TTL values.

Refresher

Refresh your site automatically at intervals specified by you without using the Refresh button . This is very useful when viewing news sites, cricket and other sport sites.

Using Power Search and Power News

Go to Power-Tools > Search or Power-Tools > News to get Search and News as different tabs in the same window. Now select the

Select News or Search from Power-Tools

search engines and news sites you want to see. Press the Go! button to view the different sites as different tabs in the same window.

Drag and Drop Links

You can drag and drop links in Refresher by just dragging the link you want to open on to a tab. The tab will be activated and the link will be dropped in to the Explorer window.

DOWNLOAD MANAGERS

They manage your downloads for you, resume broken downloads and offer
features like management of mulitple downloads

Download Accelerator Plus

Improve download speed, resume broken downloads, and find mirror sites.

◉ Drag-and-drop files into Download Accelerator Plus

You can simply drag-and-drop the links from which you want to download into the download basket. For this, enable the Download Basket option from the Downloads menu. This opens up a small window titled Download.

Now click on the link to drag-and-drop it into this box. In the Download File Info box which pops up, click on the Start Download button if you want the download to start immediately. Clicking on the Download Later button puts the download into the queue for downloading later on.

Using the Advanced button you can choose between the various download speeds available.

◉ Downloading directly without the browser

It is possible to download directly without opening the browser if you know the URL of the download site. All you have to do is click on the Add URL button in the Download Accelerator main window. Click OK for the download to start automatically.

◉ Downloading files with extensions unavailable in DAP

Just press [Ctrl] + [Alt] when clicking in an HTML link whose extension is not available in Download Accelerator.

File extensions available in the Download Accelerator Plus configuration are .EXE, .ZIP, .ARJ, .RAR, .LZH, .Z, .GZ, .GZIP, .TAR, .BIN, .MP3, .AVI, .MPG, .MPEG, .QT, .PLJ, .ASF, .MOV, .WMA, .WMV, .R0*, .R1*, .A0*, .A1*, .TIF, and .TIFF.

◉ Schedule DAP to download at specified times

Download Accelerator has a scheduler function which lets you specify when you want to download.

Specify when you want the downloads scheduled

The scheduler can be accessed from the scheduler button or Downloads > Options / Configurations > Scheduler. The scheduler can be set to run daily or once a week. Make sure that the Enable Schedule Start checkbox is ticked. If you want the scheduler to run only on specific days of the week, click on the Choose Days button to select the days you want the scheduler to run. Specify the time at which you want the downloads to end by clicking on the 'Always stop downloads at certain time' checkbox and giving the time. Use the HangUp modem, Quit the Download Accelerator, or Shut Down computer options to select the action to be done after the downloads stop or are over.

◉ Simultaneous download

Download Accelerator can simultaneously download any number of files. However, you have to define the number of maximum simultaneous downloads to Download Accelerator. To set the maximum batch size, go to Downloads > Options / Configurations. Select the Connection option from the left hand side of the box. Now set the maximum number of simultaneous downloads in the Download queue box near the right hand bottom of the box. Click on Close to complete.

◉ Searching for hot downloads

Click on Select > Hot Downloads. Clicking on Start Search gives you Web sites with downloads—both shareware as well as freeware.
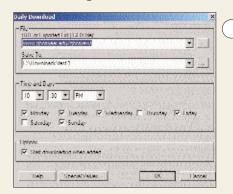
GetRight

This utility gives you the ability to resume, schedule and manage your downloads.

◉ Setting up download times

GetRight can be scheduled to start downloading at fixed times of the day. For setting up the scheduler click on the Schedule Download Start button on the main panel or use Downloads > Schedule Download Start. You can also get it by right clicking on the GetRight system tray icon and selecting from Tools. Choose the time at which you want to start the downloads and click OK. Downloads will be performed at the time(s) you have scheduled.

Similarly, the Download ending times can be set using the Schedule Download

Set up your Scheduler for fixed times of the day

Stop (Hang up) option in Downloads or
the Schedule Download Stop (Hang up)
button in the main interface.

Setting up daily downloads

You can set up GetRight to download
from a list of download locations at dif-
ferent times on different times of the week.
This is possible using the Daily Down-
loads feature in GetRight.

Set up Daily Downloads using Tools >
Daily Downloads. This brings up the
GetRight Daily Downloads box. Click on
the Add… button to add the download
details. Enter the download locations of
the files you want in the URL box of the
Daily Download box. Now set the tim-
ings for downloads, days, and locations
to be saved. Click OK and you are done
with the set up.
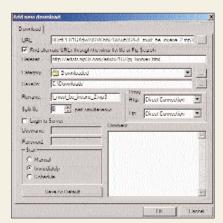
FlashGet

Resume, schedule and increase download
speeds by splitting files into smaller
segments.

Downloading files as segments

It is easier to divide a download into dif-
ferent segments for faster downloading.
This is especially beneficial in slow con-

Set the number of segments to be
downloaded

nections. FlashGet allows files to be
divided up to a maximum of 10 seg-
ments. However, in most of the ordinary
dial-up connections, it is always best to
keep the number of segments between
three and five.

Downloading files not handled by FlashGet

FlashGet does not automatically down-
load files like images. For downloading

these files, hold down the [Ctrl] and
[Alt] keys together and click on the file
or the link you want to download.
FlashGet will now get hold of the link
which is clicked and will start down-
loading it.

Automatically scanning down-loaded files

FlashGet can automatically scan all the
files you download with it. For setting up
the automatic scanning feature in
FlashGet, go to the tools menu and select
options from it. Select the File Manager
option by clicking on its tab. In the File
Manager check the 'Use virus scanner to

Give the location for anti-virus using the
Browse button

scan the downloaded file option' for set-
ting up the automatic scanning feature.
Now give the path to the anti-virus you
use in the text box below it.

If you do not know the path of your
antivirus, then use the Browse button to
find the location of the .exe file as
shown. For example, if you use McAfee
AntiVirus, it will be having a path of the
form C:\Program Files\McAfee\VirusS-
can95\scan95. Norton AntiVirus will be
having a path like C:\Program
Files\Norton Antivirus\navw32.exe in
most cases.

If you do not want your antivirus to
scan all the files, then you can scan each
file individually by right clicking on the
downloaded file and selecting the Virus
scan option.

ONLINE PRIVACY TOOLS

Preserve your online privacy with the help of these cookie managers and pop-ad blockers

Burnt Cookies

Tips on how to keep track of and manage cookies on your machine while surfing.

🔥 Making cookies fireproof

There are some cookies which are necessary for proper functioning of your computer. You can protect these cookies from getting burnt by putting them in the Fireproof list. For example, when a cookie comes in, the program will ask you if you want to put that cookie on the 'Burn List'.

If you select No, the next query will be whether you want to add it to the 'Fireproof List'. The cookies on this list are not deleted from the PC. It is possible to view and modify the contents of this list by clicking on the Fireproof button.

🔥 Command line switches

Command line switches help you control the way Burnt Cookies starts up. The command line switches available for Burnt Cookies are given below.

/h – Burnt Cookies start up in hidden mode. This switch is the same as starting the program normally and then clicking the Hide button.

/newlog – Creates a file called 'Burnt Cookies.txt' in the same folder as the program executable. This folder contains a list of all URLs visited during the session of Burnt Cookies which has just ended.

/log – This is similar to '/newlog' above but appends a list of all URLs visited during the session of Burnt Cookies which has just ended to the file.

AdSubtract SE

Block ads and cookies by setting up filters.

🔥 Configuring filters

Filters help you configure AdSubtract SE as to what kind of blocking you need to enforce. The default option of blocking is to block all advertisements.

In addition to advertisements you can also block all cookies. For setting

Use filters to block and selectively filter sites

up filters click on the Filters tab. Now check the Cookies option as well if you want AdSubtract to block incoming cookies.

One problem with this kind of blocking is that it tends to block all sites. There are sites (like banking, for example) which have to place cookies on your PC for security purposes. if these cookies are removed, you will not be able to use these sites. For this you can put all these needed sites in the Custom Sites Filter list. For adding a site to the Custom Sites Filter list, click on the Add button in the Custom Sites Filter and add.

You can also remove the default sites or those you don't want to be blocked from this list. Just click on the site in the list and click on the Select button.

Pop-up Stopper

Ban pop-ups and ads to minimise on irritating distractions and to retain your surfing pleasure.

🔥 Allowing pop-up windows when block is enabled

Many sites have pop-up windows for displaying content instead of ads. In these cases, you can temporarily disable the blocking by holding down the [Ctrl] or [Shift] key when clicking on the link. Setting the sound option each time for pop-up windows is helpful. If you don't want sound alerts, just look at the Pop-Up stopper icon in the system tray which flashes every time a pop-up is blocked.

Double-clicking the icon can be used to disable and enable Pop-Up Stopper blocking. The X on the icon will be red in colour when Pop-Up Stopper is enabled.

Window Washer

Tips to clean up your browser's cache, cookies, and history. Automatically.

🔥 Washing and bleaching files

You can set Window Washer to completely delete files from your PC. Adding the Bleach To Wash Items will completely delete the washed files.

Set the number of times data has to be bleached

To add bleach to washing, click the Wash Options button. Now click on the Info button after checking. This brings up an Information box. In the box, click Yes. Now enter the number of times you want data to be overwritten. Bleaching a file about three times ought to take care of most of the sensitive data. 🔥

Ad will come

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IN TEST: 15 IDE HARD DISK DRIVES

With hard disks like these, you can give your PC all the space it needs!

Room for more

Imaging: Ashwin Boricha

DIGITAL MEDIA RESEARCH AND TEST CENTRE

The storehouse of your computer, hard disks are marvels of modern engineering that glean the best from fields such as mechanical, electronic, aeronautic as well as chemical engineering. The construction of a hard disk involves very precise and micron-level tolerances, which is now possible with the help of highly sophisticated machinery. Right from the time the first 20 MB hard disk made its appearance to the 100 GB hard drives available today, the increase in capacity of these is a very accurate indication of the progress of computing in particular and technology in general. To illustrate this, the areal density (the amount of data that can be packed into a single unit of area on the hard disk platter's surface) of the hard disk drive has increased by around 5 million times. Therefore, mammoth devices such as the 100 GB drives are fast becoming commonplace nowadays.

When buying a hard disk, the first and primary concern most users have is whether it will serve their applications well. Then there's also cost that plays a role when determining how large a hard disk you can afford. When it comes to performance, there are a range of parameters that dictate the speed at which your applications and programs will run from your drive. These parameters are specifications such as sequential and random data transfer rates during read and write, access time of the hard disk and the CPU utilisation during operation. The spindle speed of your drive (rotations per minute or rpm) will also play an important role here, since the faster it spins, the faster will it be able to transfer data between the platter and the read/write heads. To evaluate the performance of these parameters, we used a selection of

TEST PROCESS

The following benchmarks were used to evaluate the performance of the IDE hard disk drives in this shootout:

WEIGHTAGE TABLE	
Benchmark	**Percent weightage**
High-End Winmark 99	10
SiSoft 2001te score	5
SiSoft sequential read	7
SiSoft sequential write	7
SiSoft random read	12
SiSoft random write	7
SiSoft access time	10
HDTach random access time	10
HDTach read burst speed	10
HDTach read speed average	8
HDTach write speed average	8
HDTach CPU utilisation	6

■ High-End Disk Winmark 99, which puts the disk sub-system of the PC under stress
■ SiSoft Sandra 2001te (Disk benchmark), a synthetic benchmark that tests the low level parameters of a hard disk such as sequential and random read/write speeds, access times, and so on.
■ HDTach 2.6, which evaluates the sequential read/write, read burst speed, average access time and CPU utilisation of the hard disk.

After running these tests, the overall score of a hard disk drive was calculated by applying a set of weightages to the various parameters and tests run. The weightages fixed for the tests are as in the table.

Contents

benchmarking programs that test the performance of each of these sub-systems and also of the hard disk as a whole by using applications such as office productivity suites, etc. The results of these tests are described below.

PERFORMANCE DRIVES (7200-RPM)

When you're looking for the best in IDE disk drives, look no further than the current breed of 7200-rpm speedsters. The platters of these drives spin at a maximum speed of 7200 rpm and by virtue of this, data can be picked up by the read-write heads much faster than in the case of a 5400-rpm drive. Also, since data is read that much faster, high-speed interfaces such as ATA/100 can be properly utilised, which makes the overall performance and response of the hard disk much faster. Let's take a look at this crop of hard disks and see which one is best suited for your applications.

IBM Deskstar 75GXP: this hard drive is silent and has a very low CPU utilsation

Application performance and the Winmark 99

For evaluating the performance of these drives, we used Ziff-Davis High-End Disk Winmark 99. This is a benchmarking tool that uses real-world applications such as office productivity and multimedia authoring tools, comprising audio and video applications that particularly stress the hard disk sub-system of a computer.

These applications are run in a script-driven manner and the index that is returned at the end of this test reflects the drive's performance in working with similar applications. It runs for

about 10 minutes on each hard disk and the strain that the hard disk undergoes is evident from the sound and heat generated during the course of the test.

In the 7200-rpm category, the **IBM Deskstar 40 GB** delivered exemplary performance in the Winmark 99 test, logging a score of 26700. Compare this, for example, to an average of 7500 logged by a 5400-rpm drive of the same capacity.

The other drive that gave a good score in this test was the Seagate Barracuda ST320414A 20 GB hard drive, which scored 23000. This drive was also very economical considering the fact that it's a 7200-rpm drive. On the other end of the scale, the Samsung SP4004H, with it's Spin-Point technology, did not score very well in this test and notched a score of just 5770.

Over to the actual tests that measured the data transfer speeds: SiSoft Sandra 2001te was the program used to evaluate the performance of the drives in these low-level tests. Here, we measured the data transfer speed and the access times for the hard disk. We specifically noted the sequential and random data transfer speeds during reading and writing operations on the drive. In the results, we see that the transfer

SiSoft Sandra Random read/write speed (7200 rpm drives)

Brand	Random read (Max: 15)	Random write (Max: 10)
IBM DeskStar DLTA-307075	12	9
IBM DeskStar 60GXP	7	9
Samsung SP4004H	7	8
Seagate Barracuda ST320414A	6	5

rates in sequential operations are faster than that of random operations as the drive does not have to reposition the read-write head each time it accesses a new file. Also, the speeds while reading are faster than that obtained when writing to the drive. In this test, the best performer was once again the **40 GB IBM Deskstar 60 GXP** hard disk, which scored a blazing 39

SiSoft Sandra Sequential read/write speed (7200 rpm drives)

Brand	Sequential read (Max: 15)	Sequential write (Max: 10)
IBM DeskStar DLTA-307075	23	11
IBM DeskStar 60GXP (41GB)	39	39
Samsung SP4004H	33	33
Seagate Barracuda ST320414A	39	39

MBps in sequential read and 7 MBps in the random read test. When writing, this score dropped to 11 MBps and 9 MBps during the sequential and random write test, respectively. These are very good scores and indicate a usage of about 40 per cent of the entire bandwidth available in the ATA/100 interface. Though this seems rather low, this is the practical maximum that a single 7200-rpm hard disk can achieve. When evaluating the 5400-rpm drives, the under-utilisation of this bandwidth is far more pronounced due to the lower spindle speeds.

The access times logged by these 7200-rpm drives were between 5 ms and 9 ms and though this isn't much of a variation numerically, it does translate into the drive taking longer to access a file located on the hard disk. Therefore, in case of the 20 GB Seagate Barracuda, the access time of 5 ms means that it is ideally suited for applications where many files are accessed on the drives—applications such as multimedia authoring, databases, etc. In real world terms, a faster access time means quicker response of the hard disk, which is evident when applications start up faster and are more responsive when tasks are run.

What other factors affect performance?

There are other factors that are not directly related to the data transfer speed and

access times of the hard disk but which affect the overall performance of applications running on your hard disk. One such parameter is the CPU utilisation of the hard disk.

All hard disks manufactured today use a technology called DMA (Direct Memory Access) which is a mode of data transfer where the hard disk orchestrates all data flow between itself and the rest of the system—the main CPU of your system plays little or no part in this. Therefore the level to which the hard disk depends on the main processor during data transfers would affect the performance of the rest of the system when the hard disk is being accessed. This is known as CPU utilisation and is expressed as a percentage.

The CPU utilisation of the drives was measured by a benchmarking program called HDTach, a program which is known to accurately measure this parameter. Here, we found that these 7,200-rpm drives posted a CPU utilisation ranging between 3.6 to 4.9 per cent. This indicates that the drives used a very small portion of the system processor, which, in turn, implies that the rest of your system runs smoothly even while the hard disk is being accessed, as the hard disk uses a very small portion of the main processor's power.

Another interesting point seen in the results was that the CPU utilisation posted by SiSoft Sandra was significantly different from those logged by HDTach. This is because different applications write different type of data to the hard disk, which accounts for the variation in the scores logged by the two programs.

