

digit

YOUR TECHNOLOGY NAVIGATOR





5 years ■ 60 issues ■ 10,000+ pages ■ Nearly 200 GB of data ■ 6,00,000+ readers

Digit Unleashes the Power of Five

Special Report

Celebrating its fifth anniversary, India's No. 1 technology magazine *Digit* treats its readers to a special issue that doffs its hat to the most amazing things about technology yet. Featuring:

5 Tech Shopping-Carts

Fancy a laptop with a 20-hour battery? What about a bathtub that immerses you in movies while you immerse yourself in water? A round-up of the coolest tech products that will affect you now and in the future. Divided neatly into five little piles.



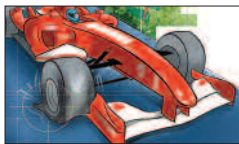
5 Decades of Technology

While the hippies played in the fields and the rockers rocked in the parks, new and wonderful things were happening in technology. *Digit* takes a heady nostalgic trip through the past five decades. On our way, we will witness the birth of BASIC, the first LAN, and the coming of the Internet—among many other things. And what lies in store for us in the remainder of this decade? A look into the Great Big Plan.



5 Technologies That Fell Flat

Ever wondered where Virtual Reality went? And whatever happened to flying cars? Welcome to our guided tour of the great tech-nological graveyard. Today's attractions: great ideas that fell flat on their faces, and ideas that flopped because they were idiotic to begin with. Please, no pushing!



5 of Digit's Tech Desires

Do *Digit* employees dream of binary sheep? We reveal five of the least embarrassing things on our technological wish-lists. Actually, they're not so crazy after all! How long will we need to wait?



5 Experts on Tech

We roped in industry biggies to tell us what they think the future in their respective areas of expertise is going to hold. Read about five facets that are going to refresh the way we see the technological world today.



The Great Cell Phone Shootout

Mobility is in now, and mobile devices are becoming increasingly convergent. We put the cells and smartphones of today under our microscope and bring you the low-down on the best and the rest!



Now you don't need to go to the theatres!

10 All Time Classic Movies on DVD

Dressed To Kill (1946)

Dressed to Kill puts Sherlock Holmes and the devoted but bumbling Dr Watson on the trail of a ruthless gang intent on securing—by hook, crook or thrown dagger—three seemingly innocuous music boxes.



The Last Man on Earth

Based on the chilling Richard Matheson science fiction classic *I am Legend* and later remade as *The Omega Man* starring Charlton Heston, this classic features Vincent Price as scientist Robert Morgan in a post-apocalyptic nightmare world.



The Kid

The Kid was Charlie Chaplin's first full-length movie. It, more than anything else to that date, made Chaplin a living legend. It took over a year to produce, and was an incredible success for Chaplin.



Superman: Mechanical Monsters

An inventor has built powerful giant robots that can fly like planes and open banks like cans. Of course, Lois Lane gets into trouble with a robot; can Superman rescue her from the inventor's hideout?



Come join the Digit 5th Anniversary Bash!

Gamers' Delight: 30+ Games—Believe It!



Babylon 5: I Have Found Her

IFH (I Have Found Her) is the computer game project maintained by Space Dream Factory. It's a space combat simulator based on the popular Sci-Fi TV show *Babylon 5*.



Halo Zero Full Game

A free fan-made 2D action game based on Bungie and Microsoft Game Studio's *Halo* Franchise.

Prince of Persia 4D

Prince of Persia 4D is an unofficial release of the original *Prince of Persia*, with harder levels and more challenging gameplay. The original *Prince of Persia* was released in 1990 and became extremely popular over the years. With its Arabian theme and realistic, unex-



pected surprises and puzzles, some think this is one of the best games ever made!

Microsoft Monster Truck Madness 2

There's a whole new mud bath waiting for you! The question is... ARE YOU READY TO RUMBLE?! *Monster Truck Madness 2* combines outrageous attitude, unrestrained racing and real monster trucks to provide a fun and exhilarating offroad driving experience across rugged terrain.



LINUX GAMES

Penguin Passionates can Play too!

Cube

An open source multiplayer and single-player first person shooter game built on an entirely new and very unconventional engine. Cube is a landscape-style engine that pretends to be an indoor FPS engine.



It is used as an ordinary car racing game, an AI racing game and as a research platform.

TORCS

TORCS, The Open Racing Car Simulator, is a highly portable multi-platform car racing simulation.



D2X-XL

An OpenGL mod for the classic 3D game *Descent 2*.



Maulik Jasubhai Publisher

Publisher's Note

Some people ask, why this devotion to technology? It's not an idle question, and I shall attempt to answer it. First, India is a developing country, but when it comes to IT, we have a global presence. We're a force in the global arena, respected for our prowess, and other countries are suddenly trying to emulate us. Within the country, as open source percolates, as the digital divide is bridged, with people taking to computing in regional languages, with IT awareness spreading to the remotest corners of the country, with prices coming down sharply—

The Power Of Five

I

t's clear enough from the packaging of what you just bought, but let me state it formally: *Digit* this month celebrates its Fifth Anniversary. It's been five exciting years of keeping you, our readers, in touch with how the technology saga has been progressing; Five great years of infotainment and innovation; Five fabulous years of focusing on the present and looking fondly to the future.

What's special about Five? Man has always given the number Five special treatment: think of the five-pointed star, or the pentagram, which wards off evil. Or of the five elements. Or of the five virtues. Coming down to earth, five translates to half a decade, so we can now speak about ourselves in terms of decades rather than merely months and years. Half a decade is a lot in Internet time, as you're all too aware! Then there's the power of your hand with its five fingers: from what I can see, the trend has been towards putting everything in your hands. Whether it's figuratively—as in control and ease of use—or literally, as in mobile devices. I've been fascinated by how everything is shrinking.

When we started off in 2001, we knew we'd be do well. Becoming India's Number One Technology magazine by far has validated our confidence. We think we've been ably doing our bit to promote interest in information technology in India. Sure, we talk a lot about technology in the personal sphere, but that's where it begins: as an interest, as a hobby, as an obsession—and then comes the drive to, for example, base a career around it. Yes, we believe we've been changing lives over the past five years. Letters from you, our readers, are testimony to this.

who knows what the IT landscape will be five years hence? Sure, we are yet to improve the infrastructure in our cities, but when the world talks about India, it's now about our growth as an IT force, about our place in the sun.

Second, technology is what is propelling us into the future, a point I do not need to belabour. Tech brands are competing with traditional ones in terms of popularity. Tech products and developments top peoples' wish-lists. "Progress" almost *means* "technological progress."

Finally, it's technology that connects us to the world. We may be a developing country, but when someone reads a blog post of yours, your national economic situation does not show. What shows is how much we're in step with the rest of the world. We're an integral part of the global community—and I must stress that this was not the case earlier—the Internet, that great leveller, has enabled this transition. And we adapted.

And so, as much as we're celebrating the five years that have gone by, we're eagerly anticipating what coming years will bring. We don't need to make a New Year resolution, as it were: we'll continue doing what we've been doing. I believe we've been doing it well.

Enjoy this, our Five-Star issue—and stay tuned for much more to come!

Editorial

Virtually Vocal

FIRST, PARDON ME for coming back to the topic of blogs, something about which I wrote in this space last month. But have you wondered why blogging, podcasting or even vlogging is such a rage today? All of a sudden, so many of us have the opportunity to be broadcasters or publishers, and have discovered the requisite talent in ourselves—resulting in an outpouring of thoughts. A new breed of blogaholics is writing five to ten times a day in their corners on the Web, while others have made such activity their sole profession.

Some well-known blogs are now being published as novels, and aim to be bestsellers in the USA. Jessica Cutler, a former Capitol Hill intern, traded inside secrets of her workplace on her blog *Washingtonienne*, and now it's a sought-after novel.

To me, this trend seems to be a reflection of a certain shift—from where the inherently introverted are expected to be submissive, to where anyone can afford to be individualistic, vocal and expressive. Private diaries in the days of ink-pens were shrouded in secrecy and a sense of privacy revolved around them, but blogs today carry an invitation to be read and criticised. So what has changed?

The Internet is the great leveller, as our publisher has said in his note. “*Why not me?*” seems to be the general idea. You’re as much a blogger as the next Blogspot or TypePad member. Not so in “real” life: in that other world, he or she is better-looking, more sociable, more chatty, more extroverted. His or her views are taken more seriously just because, for example, he or she is more articulate. We’re witnessing the great levelling act—where it does *not* matter whether you’re pretty or ugly, introverted or not. This reminds me of marriages that begin as online relationships: the focus is hardly on looks, as it is in the case of the traditional matrimonial proceedings. When the couple finally meet offline, looks take a backseat.

Second, everyone has this need to be rated, to be appreciated, to be *appraised*. Witness such sites as *ratepeople.com*, where people put up their photographs and wait to be rated on a scale of five, ostensibly by members of the opposite sex. Now with blogs, you can be sized up—from behind the comfort, in most cases, of a nickname. There’s also the need for acceptance by society: the Net is the new



Deepak Ajwani Associate Editor

“With blogs, you can be sized up—from behind the comfort, in most cases, of a nickname”

society, and blogs are the platform where one gauges how worthy one is. The introverts amongst us now have a level playing field, so to speak. It had to happen: way before blogs, the socially maladjusted had taken to the Net.

Most interesting, perhaps, is the need and capability to be a part of it all. To have an established voice on the Net is a matter of pride, not least because it can be accessed from anywhere at any time.

Virtual reality—as in the comical goggles—might have failed to deliver, as we speak about in this issue, but even apart from MMORPGs, the Net *is* virtual. It’s a reflection of *every* aspect of our brick-and-mortar lives, a more ideal expression; a new playground where it’s easier to arrive. The traditional shackles have been shed.

A handwritten signature in black ink, appearing to read 'D. Ajwani'.

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Tell Us What You Feel About Digit

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



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iMate Jasjar	Nokia 6260	Sony Ericsson W550i
LG B2050	Nokia 6681	Sony Ericsson K750i
LG B2070	Nokia N70	Sony Ericsson W800i
LG C2500	Nokia N91	Sony Ericsson J100i
LG S5200	Nokia 370	Sony-Ericsson J220i
Motorola C139	Nokia 7710	Sony-Ericsson J230i
Motorola L6	Nokia 9300	
Motorola E398	Nokia 7360	
Motorola PEBL	Nokia 9300i	
Motorola RAZR V3i	Q2 Atom	
Motorola L7	Palm Treo 650	
Nokia 2600	Philips 768	
Nokia 1600	Phillips Xenium 9@9e	
Nokia 3120	Samsung X620	
Nokia 6030	Samsung D600	
Nokia 6020	Samsung X660	
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		ELITE PRIVACY
		6.Tech-Com DSC-512X
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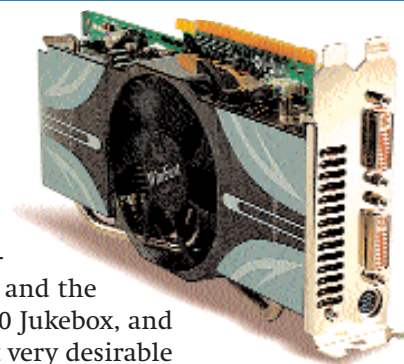
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GAMES



Babylon 5: I Have Found Her
BIFH (I've Found Her) is the computer game project maintained by Space Dream Factory. It is a space combat simulator based on the popular Sci-Fi TV show Babylon 5



Eternal
Its story is a direct, unofficial sequel to Marathon Infinity, the last installment of the original Marathon trilogy

S.W.I.N.E

S.W.I.N.E. is a real-time tactical strategy game in which you must carry out extremely varied missions while taking advantage of the terrain and your units' special abilities



SMALL GAMES

Gruntz

This puzzle game from Monolith begins as the Gruntz are whisked off to another realm. These Gruntz must venture through this new world to gather missing pieces of the Warp Stone to return home



- Halo Zero Full Game
- Franchise
- Super Mario Epic
- Liero Xtrem
- Moon Struck
- Prince of Persia 4D
- Room War
- Santa Slayer
- Stargunner
- Zelda Classic
- Apprentice
- Star Wars: The Battle of Endor
- Super Mario: Blue Twilight DX
- Blooby Volley
- Chacal-3D
- Code Red - Battle for Earth
- Half-Life 2 Total Mayhem



EYE CANDY

SKINS

- Winamp Skins
- Windows Media Player Skins
- Windows Media Bonus Pack for Windows XP
- Full Installation



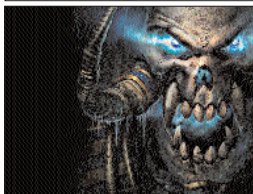
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- Yahoo! Widget Engine 3.1.2
- Yahoo! Widgets

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More than 280 MB of Wallpapers



AUDIO VISUAL

FREE MOVIES

The Kid

The Kid was Charlie Chaplin's first full-length movie. It, more than anything else to that date, made Chaplin a living legend. It took over a year to produce, and was an incredible success for Chaplin



Dressed To Kill

Dressed to Kill puts Sherlock Holmes and the devoted but bumbling Dr. Watson on the trail of a ruthless gang intent on securing - by hook, crook or thrown dagger - three seemingly innocuous music boxes



- Little Lulu: Bored of Education (1946)
- Popeye the Sailor Meets Ali Baba's Forty Thieves (1937)
- Sherlock Holmes and the Secret Weapon (1943)
- Superman (1941)
- Superman: The Arctic Giant
- Superman: Mechanical Monsters
- The Last Man on Earth (1964)
- The Man Who Knew Too Much (1934)

SHORT FILMS

- Core Wars
- Quake done Quick With a Vengeance (2000)
- The Matrix (Halo Remix)
- Star Wars TV Trailer
- Nostalgia

FREE Ebooks



- Asynchronous JavaScript Technology and XML (AJAX) With Java 2 Platform, Enterprise Edition
- Introduction to the Java EE 5 Platform
- The Basics of GlassFish
- Project Gutenberg August 2003 CD



LINUX

TOOLS

Sox

Sox is a program for converting sound files between several formats such as CD audio, .au, .voc and .wav. It can also apply sound effects to the audio file



- DivX Video 5.0.5
- KDE Multimedia 3.1.4
- Mp3blaster
- PyKaraoke 0.4.1
- RipperX
- Sing-Along Disk Player
- Xine Lib: 1 - rc3a
- Xmms 1.2.8

LINUX GAMES

TORCS

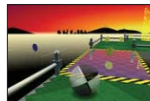


TORCS, The Open Racing Car Simulator, is a highly portable multi platform car racing simulation. It is used as ordinary car racing game, as AI racing game and as research platform

- HCube
- D2X-XL
- gTTron
- Racer

Neverball

In the grand tradition of Marble Madness and Super Monkey Ball, Neverball has you guide a rolling ball through dangerous territory. Balance on narrow bridges, navigate mazes, ride moving platforms, and dodge pushers and showers to get to the goal



TOOLS

A/V EDITORS

Mixxx 1.4.2

Mixxx is designed for DJ'ing for both professional and semi-professional users. Mixxx was started in early 2001 as one of the first digital DJ systems

Musik Magic Mixer 1.5c

The MusicMagic Mixer is the ultimate music library power tool-digital signal processing is used to automatically perform acoustic analysis of the sounds in your music collection

- Aestesis All Starz 2.0
- Audiograber 1.83
- EXPStudio Audio Editor Free 3.95
- Free CD to MP3 Converter 1.8 build 20051129
- Free iPod Video Converter 1.32 build 852
- Id3ToFolder 2.2
- MadTracker 2.6.1
- MP3 Recorder
- Switch 1.05
- Vjamm Blueprint 1.0.2
- VP7 Personal Edition 7.0
- WavePad Audio Editor 2.10
- Zortam Mp3 Media Studio 6.05

MEDIA PLAYERS

- Ace Player 1.28
- AdvancedDVDPlayer 1.37
- All-in-One DVD Player 2.4.8
- Artisan DVD/DivX Player 3.1
- Ashampoo Media Player 2.03 build 2
- Avant DVD/DivX Player 2.03
- AVI Movie Player 5
- Flash Movie Player 1.4
- FLV Player 1.3.3
- Google Video Player 1.0.1.0 automatically.
- Got All! Media 5.0.2
- JetAudio 6.2.6 Basic
- Manny's Simple Music Machine 1.02
- Media Player Simple Classic 6.4.9
- Music Manager
- MusicCubeOne 1.31.6
- musikCube 1 RC2
- Pulse MP 1.2
- QuickTime 7.0.2 + iTunes
- Quintessential Player 4.51
- RealPlayer 10
- Winamp 5.21
- Windows Media Player 10
- Zoom Player Standard 4.03



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Explore the endless possibilities of designing eye-catching web pages with WebPlus 6

**F-Prot Antivirus**

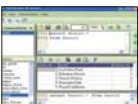
F-Prot Antivirus for Linux Workstations is designed for workstations running the Linux operating system

Parallels Workstation for Linux 2.0

Parallels Workstation is the most powerful, easiest-to-use, cost-effective desktop virtualization solution available today