VALUE DRIVES (5400-RPM)

Over to the 5400-rpm category, these are the hard disks with wide variation, both, in terms of price as well as capacity. These are generally targeted at the value market where not much stress is

Western Digital WA Caviar WD200: this 5400-rpm drive carries an amply large 2 MB buffer onboard

How a Hard Disk Works

Hard disks are used as a repository in which vast amounts of information can be stored. Unlike RAM, this information is permanent in that it is retained even after the computer is powered down. This is done using the principles of magnetic storage, which is similar to that used in retrieving and storing information on conventional tapes. Hard disks allow data to be stored at far denser levels and can be accessed very quickly. The working of a hard disk can be understood easily by drawing a parallel to the conventional audio or videotape. In an audiotape, a special magnetic material is coated onto a thin plastic strip whereas in a hard disk, the magnetic material is layered onto an aluminium or glass platter, which is polished to mirror smoothness. In an audiotape, the reading and recording head actually touches the surface directly during the read-write process but in hard disks, the head actually 'flies' microns above the surface of the platter and is never really allowed to touch the surface of the hard disk. Just fathom the speeds at which hard disks operate: the tape in a cassette recorder moves at a speed of about 2 inches per second while the platters of the hard disk can spin under the head at rates of up to 3,000 inches per second, translating into a speed of 225 kmph!

placed on data transfer speeds, but on the amount of storage space available for a given price. Let's take a look at the drives that proved to be worthy performers here.

Application performance
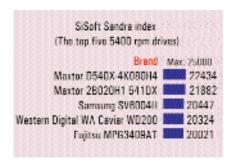
Here, too, we ran high-end disk Winmark 99 as the primary benchmarking tool for evaluating the performance of the drive in applications such as multimedia authoring and software that especially stress the

Overall Scores (7200 rpm drives)

Brand	Overall (%)
IBM DeskStar 60GXP (41GB)	71.26
Seagate Barracuda ST320414A	60.47
IBM DeskStar DLTA 307075	66.22
Samsung SP4004H	58.66

hard disk sub-system. The hard disk that did especially well in this test was the **Western Digital WA Caviar WD200**, clocking a very impressive score of 19900. This turned out to be higher than even two of the 7200-rpm drives. This implies that the hard disk, in spite of the 5400-rpm speed, is still capable of good performance in applications that require intensive access to the drive, such as multimedia authoring applications using audio and video. The Fujitsu MPG3409AT came a close second in this test, trailing slightly behind the Digital WA Caviar with a score of 18100. The drive that delivered a very low performance in this test was the 40 GB Seagate ST30810A, logging a score of just 7790. This implies that it isn't suited to situations where multiple applications would have to be executed at the same time. However, when it comes to storage space, this drive offers 40 GB and therefore imparts a lot of value in situations where you just need storage space, with little stress on performance.

In terms of the data transfer speeds, the drive that posted exemplary performance in the sequential read transfer rates was the **20 GB Maxtor 541DX**, which posted a score of 37 MBps. The drive that came in a close second here was its 80 GB sibling,

the Maxtor D540X-4K080H4, clocking a respectable 33 MBps. The drive that trailed here was the 80 GB Seagate ST380020A, which clocked a very disappointing 14 MBps in the sequential read test. However, this drive posted a very respectable score of 10 MBps in the random read tests, along with the 40 GB Samsung SV4084H drive. This could be attributed to the fact that these hard disks also posted very good scores in the access time benchmarks. As access time has a direct bearing on the random data transfer rates, since the read-write heads are constantly actuating when accessing the different parts of the platters, a lower access time will help the heads access the data faster and subsequently allow for greater data transfer rates. These drives are ideally suited for applications where data will be primarily read in a random manner, for example, a storage drive where installations of applications are stored or databases are continually read from.

In the sequential writing tests, the drive that performed well was the **80 GB Maxtor D540X-4K080H4** and the 20 GB Western Digital Caviar WD200. In spite of them being 5400-rpm drives, they posted very respectable scores of 32 MBps and 29 MBps, respectively. An interesting

SiSoft Sandra Random read/write speed (The top five 5400 rpm drives)

Brand	Random read (Max: 15)	Random write (Max: 15)
Samsung SV4084H	10	8
Seagate ST380020A	10	7
Maxtor 4W100H6 536DX	9	11
Seagate ST340810A	7	7
Seagate ST20410A	7	8

trend noted here was that a majority of the drives that did well in the sequential write tests were those that featured more than one platter. This is because when there is more than one platter available, there are multiple heads writing onto the platters concurrently, resulting in twice as fast sequential write speeds. These drives would be ideally suited for applications such as amateur audio and video authoring, where you would be writing large quantities of data to the drive over sustained periods.

As seen from the graphs, the random write scores were expectedly logged as the lowest by these drives, since this test involved writing data on random sections of the hard disk.

The drive that did the best in this test was the mammoth **100 GB Maxtor 4W100H6 536DX**, which logged a good transfer rate of 11 MBps. Coming in second were the 40 GB drives, Fujitsu MPG3409AT and Samsung SV4084H.

SiSoft Sandra index (The top five 5400 rpm drives)

Brand	Max: 25000
Maxtor D540X-4K080H4	22434
Maxtor 2B020H1 541DX	21882
Samsung SV6004H	20447
Western Digital WA Caviar WD200	20324
Fujitsu MPG3409AT	20021

Maxtor 541DX: this 20 GB drive has a low CPU utilisation and has a fast sequential read rate

How Much Space is Enough?

Application	Recommended capacity	Individual file size (Avg. range)	Explanation
Word processing, spreadsheets	At least 20 GB	20 KB to 200 KB	These files are very small and consume least amount of space on your drive. Go in for an entry-level 20 GB drive.
MP3 audio	20 GB and above, depending on the number of files	3 MB to 7 MB	The size of hard disk you settle for depends entirely on the total number of MP3 files you plan to store
Movies (DivX)	20 GB and above, depending on the number of movies	400 MB to 700 MB	Here again, the size of hard disk you settle for depends entirely on how many movies you need to store
Audio/video editing	Entry level: 20 GB Professional: 100 GB	Depending on usage	If you're a professional who works on audio/video files, you should opt for the largest and fastest drive you can afford.
Gaming	20 GB and above, depending on the number of games	Upwards of 20 MB	Today's games are huge and often take up to 1 GB on a full install. Depending upon whether you're a casual or serious gamer, you should go in for the largest drive you can afford

Specifications

IDE HARD DISKS

	7200-rpm Drives				5400-rpm Drives										
Brand	IBM	IBM	Samsung	Seagate	Fujitsu	Fujitsu	Maxtor	Maxtor	Maxtor	Samsung	Samsung	Seagate	Seagate	Seagate	Western Digital
Model	DeskStar DLTA-307075	DeskStar 60GXP	SP4004H	Barracuda ST320414A	MPG3204AT	MPG3409AT	2B020H1 541DX	4W100H6 536DX	D540X-4K080H4	SV4084H	SV6004H	ST20410A	ST340810A	ST380020A	WA Caviar WD200
Contact	Wales Technology	Wales Technology	Samsung Electronics	aci bom	Apex	Apex	eSys	eSys	eSys	Samsung Electronics	Samsung Electronics	aci bom	Visuallan	aci bom	CYBERSTAR
Phone	022-3828100 / 8200	022-3828100 / 8200	011-6322517/ 19	022- 8266031/32	022- 8354157	022- 8354157	011-6420450\51	011-6420450\51	011-6420450\51	011-6322517/ 19	011-6322517/ 19	022- 8266031/32	022-8202688	022- 8266031/32	011-6556178\ 9\80
Fax	022-3877418	022-3877418	011-6322607	022- 8250674	022-8215152	022-8215152	011-6420452	011-6420452	011-6420452	011-6322607	011-6322607	022-8250674	022-8368514	022-8250674	—
Price (Rs)	14,250	7,300	7,500	4,650	4,500	5,750	4,410	12,800	10,790	6,000	8,000	4,490	5,400	15,660	4,600
E-mail	mediaman@bom3.vsnl.net.in	mediaman@bom3.vsnl.net.in	marketing@samsungindia.com	abhishek@aci-info.com	bomapex@bom2.vsnl.net.in	bomapex@bom2.vsnl.net.in	anshuman@karmasg.com	anshuman@karmasg.com	anshuman@karmasg.com	marketing@samsungindia.com	marketing@samsungindia.com	abhishek@aci-info.com	sales@visualanindia.com	abhishek@aci-info.com	sushilb@cyber-starin.ne
Web site	www.ibm.com	www.ibm.com	www.sam-sungindia.com	www.seagate.com	www.fujitsu.com	www.fujitsu.com	www.maxtor.com	www.maxtor.com	www.maxtor.com	www.sam-sungindia.com	www.sam-sungindia.com	www.seagate.com	www.seagate.com	www.seagate.com	www.west-erndigital.com
Capacity (GB)	76.8	40	40	20	20	40	20	100	80	40.8	60	20	40	80	20
RPM	7200	7200	7200	7200	5400	5400	5400	5400	5400	5400	5400	5400	5400	5400	5400
Cache size (MB)	2	2	2	2	2	2	2	2	2	512 KB	512 KB	2	2	2	2
Interface	ATA/100	ATA/100	ATA/100	ATA/100	ATA/100	ATA/100	ATA/100	ATA/100	ATA/100	ATA/100	ATA/100	ATA/100	ATA/100	ATA/100	ATA/100
Platters	5	2	2	1	2	4	1	3	2	2	2	1	1	2	1
Benchmarks															
High-End Disk Winmark 99	9000	26700	5770	23000	14700	18100	12300	16200	11900	14200	14200	14300	7790	7900	19900
SiSoft Index	17306	26908	22918	26054	19705	20021	21882	17558	22434	15336	20447	14230	11487	12628	20324
Sequential read (MBps)	23	39	33	39	29	29	37	25	33	16	29	21	15	14	30
Sequential write (MBps)	12	7	7	6	5	5	5	9	6	10	6	7	7	10	5
Random read (MBps)	11	39	33	39	29	29	14	11	32	29	29	11	9	16	29
Random write (MBps)	9	9	6	5	5	8	3	11	7	8	6	6	7	7	7
Average access time (ms)	3	7	8	9	11	10	11	5	9	2	8	6	4	2	11
HDTach CPU Utilisation (%)	4.6	4.9	3.6	4.8	3.5	3.7	2.6	2.9	4	3.4	3.7	12.7	3	10.1	4.2
Overall (%)	68.22	71.26	58.66	69.47	56.41	60.09	54.29	62.87	62.31	65.65	61.21	49.11	50.11	58.78	53.7
Grade	B+	B+	B	A-	B	B	B	B+	B+	B	B+	B	B	B	B

SiSoft Sandra Sequential read/write speed (The top five 5400 rpm drives)

Brand	Max: 40 Sequential read	Max: 35 Sequential write
Maxtor 2B020H1 541DX	37	14
Maxtor D540X-4K080H4	33	32
Western Digital WA Caviar WD200	30	29
Fujitsu MPG3204AT	29	28
Fujitsu MPG3409AT	28	29

What other factors affect performance?

We saw that the drives that posted comparatively lower scores in the access time test were also the ones that returned low data transfer scores. Access time affects the random access of data, which was evident in the random data transfer tests. The 20 GB Seagate ST20410A posted a score of 16.6 ms in the access time test. The drive that posted very good access time scores was the **60 GB Samsung SV6004H**, which posted a good score of 9.5 ms. Expectedly, this drive exhibited good overall performance in the rest of the data transfer tests.

Maxtor 536DX: this 100 GB drive gives you all the storage space you need

The CPU utilisation of the hard disk, though neglected by most of us at times, determines the demands that the hard disk places on T processor during its operations. This is especially significant to 5400-rpm drives, as they do not have the headroom in terms of data bandwidth as compared to their 7200-rpm counterparts. These scores were logged by the HDTach benchmark and the drive that posted a good score in this test was the **20 GB Maxtor 2B020H1 541DX**, which logged just 2.6 per cent of CPU utilisation. On the other end of the scale, the drive that utilised more CPU power was the 20 GB Seagate ST20410A, at a very significant 12.7 per cent. This means that the Maxtor drive would be ideally suited for situations when you want to use the hard disk in systems that are powered by an older processor, where any additional strain on it would be very noticeable in terms of overall system performance. The same would be the case in applications where you would be using software that are implicitly demanding on the main processor, such as image, sound and video editing, 3D authoring, etc.

There are two primary parameters that you need to consider when deciding on how much you want to spend for a hard disk: capacity and performance. When considering performance, we found that the 40 GB Fujitsu MPG3409AT and the 40 GB Samsung SV4084H were both available for up to Rs 6,000, coupled with very good performance numbers. This makes these drives very well suited to tasks that need a good level of performance while still offering 40 GB capacities.

If you're looking for a greater amount of storage, then the 60 GB Samsung SV6004H hits the sweet spot with a price tag of just Rs 8,000. This was, in fact, the cost of a 40 GB hard disk about four months ago. If you're willing to shell out a few thousand rupees extra, you can even get an 80 GB or a 100 GB hard disk— these cost between Rs 12,000 and Rs 15,500. Of special mention here is the Maxtor 100 GB hard disk (the largest in the country right now), which is available at Rs 12,800. This is definitely a better choice, both in terms of price and performance, over the 80 GB Seagate ST380020A, for example.

How big is big?

When it comes to tasks that require large files to be written to and read from the hard disk, you should opt for one that sports high sequential data transfer speeds such as the 40 GB IBM Deskstar or the 20 GB Seagate Barracuda drives. If, on the other hand, your job involves working with smaller files such as database applications that access information frequently from the drive, or multimedia and Web authoring tools, then the random data transfer speed of the drive would play a pivotal role in the performance and response of your applications. Here, the drive that excelled was the 76.8 GB IBM Deskstar.

Finally, when it comes to applications, you would need to decide the size of the hard disk you're willing to settle for depending on the applications you plan to use. For example, if you're a home user who's looking for a performance hard disk and you plan to use applications such as intensive gaming, 3D software and sound and video editing, then you would at least need a 20 GB hard disk. Depending upon the volume of files you plan to create, you could even wind up using all of the space on your 40 GB hard disk! (*Refer to the table, 'How Much Space is Enough?' highlighting the suggested hard disk sizes in relation to the files and applications you most often work with.*) As a rule, text documents and spreadsheet files require the least amount of hard disk space. In the middle range, there would be files such as Power-Point presentations, MP3 audio files, etc.

Overall Scores (The top five 5400 rpm drives)

Brand	Overall (%)
Samsung SV4084H	65.65
Maxtor 4W100H6 536DX	62.87
Maxtor D540X-4K080H4	62.31
Samsung SV6004H	61.21
Fujitsu MPG3409AT	60.09

Finally, if you're a movie buff and store feature-length movies on your hard disk itself, at the rate of about 700 MB per movie, your hard disk could get filled in direct proportion to your interest in watching movies!

Files such as MP3, audio and movies do not really need a high-speed hard disk to work well.
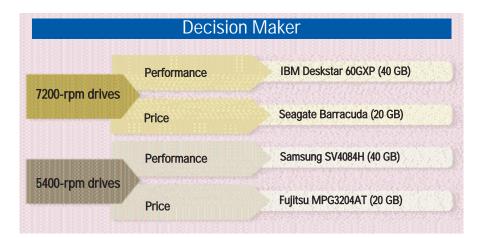
Performance hard disks come into play if you work with audio and video files and are involved in multimedia authoring applications that use large files that are accessed constantly. This would also include Photoshop where average file sizes would range anywhere between 5 and 50 MB. In these cases, a fast hard disk drive will ensure that you don't have to wait long when working with many such files.

CONCLUSION

From this roundup, it is apparent that the array of hard disks available are so wide in terms of capacity,

IBM Deskstar 60GXP: the performance hero

Decision Maker

7200-rpm drives	Performance	IBM Deskstar 60GXP (40 GB)
	Price	Seagate Barracuda (20 GB)
5400-rpm drives	Performance	Samsung SV4084H (40 GB)
	Price	Fujitsu MPG3204AT (20 GB)

Samsung SV4084H: impressive performance

Fujitsu MPG3204AT: an affordable performer

price as well as performance, that choosing the best from them is very closely tied in to the utilisation.

In the 7200-rpm category, the drive that bagged the Best Performance award was the **40 GB IBM DeskStar 60GXP**. This drive posted best-of-class performance in virtually all of the tests it was subjected to and is ideally suited for applications that need high speed data transfer such as professional audio and video editing or even for the

Seagate Barracuda: the value option

demanding home user. The drive bagging the Best Value award in this category was the **20 GB Seagate Barracuda ST320414A**. The drive was priced nearly the same as most 5400-rpm drives (though offering only 20 GB of storage space) and if it is performance you're looking for but don't need an overly high amount of storage space, there's no other drive that comes close to the 20 GB Barracuda.

In the 5400-rpm category, the drive that bagged top honours was the **40 GB Samsung SV4084H**. This drive offered a good amount of storage space for working with most applications and posted very good performance characteristics. If you're looking for good value where you do not need much storage space or especially high per-

formance, the **20 GB Fujitsu MPG3204AT** should suffice, with its reasonable performance and highly affordable price. This drive is ideal if all you're looking for is an economically priced hard disk for running applications such as word processors, spreadsheets and surfing the Internet.

With hard disk drives pushing the limits of performance and capacities and with applications getting larger every day, it wouldn't be surprising if in a few months, you were to settle for a 60 GB or 100 GB hard disk in your new home computer.