**DEVELOPER TOOLS**

- DB Explorer 1.0.1
- DrJava
- Gel version 1.0 RC39
- Plugins for Gel
- Gentee Studio 2.1
- Hyper Care 1.01
- Java Code Export 1
- Menu Creator 0.5.0
- SmallSQL Database 0.13
- SourceMonitor 2.1.8.9



- Database Browser 2.0.2
- SQL Dumper 1.1.3
- Very Simple Database Inspector 1.84
- Vide
- Xotics 4.1.23

LINUX

- Advanced Power Management
- Daemon 3.0.2
- Guarddog
- Kdevelop 3.2.0
- KTranslator 1.0.1



- LabPlot 1.5.0
- MZL & Novatech Traffic Statistics
- Linux Server 1.2.0.0
- unRAR 2.71
- SynchronEX File Sync/FTP/DAV for Linux 3.0.7.1

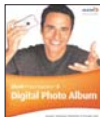
CUTE

**DrawPlus 4**

DrawPlus 4 is the user-friendly drawing program that opens up a whole new creative world

**Ulead Photo Explorer 8.5**

It's the all-in-one solution for owners of digital cameras, camcorders, scanners or anyone who wants to make it easier to keep track of their media

**MULTIMEDIA**

- Audacity 1.2.4b
- Audio Files GDS Indexer 1.0
- AudioShell 1.2
- Inkscape 0.43
- Photo Manager
- PhotoPlus 6
- Tag Support Plugin for Media Player 1
- Cool Edit Pro 2.1
- DVD and CD Cover Print 3.4.2
- FlashDigger Plus 3.7.1.94
- Photo Pos Pro image editor 1.27
- Virtual DJ 3.4

INTERNET

- Abtusion Protector Personal Edition 1.1
- Antispam Scanner 1.1
- GhostWall v1.150
- Google SketchUp
- Internet Explorer 7 Beta 2
- Messenger Plus! 3.63
- PSST
- SoftPerfect Personal Firewall
- SpywareGuard 2.2
- X-IM
- ewido anti-malware

SYSTEM

- AntiVir Personal Edition
- BitDefender Antivirus
- Contig
- Dasher Stable Release (4.0)
- Font Viewer 1.2
- Notepad2
- PageDefrag
- Touch Typing
- Quick File Rename
- Recover My Email
- R-Word Demo
- Zip Repair

ESSENTIALS

- .NET Framework 1.1
- Foxit Reader
- Avast Home Edition 4.7
- Digit Software Archive 2006 Beta
- Irfan View 3.98
- K-Lite Mega Codec Pack 1.53
- Opera 8.54
- Spybot Search & Destroy 1.4
- VLC Media Player 0.8.4

**ThinkFree Office 3**

ThinkFree Office is a simple but powerful application suite that includes word processing, spreadsheet and presentation graphics programs

PDF995 7.75

Create PDF files from any application by simply selecting the print command

**Yeah Write**

Yeah Write has an unusual approach to creating documents: it sports a fill-in-the-blanks interface, saves files automatically without users having to know the file names of the files, etc

**PRODUCTIVITY TOOLS**

- CrawlTrack 1.3.1
- Jarte Word Processor
- NeedForTrade Studio Lite 1
- Paper Label Maker 1.06
- SimpleOCR 3
- TopSales Basic 5
- NetWorx
- SoftPerfect Network Protocol Analyzer 2.3
- Universal Document Converter 4.1

**MOBILE APPS**

- FMA 2.0
- Nokia PC Suite 6.8 release 21
- Wapalizer! WAP Development kit 0.75
- Database Viewer 3.1
- Magicbyte DVD Ripper Deluxe
- Mobile Media Master 1.5
- Psiloc Mini GPS

SMALL GAMES**Alphattack**

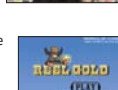
Can you save the planet from the alpha bombs? Defeat the threat before our cities are destroyed!

**Clash N Slash**

Protect your home planet from the endless onslaught of enemy weaponry!

**Sub Commander**

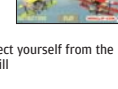
Guide your submarine through the treacherous waters - avoiding the obstacles

**Reel Gold**

Clear each level of gold before the time runs out to move onto the next valley! You can only pickup highlighted gold nuggets

**Hostile Skies**

You're a fighter ace, complete a series of dangerous missions then challenge the evil 'Red Baron' for supremacy of the skies!

**King of the Hill**

Use your castles weapons to protect yourself from the enemy, and become King of the Hill

VIDEOS

- Keeping Up With The Steins



■ Poseidon (2006)

■ X-Men: The Last Stand

Online



By Demand

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

Ulead Photo Explorer 8.5

Size: 23 MB

WebPlus 6

Size: 26 MB



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www.thinkdigit.com

Digit Reader Poll

This Month's Question

What is the actual Broadband speed you get?

- ☐ < 7 KBps
- ☐ 8 to 16 KBps
- ☐ 17 to 32 KBps
- ☐ 33 to 64 KBps
- ☐ above 64 KBps



To vote Log on to www.thinkdigit.com

Last Month's Question

Total: 4,258

How much of a gamer are you?

- 19.3% Computer games aren't for me
- 18.1% I game 1 - 10 hours a week
- 8.24% More like 10 - 20 hours a week
- 6.8% More than 20 hours a week
- 20.1% Hey, I don't count!
- 27.5% I'm gaming all the time!

taste technology at www.thinkdigit.com

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[thinkdigit.com](http://www.thinkdigit.com)

Digit Forum

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Thank you.

Welcome to the Digit Forum.

If this is your first visit, be sure to check out the [FAQ](#) by clicking the link above. You may have to [register](#) register link above to proceed. To start viewing messages, select the forum that you want to visit from the

Forum	Last Post
Interact Talk to Team Digit here, and make demands for software / magazine content.	
By Demand (3 Viewing) Here you get to demand software / articles to be included in the Digit magazine and CD/DVD	[By Demand] Digit 3 by rohan Today
Feedback Interact with Digit, give us feedback on our work (articles/CD/DVD contents)	Suggestion Box by Vishal Gupta Today
News If it's news, it goes here	
Technology News (1 Viewing) News from the world of technology that our members stumble across. NOTE: Sources to be mentioned at the beginning of each post.	Opera 9 Beta 2 by Netjunkie Today
Random News (2 Viewing) Non-technology news that you feel members should know about. NOTE: Sources to be mentioned at the beginning of each post.	"LOST" - soon to be by Darth Vader Today
In General... (12 Viewing) Anything that doesn't fit into the other sections—from upcoming technology to personal anecdotes—should be posted here	Applying Online by QwertyManiac Today
Across The Board	
Open Source (1 Viewing) A place where you can talk to like-minded people about the fastest growing software movement today!	Connecting to Intern by QwertyManiac Today
QnA (5 Viewing)	How to Display RSS f

THERE'S SOMETHING FOR EVERYONE ON THE DIGIT FORUM

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We've just upgraded the forum to offer the best user experience possible. 10,000+ members and counting...

Member Reviews

Reviews (3 Viewing)

A forum to discuss/review ONLY software and hardware products. All your queries about the same go into Respective Troubleshooting Sections and QnA. Your views and first-hand experiences on any software or hardware from OSes to Graphics cards are all welcome here. Note: The views/reviews contained within this section are purely the opinions of the posters

Tutorials (2 Viewing)

This section offers tutorials and How to's on just about anything related to computers and IT. Note: All tutorials are courtesy the posters and not verified by Digit

Mobile Monsters (9 Viewing)

All threads related to cell phones, laptops, PDAs, MP3 players, and other assorted mobile gizmos... Strictly for the geeky!

Gaming

Gamerz (3 Viewing)

This section is dedicated to hardcore gamers. Gaming news, reviews, walkthroughs, easter eggs, cheats, etc., should be posted here. Note: All views/reviews within are the opinions of the respective posters only

Java To Go Open Source

Java will be going open source, Sun's new vice president of Software, Rich Green, announced at the 2006 JavaOne Conference in San Francisco. "It is not a question of whether," he said, "but a question of how." As for "when," Green could only say, "as soon as possible."



Word To Have Blogging Support

The forthcoming version of Microsoft Word will allow users to publish blog postings directly from the application. Bloggers who currently use Word to draft their posts experience trouble when they paste the text into online blog publishing tools because Word uses non-standard HTML tags.



Enter

VJ Sophia
(Sophia Chaudhry)
Singer/VJ

Sophia has had our attention as a VJ and singer for some time now. An alumnus of the London School of Economics, she is fluent in French and Italian, and also sings in Arabic and Spanish. She sang the backing vocals for Alisha Chinai's *Made in India* and recently acted in the movie *Shaadi No. 1*.

What does technology mean to you?

I would be understating facts if I called technology "simply amazing." It is so much more than that. The leaps and bounds we have made with technology aiding us is testimony to its usefulness.

Which of your gadgets are you inseparable from?

I carry my Panasonic portable DVD everywhere with me and, of course, my iPod mini is my constant companion too.

Any instance where technology has come to your rescue?

As a single working girl in a city, the cell phone is a definite advantage when I have to keep my family informed about my safety, as I discovered during the floods in Mumbai last year. It similarly must have helped reduce panic for others a little.

What would you say are the limitations of technology?

With technology comes power but not many use it properly. Camera phones, although a breakthrough invention, can sometimes be a nuisance. The brilliance of technology is marred by its misuse.

THE RACE IS GOING AWRY

Do The Poor Want PCs Or Phones?

There's a race on to provide cheap PCs to the world's poor, but something seems to be going wrong. Mid-May, a group of technology leaders from developing countries—delegates at the World Congress on Information Technology (WCIT) in Austin, Texas—criticised AMD, Intel and MIT for not co-operating in their efforts to create low-cost computers. They also added that they'd prefer to see the likes of Nokia and Motorola bringing in cell phones to their countries before PCs. At WCIT, AMD, Intel and MIT all made pitches about why their low-cost computers would get the job done better than the others'.

AMD gave each WCIT attendee a PIC (Personal Internet Communicator). This Internet enabler has a no-frills version of Windows, and a thick plastic casing for protection. Intel's CEO Paul Otellini unveiled the Eduwise laptop: the chip giant believes the cheap computers should have full OSes as well as most of the cutting-edge technology found on more expensive computers. The Eduwise costs more than

AMD's PIC, but it's faster. MIT's Nicholas Negroponte made an appearance before the WCIT crowd to make his pitch for the now-famous hand-cranked \$100 laptop, pictured below.

"When I listen to the multiple presentations here, I wonder... are they talking to each other in terms of how they can collaborate," said Theogene Rudasingwa, a technology expert from Rwanda. "It occurred to me that probably they are not... We need to do a little more in seeing how we can collaborate... How can we put all these things together into some kind of sustainable effort that begins to have an impact on people in the developing world."

"We are also worried whether AMD, Intel and the MIT professor are talking to each other," said Ibrahim Kaliisa, special advisor on technology to the president of Uganda. "It can be about moral obligation here, but it

also must make business sense for these companies. Maybe that is why they are not talking to each other."

Co-operation seems unlikely given that AMD and Intel don't see their low-cost PC efforts as charity projects, but as seeding potential growth markets with their brands.

But are PCs what the developing world wants?

"I think we need to raise the first question, which is, should we have a PC-oriented view on communications," said C K Prahalad, a business professor and author at the University of Michigan. Prahalad backed the idea that there will be more growth and interest around cell phones in the coming years in developing nations. Companies, according to Prahalad, should concentrate on creating affordable service plans, as well as devices that provide PC-like tools.

Teresa Peters, a senior program officer at the Bill and Melinda Gates Foundation, said in reference to the cheap PCs:

"At the individual level, the people on the ground aren't clamouring for these kinds of devices." In contrast, they want cell phones, she said.

Even if it is a PC the people want, the price point is a topic of much debate—\$400, say, is too expensive, and no-one wants a barely-usable \$100 device. Will the





Security Watch

Vulnerabilities In Word

The Problem

Security Experts have warned that a vulnerability in Microsoft Word XP and 2003 is actively being exploited, in a targeted "zero-day" attack using a combination of a Trojan and a Backdoor. (A zero-day exploit is one that takes advantage of a vulnerability on the same day that the vulnerability becomes generally known.)

Trojan Dropper.MSWord.1Table.bd spreads via targeted e-mails identified to be sent from China and Taiwan. Once you try to download and try to open the infected file, it shows an error message. If you click Retry, the malicious file is immediately replaced by a clean one. By that time, Trojan-Dropper would have already slipped into your computer. It then goes ahead and downloads Backdoor.Win32.Gusi. This Backdoor can open a direct channel that connects to the remote attacker suspected to be in China, to receive and execute commands. With its rootkit capability, this Backdoor can smartly hide itself.

Well-known security firm Secunia has issued a rare "Extremely Critical" advisory for this vulnerability.

The Solution

At the time of writing, Microsoft was aware of the problem, but had not released a patch yet. By the time you read this, a patch might have been released; visit www.microsoft.com/athome/security/update/bulletins/default.mspx. If there's no patch available yet, *do not* open untrusted Office documents.

whole "provide-the-world's-poor-with-cheap-laptops" thing flop after all? Is there any research being done on what exactly the poor in developing countries want? There is much debate and much talk over the issue. Some ask why a kid in, say, rural Rwanda, would even want a laptop. Others talk of distributing PCs as a sure-shot way of bridging the digital divide. With three major players now in the fray, it's getting interesting.

WILL IT BE GOOD ENOUGH?

Vista To Have Inbuilt Security

According to a recent analyst report, Windows Vista will include security features that will make it unnecessary to install third-party anti-spyware and firewall software. This means Windows will be more secure, but it will significantly impact the \$3.6 billion (Rs 17,000 crore) market for Windows security products.

The anti-virus market, though, will not be affected: Vista will not ship with anti-virus software.

Microsoft has plans to sell its own anti-virus software—Windows Live OneCare—separately. OneCare will be available starting this month.

The impact on the anti-spyware and software firewall market will depend on how good these features in Vista are. As of now, in Windows XP, many believe the inbuilt firewall isn't quite good enough—and third-party firewalls are often recommended.

However, sources say that the new Windows Firewall, as well as Windows Defender—the anti-spyware in Vista—will be good enough for most users.

The enhanced features in Vista will mean better security, but according to Andrew Jaquith, a Yankee Group analyst, the security features mean upgrading won't be easy. "Vista



Illustrations Harsho Mohan Chatteraj

HOT

Google

A poll conducted in the UK of nearly 3,000 consumers has put Google as the most-loved brand. The poll included a wide range of consumer brands such as Coke and Pepsi, as well as supermarket chains.



eBay

OK, this might be UK-centric, but eBay stood at fourth position in the same poll, having also been beaten by Tesco and Nokia.

The British happen to be less likely than Americans to shop online.

will dramatically improve the security for Windows users, but they have some execution and usability challenges," Jaquith said. "It is clear as day that Vista is going to really annoy users." This is because of features such as User Account Control, which will be enabled by default, and which will let users run the OS with fewer privileges. The intent here is to prevent malware from taking over PCs, but Jaquith says, "Although the new security system shows promise, it is far too chatty and annoying."

That apart, does the report spell doom for security product vendors (excluding anti-virus makers)? Perhaps not. According to Jaquith,



One Silly Question

"What Business Should Microsoft Be Doing Besides IT?"



"Dentistry!"
Rujutha Deshpande, Mumbai



"Producing movies."
Urvi Desai, Mumbai



"Sending teachers to the moon!"
Divyakshi Motwani, Mumbai



"Making pillows..."
Vijayendra Bhoiv, Mumbai



"The cold-drink business."
Rahul Khatri, Mumbai



The Digital World

A Round-up Of Technology News From Across The Globe

CANADA
In an indication of the menace that the Internet represents to the printed press, CanWest, one of the largest media companies in Canada, ceased print production of *Dose Magazine* on 17 May. It will be continued on the Internet and on cell phones

UNITED STATES
Telephone giant AT&T has plans to offer IPTV service in as many as 20 US markets by year's end. The company is spending \$4.6 billion to make the service available to 19 million homes by the end of 2008

BANGLADESH
The laying of Bangladesh's first submarine fibre-optic cable has recently been completed. It will provide a link with a capacity of 10 Gbps, compared to the current 150 Mbps Internet service providers use

SOUTH KOREA
A South Korean lawmaker is seeking to draw up a bill to prevent kids from spending too much time playing games online. If the bill is passed, parents of minors will be able to require online game publishers to limit the daily game time of their children

AUSTRALIA
A recent survey found that more people are using the Net to find a partner because it is more convenient than traditional methods. It found that most online romantics are middle-aged and very pressed for time

"Windows security issues will continue to be a permanent fact of life for Microsoft, which means that third parties will always have a rich and robust aftermarket available to them to serve."

Things aren't clear, but Symantec CEO John Thompson said his firm would produce better security products than Microsoft. "We know more about security than they ever will," Thompson said. The Microsoft brand "is synonymous with a lot of things. Security is not one of them." Which we know all too well!

PATENT, WAIT, SUE

Creative Sues Apple Sues Creative

May 15, Creative Labs filed complaints against Apple Computer in the US Federal court and with the US International

Trade Commission, saying Apple's iPods impinge on a Creative Labs' patent for how the iPods "access and display music." The patent Creative is referring to is what Creative's Nomad Jukebox and Zen digital music player are based on. Specifically, the patent covers the user interface for how "songs or pictures are organised, accessed and displayed" on the screen.