Until then, the present drives will serve you well in whatever application you might want to throw at them—be it office productivity or serious gaming! d

IN TEST: **10** CD-ROM DRIVES

Photograph: Rahul Sharma **Imaging:** Neeta Wadiker

–ROM
D R I V E S

DisKography

On your way to buying a CD-ROM drive? Our Test Centre plays the disc jockey and tells what's what to help you make a wise decision

DIGITAL MEDIA RESEARCH AND TEST CENTRE

We've seen the trusty CD-ROM drive grow in terms of importance in a system to such an extent that it now forms an indispensable part of any PC. This has primarily been fuelled by the fact that software—both applications as well as operating systems—have also grown exponentially in terms of install sizes. What was once available on sets of floppy disks as a *de facto* standard, now comes on CD-ROMs. Added to this, the increasing use of multimedia in conventional applications has been a pivotal factor in transforming the CD drive into a component that you can't do without.

Thanks to the Video CD and DivX rage, the popularity of movies on CD-ROM, though illegal, is a big selling point and forms one of the main uses that most home users have for their CD-ROM drive. The importance of the CD drive is also, in fact, corroborated by the fact that

nowadays boot floppies are so rare—you can boot and install operating systems off the CD-ROM drive itself. While other optical standards such as DVD-ROMs have also risen and taken some of the limelight away from the CD-ROM over the past couple of years, the economical price and very high availability of software and working titles have ensured that the CD drive is still widely used, both in new computers as well as standalone purchases.

In terms of technology, however, the underlying operating principles and mechanisms of CD drives have remained largely unchanged. The major advancements that we have seen are the increase in the speeds itself and not the actual read technology.

Looking back, the first conventional CD-ROM drive sported a 4x read speed (that's four times the speed of an audio CD, or 150 KBps x 4 = 600 KBps). Today's fastest CD-ROM drives ➡
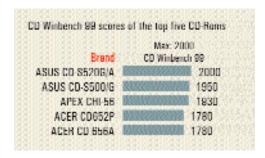
TEST PROCESS

The tests comprised of a mix of real-world and synthetic benchmarks that included Ziff-Davis CD Winbench 99, SiSoft Sandra 2001, AudioCatalyst (digital audio encoding).

The real world tests included copying a single 100 MB file, copying 100 MB of assorted smaller files, and opening 10 TIFF images through Photoshop 6.0.

The weightages accorded to these tests in determining the overall performance of the drives are given in the adjoining table.

Tests	Weightages
CD Winbench 99	10
SiSoft Sandra 2001te	34
SiSoft index	4
Sequential read (KB/s)	10
Random read (KB/s)	10
Average access time (ms)	10
Audio catalyst	24
File copy / access	32
Single 100 MB (sec)	8
Assorted files (sec)	12
Opening files in Photoshop (sec)	12

CD Winbench 99 scores of the top five CD-Roms

Brand	CD Winbench 99 (Max: 2000)
ASUS CD-S520/A	2000
ASUS CD-S500/G	1950
APEX CHI-56	1830
ACER CDG652P	1780
ACER CD 656A	1780

sport a blazingly fast 72x maximum read speed! While these speeds are not sustained throughout the entire operation of the drive, the effective read speeds of the CD-ROM drives available today will let you, for example, install Windows 98SE in about 35 minutes flat on a Pentium III based system, as compared to the leisurely 50 minutes to one hour that it used to take on the 32x and slower drives available just a few years ago.

To help you better understand the potential of these bad boys, we've put to test some of the best CD-ROM drives available today to help you get a good idea of the kind of myriad applications each is capable of running.

Application tests

CD Winbench 99 is one of the best benchmarking software for testing a CD drive's overall performance. This includes measuring the CPU power utilised while operating the CD-ROM (that is CPU utilisation expressed as a percentage) and the speed of the CD-ROM (which is expressed in terms of data transfer rates and access times).

As this test involves running a variety of applications such as word processors and spreadsheets that are run directly from the Winbench 99 CD, you get a clear indication of performance while working with these 'real world' applications as well as the actual data transfer speeds. Since this test continuously accesses the drive, the operating noise levels of the drive also becomes evident.

In this test the drive that overtook all others was the **ASUS CD-S520/G**. Though the rated speed of this drive was just 52x, it outperformed other higher rated drives by scoring an index of 2000—the highest in this test. Coming in a close second to this drive was its sibling, the ASUS CD-S500, which logged a score of 1950.

Of notable mention is the Apex CHI-56, which trailed 70 points behind the fastest drive in this test. However, the price of this drive is a very significant Rs 400 lesser than the 52x ASUS, with performance that closely matches it.

On the lower side, the drive that didn't meet up with our expectations was the 40x Plextor PX-40TSi. Sporting a SCSI interface, this drive logged a score of just 1380, which was the lowest in this roundup. In spite of being rated as a 40x drive, this one came with a Rs 5,450 price tag because of its SCSI interface. With performance that was just not up to the mark in this test, this drive is not a good choice: its price is a constraint and it's performance is, in fact, slower than even some of the IDE drives tested.

While most scores posted by the 52x drives ranged from 1500 to

LG CRD8522B: fast at ripping audio

Contents

The CD-ROM Drives at a Glance

Brand	Model	Speed	Contact	Phone	E-mail	Web site	Warranty	Price	Rating
Acer	CD652P	52x	Acer Peripherals	022-570 5230/31/32	pankajpamani@acercm.com.tw	www.acercm.com	1 year	Rs 1,650	B+
Acer	CD 656A	56x	Acer Peripherals	022-570 5230/31/32	pankajpamani@acercm.com.tw	www.acercm.com	1 year	Rs 1,850	B+
Apex	CHI-56	56x	Apex Computers	8354157	bomapex@bom2.vsnl.net.in	--	1 year	Rs 1,950	B+
ASUS	CD-S500/G	50x	Aditya Infotech Ltd	6338555to 61	applmmb@bom4.vsnl.net.in	www.adityagroup.com	1 year	Rs 2,250	A-
ASUS	CD-S520G/A	52x	Aditya Infotech Ltd	6338555to 61	applmmb@bom4.vsnl.net.in	www.adityagroup.com	1 year	Rs 2,350	B+
Creative	Digital iR	52x	Compuage Infocom ltd	022-8305501/02/03	info@compuageindia.com	www.compuageindia.com	1 year	Rs 2,250	B
Krypton		52x	Priya International	022-2663611	prom@priyagroup.com	www.priyagroup.com	1 year	Rs 1,740	B+
LG	LG CRD-8522B	52x	LG Electronics	022-691 0123	sanjaym@lgindia.com	www.lgindia.com	1 year	Rs 2,200	B+
Plextor	PX-40TSi	40x	Zeta Technology	022-4102288	tejas@zetaindia.com	www.zetaindia.com	1 year	Rs 5,450	B
Samsung	SC-152	52x	Savex Computers Ltd	022- 2881616/17	devang@savexcomputers.com	www.savexcomputers.com	1 year	Rs 2,000	B

2000 points, another drive that delivered below-par performance in this test was the Krypton 52x, which just managed a score of 1380 in spite of being rated as a 52x drive.

If you more often than not run applications from the CD drive directly (as in games that need the CD to be in the drive to be played) and also perform extensive installations, then the ASUS CD-S520, which did well in this test, would be your best choice. If price is a constraint, then you could consider the Apex CHI-56, which delivered performance close to the best performer in this test, but was priced lower.

Give me raw numbers!

SiSoft Sandra (System Analyser, Diagnostic and Reporting Assistant) 2001te is a utility that we used to benchmark parameters such as sequential read, which is important while copying or playing back a single large data file, such as an MPG or AVI file, from your CD.

The random read, buffer read and the access time of the CD drive that this test measures are also important because they reflect the performance while browsing the contents of a CD. This test also logs information such as the maximum speed the drive reached while running the test.

Here too ASUS delivered exemplary performance in both, the 52x and 50x drive categories. Results logged by the **ASUS CD-S520/G** were very impressive across the board where it logged a sequential read speed of 3553 KBps, a random speed of 682 KBps and an access time of 56 ms. These were among the highest that we've seen in a CD-ROM drive. This performance was also replicated by its 50x sibling, which clocked a sequential read score of 3496 KBps, a random read speed of 688 KBps and an access time of 55ms.

Another drive that also did especially well in this test was the Apex CHI-56, which scored 3395 KBps in the sequential read test. The random read speed and the access time of this 56x rated drive, which was clocked at 764 KBps and 45 ms, respectively, turned out to be even faster than that of ASUS.

On the other side of the spectrum, the drive that disappointed was the Samsung SC-152. It managed a sequential read

Apex CHI-56: it's fast in reading and transferring data

speed of just 1462 KBps, which is under par considering that it is a 52x drive. To add to this, the price of this drive was a shade higher than the average pricing in the 52x category.

The Creative Digital iR CD drive was another that gave a low result of 2061 KBps in the sequential read test. However, this drive did sport some cool features such as an infrared remote control that can be used to control the functioning of the drive if you choose to install the application software that is bundled with it.

Of special mention is the performance of the drive in the random read tests. This is a very pivotal specification in a CD-ROM drive as it talks about the performance of the drive's data read assembly while accessing information from different parts of the CD-ROM media.

While the scores in these tests may not seem very high as compared to those in the sequential read tests, they are a more realistic indication of how the drive will perform with day-to-day applications, as most access to the CD-ROM drive is random in nature (such as browsing the contents of a CD-ROM, running multimedia applications, installing applications etc).

Here, the drive that posted the best results was the **Apex CHI-56**, which logged a transfer rate of 764 KBps with an access time of just 45 ms.

If your work process predominantly involves sequential access of large data files (as in reading big image files and databas-

SiSoft Sandra scores for the top five CD-Roms

Brand	SiSoft index (Max: 2500)	Sequential read (kbps) (Max: 4000)	Random read (kbps) (Max: 800)
ASUS CD-S520G/A	2405	3553	682
ASUS CD-S500/G	2373	3496	688
APEX CHI-56	2345	3395	764
LG CRD-8522B	2285	3370	658
ACER CD652P	1862	2844	639

es from CDs), then the **ASUS CD-S520** is the best choice. For random data read applications, the Apex CHI-56 gets top honours, but if features such as a remote that allows you to control drive operations

Time taken to copy TIFF files (top five CD Roms)

Brand	Max: 45 single 100 MB (sec)	Max: 40 Assorted files (sec)
SAMSUNG SC-152	40.13	34.57
ACER CD652P	33.37	27.06
ACER CD 656A	33.37	27.06
CREATIVE 52X Digital iR	33.25	27.72
PLEXTOR PX-40TSi	33.13	27

is more important to you, then the Creative Digital iR would be a good choice, provided you're willing to sacrifice on performance.

Audio ripping

This helps evaluate the ability of the drive to perform error corrections with the help of better cache synching on the fly, which results in WAV files devoid of any 'clicks' and jitters. This will result in better quality as well as faster conversion of CDA to WAV format.

All you MP3 buffs out there would need a drive that works well with applications that need audio tracks to be ripped from audio CDs so that they can be worked on and edited or converted to another format such as MP3. This process is called Digital Audio Extraction (DAE). This is a feature that older drives used to be incapable of supporting but is incorporated into all CD-ROM drives available today. Interestingly, this is also a feature that proves to be very well implemented in some drives and poorly implemented in others; although the data transfer might be fast in one, it could have very poor DAE speeds.

The drive that gave good results in this test was undoubtedly the **52x Acer CD652P**, which logged a blazing 16.94 seconds to rip the middle track—compared to the 43 seconds taken by the ASUS S520 drive.

Another drive that also performed

Overall scores (top five CD-Roms)

Brand	Overall (%)
AASUS CD-S500IG	79.59
ACER CD 656A	75.72
ASUS CD-S520GIA	75
LG CRD-8522B	73.42
APEX CHI-56	70.14

very well in this test was the Plextor PX-40Tsi, taking just 27.03 seconds to rip the innermost track (72.84 MB in size) of the audio CD, making it almost twice as fast as the slowest performing drive in this test. Surprisingly, we found that the drive which excelled in data transfer—the ASUS S520G 52x—performed slowest in this test, taking a leisurely 73.68 seconds to rip the innermost track. This was almost three times more than the fastest drive.

The Samsung SC-152 also performed very well in this test, with very good results in spite of not having performed too well in the earlier data transfer tests.

So, if you are into converting music on CDs into MP3s or extracting from audio CDs, the best drive for you is the Acer CD652P 52x, which logged exemplary results in this test. Do keep in mind, however, that good performance in DAE and high data transfer performance cannot be directly co-related; there are drives that deliver very good data transfer performance, but lag in DAE performance.

Working with files

Simply put, this is a set of tests that involves copying different file types from the CD-ROM to the hard disk. This is a very practical indication of the speed of the CD-ROM drive.

The drive that emerged the winner while copying a single 100 MB file was **Krypton 52x**, which surprisingly outperformed all other drives in spite of delivering very average performance in the synthetic tests. This drive took only 26.19 seconds to copy the 100 MB test file to the hard drive. The scores in the synthetic tests for this drive were not among the highest, but as seen, it did very well in the real-world test. The runner-up in this test was the 52x LG CED 8120B, which took 27.58 seconds to copy the file to the hard drive.

In the assorted file copy test, where an

Acer CD 652P: this drive gave above average results in most tests

CLV vs CAV

CLV (Constant Linear Velocity) is the method used to access data in almost all CD-ROM drives available in the market today. In this method the variable speed motor is used to spin the disc. The reason for this is that while reading the data available on the innermost track, whose circumference is smaller, the speed at which the disk spins has to be higher. On the other hand, when the head is reading the data from the outermost track, the rotational speed (rotation per minute or rpm) of the drive is much slower. This change in the rotational speed ensures the constant flow of data.

CAV (Constant Angular Velocity) on the other hand follows a different method of reading the data. Here the rpm of the motor spinning the media remains constant, regardless of where the data is stored on the media. This makes the drive using this method slower than the drive using the CLV method. The advantage of this method is that it's simple to design and produce the drive because the speed of the motor is constant and latency time (time wasted while the drive changes its rpm) is eliminated.

assortment of 10 files totalling 100 MB was transferred to the hard disk from the CD drive, the Krypton 52x clocked 22.21 seconds to complete the task. The slowest drive here turned out to be the Samsung SC-152, which took 40.13 seconds to copy the 100 MB file and 34.57 seconds to copy the assorted files. The most attractive part about this drive is its economical price tag. The runner up in this test was the 50x ASUS CD-S500, which delivered results that were just a shade below the Krypton drive.

The next real-world test that we ran involved opening an assortment of 10 TIFF images in Photoshop 6.0 from the CD-ROM drive. Since many Web designers, photographers and art professionals extensively use CDs to store backups of images, this test was intended to be indicative of the

drive's performance with such applications.

Here the 52x **ASUS CD-S520G** drive fared well, logging 30.12 seconds to open the images, making it 23 seconds faster than the slowest drive in this test. The second in this test was the 52x Krypton, which trailed very slightly, taking 34.28 seconds to open the images from the CD.

The drive that took the most time to complete this test was the 52x Samsung SC-152, taking a slow 53.56 seconds to open all the TIFF images.
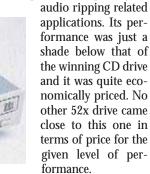
In summary, we see that the real world performance of these drives is often different from the synthetic or 'ideal-conditions' performance. If you work extensively with applications where you need to copy and read files from the CD-ROM drive, then the best choice in this category would be the Krypton 52x drive as it showed exemplary performance in the file transfer as well as the Photoshop tests and is also priced quite competitively. The runner up in this category was the 52x ASUS CD-S520.

CONCLUSION

The performance of a CD drive is not just a function of the maximum speed it can reach in synthetic tests but also in real world performance tests and in its ability to support new features and formats.

The 50x **ASUS S500/G** drive proved to the best performer in these tests, having logged a very impressive set of results and was a good blend of performance in the real-world and low-level data transfer tests. In fact, despite being a 50x drive it posted results that were a shade ahead of even some of the 52x drives. It was, however, among the more expensive drives in the comparison.

The 56x **Acer CD 656P** bagged the Best Value award. This drive posted good data transfer speeds and proved to be an exceptional performer, especially for audio ripping related applications. Its performance was just a shade below that of the winning CD drive and it was quite economically priced. No other 52x drive came close to this one in terms of price for the given level of performance.

Even though CD-ROM drives are at threat due to the aggressive pricing and speeds of DVD drives, they still prove to be worthy performers and it seems that the continually falling prices of these drives will ensure that the CD-ROM standard sticks around for some time to come.
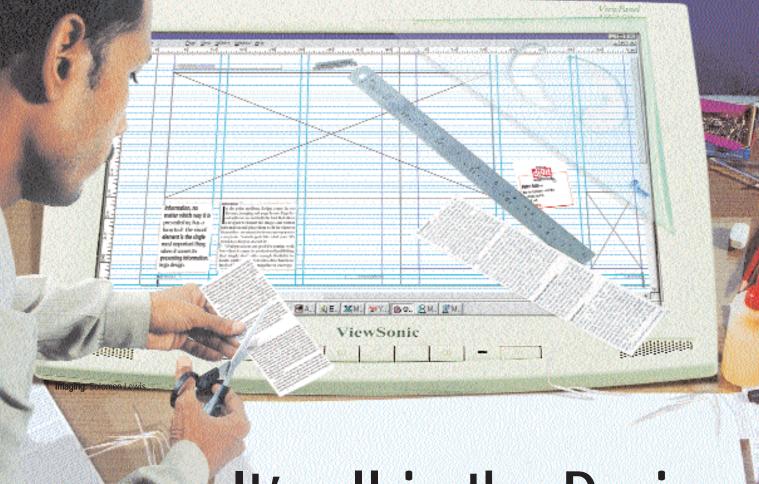
Acer CD 656P: a value buy

ASUS S500/G: it blazes ahead

IN TEST: **5** PAGE LAYOUT SOFTWARE

Imaging: Solomon Lewis

It's all in the Design

The visual element is the single most important thing when it comes to presenting information. Ergo design

DIGITAL MEDIA RESEARCH AND TEST CENTRE

In the print medium, design comes in two flavours: imaging and page layout. Page layout software is essentially the tool that allows a designer to format the images and written information and place them to fit in whatever format they are meant for—from a newspaper to a magazine. Sounds quite like what your MS Word does for you, doesn't it?