That patent is the so-called "Zen Patent," which Creative applied for in 2001 and was awarded in August 2005. The company says it engineered and demonstrated the interface that its own players as well as competing players use—well before the first iPods began shipping.

In the filing with the US International Trade Commission, Creative claimed that the two companies had a licensing agreement by which Apple would have access to Creative's source code for its Nomad Jukebox, and that Apple's 2001 edition of the iTunes software on updated 2001 Macintosh computers



Three Incredibly Useful Sites

Online Access

<http://thinkfree.com>


Thinkfree

This site offers you 1 GB of free storage! It's a boon for those who don't have office packages and yet need to work on documents. The site also allows you to work on such files online using your browser—you can create and edit Microsoft Office-compatible word processing, spreadsheet and presentation files.

www.logmein.com


LogMeIn

Log in to a PC remotely via this site! If you're at home and need to access your office PC, you can—using LogMeIn! The site allows you access to systems behind firewalls and proxies. LogMeIn also provides 128- to 256-bit encryption protection for data and passwords. Remote-control everything! Open files, check e-mail, run programs—all on a faraway computer!

www.box.net


Box

You get a GB of free space here to store your files online. The site allows you to synchronise or back up folders. The most exciting feature here is that it allows you to share files—you can specify the privileges for each folder so only certain users who have also signed up can access them. Several sites offer free storage, but not with so much functionality.



Photograph Sonu Sharma

Each month, *Digit* will carry a caption for a photo. Come up with something funnier, and beat the *Digit* team at their own game! Entries accepted by the 15th of this month.

Beat That!

Digit Caption
"E-Tea!"

Last Month's Winner!

Bhavesh N Momaya
Chalisgaon, Dist. Jalgaon
"The Window-modded PC cabinet"



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

SCJP Sun Certified Programmer for Java 5

by Kathy Sierra & Bert Bates

Published by

WILEY-INDIA



could integrate with Creative's digital media players. Creative alleges that after the agreement, executives from the two companies—including Apple CEO Steve Jobs—had discussions to "explore ways in which the companies could work together. Creative showed Apple several prototype portable digital media players that showed the patented interface"—meaning that Apple just stole the idea.

Creative asked for no less than the US International Trade Commission to bar Apple from importing iPods, iPod nanos, and iPod Minis from its manufacturing operations in China. The company is also asking for monetary damages amounting to triple what the court might find as the damage that Creative has suffered as a result of the patent impingement. (As of April 1, 2006, Apple had sold 50 million iPods.)

Apple reacted by counter-suing Creative in a Wisconsin District Court, alleging that Creative infringes four patents it

holds for digital music players. Apparently, two can play at this game!

But it was Creative who started it, and was that a case of a company patenting something rather general only to sue later? Think about it: it's an *interface* we're talking about. There's nothing special about it: it's a simple, intuitive way to navigate through data. How would Apple let users sort through their MP3s without using the kind of menu it does? And the question everyone is asking is, what took Creative so long to complain?

NET PORN COMPANIES HAPPY

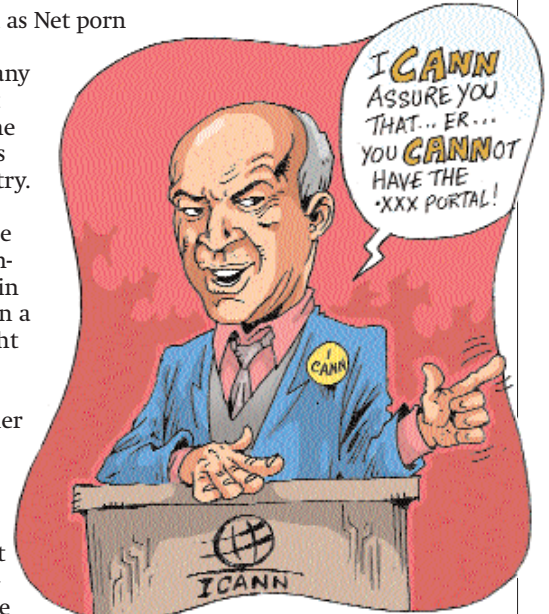
ICANN: No .XXX

ICANN, the body that oversees how Internet names are awarded, has once and for all turned down the proposal to create the .xxx domain for porn sites. The proposal has existed for a long time, and has faced opposition from conservative

groups as well as Net porn companies.

The company that was most pushing for the .xxx domain is the ICM Registry. According to ICM—and some people—a porn-specific domain would result in a virtual red-light area, clearly identifiable, making it easier to prevent children from accessing porn. On the surface of it, it sounds good—there would be no need for porn filters: just block .xxx URLs! But actually, it's much more complicated.

Mukul Krishna, an analyst with Frost & Sullivan, said the porn industry doesn't want a special domain, and that governments don't want it either. "ICANN doesn't want it because it doesn't have the resources," he said, adding that the issue would



probably fade into the background.

ICANN initially decided in favour of adding .xxx to the list of top level domains in June of 2005, but pressure from conservatives and the Bush government led to ICANN revoking its decision. The US Government argues that the creation of a specific porn domain would allow for more porn on the Net.

GENDER

Ashwini vs. Prakhar



BENDERS

What's Up With The Icons?



We took an image of our Desktop, complete with icons and all—and placed it as the background, and then hid the actual icons. Clicking on the “icons” therefore did not open any files or folders! Prakhar turned to us, a little confused. Upon a hint, he changed the desktop background, and realisation dawned: the icons had been hidden! Prakhar searched for how to get them back in **Display Properties > Desktop > Customize Desktop**. Not finding it there, he again right-clicked on the Desktop and checked the menu. He located “Arrange icons by” right at the top, and clicked “Show desktop icons”—there they were, all the icons, safe and sound!



Ashwini quickly realised we'd set up a trick task, and was a little unclear about what she was supposed to do. When clicking on the icons did not change anything on the screen, she immediately changed the desktop background. She came to a stall at this point: even when she did right-click on the screen and a menu popped up, she couldn't immediately discern the correct thing to do to bring the icons back. After some thought, she chose the “Arrange icons by” path and finished the task by clicking “Show desktop icons.” Well done, Ashwini—for time and for not needing a hint!

To analyse it a little, would a .xxx domain actually help reduce porn from proliferating? It probably wouldn't make a difference. Porn site operators will not relinquish their .com and .net domains in exchange for a .xxx domain; for them, having only a .xxx domain would mean easy censorship. They

would probably keep their old domain names and also register the new domains—meaning more money!

As regards the argument that .xxx would help authorities filter lewd material and help parents protect their children, it might be unfounded. Pornographic Web sites are everywhere, operated by

people in different countries. What worldwide law would force adult site operators to relegate themselves to a specialised domain? It seems a near-impossible task.

BEYOND SEARCH

Google Unveils New Tools

Google on 17 May unveiled new products that could turn search into more of a group activity. One of these is Google Co-Op Beta (google.com/coop), where users can save links or label Web pages and make their choices available to others. As an example of how Co-Op might be used, a researcher could tag certain Web pages related to, say, nanotechnology. Anyone who subscribes to that list would be shown the researcher's selections at the top of their search under, say, “developments,” whenever they enter a search term such as “nanotubes.”

Google has already arranged with partners to create pre-selected content, such as health and city guides, and restaurant and movie information. “Going forward, the broader online community will begin building out new topic areas,” Google said in a statement.

Then there's Google Notebook (www.google.com/notebook)—a program that lets users keep text, links, or images from search results

on a scratch pad. The Notebook can be accessed from any computer, and, if the user wants, it can be shared.

Google Trends (www.google.com/trends) lets users see how popular a specific search term is for a given period of time, as a trend line measures billions of searches.

Google also showed off Google Desktop 4 Beta (desktop.google.com), an upgrade to Google Desktop Search, which permits Google Gadgets—little programs—to be more easily downloaded and installed. The Gadgets can show weather reports without users having to open a browser, and can provide games, music, and news. Desktop 4 Beta also can track your searches if you want it to, and then create a personalised home page related to those searches.

Google has said it has “hundreds” of Gadgets ready for download. Developers will be able to create and share Gadgets of their own.

Some observers see Google's new releases as part of the trend towards social networking and user-created material on the Web. “Google is making it easier to create user-generated content,” said Jennifer Simpson, a research associate at the Yankee Group. “Yahoo, Microsoft, and AOL are also all beginning to release user-generated applications or services that have a social context, in search and elsewhere. For search, it's part of a big thrust to increase the value of results to consumers.”

Nintendo Wii

The much-anticipated Nintendo Wii gaming console will soon be hitting the market. Word is that it will be priced “under \$200.” What's special about it? Well, if you're playing tennis, you use the controller as a racquet! The main controller acts like a gamepad when turned on its side. The distance between the controller and console can be ten metres. Four controllers can be used

simultaneously, meaning four players can be part of a game! Two sensors help the console pinpoint the position, orientation and acceleration, in 3D, of the Wii remote. The controller has a speaker and a rumble motor! An expansion slot on the remote allows you to plug in add-ons such as the much-vaunted Nunchuk controller—a classic controller for games that require gamepad functionality.

Buzzword
of the MONTH



MAID

What is MAID?

MAID stands for Massive Array of Idle Disks. This is a technology that promises to provide massive scaleable storage at a very low cost.

Where will it be used?

MAID will be used where there is a need to archive or back up data amounting to terabytes. It will also be used in places where large amount of archived data needs to be accessed quickly.

Who is selling MAID solutions?

Though the concept has been around some time now, only one company—Copan Systems—offers the solution.

What was the alternative to this technology?

The older alternative to MAID is archiving using a tape drive. There are many drawbacks to tape, the main one being slow access speeds. Also, when a large amount of data in image form has to be stored on a tape drive that has less storage capacity than the image, the image has to be split—which is cumbersome and also takes a lot of time. Sometimes it takes days to access the archived data stored in tapes, discouraging active usage.

How scalable is MAID?

MAID is an array of hard drives combined to work as a single point of storage. Scalability is therefore not an issue. The smallest of Copan's systems is 28 terabytes, and the largest is 200 terabytes. The space used for the largest-capacity array Copan produces is just one square metre, making for space-saving.

Why MAID?

MAID consumes less power and produces less heat, since when the data is not accessed on the hard disks, the disks go into idle mode—making it energy-efficient. MAID allows one to store data in both structured (SQL, MS Access) and unstructured data formats (Word, PowerPoint).

FLASH IN HARD DRIVES

Faster Bootups, Longer Battery Life

Microsoft and Samsung first demonstrated a hard drive with Flash memory about a year ago. This month, they will showcase the technology again in a form they claim will be ready to come to market. The system will be demonstrated at the WinHEC (Windows Hardware Engineering Conference), which started 24 May. However, the OS code that supports the Flash package will only ship with Windows Vista.

The unit that Samsung showed off last year had 128 MB of Flash, which was used to cache startup data and other frequently-accessed information, both to make the loading of the data into RAM faster and to boost laptop battery life.

When Vista arrives, Intel will be promoting its own, related technique, which incorporates the Flash on an add-in card rather than putting it in the hard drive. This approach allows the Flash to be replaced easily and will keep hard drive prices down, but will raise the system price. In fact, Intel, Hynix, Micron, Sony and other companies have founded the Open NAND Flash Interface (ONFI) working group, which will develop a specification that might make it easier to incorporate Flash memory in laptops.

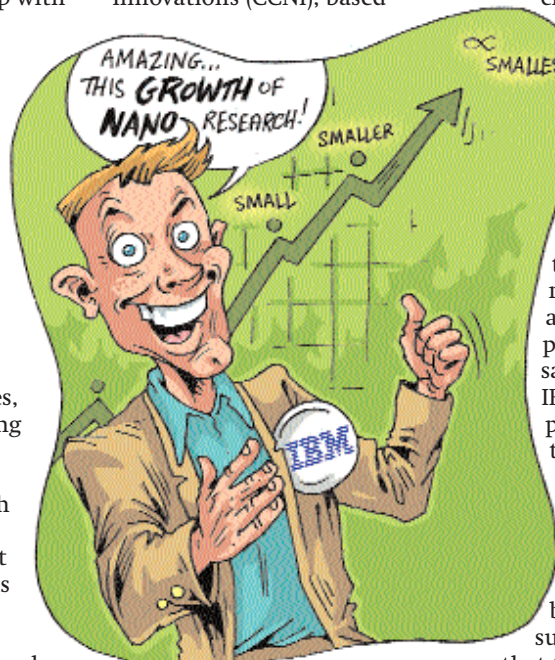
Intel had actually announced the formation of ONFI at its Developer Forum in March. It showed off an add-in card codenamed "Robson" designed to be

fitted into a notebook to accelerate the boot process and the loading of applications. ONFI will define a standardised interface by which the Flash chips mounted on the card communicate with the card's controller chip. The initial specification is expected to be completed in the second half of this year.

IBM'S BLUEGENE

Nanotech Gets A Boost

IBM is to back a research centre being developed at Rensselaer Polytechnic Institute (RPI). The \$100 million Computational Center for Nanotechnology Innovations (CCNI), based



at Rensselaer Technology Park in Troy, New York, will further research into shrinking electronic devices including computer chips. An IBM BlueGene supercomputer, yet to be built, will power the effort. It will be able to perform 70 trillion calculations per second (70 teraflops).

Herb Schultz, marketing manager for BlueGene at IBM, explained, "To do simulations on how molecules react, which is the essence of

nanotechnology, researchers need the computing power that BlueGene delivers." Underlining the growing importance of nanotech, Schultz went on, "There are so many applications for this that will be emerging in the next decade." He also hinted that using BlueGene to work on computational problems such as ways to extend Moore's Law could open new opportunities for a range of industries.

Among the technologies that might benefit from the centre are super-fast nanocapacitors and nanoscale memory cells. These would have applications in Flash-like memory.

Chip manufacturers have sustained Moore's Law for a long time now: current

circuit components are about 65 nm wide.

Experts say this needs to shrink to 45 nm by 2009 and 22 nm by 2015. "Current semi-conductor technology is rapidly approaching its practical limits," says John E Kelly III, IBM's senior vice president of technology and intellectual property. "New, nanotechnology-based technologies will be needed to sustain the growth

that the IT industry provides to the world economy."

Indeed, it is today generally believed that to keep Moore's Law going—and possibly even redefine it—the field of nanotechnology will have to deliver. Recall *Move Over Silicon*, *Digit*, May 2006: transistors may soon use carbon nanotubes instead of silicon. The dedication of a research centre with a 70-teraflop supercomputer specially for such research seems a defining moment. ■



Imaging Pradip Ingale
3D Modelling Vikram Kathare



FIFTH ANNIVERSARY

The Power of FIVE

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When Mice Were Wooden

It's clichéd to say we live in a technologically advanced world, but just five decades ago, a mouse was only something a cat chased. It's all zoomed by us—almost too fast

Ram Mohan Rao

“History is bunk,” flatly and famously stated Henry Ford in 1916. We don't quite agree. Sure, we can let bygones be bygones, but if what was done a fifty or a hundred years ago endures, if it has changed the way we live, if it has enriched our lives—we're interested. What was computing like when there were no mice and—the horror of it!—no colour displays? A passion for technology is not limited to checking out the latest graphics cards. We want to know how it all happened: how we got married to the phenomenon called technology.

This is not a history lesson. It's a celebration of five decades of tech, and not to forget, a tribute to the men who made it all happen.

So, while the hippies were lying on the grass and getting stoned, not everyone was convinced that that was where the good life was. Researchers in corporate and university labs were, for the ultimate good of mankind, engaged in serious work (yes, there was a lot of that in the '60s, too). And they weren't working on their laptops from the comfort of their homes: they got down to the dirty, as in actual hands-on work with primitive components. A few dreamers here and there wrote seminal papers. And companies—some small, some large—intro-

duced devices, some that fizzled out, some that endured.

The audio cassette, invented in this decade, endured. It started off the whole portable music thing. Of course, it was the Walkman, brought out much later, that actually put cassettes to good use.

Laser mice and multi-button mice are all fine, but how about a word of thanks to Doug Engelbart, who invented the device in the '60s? It was a “primitive” device—carved from (ugh) wood—but it did the job. (Actually, wooden mice seem to us a cool retro idea—we found a couple on eBay!) While on the subject of inventions, Xerox came out with the Telecopier—the first successful fax machine. And if you can think of a programming language as an invention, BASIC—as in VB, only a lot less capable—was invented this decade. Ah, the simple joys of life! LET $x=10$; LET $y=20$; LET $a = x + y$; PRINT a ! That was probably the first program many of us at *Digit* ever wrote...

...because BASIC really was pretty basic, and became popular with folks learning to program. We were surprised when our in-house programmer told us it's been around since the '60s!