Word processors are good for routine work but when it comes to professional publishing they simply don't offer enough flexibility to handle multiple objects besides other functions involved in designing a magazine or a newspaper. It becomes essential for one to use page layout tools that allow one to handle text as well as multiple graphics elements. This is done by giving the user the flexibility to design everything from simple letterheads, posters and cards to publishing magazines and even newspapers.

Unlike other software, the market does not boast a wide variety of professional page layout software. Adobe has a range of three different types of software which in itself kill each other on basis of their functions. QuarkXPress had

a result what one gets is an extremely functional product with an extremely dull interface. Shortcuts allow for easy access to commonly used features from the keyboard. A good software will not only have the facility of providing this feature, but also the capability of customising shortcuts. If a user wants a particular shortcut through a particular set of keys, he should be able to do so.

Toolbars are perhaps the most commonly accessed element in a page layout software. The toolbar should have the common set of tools so that the user does not have to access the menu each time to use the feature. Software developers have started placing the extra functions of a particular tool in the toolbar, but in a hidden mode, which can only be accessed when it is double-clicked. Users will be more appreciative of the floating toolbar as it gives them the flexibility of dragging and dropping.

A common problem with professional software available today is too many choices. Users are often stuck with features they can't use. Therefore, it is important for a software to explain the basic operations through adequate help and documentation and give in-depth examples, information which would really be helpful to new users.

In spite of the release of the new PageMaker, the Adobe developers seem to not have taken many pains to improve the interface. It looks no different from its previous version with the exception of a quick access toolbar under the menu bar, which can be called a nice addition. QuarkXPress has a simple but not appealing interface like Adobe InDesign. It too features a floating toolbar with a common set of tools like frames, Bezier, selection, type and drawing tools.

Microsoft Publisher's interface might not appeal to a professional user. It too has a floating tool palette that, by default, is stuck on the left-hand side of the software. You will not have to manually pick and drag the bar and place it wherever you need it. A wizard panel also appears on the left-hand side but it gives the impression of the screen being too cramped. You can hide it though.

Adobe Frame Maker's interface is shocking; it is difficult to believe that Adobe has developed this software. This has a highly unintuitive interface and the toolbar looks very dull indeed. One wonders why this is so after the proven brilliance of other Adobe products such as Photoshop, Illustrator, etc.

InDesign, with an interface similar to that of Adobe Illustrator, possesses a common set of tools like the gradient, free transform, text, drawing, eyedropper, etc, which make it a pleasure to work with this software. Both Adobe InDesign and Frame Maker boast a good set of help files which

received a tremendous response when it was launched in the late 1990s and continues to be popular with many publishing houses.

In this comparison test, we included only those DTP software that had the functionality of layers, text wrapping, frames, masking, etc. Corel Ventura has been a favourite with many, but we weren't able to include it in our comparison test because it was unavailable.

SOFTWARE SPEAK
Interface

A reasonably appealing look and feel of the interface adds to the tool's intuitive feel. Software developers conveniently ignore this factor and as

More Info on the test process and the products tested. Check out **Mindware**

Contents

Extremely intutive interface of InDesign

Adobe PageMaker Provides a Story Editor to edit text

explain all the fundamental operations of the software but what they (and also Quark) lack is the look and presentation style which is Adobe PageMaker's forte.

Features

A page layout professional expects certain features—on-the-fly text editing and image editing capabilities, automatic flow of text from one page to another, and the ability to export to different colour modes for pre-press use—to be present in the software. We've emphasised these features and closely examined how the software has bundled them.

Professionals dealing with huge amounts of text find it extremely tedious to manually add and place text on every page. If the software facilitates automatic adding of text, it would make their work much easier. Yet, sometimes when the text has to be flown from one column to another, the user should have the option of flowing text manually.

Adobe PageMaker and InDesign do have the auto flow feature but one will have to first manually add pages, whereas if one is using QuarkXPress, the pages get added automatically. With Publisher it prompts the user to use the auto flow feature and then automatically places the text by adding the pages. Like Quark, Frame Maker automatically puts the text to

another page and does not require the user to add one manually.

At some point of time everybody includes tables in their work. However, it is rare to find a page layout software with a separate program for creating tables. One normally has to create a table in Office suite programs like Excel and place it in the page layout program. The problem here is that the data gets imported without the horizontal and vertical lines. These lines would then need to be drawn manually. Hence it would be better if the software provides the facility of making tables.

Adobe PageMaker does provide the user with a separate program to generate tables but unfortunately one cannot directly import them into PageMaker so one will have to place it as an OLE object. Publisher and Frame Maker have the capability of allowing users to create tables in the software itself but InDesign and Quark do not have this capability. Hence one will have to create tables in a different program and then import them here.

Who does not make mistakes, especially when it comes to typing? Wouldn't it be better if the software provides some easy and quick way of editing the content? Some software enable you to edit text by providing a separate text editor programs whereas others provide on-screen text editing.

Except for Adobe PageMaker, which allows the user the option of editing the text on-screen or editing it in a separate window by selecting Edit Story, the others only allow one to edit the text on-screen.

Though one wouldn't normally use a page layout software for editing images, it would be of great help if the software provided the basic facilities of cropping, rotating and transforming the size of the image as one often finds the need to make some

adjustments to the images while placing elements within the layout of the page. If the software has this capability then it eliminates the need of going back to the image editing software to perform basic editing.

Microsoft Publisher, InDesign, Quark and Frame Maker provide one with basic elements such as rotating, cropping and scaling images, but Adobe PageMaker is particularly impressive because in addition to basic editing capabilities, it also lets the user add Photoshop filter effects. However, these can be added to only TIFF (Tagged Information File Format) images.

Design elements

There are certain design elements which layout professionals m2ake use of such as frames, manipulation of layers, masking, column guides, text on path, paragraph and character styles, etc.

Layers: If digital imaging artists can work with layers, then why not page layout professionals? Most software developers have taken this point in consideration and infused functionality into professional page layout software. With the help of multiple layers one can create and edit specific areas in work without disturbing the rest of the areas. For example, if you've placed your text on a specific layer and your images on another, you can temporarily hide the image layer to make proofreading easier.

Only Adobe PageMaker and InDesign provide this functionality wherein one can place different objects on different layers. The layers can be hidden and even locked.

Frames: This element helps in laying out content as it can hold content together (text as well as graphics) and serve the purpose of a placeholder too. Newspapers and magazines use this element as it gives the basic layout structure of the content and one can place empty frames to make it easier to fit in data at a later stage.

Frame Maker, Publisher and InDesign

What People use in the Industry

Ever wondered if you really need to use these expensive page layout software packages?

The newest versions of Microsoft Word and Photoshop are quite proficient when it comes to handling text and images and most of us can churn out pretty decent looking documents with them.

Even page layout professionals tend to use these to lay out simpler brochures and booklets. In the new release of Photoshop one can easily design and create brochures, pamphlets, visiting cards, memo's and also type in large amounts of text.

One of the things that Photoshop does lack, however, is the ability to flow text around the object, etc. Hence if you want to really do something special with your design you will require the additional flexibility of a specialist page layout tool. This is why professional designers would eventually choose to import the image objects into the page layout software and flow the text and manipulate elements there.

For most of us, Word is probably a more logical choice since it allows one to create basic layouts.

Word XP, a part of the recently released Microsoft Office XP suite, allows you to do everything from adding tables, frames and columns to placing images, creating table of contents, spell checking, wrapping text around an object and adding gradients and all of these can be done on the fly.

The things that are required for professional publishing and are missing from Word are support for CMYK, the ability to type text along a randomly drawn path, placement of graphics in frames, masking, etc.

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not only provide frames where one can add graphics but also text frames for typing text. Unlike InDesign and Publisher where one has to add text frames to start typing, Frame Maker gives the user the flexibility to type on-screen as well as in text frames. PageMaker and Quark allow the user to type directly without having to place text frames.

Masking: This feature is already present in most animation and image editing software and is seeing its place in page layout software as well. Going back to the image editing software just to mask objects is boring and disrupts concentration. Now one can easily mask, that is, hide, objects by either placing them one over another or by covering a part of the object with the help of various shape tools so that only a particular portion of that object is visible.

Frame Maker and Publisher have not yet incorporated this feature so one will have to take the trouble of going back to the image editing software for masking images. The remaining software do provide this feature.

Text on path: Advertisements in newspapers where the text flows throughout the page are common. If you think it's difficult to place the text in such as a way, you'd be

1/2 Page AD

surprised. It can be done quite easily by drawing a path with the help of the pen or pencil tool (depends on what the software

Layers and Gradient effects in InDesign

provides) and typing the text on to it as one would normally do. It is the software which does the trick by allowing text to

flow on a particularly drawn path. A page layout software should possess this important feature.

The new release of Adobe PageMaker tested here does not incorporate this feature. The developers at Adobe don't seem to be interested in developing this software, and are giving more importance to InDesign which does possess this feature. Unlike Publisher and Frame Maker, Quark and InDesign include this feature thereby giving the user the flexibility to type text on paths.

Gradient: It is a blend between two or more colours or tints of the same colour. Why would anybody want this element on a page layout software? This is primarily used by designers in generating two-tone effects in text and also in filling up drawn objects. One disadvantage here is that the colours are converted to CMYK mode

QuarkXPress provides on-screen display of linking of various pages

while printing, which raises the possibility of them appearing dull or shifted. Hence, most designers use this feature in CMYK mode.

InDesign, Quark and Publisher allow one to add gradients to objects but Publisher does not allow one to add it to text.

SCORE BOARD The Page Layout Software at a Glance

	Adobe Frame Maker +SGML 6.0	Adobe InDesign 1.5.2	Adobe PageMaker 7.0	Microsoft Publisher 2000	QuarkXPpress 4.1
Company	Tricom International	Adobe Systems India Pvt Ltd	Adobe Systems India Pvt Ltd	Trifin Technologies	Quark India Pvt Ltd
Phone Numbers	022-8942461	0118-4532026	0118-4532026	011-6236061	0172-254412
Fax Numbers	022-8930504	0118-4532010	0118-4532010	011-6436447	0172-254414
E-mail Address Web site	tricom@vsnl.com www.tricommutimedia.com	sandeepm@adobe.com www.adobe.com	sandeepm@adobe.com www.adobe.com	trifin@vsnl.com	gprakash@quarkindia.com www.quarkindia.com
Price (Rs)	90,000	42,946	26,500	4,500	34,000
Hard Disk Space	95 MB	50.6 MB	172 MB	60 MB	22 MB
Memory Usage	16.4 MB	22 MB	31.2 MB	7.6 MB	8.4 MB
Features					
Autoflow	Yes	Yes	Yes	Yes	Yes
Text Editing Capabilities	Yes	Yes	Yes	Yes	Yes
Creation of Tables	Yes	No	Yes	Yes	No
Various Colour Modes Supported	CMYK, RGB, HLS	CMYK, RGB, LAB	CMYK, RGB, HLS	CMYK, RGB	CMYK, RGB
Image Editing Capabilities	Yes	Yes	Yes	Yes	Yes
Design Elements					
Paragraph Style Sheets	Yes	Yes	Yes	No	Yes
Character Style Sheets	Yes	Yes	No	Yes	Yes
Importing Images	Yes	Yes	Yes	Yes	Yes
Column Guides	Yes	Yes	Yes	Yes	Yes
Frames	Yes	Yes	Yes	Yes	Yes
Layers	No	Yes	Yes	No	No
Masking	No	Yes	Yes	No	Yes
Text on Path	No	Yes	No	No	Yes
Gradient	No	Yes	No	Yes	Yes
Miscellaneous Features					
Dictionary	Yes	Yes	Yes	Yes	Yes
Spell Check	Yes	Yes	Yes	Yes	Yes
Wizards	No	No	No	Yes	No
Templates	Yes	No	Yes	Yes	No
Ratings	**B-**	**A-**	**B**	**B**	**B+**

Frame Maker and PageMaker are yet to incorporate this feature.

Styles: Who would want to take the trouble of formatting all the paragraphs in one particular style? With paragraph style sheets, one can load the predefined set of styles already provided by the software or save their own styles in case they are going to be used again. Professionals actually use this function to a great extent—all it needs is a click to format paragraphs by selecting the appropriate style. Similar to paragraph style sheets, character style sheets allow one to have a particular style of formatting attributes that can be applied to a selection of text. Thus, for example, for logos or for headlines, you can save such character styles once and then apply them wherever required by a single click.

PageMaker and Publisher are disappointing when it comes to styles—PageMaker provides for only character style sheets and Publisher provides only paragraph style sheets.

Importing text: One usually uses some office program or the other to make text documents and spreadsheets. Hence, if one wishes to import data into a page layout program, it should appear exactly the

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PostScript Files

While working with page layout software, one often faces problems when sending the final documents to get printed at the press. One usually gets 'font missing' errors because the font used while designing the document may not be installed at the printer's end. To work around this, copy the fonts along with the documents so that they can be installed before the document is finally printed.

In 1985, Adobe developed PostScript which became an industry standard for printing and imaging. PostScript is basically a programming language which describes the appearance of the page containing text and graphics to the output device (colour or a black and white printer or any other output device).

To eliminate font-related problems, you can save your documents as Post-Script files. This will save you from worrying about which platform or version of system software the service provider has.

PostScript files contain all the fonts used in the document so the fonts will appear correctly even if the output device does not have them. Files saved in the PostScript format can even be sent over the Internet to the service provider. However, the large file sizes associated with PostScript files deter many from sending documents over the Net, especially in India where bandwidth is a major problem.

To reduce the file size one can, depending on the settings provided by the software, omit images (which are usually saved in TIFF format) from the document. These TIFF images can be sent separately and incorporated into the PostScript file before printing.

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way it was formatted—if one were to reformat the text after it's been imported into the page layout software, it would just be an unnecessary duplication of work.

Adobe PageMaker shines here as it can retain the formatting while importing text, though it does lose the font size. InDesign also does a good job of importing text

but strangely enough, it retains the font of the header but not of the remaining text. QuarkXPress was quite bad in this regard—it doesn't import text if it is saved in the default MS Word format. You can import text only in RTF format, but all the formatting gets lost. Like PageMaker, Adobe Frame Maker, InDesign and Microsoft Publisher maintain the text formatting.

PageMaker and InDesign do an excellent job of importing data as it is from MS Excel. Quark again disappoints here. Frame Maker does import the Excel sheet but only if it is saved in version 5.0. However, what you get is a hotch potch of data which you then have to adjust manually as the flow of the data is lost upon importing.

Miscellaneous features

If a page layout software has features such as spell checker, wizards and templates, it is a bonus as they add to the software's functionality.

MS Publisher 2000 provides wizards and templates for ease of use

Spell checker: Spelling mistakes are common. After laying out the text, we normally run the spell checker to see if any typographical errors are present. The spell checker should be able to detect not only the spelling mistakes but also the duplicate words. It can get pretty irritating if it keeps on ignoring proper nouns. The software should allow users to manually add names and not show it as an error the next time you run the spell check.

All the software that we tested had this feature and all were equally good.

Wizards: There are many software which provide wizards (step by step guidance) to create predefined documents. This makes the job easier and much faster than the manual process.

Except for Microsoft Publisher 2000, none of the software have wizards for generating documents. Publisher offers an extensive list of publications such as brochures, catalogues, greeting cards, etc that can be created very easily even by a novice with the help of wizards.

Templates: A template is a predefined design page which can be used as standard document as it contains a set of graphics and text in predefined layout. This feature is commonly use by newspapers and monthly publications where the template can consist of text, graphics, layout, placeholders, rulers, grid, etc. Software like Adobe's PageMaker now come bundled with sufficient templates to make things easier for the user.

PageMaker, Microsoft Publisher and Frame Maker provide an extensive list of templates which one can use for his work or rework on them to suit his need. InDesign and Quark haven't implemented this feature yet.

CONCLUSION

Even though PageMaker and QuarkXPress have been the all-time favourites, this time the equation changes a bit. Quark hasn't come out with a new version for quite a long time. Even though QuarkXPress 5 is reportedly nearing completion, the retail version available in the market as of now is still 4.1.

Even with PageMaker, the new version fails to impress as the interface and features haven't changed much. Quark is feature rich, but lacks proper importing capabilities. Microsoft's Publisher 2000 offers a simple and easy-to-use solution for those not-so-design-inclined who want nothing but basic
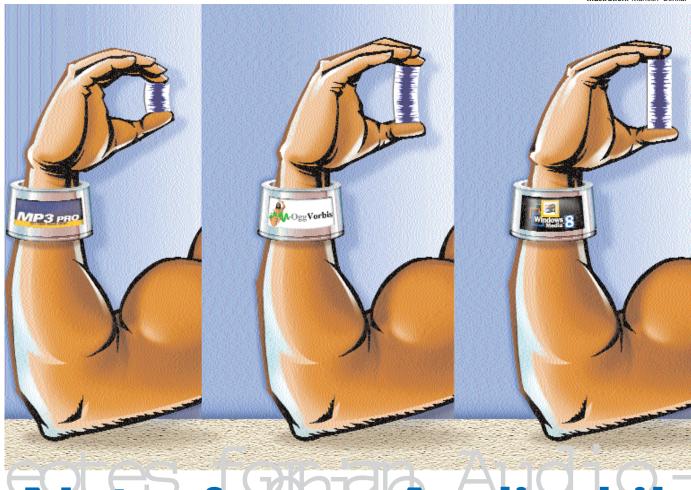
Adobe InDesign 1.5: the most functional and versatile page layout software

design templates to make simple documents such as letterheads, business cards and memos.

What really toppled the top ranks was Adobe's InDesign, which, with its easy-to-use interface and a boatload of features overtook all the oldies. It has an extremely functional interface that rivals that of Photoshop. Adobe came out with this version a couple of months back, and a new 2.0 version has already been announced on Adobe's Web site. As of now, InDesign stands way ahead of all other page layout software in terms of user friendliness, features and usability.

Notes for an Audiophile

A look into the world
of audio formats and
what's happening

PRASHANT MASRANI

Audio formats have evolved since the early days of blips, beeps and first-generation PCM audio. It was the WAV format, which finally allowed users to experience CD-quality audio on their PCs. Though audio reproduction was remarkable, file sizes of WAV audio clips were huge. A single minute of CD-quality audio occupied approximately 10 MB of space. As an uncompressed audio format, WAV files are difficult to share and transport across computers.
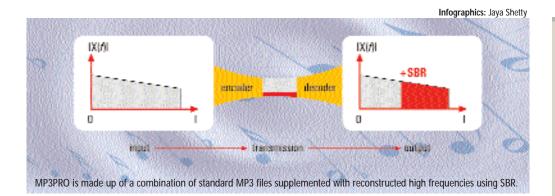
The need to bring down the size of audio files was felt and development began on a format, which not only accomplished smaller audio file sizes, but also maintained as much audio integrity as possible. Fraunhofer started it all with their revolutionary MP3 format. With MP3, audio clips were cut down in size, in most cases, by a factor of 10 to 14, while maintaining audio quality to a great extent. Though audiophiles may not swear by the MP3 standard, most casual listeners won't be able to tell the difference in audio quality between MP3 audio and CD audio.

How MP3 works

An MP3 file consists of a number of individual frames. Each frame contains a certain amount of song data and when grouped together, they make up the entire track. In order for these small segments of data to exist, a particular song must be encoded first. The bit rate chosen will directly reflect upon the output file's size and audio quality. Essentially, bit rate is a measurement (in bits per second) of how much compressed audio data flows per second. Higher bit rates yield higher quality sounding music as opposed to lower bit rates. The lower the bit rate, the less space the file occupies.

A CD contains data, which is digitally stored in an uncompressed, high-resolution manner. Music is sampled 44,100 times per second and each sample is 16 bits long. Separate samples are

MP3PRO is made up of a combination of standard MP3 files supplemented with reconstructed high frequencies using SBR.

Lossy Compression

When audio is compressed, it usually doesn't mean the compression of the audio itself. What really happens is known as lossy compression. Lossy compression is usually used in audio, video and image files where certain details can't be seen or heard by the human senses and thus those areas are not included in the compressed file itself. Every human has a hearing range, which means that he or she can hear only a particular range of sounds. In MP3 compression or most audio format compressions, the frequencies that cannot be heard are eliminated from the particular song. However, a good audio compression method will give the most accurate results by getting most frequencies encoded within the song, giving quality of sound and also giving small file sizes.

taken for the left and right audio channels. If we do the math, we get:

44,100 samples per second x 16 bits per sample x 2 channels = 1,411,200 bits per second or 176,000 bytes per second

So a typical one-minute segment of CD audio occupies around 1MB of data. What MP3 does is reduce the number of bytes of a song while maintaining a high standard of audio quality. In order to accomplish this, the MP3 format uses a compression technique known as perceptual noise shaping or 'psychoacoustics'.

The principle behind perceptual noise shaping is based upon the characteristics of the human ear. For instance, the human ear is sensitive only to frequencies in the range of 20 Hz to 20,000 Hz. Anything below or above this range cannot be heard. Also, there are certain sounds that the human ear can hear much better than others. Furthermore, if two sounds of different amplitudes (volume levels) are being played simultaneously, the human ear has a natural tendency to pick up on the louder sound and focus

less upon the softer one. Using these principles, MP3 encoding will only include those frequencies, which the human ear 'prefers' and excludes certain parts of the song without significantly deteriorating sound quality.

With this algorithm of song compression, the resulting MP3 file is only one-tenth to one-fourth the size of the original song, giving it tremendous portability. What you have left after encoding is a 'near CD quality' song as the MP3 version of the song does not sound exactly like the original since some parts have been removed. For all practical purposes, the output is very close. Due to the fact that the MP3 encoding process eliminates some data from the original song, this type of compression is known as 'lossy compression'.

The MP3 format also supports Variable Bit Rate, or VBR for short. As mentioned earlier, MP3 files consist of hundreds of smaller chunks called frames. When encoding a VBR file, the encoder decides the bit rate for a particular frame. A frame's bit rate can drop down by 32

A Question of St@NdaRDS

Sony, Liquid, Dolby. Three companies with three standards—AC3, ATRAC3, and LQT. Which is the best?

AC3: Audio Code number 3 is a sound compression standard that has been created by Dolby. In most audio formats, stereo sound is the standard. However, in AC3, the aim is to deliver five speaker streams and also a bass channel, which is overall denoted as 5.1 surround sound. This standard is usually found in cinemas and theatres. AC3 encoding allows sound from the frequency of 3 Hz to 20 kHz to play on the system, which is quite over the sounds that a human can hear. The bass that is produced is between the frequency ranges of 3 Hz to 120 Hz only. The bit rate at which the audio is played at is 640 kbps, which is much over most audio formats today like MP3, WMA, etc, but here quality and not the

media size is the main priority. Recently, with the introduction of DVD, compression and storage of surround sound is now possible. This enables users to listen to Dolby Digit surround sound at home.

Sony ATRAC3: Sony was the first company to introduce portable music with the unforgettable Walkman. Then came the Memory Stick Walkman, which was like a pen and stored songs on the memory. Sony has been using its own formats; there were two main technologies used—ATRAC and Magic Gate Memory. Later, a software called OpenMG was introduced which would convert the normal MP3 to the Sony format, ATRAC3, before copying it to the memory. However, the public wasn't quite happy with the conversion of formats.

Liquid Audio's LQT: Liquid Audio SP3 is the latest of all the formats available, and it

has been created with security of the media as the chief priority. Liquid Audio SP3 is also known as Liquid Audio Secure Player Platform. The Web site and company offer firmware updates for any later version. Claims have been made that Liquid Audio with its technology will be able to protect the copyrights of the artists. There are huge archives and online stores available for the format where people can use carts and select songs from the Internet through the authorised sites. Currently, Liquid Audio has device partners such as Palm, Sony, and Toshiba, to name just a few. There is also a software player which is available for download from the Liquid Audio site itself. The free version and the Pro version of the player allow you to write CDs and import music at high quality. Liquid Audio is also said to use AC3 Dolby digital Codec for its audio.

Advanced Audio Coding

WMA and RealAudio 8 may have the advantage over MP3: Their files are half the size at CD-quality rates. However, a newer standard called Advanced Audio Coding (AAC) may give them a run for their money. AAC was co-developed by the Fraunhofer IIS-A, Dolby, and AT&T, and it is part of the MPEG-2 specification. AAC's algorithm is different from MP3's, and AAC incorporates additional features that boost the efficiency of encoding. Basically, AAC delivers better-quality audio with 30 per cent less data than MP3. AAC is widely known to be the best when it comes to audio compression, and a number of desktop players, like the new MusicMatch Jukebox 6.0, are beginning to incorporate it into the suite of codecs they support. As of today, there are no portable players that support AAC, but with its upgradable firmware, it may just be a matter of time before AAC becomes as common as MP3.

kbps to a lower value whenever possible (if there is not much audio going on) and can accelerate the bit rate by 32 kbps as and when required. Essentially, VBR is used to provide for an efficient compromise between file size and audio quality. Whenever a silent period is encountered during a track, the bit rate can be decreased, thus conserving on the size of that particular segment. Whenever higher quality is in need, the bit rate can increase giving a fuller, more accurate reproduction of the original track, but at the sacrifice of space.

The problem encountered with VBR is that as the bit rate is constantly changing from one segment to another, several players have a problem in determining correct track length. Though a standard exists where track length is recorded into the first segment of an MP3 file, not all encoders can do this.

A negative point from the perspective of the recording industry with the MP3 format is that there are no security features that have been included in the format—it is free for everyone to pirate and share. As for the licensing part of MP3, a company needs to pay $3.75 for each device capable of playing back the MP3 format.

Emerging standards

Though the MP3 format does a satisfactory job in compressing song data and maintaining a high standard of audio quality, recent advents in technology permit even further compression of song data. Thompson Technologies, the co-creators of the MP3 format along with the Fraunhofer Institute, have teamed up with Coding Technologies to produce the next-generation MP3 format called MP3Pro. MP3Pro operates in a similar fashion to the MP3 Codec with a few enhancements. A codec is analogous to a device driver in that it allows playback of a particular audio format using specified parameters. MP3Pro is completely backward compatible with the original MP3 standard but you will not reap the full benefits of this codec unless the suitable codec or plugin is installed on the computer.

In MP3Pro, the encoder splits up the encoding into two main parts: the low frequency range and the high frequency range. The low frequency range consists of signals below 10 KHz while the high frequency range lies above 10 KHz. This technique proves to be a more efficient way of encoding sound into MP3Pro format and also contributes to increasing overall sound quality.
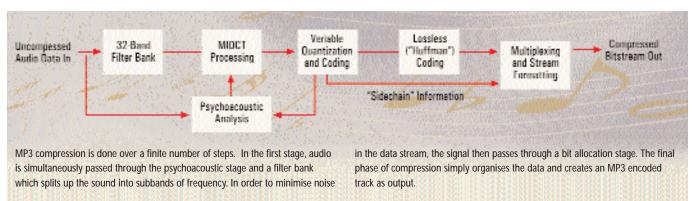
One problem encountered with the MP3 format is that at low bit rates, MP3 files run out of bits to compress the music in full audio bandwidth. That is why at bit rates of around 48 kbps to 64 kbps, MP3 music begins to sound dull as it lacks a good deal of high frequency signals. At 64 kbps, MP3 can either produce an audio bandwidth of approximately 10 KHz or introduce coding artifacts. Coding artifacts are used to compensate for the shortage of bits while sampling at low bit rates in order to attempt to represent the complete audio bandwidth.

MP3Pro is a result of combining two components: MP3 and Spectral Band Replication, or SBR. SBR is a new coding technology which offers FM-quality audio (15 KHz) by increasing audio bandwidth of a standard MP3 sample.

SBR is a new method used in conjunction with the MP3 format to reproduce high frequencies in low bit rate encoded audio files. When used with SBR, the underlying MP3 encoder is responsible for transmitting frequencies below 10 KHz while SBR reconstructs all frequencies above the 10 KHz range. This is a process which occurs during playback of the MP3Pro file. First, the MP3 decoder processes the file (and frequencies below 10 KHz), then it transmits the decoded portion to SBR for analysis and high frequency enhancement of the decoded portion. In effect, the SBR accurately represents the original music before the encoding process began. This reconstruction is not only accurate in the frequency domain, but in the time domain as well. The end result is full bandwidth audio decoding at low data rates and increased compression efficiency.

The free version of MP3Pro supports a 64 kbps bit rate and a maximum sampling rate of 44.1 KHz. The official full version of the codec will allow a 96 kbps bit rate, which easily rivals standard MP3 files encoded at 128 kbps in terms of audio reproduction. Like MP3, MP3Pro does

MP3 compression is done over a finite number of steps. In the first stage, audio is simultaneously passed through the psychoacoustic stage and a filter bank which splits up the sound into subbands of frequency. In order to minimise noise in the data stream, the signal then passes through a bit allocation stage. The final phase of compression simply organises the data and creates an MP3 encoded track as output.

not have any security features to prevent wide-spread piracy of licensed music.

A completely free alternative

Let's see what else you can really depend on for storing and playing your collection of songs. Ogg Vorbis could be just the thing for you in case you want quality and, more importantly, you want it free for distribution. Ogg Vorbis is open source code, patent free and you don't have to pay a penny for giving your own songs to anyone. As of now, it is the only audio format that does this.

Ogg Vorbis uses different mathematical principles from MP3 in how it encodes its music and plays it. The Ogg Vorbis Codec works on the basis of VBR like MP3 but does it more efficiently. In the standard MP3 format, VBR allows for a rise and decline of 32 kbps steps. In Ogg Vorbis, the jump is of 1 kbps, which means you get very accurate quality and file sizes are strictly kept to a minimum. Though Ogg Vorbis files themselves can be encoded between 8 kbps to 512 kbps, the current beta encoder supports 128, 160, 192, 256 and 350 kbps in mono or stereo.

Since streaming audio is a very important application for these file formats in the future, any successful format would need to include support for them. This is natively supported within the Ogg Vorbis Codec. Currently, the designers of Ogg Vorbis are working with the makers of Icecast, an open source streaming server which will allow users to enjoy streaming audio.

Similar to what MP3's ID3 tag offers, Ogg Vorbis supports a proprietary comment header system, which allows you to include various information about the track such as title, artist, song name, and so on.
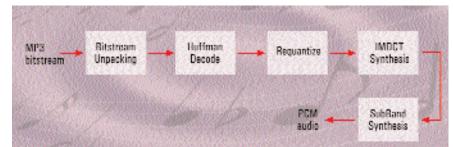
Ogg Vorbis is patent free, open source and thus can be distributed and used for personal and commercial purposes. Similarly, codecs are being developed for other operating systems like Linux, BeOS, etc. Ogg Vorbis files can be played back using Winamp and other supportive audio players simply by using an Ogg Vorbis plug-in.

How can we forget Microsoft?

Microsoft likes doing things its own way. After having taken over the operating system and office suite market, they've set sights upon pushing their audio formats in a similar fashion with their Windows Media Audio.

What you are about to get is Windows Media Audio 8—Microsoft's latest iteration of the WMA standard and their idea of the perfect competition to MP3Pro and Ogg Vorbis.

The format is similar to MP3Pro in terms of size of the file. The bandwidth used is 48 kbps for near CD-quality and 64 kbps for CD-quality audio, similar to what MP3Pro offers. The format has been created for streaming of media

Decoding an MP3 starts with feeding the signal through bitstream unpacking where certain bits of information regarding the decoding process are read and stored. The audio sample is broken down into chunks, which pass through the Huffman decoder where many tables are used to look up actual values since these bits of information are decoded. The decoder's task is to then requantise the results and transform the signals into the time domain so that the resulting audio stream accurately represents the original sound.

over 56 kbps dial-up connections to high-speed DSL and cable modem connections.

One particular feature incorporated into WMA 8 that should appeal to the record industry is a technology called Digital Rights Management, or DRM for short. DRM is an end-to-end solution for encrypting and distributing digital content in a secure manner on the Internet.

The Windows Media format is a compilation of various components, which is called as a Windows Media File Container. It contains WMA and WMV using the codecs along with DRM technology. Metadata is similar to MP3's ID3 tag as it contains information about the artist, song name, etc. The format also has well integrated voice recognition and text to speech capabilities using Microsoft speech engine.

What's your format?

So finally, which is the best format? If you're looking at availability, MP3 is no doubt the most happening audio format available. MP3Pro has just started and the demo encoder/player does not have support for encoding audio at full quality yet. For the time being, one will have to stick to encoding at 64 kbps using MP3Pro.

Ogg Vorbis offers high quality audio, thanks to the optimal VBR encoding and playing features, but availability and widespread industry support still remains a major problem. And without security and encryption, it is difficult for the record industry to adopt Ogg Vorbis as their audio standard du jour. The latest version of the Ogg Vorbis Codec, V1.0, will soon be available and proper encoders and players should also be available for the general public to adopt.

Microsoft is doing a splendid job with their WMA 8 standard. With high compression, integrated security features and streaming capability, WMA 8 appears to have the most potential to be the prominent audio standard in the future. At the moment, while WMA is catching ground fast with portable audio player makers' support in their devices, MP3 still remains the format of choice for most device manufacturers and users. 🔳

What to look for in a Protected Player

With audio standards changing the way they are today, it would be best to scout for a player that will support a particular format in the future. To ensure that your digital audio player is indeed future-proof, purchase a unit equipped with upgradable firmware. Be sure you buy from a reputed company, as the inclusion of upgradable firmware does not guarantee that the company will provide you with an upgrade in the future.