If you can imagine a world with no computer games, you don't need to think beyond the '60s—that was when the first video game came out: Spacewar!. It generated no little excitement—people liked the idea of actually

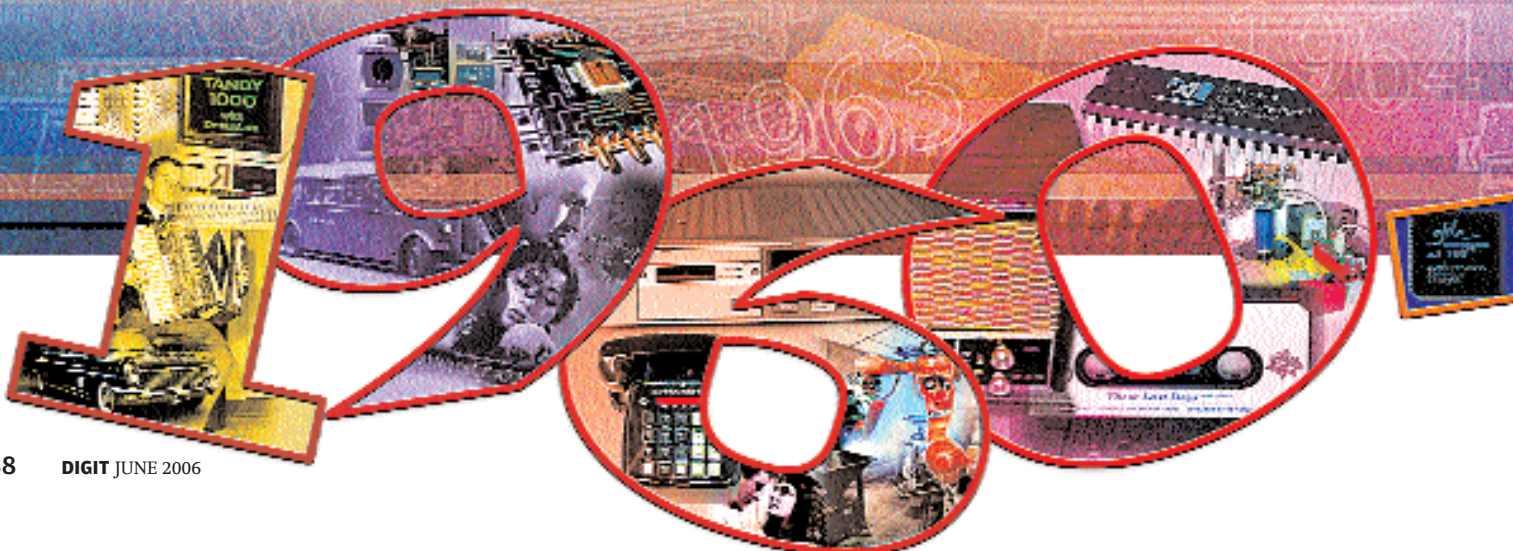
being able to use their computers for business as well as pleasure, and wherever there were computers—mostly labs—Spacewar! was being played.

You might or might not believe how simple Spacewar! was. It was a two-player game, and each player controlled a spaceship, meaning a little white blotch on the screen. There was a star that pulled you towards it—and you had to avoid the star. The players shot at each other: the bullets were little dots. Take a look for yourself—you can play a Java version of the original game at <http://lcs.www.media.mit.edu/groups/el/projects/spacewar/>.

Actually, the first video game wasn't Spacewar! either. Spacewar! was the first game “intended for computer use,” according to some sources. The first “graphical computer game” is “widely believed” to have been Tic-Tac-Toe (or “Noughts and Crosses,” depending on your source) by A.S. Douglas in 1952. According to pong-story.com, “the game was played against the machine. Once the game started, the player specified where he wanted to place his nought or cross using a *mechanical telephone dialler*.” (!) Not much of a game—and we think we can safely say Spacewar! was “the first computer game.”

It might come as a surprise that robotics predates computers (the way we think of them, at least). In 1961 was marketed the

Imaging Shrikrishna Patkar



first industrial robot. And in 1969 was invented the Stanford Arm, the first electrically-powered, computer-controlled robot arm. Talking about robotics, where was AI? Well, it was there, and the research being done back then doesn't seem primitive compared to what's being done today. OK, a lot has been done since then, but think about how much we've done and how far we need to go. They were developing chat-bots and neural networks back then, and we're developing chat-bots and neural networks now as well.

Still, the point is that a lot of work done back then was seminal. AI was in vogue. Frank Rosenblatt built, in 1960, the Perceptron—a sort of computer that could actually learn by trial and error. It employed a neural network. (Neural networks themselves were already in existence.) And then in 1966 happened Eliza, probably the most famous chat-bot of all time. Joseph Weizenbaum developed Eliza at MIT: “she” was a psychiatrist, and would chat with people primarily in consulting mode. “Tell me more about your mother.” “Does that make you feel depressed?” You can find a Web version of the original Eliza at www-ai.ijs.si/eliza/eliza.html.

Why was Eliza important? Mostly because it proved that something like a chat-bot could be built; people were fascinated by the fact that a computer seemed to be exhibiting intelligence.

More in AI: a team at Stanford led by Ed Feigenbaum created DENDRAL, the first expert system. In an expert system, one feeds in as much knowledge in a certain domain as one can into the system, and it analyses the situation and provides answers comparable in quality to what a human expert would propose. What DENDRAL

did is not very interesting, but expert systems had come into being. They're used today in many domains, but medicine is one field that has particularly benefited.

Come to think of it, a lot happened in the '60s. Did you think the CD was invented by Philips in the '80s? Not really: the man behind the CD (and therefore, optical storage) was a less-known-today inventor called James Russell. Actually, he invented a complete optical digital recording system, not just the storage medium. In an interview, asked what prompted him to explore the concept of optical recording, Russell's answer was that he developed the technology because he “wanted a better hi-fi system”! Talk about necessity being the mother of...

We won't bore you with details of what research papers were written around this time. But so much tech that we take for granted started off as single research papers! At Rand Corporation, Paul Baran developed, in 1960, the packet-switching principle. This was followed, in 1961, by the first paper on packet-switching theory, by Leonard Kleinrock at MIT: it was called “Information Flow in Large Communication Nets.” What talk of the Internet without packet switching?

Coming to the Internet, the first plans for ARPANET were laid out by Larry Roberts, also of MIT, in a 1966 paper called “Towards a Co-operative Network of Time-Shared Computers.” ARPANET, as you might know, was what eventually “became the Internet.” We'll be talking more, as we should, about ARPANET—it's not as simple as “it was the first Internet.” In fact, some of the foundations of the Internet were laid in the 60s: way back in 1960, J C R Licklider

published a seminal paper called “Man-Computer Symbiosis.” It included these excerpts:

“It seems reasonable to envision, for a time 10 or 15 years hence, a ‘thinking center’ that will incorporate the functions of present-day libraries together with anticipated advances in information storage and retrieval.

“The picture readily enlarges itself into a network of such centers, connected to one another by wide-band communication lines and to individual users by leased-wire services...”

Sound sufficiently enough like something we're familiar with today?

To avoid hate-mail for having missed out on this point, we must mention that Unix was developed by Ken Thompson and Dennis Ritchie in 1969 at Bell Labs, the same year Linus Torvalds was born. We don't need to tell you how important that development was.

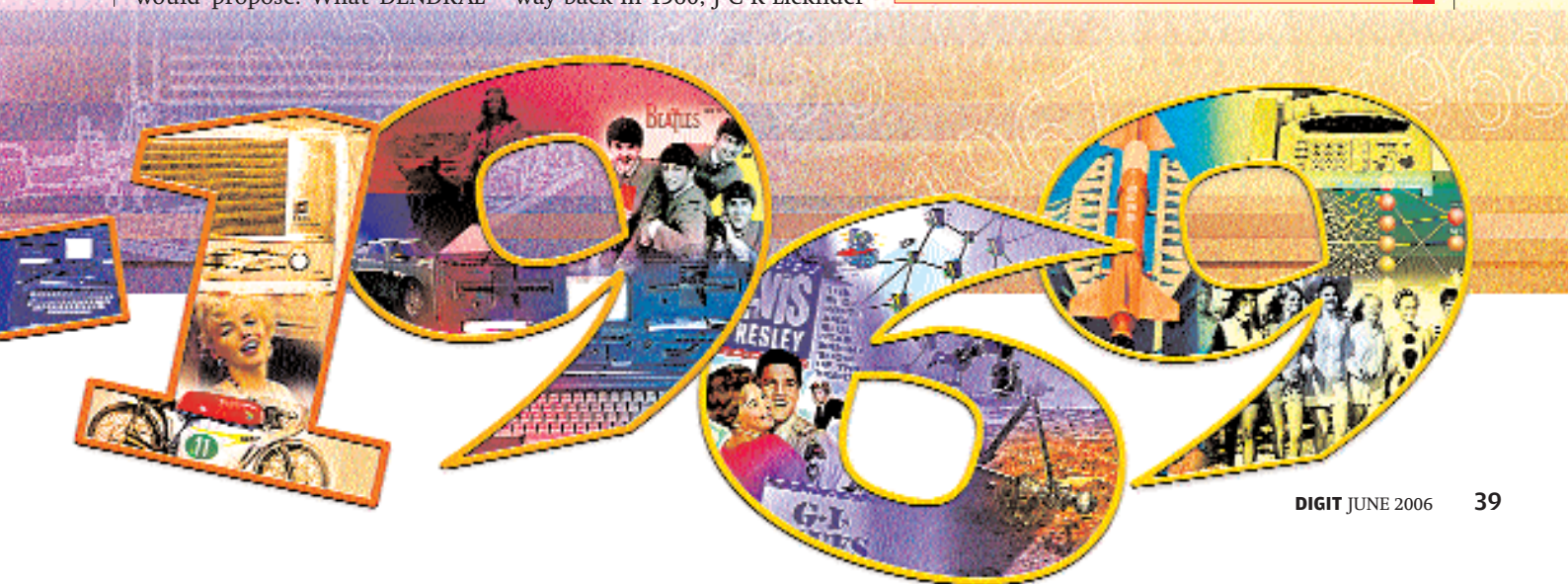
Yes, much was done in the 1960s, but we think the seventies were even more exciting—and something we can relate to better! Turn the page! ■

ARPANET, as you might know, was what eventually “became the Internet”

DEC's PDP-1

There are many, many firsts in the world of personal computing; the DEC PDP-1 is just one of those firsts, but it sounds suspiciously like our PCs. It's been described as the “first commercial computer with a monitor and keyboard input,” as the “world's first small, interactive computer,” and so on. Essentially, this was the first thing that felt—if not looked—something like what we all have on our desks today. It was an 18-bit machine with a keyboard and a light pen for input. It was small—about the size of a couple of fridges. One of its biggest pluses was that it didn't require specialised air conditioning, and that it could run on standard (US) 110-volt power. Some PDP-1s had CRT graphics display systems, which happened to be the first commercially-available computer graphics terminals.

A PDP-1 at MIT became the first computer on which a game was played: Spacewar!, which became a DEC standard diagnostic program for the rest of the decade.





The Plot Thickens

So much happened in the '70s that if we had to choose a "winner decade" from amongst the five we're talking about, this would have to be it

We promised this wouldn't be a history lesson—and it won't be. So we won't talk about the development of ARPANET and other experimental networks such as ALOHAnet—we'll make do by saying that most of the major foundations for the Internet were laid down in this decade: proposals, papers, protocols, and what not. It all developed at a mind-boggling pace—ARPANET was commissioned by the Department of Defense in 1969 to further research into networks, and in 1984, the Domain Name System was already in place! That's about 15 years from "ancient" to "modern"—and in another 15 years, the Internet was pretty much what it is now.

Networks, disks, processors, printers, programming, phones—you name it—it all happened in this decade! Naturally, with the components being developed, the personal computer—essentially a convergence of all these—had to emerge. So what enabled the quick transition from computers such as the PDP-1 to the PC as we know it? Microprocessors and disks come to mind first.

1971 saw the development of Intel's 4-bit 4004, which was quaintly dubbed "a computer on a chip" at the time. Different sources state different things about what was the first this and the first that, and you'll all too often come across the phrase "widely considered!"

And so, well, The Intel 4004 is *widely considered* the world's first "commercial single-chip microprocessor." It was designed to be just a component of a calculator, but people figured it could be used for many other things. For example, it could replace certain logic chips. As more and more uses were found for the 4004, people realised that the microprocessor had tremendous potential. A trend began—that of developing more and more sophisticated microprocessors; there we see the beginnings of today's zillion-dollar microprocessor industry. However, it wasn't the 4004 that started the microcomputer revolution: the distinction is "widely considered" to belong to the 8080.

Also at the beginning of the decade, IBM introduced a floppy disk drive called the 23FD. It used a read-only 8-inch plastic disk, which held 0.816 MB. It was the first flexible disk drive—no, not "widely considered": it really was! The 5¼" flexible disk drive and diskette were introduced later, in 1976. You can imagine the impact of portable disks at a time when there were no LANs, and in 1973 came the Winchester hard disk, also by IBM.

Most hard disks today are basically Winchester disks: the Winchester was the first disk to use a "sealed head/disk assembly," which is what we use today. This

wasn't the first hard disk, though: the 5 MB IBM 350 RAMAC of 1956 was the first *commercial* hard disk. And to clear the air a bit, the first hard disk is *widely considered* to be the IBM 350 Disk File of 1955.

AI wasn't as much in vogue as in the '60s. In fact, some felt they'd been wasting their time on the whole thing. Still, *some* things were happening: a robot called Shakey was the first to use AI for navigation. PROLOG—an important language for AI programming, more in vogue in Europe than in the US—was developed. In 1974, the first computer chess tournament was held in Stockholm. And in 1979, backgammon player Luigi Villa—then the world champion—officially became the first champion of a board game to be beaten by a computer.

Back to networks: Ray Tomlinson, the man who decided upon the "@" sign for e-mail addresses, sent the first *network* e-mail in 1971. As Tomlinson puts it, "Network" should be included because there were many earlier instances of e-mail within a single machine." We can't figure why, though! A year later, the first computer-to-computer chat took place over ARPANET. It was between two AI programs, "Parry" and "Doctor." Parry was psychotic, and Doctor was, well, a Doctor—we have no details on whether Parry was restored to good health.

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Then, of course, there's Ethernet. In 1973, Robert Metcalfe's PhD thesis at Harvard outlined the idea. The same year, after he joined Xerox's PARC as a researcher, he was required to build a networking system for the Center's computers. The company wanted the network because they were building the first laser printer, and wanted to be able to share the printer amongst all PARC computers. Necessity is the mother of... Metcalfe, therefore, had two things to achieve: a fast enough network to drive the fast printer, and a connectivity system that could scale up to hundreds of computers.

It is "generally considered" that Ethernet was invented in May of 1973, but Metcalfe claims Ethernet was invented gradually over several years. We don't need to tell you how much this landmark invention meant: in three words, it revolutionised networking.

Coming to processors, Intel's 8008, in 1972, was the first 8-bit microprocessor. It was soon replaced by the 8080, in 1974, which was the beginning of a revolution. Michael Kanellios of CNET News.com sums it up: "The breakthrough moment for microprocessing came in 1974, according to many, with the 8080 processor. Not only did the chip feature a more complex instruction set, it came in a package with 40 pins, two innovations that greatly expanded its capabilities." The transition to 16-bit happened in 1978: Intel's 8086 saw the light that year.

From processors to personal computers: the story is long and complex, and is chock-full of "generally believed"—you'd do well to visit www.blinkenlights.com/pc.shtml for a lowdown on which "The First Personal Computer" was. But here, we should mention the French Micral, arguably the first

commercial, non-kit, personal computer based on a microprocessor, the Intel 8008. Now that's a lot of qualifications, but you'll notice that it is a first of sorts. Then in 1975 came the Altair 8800, as a kit. Some call it the first personal computer; some call it the first microcomputer. Some say it's neither. Whatever the case, it was a first of some sort! Specs: 2 MHz Intel 8080, 256 bytes RAM.

Enter Apple. The two Steves—Jobs and Wozniak—designed and built the Apple I in 1976. It wasn't easy. Jobs first had to persuade a computer store to buy his creation, and the store ended up ordering 50 units at \$500 each. He then went about obtaining the components. This must not have been fun: he had to sell some of his stuff to buy them. And after the parts were procured, Wozniak and a friend called Ronald Wayne assembled the Apple I. It was the first personal computer with a keyboard and which ran on a microprocessor, while also having a connection to a monitor. Too many qualifications, and a better reason for mentioning it is probably that the Apple I was the first personal computer sold in fully-assembled form.

Succeeding the Apple I was—no prizes—the Apple II: it was a hit, partly because it was capable of being hooked up to a colour TV set. Colour and high-res graphics were a first, as were its sound capabilities. Some say (and some don't) that the Apple II was "the beginning of the personal computer revolution." Which, actually, many things were—take your pick!

Other highlights of the decade included the development of the inkjet as well as the laser printer. By HP, right? In fact, that's what even President G H W Bush believed: in a certain speech, he congratulated HP engineers for

having invented the laser printer. HP actually came up with the LaserJet in 1984. It's Xerox that invented the laser printer. (Perhaps we should qualify that with a "generally considered.")

People discovered home entertainment—and theatres lost their monopoly on movie lovers—when the VCR was invented in 1970. In 1972, Seymour Cray founded Cray Research and introduced the first successful commercial supercomputer, and megalomaniacally named it the Cray I. And in 1977, Bell Labs built a prototype cell phone system in Chicago, and tested the system the next year. The year after that, the first commercial cell phone system was started in Tokyo. Last but not least—can we leave out mention of Microsoft, founded in 1977 by Bill Gates and Paul Allen?

As we move on to the 80s, we note that much of what we're familiar with today had been developed by 1979, at least in rudimentary form. There was colour graphics, there was 16-bit processors, there was the hard disk. The stage was set for everyman's PC. ■

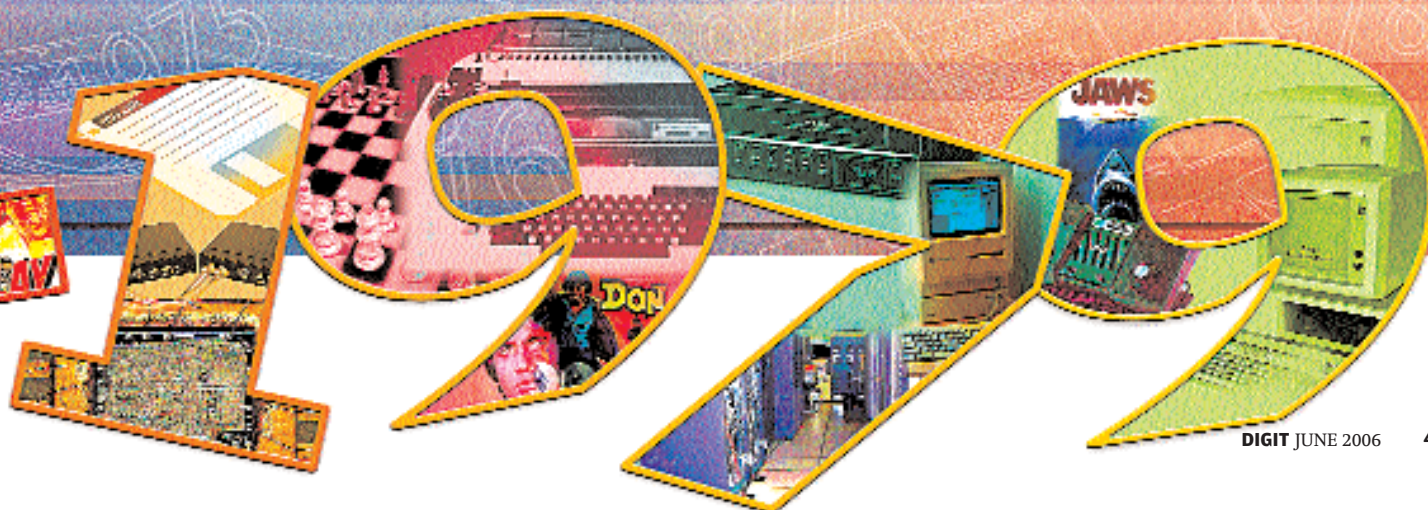
Some say (and some don't) that the Apple II was "the beginning of the personal computer revolution"

ARPANET

Formally, ARPANET was the first wide-area packet-switching network. Much of its development happened in the 70s, and we think no-one will dispute the notion that nothing more significant than this happened in the decade—processors and PCs notwithstanding: no other *single* development contributed as much to the computing experience as we know it today.

ARPANET was to serve as a test-bed for networking technologies. The plan required the network to be composed of computers known as Interface Message Processors (IMPs). The IMPs at each node performed packet-switching functions, and used modems connected to leased lines (the initial speed was 50 kbps). ARPANET initially ran on the NCP-Network Control Program, or Network Control Protocol. In 1983, TCP/IP replaced NCP.

To read up on the history of ARPANET, a particularly good site is www2.dei.isep.ipp.pt/docs/arpa.html.





Think PC

The PC—as in “personal computer”—is what technology is first associated with. The ‘80s was when “PC” began to mean “IBM PC”

There’s a pattern to the development of technology: in the early days are written all the seminal papers, and are made all the breakthrough inventions and innovations; later on come things that build upon these old foundations. Compared to decades such as the ‘40s, when the transistor was invented, little was actually *invented* in the ‘80s. But a lot was built upon, and computing reached critical mass—it was no longer something for the geeks.

The ‘80s were the decade of personal computing more than anything else—not just in terms of technology, but in *general* terms. This is reflected in Time Magazine’s choosing of the PC as the “Man” of the Year in 1982. We wish we had a copy. (We’re sure there’s one for sale on eBay.)

1984 may have been when the Mac came out, but August 1981 saw the launch of the IBM PC. And that’s the date the non-Macaholics amongst us celebrate: the dark ages of computing were over. We’d reached what has merely evolved and tided us through thus far.

Apple innovated and Microsoft followed, but IBM chose DOS for its PCs. That’s what’s important to folks like us who write stuff like this on a Wintel. The original arrangement, in 1981, between IBM and Microsoft as regards the machine and the OS, stated that MS would provide the base OS, and that both IBM and Microsoft would

then work on developing different parts of it in order to build a more powerful system. The companies were to then share the code they had arrived at.

Just to be accurate, PC-DOS was what was chosen as the IBM OS; it wasn’t very different from MS-DOS, which was reserved by Microsoft for non-IBM PCs. We should mention here that MS-DOS was reverse-engineered from the CP/M-86 OS, which was written by Digital Research!

Why DOS? There are rumours and theories aplenty, but here’s what we found as plausible explanations on reference.com:

“CP/M was by far the most popular OS in use at the time... there are at least two rumours about why IBM ended up licensing QDOS instead... One story is that Gary Kildall, creator of CP/M, simply refused to answer the door when representatives from IBM rang his doorbell. However, the most prevalent story... is that when IBM approached Kildall for a license, Kildall kept the IBM executives waiting for hours while he went flying in his airplane... IBM then turned to Microsoft to provide an operating system.”

The article, unfortunately, goes on to state—you guessed it—that neither story is “generally accepted” as true. We figure, therefore, that the story is much longer—do write in if you know!

(To clear the confusion between

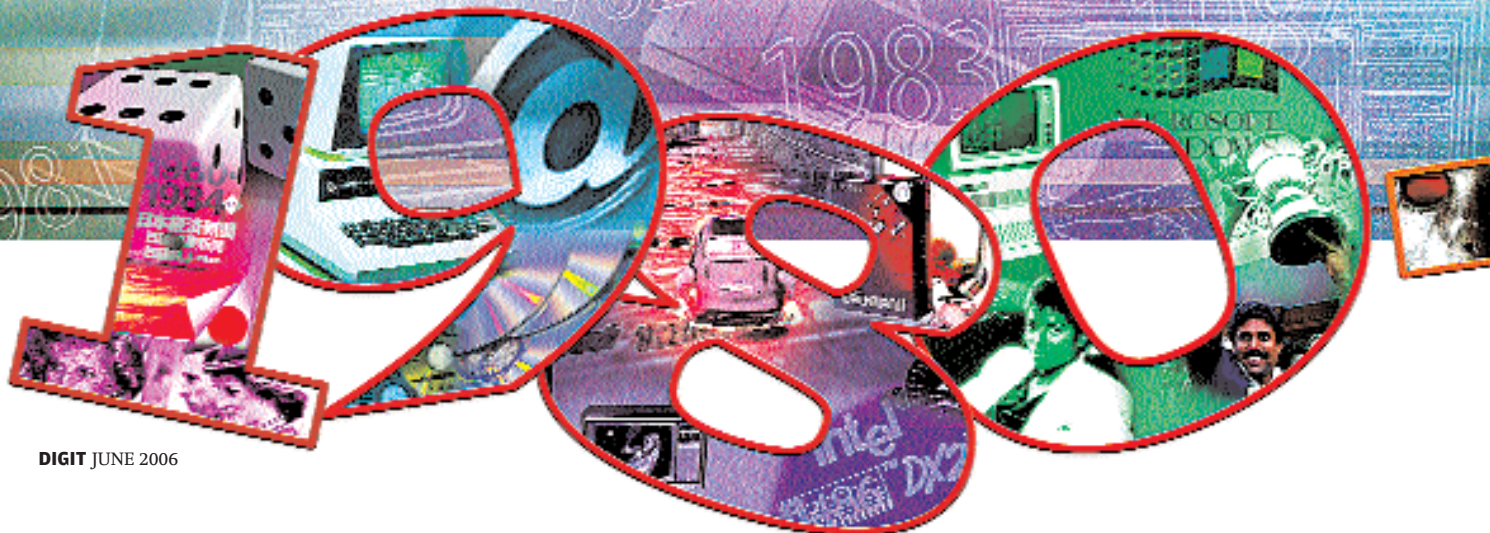
QDOS and PC-DOS, MS licensed QDOS to IBM, which became PC-DOS 1.0 on the PC.)

Too much happened in the first half of the decade, really. The PC, the Mac, the Osborne 1, and the Walkman. “The Osborne 1” probably didn’t ring a bell there: it was the first laptop. Actually, it wasn’t a laptop: it was about the size of a briefcase. But it was portable. So well, the Osborne 1 by Adam Osborne weighed about 11 kg, shipped with a lot of software, and cost \$1,795 (which means several lakhs in today’s terms). But then there was the software, and some of the specs were attractive: 64 KB RAM, two floppy drives (5 ¼ inch) and also a modem. It, however, had only a 5-inch display. Mind you, it didn’t start off the portable computing revolution—Compaq and others came out with more workable models.

Going a level above “personal computing,” think of “personal technology”: it was *that* that the Walkman brought to the streets—literally. It was (obviously) still considered funny if you walked down a street with wires dangling from your ears: the Walkman overcame that little hurdle to popularity, and went on to become probably the most-celebrated single *gadget* of all time, in the strictest sense of the word.

The Apple Macintosh in 1984 was, formally, the first commercially-successful GUI-and-mouse

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With personal computing and TCP/IP in place by 1989, the '90s had it easy

based personal computer. Running on an MC68000 CPU by Motorola at 8 MHz, it had 128 KB of RAM—decent for those days, but not too much. The OS was, of course, Mac OS 1.0. While the Mac popularised the GUI, it didn't do too much for games: the non-console gaming honours for the decade go to the little monitor-less, floppy-less microcomputers of the time—notably the Commodore 64, BBC Micro, and ZX Spectrum. In retrospect, it's absolutely amazing how much game developers packed into 48 K and 64 K those days! In fact, these computers, while running BASIC compilers and all, were primarily used as gaming devices, being hooked up to a TV set. Games were loaded via tape—it took about five minutes for one game to load—and some folks bought drives such as the ZX Microdrive, which loaded games via cartridges much faster. (But those of us who were there remember that tape was the best way to go because they could be easily replicated!)

The beginning of the decade also witnessed the optical storage revolution: the Philips-Sony-CD story. In 1979, Sony and Philips set up a joint engineering task force with the mandate of designing a standardised digital audio disc out of the ashes of earlier efforts at promoting the optical disc. (If you remember, the first CD had already been invented in the '60s by James Russell.) This task force soon came up with the "Red Book"—the CD standard. The disc based on that standard soon reached the market—in 1982 in Asia.

There's an apocryphal story about the maximum length of the audio CD being set at 74 minutes so it could hold a recording of Beethoven's Ninth Symphony. Some sources say the reason was because it was Sony president

Norio Ohga's favourite piece of music. Honestly, we can't vouch for the veracity of this story—or of any others. Anyway, Billy Joel's *52nd Street* was the first CD released commercially, not a recording of the Ninth Symphony.

By 1984, CDs were household things (at least in developed countries). In 1985, evolved out of the music CD, the CD-ROM drive stepped out to the market.

The first IBM PC clone came out in 1982. It was by a company with the sedate name of Columbia Data Products; Compaq soon came out with their own version. The x86 revolution essentially happened in the '80s: 1984 saw IBM releasing the PC Jr. and the PC-AT. The former flopped, the latter didn't: it was based around Intel's 80286 processor, and became popular. Later on, Compaq released the obviously-named Deskpro 386, the first PC to use the 80386 processor from Intel.

The 386 was 32-bit, and computers based on the 386 were as powerful as some mainframes of yore. The 486 debuted in 1989, but it wasn't as much of a landmark—with the 386, "modern" desktop computing was already in place.

Windows, too, actually has its origins in the '80s (and not in the '90s), with Windows 1.0 having been developed in 1985. Was it just a front-end for DOS? Many believe so, but there are differences: Windows EXEs had a file format called "new executable," which only Windows could process. There was also Windows' own memory management system, which implemented a virtual memory scheme. Still, Windows 1.0 didn't become hugely popular. Version 2.0 enjoyed more success, and from then on, it's a history lesson.

Meanwhile, the decade saw the introduction of commercial e-mail. But the most important develop-

ment here was inarguably TCP/IP: in 1982, DCA (the Defense Communications Agency) and ARPA established TCP/IP as the protocol suite for ARPANET. The definition of the word "internet" was set: "an internet" was now defined as a connected set of networks running on TCP/IP, and "The Internet" was defined as the set of connected TCP/IP internets. And so, the Internet had arrived: the first name server was developed at the University of Wisconsin, and the DNS system was introduced by 1984. And in 1986, the first domain name was registered. Symbolics.com. Interestingly, Symbolics.com is today a plain HTML page!

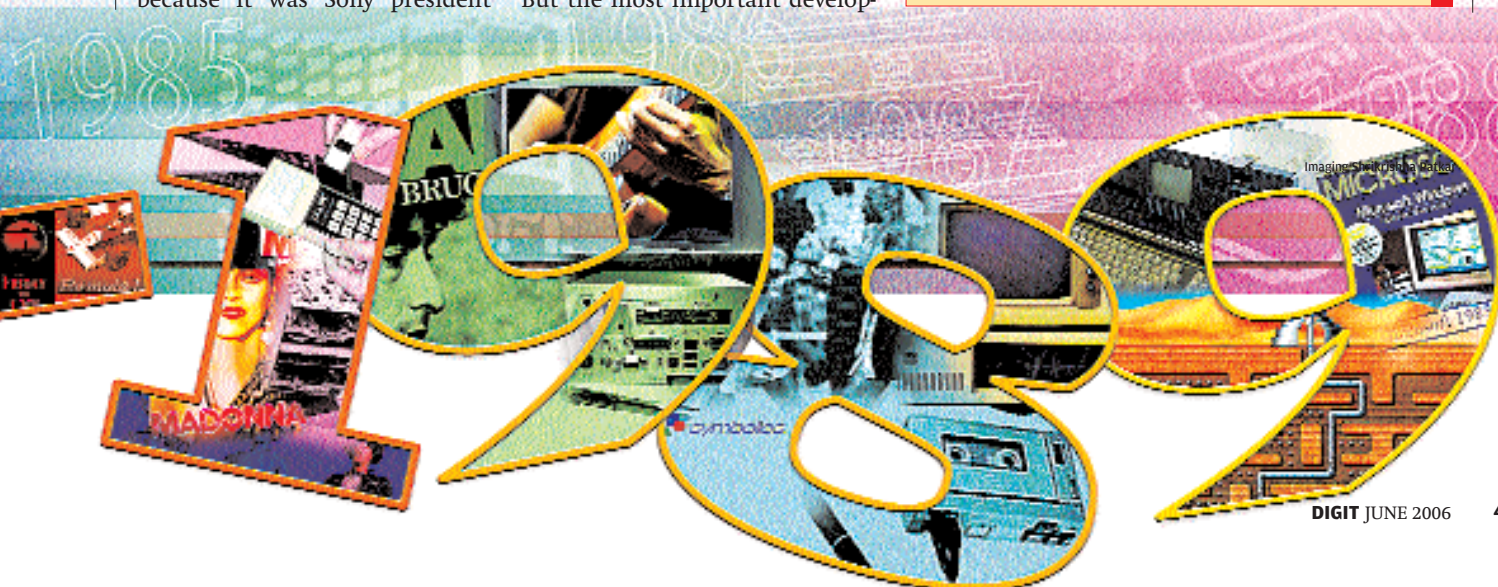
With personal technology—including personal computing—and TCP/IP in place, the '90s had it easy. The x86 architecture simply had to improve upon itself in accordance with Moore's Law of 1965, Windows would have to become Windows 95, and the Internet would have to grow a million-fold—but that was just a matter of hooking up computers to the phone system. On to a world we're familiar with... ■

IBM PC, x86, Windows

The star of the '80s was obviously the personal computer, but Apple or PC? Motorola or x86? It's a tough choice and a touchy subject. Many reasons are cited for why the Mac is not our PC today: it was underpowered for the GUI it sported, and DOS was faster. Macs were more expensive than PCs. And perhaps most important is the fact that Apple didn't allow a Mac clone industry (except for a brief time, and to disastrous effect, to be historically accurate)—the world might well have been different if IBM patented the PC architecture and kept it proprietary.

Yes, the IBM PC is the best thing the 1980s gave us. x86 is a phenomenon in itself: IBM's decision to use the architecture was criticised, and the Motorola 68000 was considered a much better alternative. But due to certain accidents of history, x86 it was.

And then there was the rise of Windows. Apple had already become niche by the early '90s.