Several memory-based and MP3/CD players are available that permit firmware updates. Sonicblue's Rio players (500 and above) support MP3, WMA and Audible formats. If an MP3 CD player suits your fancy, take a look at the AVC Soul Player which has a very good track record of providing constant firmware updates through their Web site.

Photograph: Mexy Xavier
Courtesy: Priyadarshini Park

HyperTransport
vs3GIO

As the battle for CPU supremacy wages on, Intel and AMD fight to promote their proposals to rework the innards of computers

PRASHANT MASRANI

There is no doubt about it. The escalation seen in today's CPU speeds is stunning. Hard disks are buzzing along faster than ever and the 3D technology that's available today was dismissed as fantasy a decade ago. However, without due consideration, pushing barriers in clock speeds, storage densities and fill-rates will be in vain. Tomorrow's devices are going to need infrastructure suited for their requirements. Without high-bandwidth protocols in place, the new technology is virtually useless.

Long-time rivals, Intel and AMD have each introduced blueprints of a new I/O bus—a successor to the aging PC architecture, the PCI bus—aimed at handling future bandwidth requirements and which are scalable at the same time. AMD's HyperTransport and Intel-backed

3GIO (known as Arapahoe) each proposes to change one of the most overlooked parts in a PC, the I/O bus.

But before we discuss the technologies involved in HyperTransport and 3GIO, let's rewind a little and see the limitations in the existing technology.

Beyond the confines of the PC

The components of a PC communicate by sending and receiving data through an interconnected network of wires called buses. A bus is essentially a high-speed conduit for digital information to travel. Several types of buses exist and each operate at a different speed and protocol, depending upon the standard at which the bus functions.

The PCI bus is responsible for transporting

data from PCI-based peripherals to and from the memory bus for further processing. This general-purpose bus has been serving well as a standard for over 10 years, hosting such devices as soundcards, video cards and storage controllers. Now PCI is facing a major strain with bandwidth-hungry I/O devices on the horizon. Products used in applications such as video capture/editing and other bandwidth-intensive applications need plenty of room to function. In order to host a number of components such as these, either the entire PCI bus would have to be reworked or a new standard would have to be built from the ground up.

A chipset, or core logic, is responsible for directing the control and flow of data across bus lines. Generally, it is divided into two distinct chips, a north bridge and a south bridge. The term 'bridge' comes from a reference to a device that connects multiple buses together. The north bridge connects to the CPU, the memory bus, the AGP graphics bus and the south bridge. The south bridge connects to the PCI, USB, ATA, ISA, etc.

With current technology, the reservoir of available bandwidth for these multiple buses is quickly running out, leaving the industry no other choice but to innovate new ways to replenish the bandwidth pool.

The answers

One answer to bus bandwidth constraints is HyperTransport, an AMD-led architecture developed with the help of industry partners such as Cisco, nVidia, Sun Microsystems and 168 other industry influences. HyperTransport is a bi-directional (send and receive), high performance packets-based protocol for interconnecting various components in a PC. Using packets simply means sending data in chunks (or packets) and rearranging them to its original form later. It was designed for applications such as networking, telecommunications and other uses where scalability, high speeds and low latencies are required while at the same time, remaining compatible with legacy PC buses such as PCI, ISA, USB, etc.

There are several immediate advantages of HyperTransport. While developing specifications for the protocol, design engineers kept a framework of goals in mind in order to improve system performance. Higher bandwidth bus links and reducing low latency responses across bus points are two direct ways of achieving this.

Being 32-bits wide and running at a speed of 33 MHz, the PCI is restricted to a maximum bandwidth of 133 MBps. HyperTransport offers substantially larger bandwidth up to a maximum of 12.8 GBps, a near 100-fold increase over existing technology.

Current PCI technology transfers data across the bus at 133 MBps. PCI-X, an evolutionary modification of the original PCI bus, runs along at 1 GBps. HyperTransport ups the ante to a significantly higher 12.8 GBps.

Off the bat, HyperTransport uses a flexible bus architecture providing data links in various widths. Depending on the application, bit widths can either be 2, 4, 8, 16 or 32 bits. Each bus line is capable of transferring data at a rate of 400 MHz in each direction. Since HyperTransport provides a dedicated line for both sending and receiving data, effective throughput is in the area of 800 MHz with a maximum throughput that is over 96 times the bandwidth of today's PCI bus. In situations requiring different upstream and downstream speeds, HyperTransport is fully capable of asymmetric operation.

Optimising bus topology and reducing the number of buses in a system not only streamlines data transfer processes, but also contributes to lower voltage requirements and, therefore, lower power consumption.

HyperTransport is not designed to eliminate technologies such as USB and FireWire. Instead, it was designed to complement them by acting as an infrastructural backbone between the devices themselves and the rest of the system. The fact remains that HyperTransport was designed to interconnect internal system components and not directly connect to external technologies. The point of using HyperTransport is to provide the bandwidth that FireWire and USB devices will need now and in the future.

Unlike PCI, which is a shared bus and allows multiple devices to be placed on the one bus, HyperTransport only allows one device to be placed on a bus. However, these busses can be chained together to create a multi-device bus.

Latencies

Of course, the further devices are chained, the higher latency there will be between a device at the end of the chain and the processor. It is important to design the system so that there are at most around three to five elements in the chain. The more a component is affected by latency, the higher up the chain of buses it has to go, otherwise, a bottleneck would be introduced.

HyperTransport's theoretical maximum of 12.8 GBps is 96 times as fast as a 32-bit, 33 MHz PCI bus, and 24 times faster than an expensive 64-bit, 66 MHz PCI bus. However, the 12.8 GBps link is likely to be used only in processor-north bridge and north bridge-north bridge configurations, and each pin-

Likeness in Disparity		
	HyperTransport	**3GIO**
Bus type	Point-to-point	Point-to-point
Protocol	Packet based	Packet based
Maximum bandwidth per link	1.6Gbits/sec	2.5Gbits/sec
Multi-processor support	Yes	Yes
Outside-the-box configuration	No	Yes

Licensing Scheme

Unlike direct licensing schemes which require annual payment and at times royalties as well, the HyperTransport licensing strategy is comparatively simplified. Those who want to use the technology may join the consortium for $5,000 a year, and those who also want to contribute to the technology development may join for $25,000 a year. There are no royalties or licensing fees beyond this annual membership cost. At the moment, licensing information on 3GIO is not available.

pair can carry 1.6 Gbps (200 MBps) of data. Other HyperTransport implementations will be using a slower but cheaper HyperTransport IO system, at a speed of 800 Mbps (100 MBps) per pin pair, which is just under the speed of a 32-bit PCI.

HyperTransport is a differential bus. This means that for each bit of the connection, two wires (and therefore interface pins on a chip) are required to carry the signal. Wire one carries the signal and wire two carries the inverse of the signal. For each device residing on a bus, there needs to be a corresponding number of pins. This increases the pin count by quite a margin, so many implementations of this technology will use reduced bus widths to cut costs.

HyperTransport products

Products from AMD based upon the Hyper-Transport protocol are expected to appear in 2002. HyperTransport has the potential to replace most point-to-point busses in use in computer systems today. This includes north bridge-south bridge interconnects, the memory bus, AGP, and the front-side-bus. AGP is currently limited to 4x speed, and 8x speed is not an easy task. With nVidia licensing HyperTransport for their own use, both within their chipsets and between their chipsets and other components, the appearance of a HyperTransport graphics processor (GPU) is guaranteed.

This raises the interesting spectre of a system without any AGP slots, and a lot more integration onto the motherboard. Now that nVidia are into chipset design, they could very well decide to drop AGP support and make the GPU part of that chipset, connected using HT to the north bridge at 1.6 GBps. The standard specification would mean that any HTIO GPUs that ATI or Matrox produced would also work with this chipset, meaning more choice for the consumer.
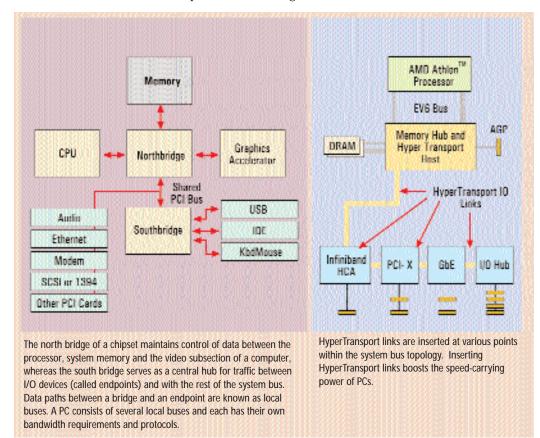
3GIO

Intel's latest initiative to develop a standardised bus transport comes in the form of third-generation I/O, or 3GIO for short. Like HyperTransport, 3GIO (code named Arapahoe) addresses similar concerns of bandwidth, scalability and flexibility in design.

3GIO is a point-to-point interconnect and uses a packetised protocol structure. It transports data at high bandwidths, uses scalable bus widths, exhibits low power consumption and is hot-pluggable. It was designed for chip-level interconnects, expansion card connections and can act as an I/O bridge for other interconnects such as USB 2.0, Infiniband, Ethernet, 1394, etc. 3GIO is capable of providing interlinks within the chipset core but initial proposals state that initial implementations will focus on the I/O devices and subsequently the AGP bus itself.

The specific workings of 3GIO differ somewhat from HyperTransport. A fundamental 3GIO bus link uses two low-voltage pairs of signals, one pair to transmit and the other to receive. Initial speeds between pairs is over 300 MBps and this is expected to increase to 1.25 GBps (the physical limits for copper interconnects). Once these limits are reached, 3GIO has made provisions for a smooth transition from copper to faster interconnects using optical links.

3GIO also brings forth a technique to allow itself to connect to external high-speed devices such as hard disks, optical drives and video cameras. Furthermore, 3GIO can be used to tie together different PC subsystems that are housed in physically separated enclosures. This in itself could be used to completely redesign the 'beige box' existence of PCs

The north bridge of a chipset maintains control of data between the processor, system memory and the video subsection of a computer, whereas the south bridge serves as a central hub for traffic between I/O devices (called endpoints) and with the rest of the system bus. Data paths between a bridge and an endpoint are known as local buses. A PC consists of several local buses and each has their own bandwidth requirements and protocols.

HyperTransport links are inserted at various points within the system bus topology. Inserting HyperTransport links boosts the speed-carrying power of PCs.

today. As 3GIO uses hot-plugging capabilities, devices can simply be added and removed without opening the PC chassis and without powering down the system first.

Intel is compatible with PCI at the software layers, so if the software supports PCI, it automatically supports 3GIO too. The initial speed of a single channel or 'lane', which is comprised of two differentially driven pair of wires (transmit and receive), is 2.5 Gbps in each direction. The lanes will supposedly scale to 10 gigabits per pin and beyond in the future.

The PCI bus is parallel in nature. The difference between serial and parallel buses from a motherboard designer's standpoint is the number of traces and routes needed between the device and core logic. Parallel architectures require a significantly higher amount of trace points than serial designs and, thus, the number of pins needed to correspond to these routes goes up as well. Changes such as these not only increase cost, but also cause a rise in signalling problems due to electromagnetic interference.

A new type of controller introduced in third generation I/O architecture is the switch. A switch essentially manages interconnections streams of data and between attached devices. In the case of the PCI bus, multiple devices share the same pathway for data flow. With HyperTransport and 3GIO, each device receives a dedicated link from the device to the core logic. This setup overcomes some of the problems faced by PCI such as system resource conflicts and inefficient use of bandwidth. Since devices reside on independent bus links, each link can be scalable to a higher width if the need arises.

A key advantage that 3GIO holds over HyperTransport is the focus on external devices. Not only does 3GIO act as a point-to-point link between chips, the standard is also explicitly designed to link to external devices. HyperTransport, on the other hand, is more focused on connecting the internal devices of a PC.

Current implementations of HyperTransport, such as nVidia's nForce, focus upon bus links between the north and south bridges. HyperTransport has no problem in performing as a system-wide bus.

3GIO, like HyperTransport, can handle bus connections across the system. Interestingly, the Arapahoe group has opted in favour of positioning 3GIO as more of an expansion bus in the immediate future. A more comprehensive system-wide approach may be taken in the future. However, at the moment, nothing has been etched in stone.

Announced at the spring session of the Intel Developer Forum, the Arapahoe architecture was recently handed over to the PCI SIG (Special Interest Group), the industry organisation chartered to develop and manage the PCI standard, which will assume further governing and development of 3GIO as a standard in the future.

The last word

AMD and Intel are both aiming to solve the same problem with similar constraints. Therefore, it is not surprising for them to come up with similar solutions. Between these two solutions, HyperTransport appears to be a faster way to connect devices today. Since it uses parallel bus architecture, it should not be very difficult to quickly implement with existing technology. The biggest advantage that HyperTransport has over 3GIO is that it is available now. In fact, nVidia has already incorporated HyperTransport technology in their upcoming nForce chipset. Transmeta too has jumped onto the bandwagon and grabbed a license for the technology. Other proponents of this technology such as API Networks announced a chip design that would let computers use HyperTransport.
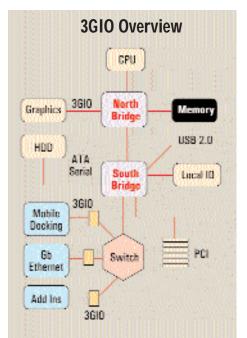
So far, 3GIO can only be considered 'on paper' since products supporting Intel's third generation I/O specification will not be seen until 2003.

But before the AMD camp starts cheering, here's a pause for thought: 3GIO has been adopted by the PCI SIG (Special Interest Group), the influential standards body which governs the currently prevailing PCI bus standards. Considering how widespread the PCI bus is and how comfortable companies are with the group and the PCI standard itself, its magic could easily rub off on 3GIO.

Surprisingly, nothing is holding back the two competing solutions to work together. With HyperTransport at the chip level and 3GIO linking external devices, a perfect blend of complementary technologies would result. This, however, will most likely not happen.

Two overlapping standards raise indecision for component makers, who must decide whether to support one standard, the other, or both.

In the end, Intel just might be a little too late in getting to the market with 3GIO. Technology solutions based upon HyperTransport have already been designed and implemented into silicon, some of which are very close to being released in the market.

3GIO Overview

Multiple lanes can be connected between devices, chips, etc, and this almost seems like you'd be constructing parallel interfaces again, but these are independent serial channels. In fact, the physical layer of 3GIO supports x1, x2, x4, x8, x12, x16, and x32 lane widths. A data stream would be striped across the lanes as in the figure. There must be some logic to split and reassemble the streams, of course.

HARDWARE

Radar

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More Info on the hardware products tested. Check out **Mindware**

Not too hot

Sporting the Socket 370 interface, this processor comes with a heatsink alone and no fan. It uses the 0.13-micron technology, which consumes little power (between 7 to 14 Watts) and heats up considerably lesser than other processors in its range. It's targeted at the budget–conscious buyer not looking for top-of-the-class performance.

VIA C3 800 MHz

SPECIFICATIONS:
128 KB of L1 cache, 64 KB of L2 cache, 0.13-micron technology
Benchmarks:
SiSoft Sandra: 953 Mflops in CPU Whetstones, 1635 MIPS in CPU Dhrystones; 7 minutes 18 seconds for video encoding; 2 minutes 49 seconds for audio encoding; 64.6 fps (normal mode), 63.9 fps (high quality) and 58.8 fps (max settings) in Quake III; 499.17 seconds in the Photoshop test; 19.4 units in Content Creation

verdict **B**

VIA C3 800 MHz	
Performance	▲▲◢△△
Build Quality	▲▲▲◢△
Value for Money	▲▲◢△△
Features	▲▲▲◢△
OVERALL	▲▲▲△△

+ Does not require a heatsink; Good performance in day-to-day applications
- Comparatively high-priced
Price: Rs 4,000+taxes
Contact: eSys Distribution Ltd
Phone: 011-6420450
Fax: 011-6420431-52
E-mail: c3sales@esysmail.com

Lavish and sleek
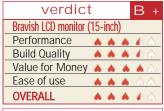
This stylish 15-inch monitor features an easy-to-use onscreen display and offers flicker-free display even at the highest resolution. Installation is simple due to the plug and play feature. It occupies very little desktop space and can even be swivelled through 360 degrees. The featured pivot makes switching between horizontal or vertical display simple.

Bravish LCD Monitor (15-inch)

SPECIFICATIONS:
Supports a maximum resolution of 1024x768
Features: Average dot pitch of 0.30 mm, includes 1built-in multimedia speakers

verdict **B +**

Bravish LCD monitor (15-inch)	
Performance	▲▲▲◢△
Build Quality	▲▲▲◢△
Value for Money	▲▲▲▲△
Ease of use	▲▲▲△△
OVERALL	▲▲▲◢△

+ Stylish design
+ Uses little desktop space
- Tricky placement of OSD buttons
Price: Rs 35,000
Contact: Wales Technologies
Phone: 022-3828100 Fax: 022-3877418
E-mail: mediaman@bom3.vsnl.net.in
Web site: www.walestechnologies.com
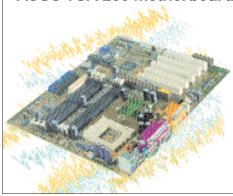
An expensive proposition

This socket 370-based motherboard features five PCI slots and an AGP Pro slot, which guarantees you high-bandwidth gameplay when coupled with a high-end 3D card. It provides you with four USB slots, so connecting USB devices to it is no problem. The board is a good buy as it supports both SDR and DDR RAM up to 3 GB.