Then The Net Happened

Those of us born around 1980 are fortunate: we witnessed the prime time of tech in the prime of our youth

The WWW. Dial-up. Broadband. Netscape. The browser wars. Windows. Linux. The Pentium. The DVD. Napster. Google. PDAs. Cell phones. That about sums up the 1990s, except it doesn't describe how our PCs transitioned from a luxury item to a staple, and it sidelines AMD.

As we said earlier, Apple's products were niche offerings by 1990. During this decade, the company defined that niche better, coming up with innovative, colourful products—literally and figuratively. 1991 saw the Macintosh PowerBook series, Apple's first truly portable computers. They came with a 16-bit Motorola CPU, 2 MB of RAM, a hard disk ranging from 20 to 40 MB, and a 640 x 400 black and white screen. As an aside, 20 MB was quite the size for hard disks back then: 30 or 40 MB was considered large.

The fruity-coloured iMacs were launched only in 1998, with their hockey-puck mice. Specs: 233 MHz PowerPC 750, a 4 GB hard disk, and 32 MB of RAM. The monitor was translucent, and these machines ran dead quiet. Some say that even this addition of colour was imitated by the Wintel alliance, with cabinets now coming in black, silver, and grey! In 1999 came the equally colourful iBooks, as well as the PowerMac G4.

Yes, the '90s were good times for Mac lovers (already there was a cult of Mac lovers, or fans, or addicts, or advocates). "Think

different", they were told—and that's what they did. While Apple was being innovative in the features as well as the design departments, the company unfortunately, didn't revolutionise anything. The world was already sold on Windows—not so much sold on Windows 3.1 in 1992, but very, very much sold on Windows 95 in 1995. Reports at the time said people waited in long queues outside US stores August 24th, waiting to get the Windows 95 retail pack.

We can't sideline the importance of Windows 95: it wasn't merely an improvement over 3.x, it was the first "real" Windows. Crash-prone as hell, Apple fans might snigger, but for those of us who used it back then, it did the job. If you bought a new computer at the time, people would ask you if you'd managed to load Windows 95 on it—and lose interest in you if it turned out you were still using 3.x or even DOS. Windows 98, again, wasn't quite as revolutionary as the 95 version—it even had the same splash screen! But we all upgraded anyway, of course.

The operating systems were getting more demanding, but the hardware was keeping pace: March 22, 1993, the Intel Pentium microprocessor with its 3.1 million transistors saw the light, and (cutting a long story short) on May 7 1997 happened the Pentium II, with 7.5 million transistors. The low-cost

Celeron was out in 1998, and the Pentium III in '99. Our PCs might have been boring, with no trace of fruity colours, but the numbers I, II and III were important: they set the benchmarks for desktop processing power.

As for RAM, hard disks and such, well, so much happened then, we can't talk about it in this space! We'll just say that around 1995 onwards, components just kept getting faster and larger: the MHz/GHz/GB/whatever race had already begun. And since you're a *Digit* reader, you're well familiar with that. But for those who were too young to remember, we should mention that in 1995, a 1 GB hard disk was the envy of every kid on the block, and the corresponding figure for RAM was a whopping 32 MB! By 1999, these had become 30 or 40 GB and 256 MB respectively.

But what was a computer without the Internet to connect it to? All of a sudden—from a bird's-eye view of history, that is—this connection was as important as the computer. From the de-commissioning of ARPANET in 1990 to the WWW to broadband connections, all it took was one decade. The figures, while boring now, say it all. Here is the approximate number of hosts on the Internet by year:

1989: 1 lakh; 1990: 3 lakh; 1992: 10 lakh; 1996: 1 crore; 1998: 4 crore

Boring enough, but they're indicative of the growth of mankind's greatest creation! An

Imaging Shrikrishna Patkar



important difference between the Net as it was in the '90s and as it is now is how US-dominated it was earlier: the Internet pretty much was America back then.

Commercial dial-up access to the Internet began way back in 1990, with The World (world.std.com) coming into the nascent market. The same year, Sir Tim Berners-Lee wrote the first browser for the WWW. The browser itself was called WorldWideWeb, and the first version was finished on Christmas day. URLs, HTML, and HTTP were all his creations, and he used these in his model of the WWW—an information-sharing model built on top of the Internet.

It comes as a surprise to most of us that the WWW was not invented by an American, and not in America: the WWW project was at CERN (the European Laboratory for Particle Physics; "CERN" is how it comes out in French.)

By 1991, the WWW was put in place by CERN. Two years later, Mosaic—the first graphics-based Web browser—was received rather enthusiastically by the growing population of Netizens, as you might imagine. Netscape Communications Corp. was formed in 1994, by Marc Andreessen and Jim Clark. Their first browser was out the same year, as Netscape Navigator 1.0, and "Web browsing" became a standard term. Andreessen was on the cover of Time Magazine in 1996, under an article called "The Golden Geeks." Right on the cover of Time Magazine, Andreessen sported a near-comical, sneering grin. Netscape ruled: the browser wars had begun, and Netscape was much better than IE at the time. We remember installing Netscape on our Windows 95 machines, even though IE was there by default.

Well, Microsoft wasn't stupid,

and kept improving IE; by 1998, the war was over, Microsoft won, and Netscape released the source code for Navigator to the public domain.

What use is a browser without a search engine? Back in 1997, we remember, most folks' default start page was Yahoo!. It had a human-edited directory—and then came the major searchbots. The notables at the time were HotBot and AltaVista. Then in 1998, Google happened. It was initially a competitor to AltaVista and a couple of other search engines. You know the rest.

The killer app of the Web back then was, obviously, Web-based e-mail ("Access your e-mail anytime, anyplace!"). Hotmail, the first Web mail service, was launched July 4, 1996. It was a killer idea, and once it was out, a million companies followed. Yahoo!, Hotmail, and Google were the WWW staples towards the end of the '90s.

1999 saw the emergence of Napster, and the P2P revolution, for lack of a less clichéd word. Napster was a file-sharing service for music, and people "shared" music like it was the '60s, what with free love and all. Everyone was happy, except the music companies. Come to think of it, "revolution" is a good fit there: Time Magazine's October 2000 cover featured Shawn Fanning, Napster's sole creator, in an article called "How Shawn Fanning, 19, upended music... and a lot more."

And what's P2P without broadband? It was in 1998 that broadband began to be aggressively advertised: "Get 50 times the speed of your dial-up modem." By 1999, 1 Mbps and 2 Mbps DSL connections were routine. (Yes, India is a developing country.) DSL had a competitor in the form cable TV operators who provided broadband connections at the same price.

We've sidelined so many things talking about the Net experience, and indeed, the rest wasn't much in the news. OK, some of it was: in 1996, IBM's Deep Blue defeated world chess champion Gary Kasparov. Sony's robotic dog, the Aibo, came out in 1999. DVD became popular in '98, and did for movies what the CD had done for music: towards the end of the decade, a computer was considered incomplete without a DVD drive.

The Palm Pilot improved PDA capabilities in 1996, and again towards the end of the decade, everyone wanted "a Palm."

Cell phones in India were for the rich folk circa 1996, but soon trickled down. On the other side of the planet, there were 90 million cell phone connections in 2000.

Yes, it all happened in the '90s, for sure. The Nintendo 64. The Sony PlayStation. Java. Bluetooth. The finalisation of the initial standard for wireless LANs, IEEE 802.11. And last but definitely not least, Linux!

There's a lot we've glossed over here, but anyway, by 2000, the world was networked—and that's what matters. ■

It was in 1998 that broadband began to be aggressively advertised

The WWW

What we absolutely must declare as the defining technology event of the 1990s is the development and expansion of the World Wide Web. We're sure you'll agree.

Some background about Berners-Lee: in 1980, he was an independent contractor at CERN, and felt the need to build a system to aid in sharing information amongst the researchers there. Sir Tim thought about hypertext for this purpose, and along with another researcher, built a prototype system called Enquire. As you can guess, it was something like a wiki. It wasn't published, but it served the purpose, and remained a private thing. Much later, in 1989, Berners-Lee thought about using the same ideas as in Enquire to create a global network. It was conceptually simple, and as he put it, "I just had to take the hypertext idea and connect it to the TCP and DNS ideas and—ta-da!—the World Wide Web." CERN liked the idea. Later on, we all did.





Today And Beyond

The current decade is seeing technology driving us rather than the other way round—and we're happy slaves

It's not hard to sum up this, the current decade, in two words: "Smaller, faster!" The '00s is the decade of miniaturisation and speed. The century, of course, belongs to nanotechnology.

Already by 2000, we'd lost our innocence. No more the tinkering around with toys and making inventions of them. We've been going aggressively ahead, looking at the basic laws of physics and asking, "Why not?"

"Miniaturisation" is not restricted to gadgets: we're also getting to the nanoscale. A great example is the DVD to blue-laser transition: we packed more onto a DVD than we could on a CD, so find new materials! Invent better microscopes! Dig out more of nature's secrets! Do whatever, and figure out *just how densely those bits can be packed!* It was in this spirit of scientific aggressiveness that HD-DVD and Blu-ray were born—as with almost everything else that's happening in tech today: processors, RAM, and all the rest.

Early this decade was born the Pentium 4. AMD came into its own this decade, and became a true competitor after long years of lagging behind. The gigahertz races had begun. (An aside: AMD reached the 1 GHz finish line first with its 1 GHz Athlon, just days before Intel released the 1 GHz Pentium III.) Then someone got the not-so-original idea that if one processor could do this much

work, why not employ two or more—and thus came in dual-core and multi-core: the future of desktop computing.

Meanwhile, the graphics processor was becoming less specialised in its capabilities and more flexible in its nature. Thus was born the idea of the Graphics Processing Unit, or the GPU. The first GPU was the NVIDIA GeForce 256, launched in August of 1999.

If the GPU primarily enhanced the gaming experience, what was needed was better sound—and starting off from the simple SoundBlaster sound cards of yore, we're moving on to immersive sound experiences. The x.x speaker thing is for the most part a phenomenon of this decade: 4.1, 5.1, now 7.1 and even 9.1. (Maybe there's a 11.1 set—only we don't know!) Similarly with displays: with so many visual bytes ready to be delivered, we needed better things to display them. So CRTs became better, LCD technology went mainstream, and OLED and plasma displays came in. Sure, LCDs are still weak when it comes to games, but do you really believe they won't be on par by, say, 2012?

Games have thus far been driving much of the PC consumer industry. We now have physics processors for games. The PS3 uses the Cell processor, dubbed a super-computer in its own right.

While the Internet in the '90s was all about expansion, it's now

about broadband: people are clamouring for more. More speed, more content, more services. They want *all* their data to come in through one pipe, too. That's why IPTV and VoIP are taking off: one line, many services—WWW, TV, phone, movies. And all high-definition, high-fidelity.

(Pause for breath.) Think about how much broadband has proliferated: in fact, in the developed world, everyone has it, so it almost makes no sense to call it by a special name. From 2 to 5 to 10 Mbps—to 50 and even 100 Mbps in some countries. (Off the top of our heads; there might even be 1 Gbps in some places!)

Not only do we want more, we want it along, wherever we go. Yes, the mobile revolution: it all happened so fast, the timeline is a series of months rather than years. Sometime between 1995 and 2000, it happened in India: by 2003 or so, everybody had a cell phone. In the developed world, kids as young as 8 and 10 years old have cell phones. (Younger kids are tending to get RFID-tagged in countries such as Japan.) And once you've got a gadget, why not pack more into it? Naturally, we don't need to tell you about when cell phones became phones cum PDAs cum MP3 players and radio tuners and what not.

It doesn't seem to make sense to call it a "phone" anymore; it's just "the Gadget." These Gadgets have processing power, and they're

Imaging Shrikrishna Patkar



growing hard disks and all—so why not store and/or watch movies and TV on them? That's where 3G and 4G and all come in; they enable everything on the gadget, just like the Internet connection will (and in some places, does) enable everything on the PC. The Gadget is surpassing the laptop.

But human nature is never content. (A silly truism, because human nature *means* "never content.") So, well, who wants to watch stuff on a teeny-weeny 3-inch screen? Enter the holographic display. The technology could soon be mainstream: the Gadget might well project movies into the air over a large area. And as for the input, who wants to type or write onto a 3-inch pad? The answer is the projection keyboard, which "projects" keys onto any surface you place the Gadget on. And hey, if you can do all this on the Gadget, can real 3D games on a 3D surface be far behind?

Getting back to the Internet, what we've been seeing is expanded use. Blogging comes to mind first: as the world increasingly deals with information in byte-sized chunks, people increasingly turned towards bite-sized write-ups called blog posts instead of long, boring Web pages to navigate through. Then there's MMORPGs: that's real virtual reality. People in countries where the bandwidth lies live, sleep, work, play, and even mate online. They can't eat online—yet; although at least one MMORPG allows you to order pizza through its interface. When will that promised food-pill arrive? No, we're beyond kidding now: nanotech might well produce that staple of science fiction.

While on the subject of the Internet, we must talk about the

real problem of our age—the clichéd "information overload." There are two problems here: storing it all, and retrieving it all. As for the retrieval, trust all the search companies out there—and, going a level beyond, the data mining companies. Yes, data mining and text mining will become more important. We want only what we need: data mining will provide precisely that, patterns gleaned from heaps of information. Text mining will enable us to read summaries of articles, the main points of a news item, and so on. Like we said, we like everything in bite-sized chunks these days.

Coming to the storage, just make the hard disks larger! Did we say "hard disks"? No, no, it won't be hard disks. There's already Flash memory replacing it—initially for faster bootups—and then there will be holographic storage (due out commercially this year, by the way), and ultimately carbon nanotube storage. A pinhead of nanotubes will hold terabytes.

Everything else is moving on, but when it comes to the interfacing with our Gadgets and our PCs, we're stuck with mouse, keyboard, and stylus. Will AI please come to the rescue? How soon will we be able to just tell our display device to play a certain movie?

And when you talk about interaction, think of pervasive computing: already, researchers are talking about it. Check out www.pervasive.dk: "Pervasive computing is the next generation computing environments with information and communication technology everywhere, for everyone, at all times. Information and communication technology will be an integrated part of our environments: from toys, milk cartons and desktops to cars, factories and

whole city areas—with integrated processors, sensors, and actuators connected via high-speed networks, and combined with new visualisation devices—ranging from projections directly into the eye to large panorama displays."

"Projections directly into the eye"? Now that's an idea, come to think of it!

The decade so far has been, and the years to come will be, not so much about new technologies such as perpendicular recording for hard disks. It's more about people generally having come to believe—perhaps rightly so—that technology can give us whatever we want.

On-the-fly. Instant. Anyplace. Anytime. More. Even more. We want. It's moving fast. It's getting faster. It's getting smaller. Into our palms. Under our skin. Everywhere around us. Possibly inside us. God is now well and truly the Great Geek in the Sky—and what we want, as of this decade and in the decades to come, is for *all our material desires* to be fulfillable anytime, anyplace, right next to us, on demand. ■

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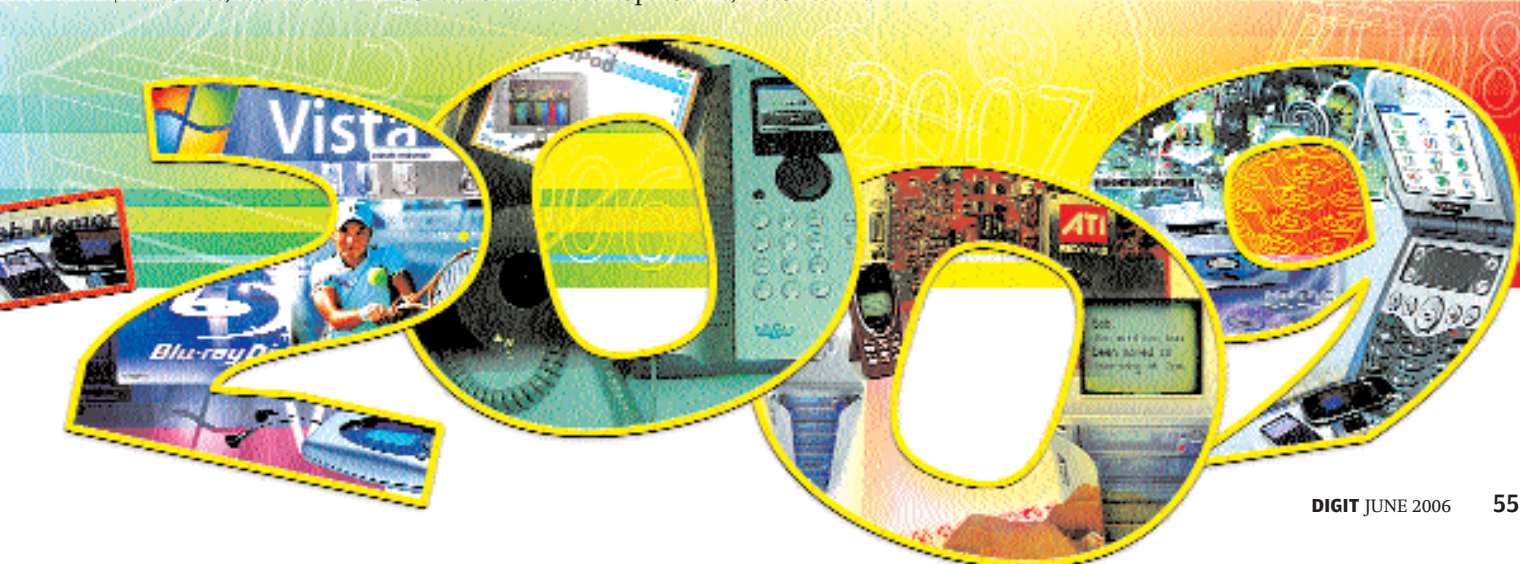
Will AI please come to the rescue? How soon will we be able to just tell our display device to play a certain movie?