ASUS TUA 266 Motherboard

SPECIFICATIONS:
Supports the P-III Coppermine and Tualatin (0.13 micron) processors; ALi M1651 north bridge and the ALi M1535+ south bridge chipsets; DDR RAM compatible; five PCI slots; four USB ports
Interface: Socket 370
Benchmarks: 1619 in 3D Mark 2001; 15687 in SiSoft Sandra; 23 MBps sequential read; 4 MBps random read; 20 MBps sequential write; 5 MBps random write; 26.3 in Content Creation

verdict **B -**

ASUS TUA 266 Motherboard	
Performance	▲▲▲◢△
Build Quality	▲▲▲▲△
Value for Money	▲▲▲△△
Features	▲▲▲△△
OVERALL	▲▲▲△△

+ Five PCI slots; Support for up to 3 GB DDR RAM/SD RAM
- High price
Price: Rs 9,500
Contact: Rashi Peripherals.
Phone: 022- 8260258 Fax: 022- 8221012
E-mail: ho@rptechindia.com
Web site: www.rptechindia.com

Smooth operator

This stylish Zip drive uses the USB cable for both power as well as data. Installing the drive is easy—simply connect the drive to your system's USB port and it automatically gets detected. You don't even need to reboot the system. After connecting the drive, load the drivers provided in the accompanying CD and you are ready to transfer data.

Iomega Zip drive (250 MB)

SPECIFICATIONS
Features: USB cable, two manuals, stand for the drive, driver CDs, a software for data back up
Benchmarks: 7 minutes 58 seconds to copy nine 10-MB files from hard drive to Zip drive; 1 minute and 17 seconds to copy from Zip drive to hard drive

verdict **B -**

Iomega Zip Drive (250 MB)	
Performance	♥ ♥ △ △ △
Build Quality	♥ ♥ ♥ ◗ △
Value for Money	♥ ♥ ◗ △ △
Featues	♥ ♥ ♥ △ △
OVERALL	♥ ♥ ◗ △ △

+ Good looks and good bundled software
- No superfloppies included
Price: Rs 11,050
Contact: Neoteric Infomatique Ltd
Phone: 022-4172600 Fax: 022-4185294
E-mail: sales@neoteric-info.com
Web site: www.neoteric-info.com

Speedster

The fastest processor available in the market today, it uses the new Socket 478 architecture comprising an arrangement of pins called the micro pin grid array. Due to this, the size of the processor is drastically reduced. The processor returned excellent scores in almost all the tests and is a great buy for those who simply want the best.

Pentium 4 2-GHz Processor
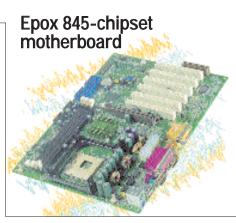
SPECIFICATIONS
Pin count of 478; 8 KB L1 Cache; 256 KB L2 Cache; 400 MHz system bus (100 MHz Quad-pumped)
Benchmarks: 25675 in SiSoft Sandra; 234.6 fps (at 320x240 with all effects turned off), 198.3 fps (normal mode), 182.3 fps (high quality), 116.6 fps (at maximum settings) in *Quake III*; 45 units in Content Creation; 3963 in 3D Mark 2001

verdict **B**

Pentium 4 2-GHz Processor	
Performance	♥ ♥ ♥ ◗ △
Build Quality	♥ ♥ ♥ ◗ △
Value for Money	♥ ♥ ◗ △ △
Features	♥ ♥ ♥ △ △
OVERALL	♥ ♥ ♥ △ △

+ Fastest processor available in the market
- Expensive
Price: Rs 28,000
Contact: Ockam Infotech Pvt Ltd
Phone: 022-6330375 Fax: 022-6347805
E-mail: sales@ockamindia.com
Web site: www.ockamindia.com

Pricey performer

This mainboard supports the new Intel P4 2 GHz processor with Socket 478 interface. It has onboard audio support through the AC'97 Codec and can support a maximum of 3 GB of PC 133 MHz RAM through the three DIMM slots. A great buy if you need the power of a Pentium 4 processor but do not want to use RDRAM.

Epox 845-chipset motherboard

SPECIFICATIONS
Interface: Socket 478
Features: Features the 845 chipset from Intel, six PCI slots, four USB ports (two onboard and two through the add-on card), manual, driver CD, data cables, connector for extra USB ports
Socket Type: Socket 478
Benchmarks:
3963 in 3D Mark 2001; 25675 in SiSoft Sandra; 38 MBps sequential read; 7 MBps random read; 33 MBps sequential write; 9 MBps random write; 45 units in Content Creation

verdict **B**

Epox 845 chipset motherboard	
Performance	♥ ♥ ♥ △ △
Build Quality	♥ ♥ ♥ △ △
Value for Money	♥ ♥ ◗ △ △
Features	♥ ♥ ♥ △ △
OVERALL	♥ ♥ ♥ △ △

+ Good packaging; six PCI slots and support for up to 3 GB of RAM
- Rather expensive
Price: Rs 9,000
Contact: Rashi Peripherals.
Phone: 022-8260258 Fax: 022-8221012
E-mail: ho@rptechindia.com
Web site: www.rptechindia.com

No magic here

The Jadoonet Elite Netbox connects through a cable connection. The setup lets you configure connection settings, e-mail settings, video and remote control settings and other netbox settings. Although capable of viewing Flash-enabled sites, it was slow and didn't play any audio on these sites. While it displayed good audio streaming capability, it was unable to stream video.

Jadoonet Elite Netbox (Ethernet)

SPECIFICATIONS
Features: Smart Card security, infrared keyboard with a range of approximately 15 feet, remote control, built-in e-mail, option of sending voice messages and even videos

verdict **B**

Jadoonet Elite Netbox (Ethernet)	
Performance	♥ ♥ ♥ △ △
Build Quality	♥ ♥ ♥ △ △
Value for Money	♥ ♥ ◗ △ △
Features	♥ ♥ ♥ ◗ △
OVERALL	♥ ♥ ♥ △ △

+ Good audio streaming; smart card
- No video streaming and poor browsing through heavy graphics; no mouse
Price: Rs 7,990
Contact: Jadoonet Computers Limited
Phone: 022-4968892 Fax: 022-4950415
E-Mail: info@jadoonet.net
Web site: www.jadoonet.com

SOFTWARE

Radar

Zbrush, MAGIC Dance Maker…the latest software in the market tested and reviewed

Find it on
digit
interactive

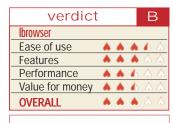**More Info** on the software products tested. Check out **Mindware**

Just what you need

This software supports most of the popular image formats available today. In the interface, you can choose from different preview options such as Details, Large icons, Small icons, or Thumbnail. The other options included are slideshow, full screen view, set as wallpaper, to name a few. The software is available for download for a 30-day trial period.

Ibrowser

SPECIFICATIONS
Features: Offers interface presets, Visual Scrolling which lets you view large images effortlessly, has multi-language support

verdict	B
Ibrowser	
Ease of use	🔥🔥🔥🔥⬦
Features	🔥🔥🔥⬦⬦
Performance	🔥🔥🔥⬦⬦
Value for money	🔥🔥🔥⬦⬦
OVERALL	🔥🔥🔥⬦⬦

+ Good interface
+ Supports large variety of formats
Price: Shareware
Web site: www.fcodersoft.com

Getting arty

It contains a plethora of tools and materials to bring your imagination to reality—a blob of clay or gel from the materials drop-down list can be carved or stretched to create a shape. You can also apply some amazing lighting effects. While you are creating your model, everything is rendered in real time.

ZBrush

SPECIFICATIONS
Size: 9 MB
Features: 19 palettes, can export only to .bmp and .psd format, the fibre brush tool lets you paint adjustable fibres such as hair

verdict	B
ZBrush	
Ease of use	🔥🔥🔥⬦⬦
Features	🔥🔥🔥🔥⬦
Performance	🔥🔥🔥⬦⬦
Value for money	🔥🔥🔥⬦⬦
OVERALL	🔥🔥🔥⬦⬦

+ Great interface and tools
+ Small file size
- Exports in just .bmp or .psd formats
Price: $585 (approx Rs 28,080)
Web site: www.pixologic.com

Child's play

This is a tool for creating viewlets, which are compact and visually rich movie files. The viewlet opens in its own Java window. You can choose different fonts, add balloons, notes and sounds to your slide from the tools palette. It is useful for firms specialising in software publishing and training and home users keen on making interesting presentations.

Viewlet Builder 2

SPECIFICATIONS
Features: Can select the resolution for capturing screenshots; can choose from among different fonts or font effects, add speech balloons, notes and sounds to your viewlets

verdict	B
Viewlet Builder 2	
Ease of use	🔥🔥⬦⬦⬦
Features	🔥🔥🔥⬦⬦
Performance	🔥🔥🔥⬦⬦
Value for money	🔥🔥🔥⬦⬦
OVERALL	🔥🔥🔥⬦⬦

+ Easy to use
+ Extremely customisable
+ Does not require any extra plugins
Price: Freeware
Contact: ViewFinder
Tel no: 0265-750623
E-mail: viewlets@viewfinderindia.net
Web site: www.qarbon.com

MAGIC Dance Maker

Dance, baby dance

Dance Maker allows you to create original dance tracks through an intuitive interface. You can add music to any of your video clips using it. Creating songs is quite simple due to the drag and drop feature. The accompanying CD includes sound files, which can be imported while you are creating a song. This version carries support for DirectX plugins.

SPECIFICATIONS
Features: Real time mixer with a five-band equaliser; supports 16 tracks of audio, MIDI video or BMP data

verdict **B -**

MAGIC Dance Maker	
Ease of use	🔥🔥△△△
Features	🔥🔥🔥△△
Performance	🔥🔥△△△
Value for Money	🔥🔥◖△△
OVERALL	🔥🔥◖△△

+ Small file size
- Low on extra audio effects
Price: Rs 850
Contact: Microsoft Computer Services
Phone: 022-8729525
Fax no: 8727446
E-mail: sales@mwcdrom.com
Web site: www.mwcprom.com

ZOC 4.02

Old and dependable

ZOC has several configurable options to suit your terminal emulation needs; from the plain Solaris telnet, to Linux with Midnight commander to BBSes accessible from telnet. It's suitable for modem or shell account/BBS users and supports secure shell connections. ZOC supports almost all protocols used by earlier BBSes even over telnet connections.

SPECIFICATIONS
Features: You can define your own custom translations for a certain key phrase, which allows you to build any keystroke, or break/pause combo required in some UNIX terminals

verdict **B +**

ZOC 4.02	
Ease of use	🔥🔥🔥🔥△
Features	🔥🔥🔥🔥◖
Performance	🔥🔥🔥◖△
Value for Money	🔥🔥◖△△
OVERALL	🔥🔥🔥◖△

+ REXX Scripting
- Needs extensive keyboard mapping for some terminal types
Price: $69 (approximately Rs 3,312)
Web site: www.emtec.com

Videolan Client

Musical notes

This software for playing MPEGs, MP2s and DVDs works on almost every operating system and has low system requirements. Although Videolan may not match up to a software such as PowerDVD, you really mustn't complain too much since it is free. Opt for Videolan if you don't mind the plain interface and are satisfied with the features it provides.

SPECIFICATIONS
Features: You can stream files through the network; the preferences menu gives you a choice of interface, colour depth, gamma, and audio options; other options include slow motion, chapter, and language and subtitle selection

verdict **B**

Videolan Client	
Ease of use	🔥🔥🔥△△
Features	🔥🔥🔥◖△
Performance	🔥🔥◖△△
Value for Money	🔥🔥🔥◖△
OVERALL	🔥🔥🔥△△
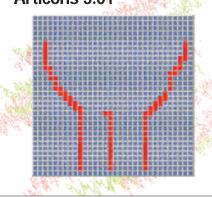
+ Good features
- Needs a better interface
Price: Freeware
Web site: www.videolan.org

Articons 3.01

Iconically speaking

Articons allows you to create or modify icons in colour depths of up to 16 million colours. While modifying images you can give them gradient or fill shadow or mirror effects. You can save your image as an image file or an icon. You can download the trial version of the software and use it for a period of 30 days.

SPECIFICATIONS
Features: You can edit .bmp or .jpg images up to a resolution of 127x127; easy drag-and-drop of icons between shells and libraries; can import a variety of image files for modification and export them to a format of your choice; during modification, you can zoom in or out, or add effects such as flip horizontally, roll left and others

verdict **B**

Articons 3.01	
Ease of use	🔥🔥🔥△△
Features	🔥🔥🔥◖△
Performance	🔥🔥🔥△△
Value for Money	🔥🔥◖△△
OVERALL	🔥🔥🔥△△

+ Good features and tools
+ Easy-to-use
Price: Shareware
Web site: www.aha-soft.com

Reviews

For your first site

If you're looking to get your first Web site on the Net, then this book should help you with the task. The book helps novices as well as HTML veterans plan and build their own site with t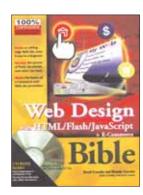he help of tools such as Flash and JavaScript. The book opens with a basic tutorial on building a Flash Web site and goes on to planning Web pages, promoting and maintaining your site, etc.

Web Design with HTML/Flash/JavaScript & E-commerce

Publisher: IDG Books India (P) Ltd
Contact: Computer Bookshop
Phone: 022-2070989, 2076356
Fax: 022-2623551
E-mail: cbsbom@gias-bm01.vsnl.net.in
Price: Rs 399 with CD
Rating: ♠♠♠⬦⬦

For more of Flash

This book is meant for those familiar with the essentials of Flash and need to expand their knowledge. The book covers advanced site design principles, Flash content creation and enhancement, ActionScript concepts and techniques and more. You can browse through chapters on topics such as simple game routines, video in Flash, sound in Flash and much more.

Flash 5 Studio

Publisher: Shroff Publishers & Distributors
Contact: Computer Bookshop
Phone: 022-2070989, 2076356
Fax: 022-262 3551
E-mail: cbsbom@gias-bm01.vsnl.net.in
Price: Rs 600
Rating: ♠♠♠⬦⬦

Introducing C#

This is a comprehensive reference manual for all C# programmers. The book has an extensive coverage of C# semantics and .Net framework compatible with the beta 2 release. The book starts with a basic introduction to OOP concepts and ends with an in-depth look at advanced programming techniques such as Defensive programming and Reflection.

Programmers' introduction to C#

Publisher: Apress
Contact: Computer Bookshop
Phone: 022-2070989, 2076356
Fax: 022-2623551
E-mail: cbsbom@gias-bm01.vsnl.net.in
Price: Rs 299
Rating: ♠♠♠⬦⬦

On the Stands

Photosho 6 in an instant

This book, rather than relying on text-based instructions, takes you through all the functions and features of Photoshop with large-screenshots and direct step-by-step instructions.

Publisher: Hungry Minds
Contact: IDG Books India (P) Ltd
Phone: 011-3260877, 3270877
Fax: 011-3275895
E-mail: idgbooks@vsnl.com, hungryminds@vsnl.net
Price: Rs 129
Rating: ♠♠♠⬦⬦

Dreamweaver 4 in an instant

Get familiar with the essentials of Dreamweaver 4 with the help of large screenshots and direct instructions.

Publisher: Hungry Minds
Contact: IDG Books India (P) Ltd
Phone: 011-3260877
Fax: 022-262 3551
E-mail: idgbooks@vsnl.com, hungryminds@vsnl.net
Price: Rs 129
Rating: ♠♠♠⬦⬦

Effective E-mail Communication

This book helps you send out more effective mails, and make more effective use of e-mail as a means of communication. It covers the origins of e-mail, composing effective e-mail messages and more.

Publisher: Dreamtech Press
Contact: IDG Books India (P) Ltd
Phone: 011-3260877, 3270877
Fax: 011-3275895
E-mail: idgbooks@vsnl.com
Price: Rs 99
Rating: ♠♠♠⬦⬦

UNDERCOVER
The right connections

Looking to buy a modem? Agent 001 investigates the relative merits of internal and external modems

Illustration: Mahesh Benkar

The best thing about external modems is that they are easy to disconnect

The market seems to be increasingly biased towards internal modems, which are sold more and recommended more than external modems. So I decided that an investigation was the need of the hour.

Down to the Mumbai by-lanes. The first vendor I approached was an external modem advocate since "they're much easier to install". That's true; the external modem involves nothing more than getting the cable, plugging it in, and turning it on. You won't have to bother with IRQ conflicts, DMA channels, and the likes. But the dealer, on the contrary, had different statistics in his shop. The last 20-odd PCs that he had sold were all installed with internal modems. His explanation: internal modems have broken the psychological barrier of Rs 1,000 and they work reasonably well, so why not?

Internal modems have become extremely cheap of late and are popular with system integrators as they don't add too much to the overall system's cost. Consumers don't have to pay extra for the fancy case and lights. They also save valuable desktop space and there's no need for cables and power cords.

So what kind of internal modems do these integrators recommend and use themselves? I get a view from another shop in Andheri. The vendor says that he stocks only Dax internal 56K models. The reason: they are priced at Rs 650.