The Gadget

It's the definitive development of this decade thus far: the portable Gadget. It was a cell phone at first, and at some point, when both cell phones and PDAs were being used, it became obvious that they could be combined. Some called the new gadget the smartphone. Then the big idea: if everyone's got this in their pockets, why not make it more capable? They added a digital music player. They added FM radio. They added faster processors and more memory. They Web-enabled it. They added a camera, so you could click snaps and instantly send them off to someone via e-mail. ("Look! Here's where I am!") And the cameras are piling on megapixels, the network is gaining in speed, the processors are getting better, and all the rest of it.

The Gadget, as we're calling it, *represents* convergence.

But it's not just about convergence, or even about convenience. It goes beyond: we want to break free of the shackles of time and space, as it were.





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Tech shopping Carts

Five classes of products that will have you running
to the stores soon

I Want To Be Entertained...

...that's what comes to us first when we look at technology for leisure. Let's take a look at some products out there that will guarantee a smile for you and the family

Robert Sovereign-Smith

Our homes are becoming more digitised—which will be obvious after you're done counting the number of gadgets in your house. But that's not the end of it—you probably already wish you had newer models of most of them! That's the lifestyle we're getting used to today, and will continue to do so. This willingness to spend has raised the bar for manufacturers, and with technology surging ahead and convergence blurring the lines between product categories, it's no surprise that every device you go out to buy has a spec sheet over two pages long!

Manufacturers are falling over themselves in the race to your home, offering gadgets in almost every form. However, the most significant category, which is also the most hotly contested, is the personal entertainment segment. Let's skip past the air conditioner that can be switched on remotely, and the fridge that has an inbuilt 12-inch TVs, and look at some products that do nothing but entertain.

TVs

Traditionally, the idiot box has been a staple of everyone's fun diet, and still is. Only, now the boxes are a lot smarter, and come in huge sizes, with as many features as there are competing brands.

The television was given a huge boost in popularity—not that it

needed one—with the coming of cable TV in India over a decade ago. Now, with more channels than we care to remember, and a more informed target audience, TVs really need to keep up with ever-changing technologies. Since this is the era of high definition (HD) video, the TV segment is leading the way, and almost every manufacturer has already released products that are decently future-proofed in terms of technology.

It's the age of plasma and LCD TVs, and almost every manufacturer is offering various models of these. What's really cool right now are wireless TVs that do away with the clutter of cables—be it the cable that comes in through the window, those that emanate from your DVD player, and so on. So when you're thinking about where to place your TV, all you need to keep an eye open for is a power outlet. Of course, if you want to, you can have a portable TV for yourself, which doesn't even need a power outlet—for a few hours of viewing at least!

Sharp AQUOS LC-15L1U-S

Sharp's wireless AQUOS LC-15L1U-S is an LCD television that offers 15 inches of screen space (4:3 aspect ratio) and is less than 3 inches deep. It has a rechargeable battery, a 500:1 contrast ratio and a great viewing angle of 170 degrees. It can be carried up to 50 feet from the base station, and why would you want any more than that? With just 2 x 2.1 watt speakers, it's not something you'll enjoy watching a rock concert on, but hey, catching up with the news while you're in the loo should be cool enough to want one! Approximately Rs 50,000 is what



Sharp AQUOS LC-15L1U-S

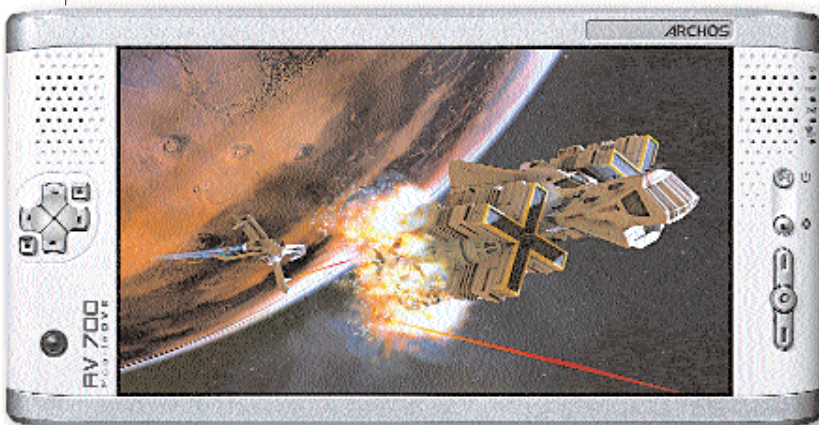
you'll have to cough up to own one of these.

Portable Media Players

Here, without a doubt, the iPod rules, whether it's video or audio that you're looking to play! Apple sure has taken the market by storm with its standard and Video iPod models, but that doesn't mean there aren't other options—especially if you want additional features and would like to try something different!

It's really hard to mention just one product in this segment, because each and every big manufacturer is offering so many models with features you never knew existed. That said, the personal favourite of this writer is the Archos AV 700. Here's why:

- ▣ 7-inch, 16:9 wide screen—480 x 234 pixel resolution
- ▣ 40 or 100 GB hard drive capacity
- ▣ Video recording capability—MPEG-4, up to 640 x 480 @ 30 fps



- ▣ Directly record from TV
- ▣ Music recording
- ▣ MP3 and WMA support
- ▣ Photo viewer (JPG / BMP)
- ▣ USB 2.0 port + USB host port to connect directly to a digital camera
- ▣ A/V out, earphone out
- ▣ Claimed 4 hour battery life with video, 30 hours* with audio
- ▣ Less than 600 grams ...and best of all
- ▣ The ability to play games using the Mophun gaming engine (visit www.mophun.com for a list of supported games)

Other devices such as the Creative Zen Vision and the Nokia 770 Internet Tablet are also good options for people with different needs. If you're looking for something smaller, the Zen Vision's 30 GB might be sufficient for you, and at only 240 grams, it's a lot lighter than the Archos. The Nokia Internet Tablet is for those who primarily want to surf and view multimedia content online, rather than saved content.

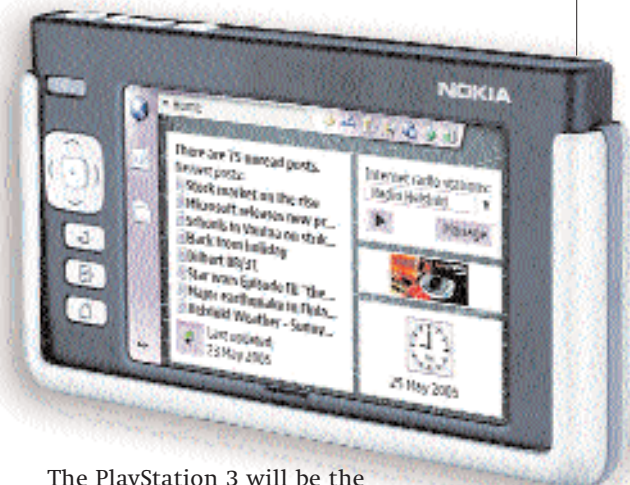
Gaming Consoles

There's a whole new market now for gaming consoles. Apart from first person shooter games, everything else is as fun and easy to play on consoles as on the PC. When you consider that the average console is cheaper than the latest top-of-the-line graphics card, forget about the rest of a PC—it all starts to make sense!

The Xbox 360 has been out for some time now, and it's by far the best console yet. However, it's in for some stiff competition from the Sony PS 3, which is scheduled to be released (finally) at the end of this year. Let's take

a look at some of the cool features the PS 3 promises:

- ▣ A Cell processor, running at 3.2 GHz
- ▣ 256 MB XDR RAM
- ▣ 256 MB GDDR3 RAM
- ▣ High definition output capable
- ▣ A gigabit Ethernet port, four USB 2.0 ports
- ▣ Bluetooth
- ▣ BD-ROM (Blu-ray disc ROM) drive
- ▣ Memory card readers (Secure Digital/CompactFlash/ MemoryStick)
- ▣ 20 or 60 GB SATA hard drive
- ▣ 5.1 Dolby audio output



The PlayStation 3 will be the most powerful gaming console when it is released, and it's no wonder that fans are impatiently awaiting its already-delayed launch. We'll have to do a head-to-head shootout of the Xbox 360 and PS 3, when we get our hands on both sometime in early 2007, to be able to tell you if the PS 3 really is as good as it sounds.

If you just cannot wait, go out and buy an Xbox 360 now—it's a magnificent console!

Buy, Buy, Buy

So whether it's gaming, movies, music, or television that is your poison, entertainment is guaranteed! With all the cool products vying for our attention, it's no wonder that the current generation is spending so much money. For those with nagging, frugal relatives, you can always use the popular excuse, "My bank balance may be nil, but at least I'm doing my bit to help the economy by spending!"

Just keep telling yourself that and buy, buy, buy! After all, you only live once! ■

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Keep Talking

The stuff that keeps us going on and on and on

Nimish Chandiramani

From its none too humble days as a 40 kg car add-on to its current barely-there form, the cellular phone has become as much as a part of our lives as a pair of shoes. Twelve years ago, cellular networks were set up in the four metros, and you'd pay Rs 8 per minute for your calls, and Rs 16 during peak hours. You'd make these calls on handsets that we now so affectionately call the "pencil-box" phones. Ah, good times.

Today, the cell phone has become the ultimate convergence device. Play games, listen to music, take photos, record movies, view documents, surf the Net and make phone calls too!

Into the Arcade

If you remember *Snake*, raise your hands. It was (and still is to some) one of the best things you could do with your phone, and sent the concept of mobile gaming on a wild toboggan ride that's still going. Newer phones came with support for Java and colour screens, enabling wilder, richer games right there in your pocket.

The Sony Ericsson W550i

While it came out as another one in Sony Ericsson's line of Walkman phones, no phone has been as conducive to gaming - not even the pioneer, the Nokia N-Gage QD - as the SE W550i. Turn it horizontally and you have a clear, crisp TFT screen in landscape mode and a button arrangement almost like a dedicated game controller. Its fast processor lets you play 3D games with ease, and the bundled Worms Forts game is extremely addictive, especially with the ability to

throw stuff like refrigerators and banana bombs at your opponent.

Getting Down To Business

The days of the PDA are numbered. With smart phones getting ever smarter, we now have cell phones that are veritable powerhouses for the businessman on the go. They have all the necessary features of the PDA - powerful organisers, synchronising contacts and data with your home PC, and all the abilities of a phone on top of that! With a GPRS or EDGE connection, you can now connect your PDA-Phone to the Internet; the world is your office!

The Sony Ericsson P990i

Pick up your jaws; the Sony Ericsson P990i takes mixing business with pleasure to new levels. Running on the Symbian 9.1 operating system and UIQ 3 platform, the phone comes packed with a host of business and entertainment applications. It's capable of holding up to 4 GB of data (or music, or video, if you'd like), and also features Word and Excel editors, and viewers for PowerPoint presentations and PDF files. The flip-lid sports a standard phone keypad on one side; open it, and you reveal a full-fledged QWERTY keyboard on the underside.

Another nifty feature is that its 2 Megapixel camera also moonlights as a business card scanner, using character recognition to convert the scanned card into text! It's even Wi-Fi enabled so you can connect to the Internet the way you choose - WLAN or GPRS.

Freedom with VoIP

There has been much talk about VoIP (Voice over IP) for a long time. When the concept first hit



IM Fone

Want to convert your cellular phone into a VoIP phone right away? It's simple with this little USB device called the IM Fone. Currently compatible with Skype and Intel, all you need to do is plug the device into your USB port; it uses Bluetooth to connect to your cell phone and you can now move around within 50 metres around your PC. One of its neatest features is the fact that your cell phone number will be displayed in the caller ID of the person you're calling.

The Big Click

The introduction of cameras in cellular phones has spawned off a whole new community of amateur photographers (and amateur pornographers, as we all know so well by now). Social issues aside, the camera phone has become incredibly popular, and manufacturers are always on a quest to make a better phone.

At CeBIT 2006, Samsung unveiled its B600, a phone that takes pictures at a massive 10 Megapixels. To put that into perspective, even professional photographers still swear by their 8 Megapixel digital SLR cameras! Of course, this still won't match up to a 10 Megapixel digital camera due to the characteristics of its lens, but it'll no doubt make your current phone's camera feel pretty silly.

our ears, we were still on our old dial-up connections putting on pots of coffee every time we waited for a Web site to load, so it sat in the background for a while.

The coming of software such as Skype and Google Talk brought VoIP back into our dictionaries again, and with a bang, too. VoIP has become an important part of businesses and homes, and soon, there came the Skype handsets that could connect you to anyone on the Skype network without even having to turn on your PC.

The iMate PDA2k

Practically a PDA with the incidental ability to make phone calls, the iMate PDA2k will be one of the first cell phones which will feature Skype - you will be able to make phone calls via Skype using its Wi-Fi connection. Imagine the ability to make international calls from your cell phone absolutely free of cost!

The PDA2k runs on Windows Mobile 2003 Pocket PC edition, has 128 MB of RAM and a sizable 3.5 inch touchscreen. There's also a full QWERTY keyboard for text input, just in case handwriting recognition isn't your cup of tea.



More Power!

One of the biggest annoyances that we face with cell phones today is battery life. Activities like playing music, recording video and general tinkering take a lot of juice out of your handset, which is why mobile phone manufacturers are looking into new ways to power up the devices. The most promising idea is the fuel cell.



Fuel cells work much like batteries—Hydrogen and Oxygen combine in an electrochemical reaction to create water and energy. Hydrogen fuel cells are favoured more by car manufacturers—our gadgets will see the Direct Methanol Fuel Cell (DMFC). It works by mixing methanol with air and water to produce electrical power. The biggest advantage is that one can get an instant recharge by just plugging in a fuel cell recharger. It's been pitched as the alternative to the standard battery for a long time now; the only argument against them now is that they're too big and bulky.

Right now, fuel cells are starting to find their place as chargers on the go. Just plug them into your current cell phone for a hearty power boost. NTT DoCoMo, Japan's biggest mobile service provider, has showcased a prototype charger that should be commercially available by 2007. Around a year after that, we shall see fuel cells replacing the cell phone battery altogether. They'll last at least 10 times longer than current batteries, and to recharge would be to just replace the water in the cell! ■

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Gadgetise!

Goodies that make your personal computing experience more... personal

Nimish Chandiramani

The willing slave, the workhorse, the friend(?); we all have a strange and undefined relationship with our boxes. Most of all, we're all tired of their dry, boring classic forms. 'Tis the age of cool, and all PCs have started queuing up for a makeover more suited to these crazy times of indulgence.

Listen And Obey

We've been tied to the same old keyboard and mouse for nearly two decades—and rightly so. There have been several alternative input devices for the PC—from strange claws to incomprehensible foot-pedals, but in the end, we all return to the warm fuzzy safety of our keyboards. QWERTY is our religion and WASD its gaming sect!

Create your own keyboard

True, we love our keyboards, but that still doesn't mean we should remain content with the layout. The DX1 input system lets you create your own personalised keyboard layout for that perfect key-punching experience. What starts out as a blank pad becomes your own personalised keyboard as you attach keys on it. Hardcore gamer or just plain keyboard warrior, this one's for you—just slap on a key where you want it, assign a combination of keys or a macro and be done with it. It even lets you add new keys in the heat of a game, so you can add new action as soon as you discover you need it!

URL: www.ergodex.com

The Hand—the next input device?

Ever wanted to grab a window and throw it into a corner à la *Minority Report*? Researchers are working on a device that will enable you to do just that: the DataGlove, originally developed by VPL research. Sensors in the glove detect your hand

movements, completely immersing you into the world of file and window handling.

For more information on the original DataGlove and similar devices, head to the site below. It's not clear where one can be bought, but prices of such devices are reportedly falling rapidly.

URL: www.cse.unsw.edu.au/~waleed/thesis/node33.html

Tagalong

Falling laptop prices have almost made it a realistic substitute for the desktop PC, especially with most of them getting faster than your entry-level machine. To the average geek, a computer is only about how much juice it has, and to the geek on the go, it's about how much juice you can carry around with you.

The Dell Inspiron XPS M1710

This runs on an Intel Core Duo processor, has 2 GB of system RAM, a 100 GB SATA hard disk, a killer GeForce Go 7900 GTX with 512 MB of RAM, and will cause the people surrounding you to spontaneously combust in uncontrollable jealousy. With a setup like that, you'd probably expect the battery to fizzle out in the first five minutes of gaming, but you'd be wrong. The 9-cell battery can take an hour and five minutes of continuous gaming, which, given the nature of its extreme use, is very impressive, and a goodish bit beyond what other gaming laptops would give you. Moreover, the fact that it's a laptop just makes it easier to take to a LAN party and brag.