AMR modems are available for Rs 350-500, but then you need an AMR slot on your motherboard for them to work. However, these modems are generally not recommended by most dealers.

However, the number of internal modems which had to be replaced was significant, said the vendor. He added that most users were confused when it came to configuring an internal modem, but once configured, it was a piece of cake.

Strangely, I found that the only vendor who staunchly recommended the external modem was someone who had fried a customer's PC! He narrated a freak incident when during a thunderstorm the internal modem conked out and, in the process, destroyed the motherboard and a couple of other PCI devices. Whether the story is true or not is not the point—the fact remains that internal modems are susceptible to freak cases of lightning strikes on local phone lines which can potentially fry the modem as well as the PC. The same could occur with external modems, it's just that the modem would be destroyed, not the PC.

I then moved on to Santa Cruz where a dealer proudly mentions that he's sold quite a few USB modems. He said that USB modems could work on any PC, Mac, and even workstations, as long as a USB port is present. And one doesn't need an external power supply as the USB cable powers the modem. However, the dealer added that these modems have certain issues when it comes to transfer speeds.

Another vendor recommended the US Robotics Message modem which he found the most reliable in terms of speed and connection. This dealer, more inclined towards external modems, said the best thing about them is that they're easy to disconnect. On many occasions the modem simply stops responding and wastes call time. With an internal modem, the only solution is to restart the entire machine (waste more time), while to reset an external modem, all you need to do is turn it off and then switch it on again. The dealer recommended the DFM 560E 56K external modem from D-Link; it gave him the least trouble with driver installation and configuration.

Another vendor in the same area espoused external modems. His reasoning: since they have lights in front, you can tell what's going on. He recommended the internal modems from Creative and said that they were a bit expensive, but that the component quality was high and the brand name respectable. ◨

Modem Hang-ups

Despite the popularity of internal modems there are certain issues that you should be aware of. Internal modems use a sizable amount of CPU time. They also come with a minimum CPU speed requirement and generally cannot be installed on systems with less than 150 MHz processing power.

On occasions, we've found CPU utilisation going as high as 50 per cent on an underpowered machine, which severely impacts the PC's performance. There are some issues with installation too. IRQ conflicts are the primary cause for problems—if you are using an internal modem, try disabling the serial ports to free up some IRQs. Apart from these issues, if you're fairly proficient in installing drivers and solving minor configuration-related problems, then an internal modem is the best and cheapest way to log on to the Internet.

A-List

A listing of the best products in different hardware and software categories

Who's in, who's out? The competition's hot, but only the winners get to this page—a listing of the best performing hardware and software that have been tested till date in different categories.

Every month, at the Digital Media Test & Research Centre, we carry out a series of comparison tests as well as individual product reviews. Based on these tests, the best products have been listed here (*detailed reviews in Digit-Interactive Mindware*). As different products get reviewed over the months, the top products might find themselves slipping out of the charts and replaced by the latest entrants in the market. So, keep your ears sharp and eyes open and keep yourself abreast of the latest cool products.

HARDWARE

Monitors (14 & 15-inch)
Viewsonic E53

+ OSD support
+ No message signal if power cut off
Contact: Roop Technologies
Phone: 022-6631921/2/3/4
Fax: 022-6103919
Price: Rs 8,000

Monitors (17-inch)
ViewSonic PS775
+ Very good image quality
+ Support for high resolution
Contact: Roop Electronics
Phone: 022-6175213
Fax: 022-6103919
Price: Rs 28,000

Monitors (19 & 21-inch)
Samsung 955DF
+ Good build quality
+ Good colour results
– Screen clarity test fades out on corners
Contact: Samsung Electronics India Information & Telecommunication Ltd.
Phone: 011-6322517/8/9
Fax: 011-6932607
Price: Rs 31,000

Graphics card
ASUS V8200 GeForce3 Deluxe
+ Unsurpassed video quality and speed
– Needs a fast CPU to get maximum result
Contact: Mnemonic Systems
Phone: 022-8010871
Fax: 022-8051761
Price: Rs 29,500

Speakers
Creative SoundWorks DTT2500
+ True Dolby Digital-compliant sound
– Too clumsy stand for speakers
Contact: Compuage Infocom
Phone: 022-4913986
Fax: 022-4919069
Price: Rs 28,600

Soundcards
SoundBlaster Live! Platinum 5.1
+ Dolby Digital AC-3 compliant
+ High quality sound processing

Contact: Compuage Infocom
Phone: 022-4913986
Fax: 022-4919069
Price: Rs 14,625

Motherboards
ASUS P4T
+ Fits into any ATX cabinet
+ Good feature list
Contact: Rashi Peripherals
Phone: 022-8260258
Fax: 022-8221012
Price: Rs 15,500

Processors
Pentium 4 - 2 GHz

+ Excellent performance
+ Good packaging
Contact: Ockam Infotech Pvt Ltd
Phone: 022-6330375/6338764
Fax: 022-6347805
Price: Rs 28,000

Hard disks (IDE)
IBM Deskstar IC35L040AVER07-0-41GB
+ Silent
+ Remains cool even during peak performance
Contact: Wales Technologies
Phone: 022-3828100
Fax: 022-3828200
Price: Rs 7,300

CD drives
ASUS CD-S500
+ Good performance
– Slightly inferior build quality
Contact: Rashi Peripherals
Phone: 022-8260258
Fax: 022-8221012
Price: Rs 2,250

CD-RW drives
Plextor PX-W1610TA
+ High write and rewrite speeds
Contact: Zeta Technologies
Phone: 022-4102277
Fax: 022-4102288
Price: Rs 11,500

DVD drives
Aopen 1640 Pro DVD
+ 16x DVD speeds; 512 KB cache
+ Good build quality
– Does not support DMA

Contact: Yogi Comp
Phone: 022-8806582
Fax: 022-8806582
Price: Rs 5,650

Laser Printers
Lexmark Optra M412
+ Good print speeds
– LCD management screen
Contact: T.V.S. Electronics
Phone: 044-2325506

Fax: 044-2327577
Price: Rs 42,995

Inkjet Printers
Epson Stylus Color 880
+ Very quiet; good results
+ Print resolution of 2880 dpi
Contact: Epson India
Phone: 022-8257286
Fax: 022-8267287
Price: Rs 18,000

PCs
Dell Dimension 8100
+ nVidia Geforce3 at work
+ Good build quality and well designed cabinet

Contact: Dell Computers
Phone: 1600338044 Toll free
Phone: 1600338046 Toll Free (Product Specific)
Price: Rs. 98,134/- (varies according to configuration)

Scanners
Epson Perfection 1640SU
+ Transparency unit included as standard accessory
+ Fast image scanning
– Too bulky (4.5 kgs)
Contact: Epson India
Phone: 080-5321266
Fax: 080-5581799
Price: Rs 22,500

Laptops
Nishubuki 1 GHz
+ Attractively priced
- Low end graphics card
Contact: Nishubuki Computer Systems
Phone: 022-5825965

Fax: 022-5379719
Price: Rs 1,19,000

External Storage Devices
IOMEGA 2GB Jaz
+ Very good price per MB; hard-disk-class performance
Contact: Neoteric Infomatique
Phone: 022-4172600
Fax: 022-4163679
Price: Rs 17,300

Handhelds
Compaq iPAQ H3630
+ Very feature packed
+ Powerful processor, multimedia capable
Contact: RADZ Technologies
Phone: 022-3678293/3678297
Fax: 022-3678193
Price: Rs 39,000

MP3 players
Creative NOMAD 2MG
+ Excellent build quality
+ Supports WMA format and upgradeable firmware
- Controls not easily accessible
Contact: Compuage Infocom
Phone: 022-4913986
Fax: 022-4919069
Price: Rs 22,100

Digital cameras
Sony Cybershot DSC-P1
+ Good features
- Limited memory
Contact: Best International

Phone: 022-2611050
Fax: 022-2624795
Email: bestint@vsnl.com
Price: Rs 49,990

Keyboards
Logitech Cordless Freedom Navigator
+ Very comfortable
+ Extensive configuration options
Contact: Rashi Peripherals
Phone: 022-8260258
Fax: 022-8190766
Price: Rs 7,900

Pointing devices
Logitech Cordless Mouse-man Wheel
+ Good accuracy with features; resilient to dirt
+ Many extra function keys
Contact: Rashi Peripherals
Phone: 022-8260258
Fax: 022-8190766
Price: Rs. 4,500

SOFTWARE
Operating systems (Windows)
Windows 2000 Professional
+ Very stable
– Heavy on system requirements
Contact: Integrated Business Solutions
Phone: 022-8214701
Fax: 022-8328240
Price: Rs 8,200

Office suites
Microsoft Office XP
+ Rich features
 – Expensive
Contact: Microsoft (India)
Phone: 011-6294600
Price: Rs 19,250

Page layout
Adobe InDesign 1.5.2

+ Intuitive Interface
+ Supports layers, masking, gradient and text on path
Contact: Adobe Systems India
Phone: 0118-4532026
Fax: 0118-4532010
Price: Rs 42,946

Operating systems (Linux)
SuSE Linux 7.2
+ Simple to install
+ Many bundled applications
+ Customisable interface
Contact: G. T. Enterprises
Phone: 080-6606093

Fax: 080-6671407
Price: Rs 3,000

Web authoring
Macromedia Dreamweaver4 ver.4.0
+ Extensive feature support
+ Integrates with other packages
- Intimidating for first time user
Contact: Wipro Infotech Enterprise
Phone: 080-8440011
Fax: 080-8440187
Price: Rs 14,250

Firewalls
ZoneAlarm Pro 2.6
+ Good performance
– No protection against ActiveX controls
Contact: www.zonelabs.com
Price: Rs 2,000 (approx)

Image editing software
Adobe Photoshop 6.01

+ Inclusion of vector shapes
+ Layers can be grouped and coloured for easier identification of images
- Too resource hungry
Contact: Adobe Systems India
Phone: 0118-4532026
Fax: 0118-4532010
Price: Rs. 39,456

Voice recognition
Dragon NaturallySpeaking v5.0 (Preferred Edition)
+ Impressive speech recognition
 – High on system requirements
Contact: HCL Infosystems
Phone: 011-4526518
Fax: 011-4526579
Price: Rs 17,995

Accounting software
FACT 1.90
+ Exhaustive feature list
– No security for database
Contact: Vedika Software
Phone: 022-5006490
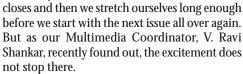**Fax:** 033-2400824
Price: Rs 14,500

I am an **Indian**

A midnight brush with a law keeper and an exposé on the shenanigans of the 'news makers'

For us at the editorial desk at Digit, finding the right stories, testing the latest in digital technology or finding the right software for the CD month after month is an exciting adventure. An adventure that would start early every month with long brainstorming sessions, chats, meetings, interviews, references and downloads. The stories and reviews would then flow into the copydesk for their master strokes (strikes) before we are ready to go to print. There would be heated debates, exciting discussions, flashes of inspiration and, well, a few goof ups here and there. After that, there is a big sigh of relief on the day the issue closes and then we stretch ourselves long enough before we start with the next issue all over again. But as our Multimedia Coordinator, V. Ravi Shankar, recently found out, the excitement does not stop there.

Illustration: Mahesh Benkar

It was late one evening towards the end of the month, when Akhilesh, our Head of Logistics/Distribution and Ravi decided to hop into an autorickshaw and supervise the dispatch of Digit to the various points in town from the printer. They landed right in the middle of the action with copies being printed, bound, packed, labelled and loaded into waiting tempo vans. In an hour the vans were ready to move with Akhilesh and Ravi in the driver's cabin.

It was well past midnight when the vans cleared the Octroi posts in New Bombay and wended their way into town. Just as they entered Mumbai, a cop stopped the vans and walked towards them waving his torch.

He checked the documents that the driver produced. He looked unconvinced. "Packet *Kholke Dikhao*," (Open the packets) he ordered. Akhilesh and Ravi dutifully got out and dug out a brand new copy of our Cool Technology magazine for the cop's benefit. A big smile broke across his face. "Film magazine *hai kya*?," (Is this a film magazine?) he asked staring at the female model on the cover. It took Akhilesh and Ravi a while to explain to him that Digit was actually a 'campooter' magazine. He flipped the pages and seemed convinced. He let them go and they boarded the tempo with a sigh of relief. But the cop still had a quizzical look on his face and when they were ready to wave him a friendly good night, he asked, "*Phoren hai kya*?" (Is it foreign?). With a dash of pride, Akhilesh and Ravi replied, "No. Indian."

Aaj ki Taazaa khabar...

One of the ways we stay up on our tech toes is through newsletters created and circulated internally by the team. But with most things Digit, these too are filled with 'attitude'. See for yourself…

Hi folks,
Nothing exciting happened today. In other non events that could be called 'news' comes SLUGBOT. No, it's not a new botpack for CS, but a robot that hunts over hundred slugs an hour.
Your newsletter for the day…

Hi,
The e-mail celebrates its 30th birthday as I send this mail. It's old now but comes to you everyday with a new charming feature, a new mail which would make your day. With tech takes like this e-mail has a long way to go… Lets sing the song, gang and wish the e-mail a very happy birthday.

(Anyone ordering cakes from Monginis? hehehe *ye pet maange* more ;-))

Hi folks,
Your Technology take, your Tech lubing, a fresh serving of low cholesterol, fat-free hi-fibre tech tidbits!

Hi Folks,
I'm in no mood for inane banter here, and luckily for me, a lot has happened over the weekend. The headlines: Gates still the richest man in the world. Comes as no surprise.

Hi Folks,
Our 'old' pal Patty [Anil Patrick] is infected with Nimda (no not his PC, it's he who is infected, lol) and retired from the NL service. Now the NL is gonna be crisper and better as in the interest of the *Junta*, I am compiling the NLs, starting today.

Seen these new movies?

- *Java waale job le jayenge*
- *Aao chat karein*
- *Programmer no. 1*
- *Memory aur hard disk*
- *H1 ko aane do*
- *Mouse ka gulam*
- *Skill apna apna*
- *Hum aapke memory mein rehte hain*
- *Do processor barah terminal*
- *Password Apna Apna*
- *Hum Hain Programmer Oracle ke*
- *Ek programmer do body shopper*
- *H1 se Citizenship tak*
- *Mera code chal gaya*
- *Har Din jo mail Karega*
- *Mera Resume Kora kagaj*
- *Khel Virus ka*
- *Programmer bane Bodyshopper*
- *Network Ke Us Paar*
- *Aayi Production Ki Bela*
- *Do Gateways*
- *Debugging koi Khel nahin*
- *Helpdesk ki Aatma (Ramasay bandhu ki Horror film)*
- *Mera naam developer*
- *Kaho na Bench hai*
- *Crash kar di aaapne*
- *Pati patni aur computer*
- *Deployment ki raat*
- *Hum WALK-IN ja chuke sanam*
- *Jis Desh mein Bill(gates) rehtaa Hai*
- *Hum To US jaayega*
- *Aa ab KUCH KAAM kare*

Contributed by: Deepak Dhingra

Your chance to BACKBYTE!

Highlight the lighter side of computing. Mail your contributions to Backbyte
Digit, Plot D-222/2,
TTC Industrial Area, MIDC,
Shirvane, Nerul,
Navi Mumbai 400 706
or send e-mail to
backbyte@jasubhai.com

Technology explains modern art

If appreciating modern art is a problem for you, then you'll definitely identify with this cartoon!
Contributed by: Anup Rungta, via e-mail

New way to copy Word?

Contributed by: Ankur Raheja, via e-mail

Readers Rants

Copying tracks? Don't be stupid!

All you audio buffs out there will agree that CD ripping software is the next best thing since Napster went out of
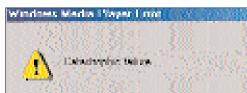
service. But a lot of people won't agree with this point of view, especially the music lables and stars. And Shania Twain seems to be telling one of our readers here exactly what she thinks as he tries to copy one of her popular tracks!
Contributed by: Colin D'mello, via e-mail

How Ping Pong came along

While we may all go gaga over *Counter Strike* today, we still must pay homage to the game that made it big out there before all others. Nolan Bushnell is the man who created the video game version of Ping Pong, and in order to market it, set up a small company whose name is a polite samurai warning to his opponent before attacking: Atari!
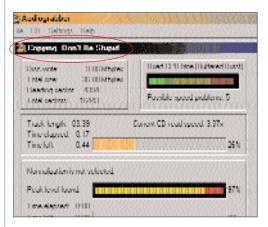
While Ping Pong made it really big and even managed to knock out the then favourite, Pinball, it wasn't exactly the first game that Bushnell created. In 1971 Bushnell and an associate created and sold the first coin operated game called *Computer Space*. But the game bombed in a big way because players found the game too complex, what with its 'thrust', 'fire' and 'rotate' controls! Go figure!

Catastrophe in the making

No one likes coming across an error when you pop in your favourite movie CD and are all set to sit back and enjoy the

rest of the afternoon. But imagine the angst if you were to come across an error message like this one!
Contributed by: George V, via e-mail

Confused with time

Back in school, probably the most difficult task that a lot of us faced was memorising all those historical dates. While that's understandable for us humans, it does seem a bit funny when your PC starts having a problem with dates too!
Contributed by: Hussain, via e-mail