URL: www.dell.com

No more tears

A nagging "feature" of laptops is their incredible penchant for going *pfift* after a couple of hours of continuous use—and this just with regular PC use. Try playing a game and you'd barely make it past level one! To counter this tragic occurrence, companies are in a mad race to create the next fuel-cell battery for the laptop. At

Imaging Pradip Ingale



CES 2006, Panasonic showed off a fuel-cell powered laptop that had enough juice to last nearly 20 hours at a size that was just slightly bigger than current battery packs. Throw *that* into an XPS and international flights won't be so long and boring any more, will they?

Stuff It

Most of us here at *Digit* have invested in 250 GB hard disks for our homes—they're so affordable now! Of course, figuring out what to put into that much space does take some thinking. Storage is becoming cheaper by the day, and huge hard disks will have lost their ooh value quite soon.

In May 2005, Hitachi announced its Deskstar 7K500, which holds a respectable 500 GB of data using the standard recording technique that all hard disks use. But this is probably the limit for hard disk recording—no more data can be stuffed into those disks without overhauling the way data is recorded. So they overhauled it.

The Hitachi Travelstar 5K160

With their revolutionary new Perpendicular Storage technology, Hitachi have managed to squeeze more bits onto hard disk platters, opening the doors to a world where hard disks get smaller in physical size while remaining bloated enough to hoard your data ten times over. While bits today "lie down" on hard disk platters, occupying more space, the perpendicular technique stands them up, allowing for more data to fit into the same area of the hard disk.

The Travelstar 5K160 is Hitachi's first 2.5 inch drive with a capacity of 160 GB—60 GB more than the current longitudinal storage disk—and comes with new "travel head" technology that will double the drive's reliability. They will now turn their attention to the smaller 1.8 inch to see how much they can get onto those—will we see 100 GB drives on our cell phones soon?

The 5K160 will launch later this year, and will cost around \$269 (Rs 11,500).

URL: www.hitachigst.com

The Swiss Army Drive

Standard USB drive not doing enough for you? Get your hands on this Swiss Army knife that

packs in all the goodies essential for survival in the wild: a red LED light for night-time jaunts, a ball-point pen to, well, write stuff, a knife, a pair of scissors, a file with a screwdriver, a key-ring, and a USB flash drive! You can choose from 256 MB, 512 MB and 1 GB, and the drive's detachable if you want to be boring as well.

Order it from: www.thinkgeek.com/gadgets/tools/6b3b/

Mine, All Mine!

When you're on the road with your laptop, you need to (a) keep other people's noses out of your business, and (b) ensure that your business stays well clear of others' noses. These two USB devices will make sure that the things happening around your laptop will stay in the vicinity of your laptop.

The USB Flex Light

Want to work on your laptop on a night-time journey without bothering your fellow passengers? Just stick this flexible light into your laptop's USB port to illuminate the keyboard or any surrounding area. Its flexible neck lets you change its position to best suit you. It drains very little power from the battery, so is ideal for the road warrior who cares.

URL: www.iogear.com

The FlyFan USB Fan

This one is the ultimate tool to make your fellow travellers burn—both in jealousy and in the heat. Perfect for unforgiving summer travel, connect this fan to your laptop's USB port to sit back and enjoy a steady stream of cooling air and a view of the others wiping the sweat off their foreheads.

URL: www.kensington.com

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From Wannabe To Legend

Gear for that tough journey

Nimish Chandiramani

The gob-smacking success of Nick Park's *Wallace and Gromit* movies is probably the strongest argument for anyone to try their hand at their own home-made creation at least once, especially now that you have technology on your side. Have you ever watched a movie and thought, "Ooh I want to do that!"

Recent advances in technology, and more importantly the increasing affordability thereof have given us a gaggle of options to showcase our creativity. Fancy yourself as the next big movie director or special effects artist? Grab that shopping basket!

Starry, Starry Eyes

In the beginning, there was the VHS camera. It sat upon the shoulders of the strong, weakening them, and the shoulders of the weak, near-killing them. Then Sony said, "Let there be the HandyCam!" And there was still the VHS camera, but at least now you could hold it in one hand without crippling yourself. And thus began the age of the Home Movie. Suddenly dwellings went from being just house to art house, and everyone loved the camera, even if it hated them.

As all things analogue were doomed to, video went digital too. The big DV (that's Digital Video) has invaded our lives in a bigger way than VHS could ever have hoped. For one thing, you can store movies from your DV camcorder onto your PC, and thanks to Windows XP, you can even turn to small-time movie editing using Windows Movie Maker which comes free with XP.

The Sony HDR - HC1

No video enthusiast can resist the temptations of High Definition (HD)

video. The size, the crispness, the capability to kill entry-level PCs, mmm...

Sony's HDR-HC1 is the world's smallest and lightest HD camcorder, and as with all Sony camcorders, this one is very drool-worthy. Weighing in at just a tad heavier than their lightest camcorders, it captures video in all its vivid glory. Of course, if you're going to edit the movies this one creates, you'd better juice up your PC—editing HD will take a big bite out of your system's resources.

Price: \$1,999 (Rs 85,000)

Shutterbug

While nearly all camcorders come with the ability to take still images as well, they still pose no threats to our much loved digital cameras. When digital photography was first introduced, it tried hopelessly to match up to the quality of the traditional film camera, and no *real* photographer would admit to even touching one. All that's changed now—with 8-megapixel cameras littered all over the markets, digital photography has finally given film something to worry about, to say the least.

High end photography is finding its way into our mobile phones, too. Samsung has been quite aggressive in this area—they showed off a 7-megapixel phone when 1.3 megapixels were a big deal, and at CeBIT 2006, they unveiled the SCH-B600—a 10-megapixel camera-phone!

The Cybershot DSC-R1

Sony's DSC-R1 is the perfect meeting ground between the digital SLR and the point-and-shoot camera. It gives you a real-time preview of the shot you're taking, unlike other digital SLRs, and sports a 10.3-megapixel CMOS sensor. A 2-inch LCD lets you frame your shots nicely, and its considerable weight will



ensure that your arm muscles
are always finely toned.
Price: \$999 (Rs 43,000)

Playing God

For a long time, the idea of being able to create movie-style 3D graphics and imagery was quite preposterous. The average home PC couldn't take the load, and there weren't even that many commercially available tools for those who itched to bring their fantasies to life. The statement was clear—this was the domain of big studios who worked on expensive and powerful Silicon Graphics workstations.

Then came tools like 3D Studio Max, which ran on most respectable PC configurations and were so easy to use that one could become something of an expert just sitting at home! Specialised tools such as MetaCreations' (then Corel's and now DAZ

Studios') Bryce let you imitate nature and create ultra-realistic landscapes or bizarre fantasy worlds in minutes—even if you didn't know the first thing about 3D modelling.

The Big Gun: Autodesk Maya 7

The leader in creating special effects for movies (Spider-Man 2, for example), Maya is to 3D graphics what EA is to gaming. Designers cower in humility before it and even say a little prayer of thanks every time they work with it. Its powers are truly awe-inspiring, if not downright frightening. Capable of creating uncannily realistic images, Maya has all the features you could possibly need to get started with your own creation. To get a true sense of its power, take the "Fake or Foto" test: [www.autodesk.com/eng/etc/fake or foto](http://www.autodesk.com/eng/etc/fake%20or%20foto).

There was considerable paranoia when Autodesk, the makers of 3ds max, a close competitor to Maya, took over Alias|Wavefront—the developers of Maya; loyal users wondered if this rang the final bell for their favourite design tool. Thankfully, Autodesk seem committed to taking Maya further, so it will carry on as the industry's darling.

Price: Rs 3 lakh, but you can start learning Maya by downloading the Maya 7 Personal Learning

Edition free from www.autodesk.com. Maya isn't easy, though—you'll require plenty of patience.

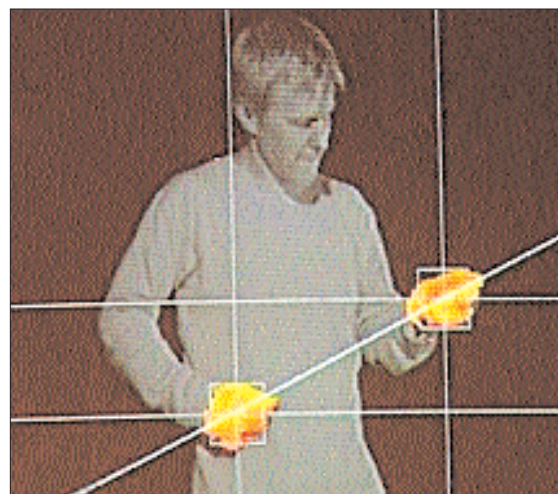
Home building comes home

Google has brought 3D graphics even closer to the home user with their new Google SketchUp, which makes designing houses and other buildings as easy as puffing your cheeks. Build your dream home or remodel your current one—thanks to its clean, intuitive interface and ridiculous ease of use, it'll be just minutes before you've mastered the art. More importantly, it's free, and you'll find it on this month's *Digit CD!*

Rock On

Peoples' fascination with creating their own music has led to many popular games such as *Guitar*

Capable of creating uncannily realistic images, Maya has all the features you could possibly need to get started with your own creation



Hero for the PS2, Nintendo's *Donkey Kong* and Namco's *Taiko Drum Master*. There are also plenty of tools that let you mix and create your own compositions—you can read about them in this month's *Fast Track*.

Fear My Virtual Axe

Want to be a rock god but can't handle a guitar to save your life? Students at the Helsinki Institute of Technology have developed Virtual Air Guitar, which translates those silly air guitar moves into actual sound! It uses a Web cam to watch your hand movements and throws out sound accordingly.

They're also working on a version that can work with our everyday Web cams, so now you don't need to jump on your bed looking like a nincompoop—you can sound like one too! ■

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Coolness Quotients

Every geek's dream house has not just a top-of-the-line PC, but also all the gaming consoles and cool gadgets...

Robert Sovereign-Smith

A true geek shows off his geekdom (and fat salary as well) by talking about every gadget in his house, not just his PC and cell phone. For them, there's an increasing market for cool consumer electronics.

If you were born before the '80s, you will remember the days when even owning a microwave was considered posh. Today, in the age of iPods, everyone seems to have one of everything. What sets you apart from the crowd is *which* one you have. This applies to everything from microwaves to refrigerators, televisions to air conditioners, and much more.

Odds 'n' Ends

There's always been the devices that have no real purpose, or features that have no business being in a device, and the people who can afford them lap them up with relish! Since we couldn't come up with a name that did this category justice, we decided to call this the Odds 'n' Ends category. Let's take a look at the top three products that we came across, and took a fancy to for some reason or the other.

Multimedia Chair

Let's face it—all of us are couch potatoes at heart! We'd like nothing better than to kick back after a hard day's work (or play) and relax to some serious gaming console action! Or perhaps we'd like to watch a movie, or just chill to our favourite TV series.

Well, now you should be able to do it with style, and loads of comfort to boot. If there's one thing that will get your buddies all green, it's the Hammacher Multimedia Chair.

Yes, as the name suggests, it's a chair *meant* to laze about and

enjoy any type of multimedia content. It has two 50-watt speakers built into the headrest, and promises to envelop you in rich, life-like sound. Whether it's Mozart, a movie, or *F.E.A.R.*, you're sure to love the experience this chair has to offer—not just because it has speakers in the headrest, but because it boasts of a "tactile sound transducer" that actually vibrates the chair realistically according to the woofer's output.

The technology is not new, however, and was first seen in USAF flight simulators and also later in some theme parks and movie theatres.

The good thing is that even at lower volumes, because of the chair's transducer, you will still feel every bump in the road in a racing game, and have a richer movie-watching experience. It will also add a full body experience for those who use game consoles—instead of just tactile feedback for your hands from joysticks, your entire body will feel the recoil of that sniper rifle!

Of course you can control the volume of the 300-watt amplifier as well as the chair's vibrations from a hidden side panel that's within easy reach for the truly lazy. There's a headphone jack for when the family is asleep, and the comfort levels are said to be exquisite—thanks to the suede micro-fibre upholstery, high-density foam and hardwood frame.

Price: \$800 (Rs 36,000)

Coolness Factor: 7/10

URL: www.hammacher.com

PC Desk

So your friend just bought the latest gaming rig. And everyone is trying to outdo everyone else with their configurations. RAM sizes are soaring into the GBs, hard disks are approaching the

TB mark, and everyone has a 64-bit 3+ GHz processor with at least two graphics cards...

Yes, life's a competition for most of us geeks, and in our quest to get the best and outdo the rest, we often forget that it's not what you have, but how you flaunt it!

Now here's a product that will make the dual AMD X2 4800+ system your friend just bought look like the biggest joke. Forget funky cooling solutions and silly lighting, forget about modding your PC cabinet. Just get a Powerdesk!

We gave this product a coolness factor of 9/10, not because of the configuration of the PC it contains, but because this is literally a PC Desk. It's not just a desk that you put your PC on top of, it is the PC!

For those who didn't get it, Powerdesk has integrated the PC and the desk to form one unit that hides all clutter, all wires and makes your home or office so neat-looking that your friends will have to hang their heads in abject shame!

You also have the added flaunt value of showcasing a PC that almost no one without a crane can steal! Plus it can be adjusted for any height—a seated child or a standing adult. Of course, if you have the money, and *really* want to rub your friends' faces in the dirt, you can completely customise the hardware configuration, and get those four 7800s in quad-SLI mode on a dual-core, dual-CPU setup! It's also easily upgradeable, and you can do it yourself.

Pay a visit to www.powerdesk.com, sell a kidney and buy one of these. The dark side commands you to!

Price: Starting at £1,550 (Rs 1,32,000)

Coolness Factor: 9/10

URL: www.powerdesk.com

Coast Spas Extreme XLT TV Bath Tub

If every part of your house is out-fitted to display your geekdom, make sure the bathroom isn't left out!

Now we all have fancy bath fittings and weird little gadgets for soap dispensers and the like, but how many of us have heard of a home theatre bathtub?

It's not one of those tiny little one-person affairs either: this is a tub you *will* be showing off with,

and you'll want your friends to join you in a nice Jacuzzi-cum-movie experience—so it's got enough place to fit eight adults, and measures 96 x 96 x 40 inches. 96 inches is eight feet!

This is obviously not the tub for any of our apartments, and you better own a nice big bungalow before you buy this baby. Of course, at a price that's reported to be over Rs 14,50,000 (yes, that's 14 lakh 50 thousand), you'll probably own a bungalow or two anyway! You might need to sell one of them to buy this extravagantly ridiculous tub and its accessories though.

With 80 water jets, waterfalls, lights, a 17-inch LCD screen, DVD player, Extreme Sound subwoofers, a refrigerator, and even a water-proof, floating remote, the tub actually seems worth the 15 lakh investment!



Perhaps you can fake your death and collect the insurance money to get one of these!

Price: Over Rs 14.5 lakh

Coolness Factor: 10/10 (Kill for money, buy this, and you'll probably be the talk of the country!)

URL: www.coastspa.com

And More...

Here are a few more products that were too wacky not to mention!

The "On Target" Urinal By Marcel Neundörfer

This one is for men who don't pay too much attention to aim when going. It actually has an LCD screen in the urinal, with a target that gets smaller as time progresses, as well as sound and visual effects!

URL: www.apartment10.net

Computer Bug Zapper

You know how we see bugs getting zapped in restaurants? Here's one that is hung above your computer and runs on batteries. It's completely pointless, but your friends should get a laugh out of the explanation you



concoct for it! This is the perfect gift for software testers, who can claim they're destroying a bug every time this thing goes off!

It's available from www.thinkgeek.com/homeoffice/gear/80c9/?cpge=cj

Speaker-Sneakers—Code M From Dada Footwear

Now here's a new way to listen to music while you jog—instead of an MP3 player, you can have speakers in your sneakers! Well, the speakers aren't that great, so they added a wireless headset with a range of 30 metres. This is because you might want to take off your shoes but continue listening to music, or perhaps you're over 30 metres tall! The shoes are rechargeable via a USB port, can store up to 100 songs, and offers six hours of playback on a single charge! Plans are underway to integrate cell phone technology with the shoes so that you never lose your cell phone or find it stolen—unless you get mugged for your shoes, that is! ■

URL: www.dadafootwear.com

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We often forget that it's not what tech gadgets you have, but how you flaunt it!



Artificial Intelligence



Broadband



Virtual Reality



The Paperless Office



Voice Recognition

Technologies that Fell Flat

Ideas that suffered Fate's wrath. Or were just plain asinine



Artificial Idiots

The promise of AI has been broken too many times. Will we ever get smart computers?

Robert Sovereign-Smith

If you've heard of Isaac Asimov, the Positronic Brain and the Three Laws of Robotics, you're probably as disappointed as we are with the current state of Artificial Intelligence (AI). Sure, computers have evolved from machines the size of buildings to chips the size of your thumb! We're not saying that computers haven't become smarter; we're just asking, by how much?

An AI pioneer called Herbert Simon said in 1965 that machines would, by 1985, be capable of doing any work a man can do. It's 2006 now, and far from "doing any work a man can do," machines can't even use a broom to sweep a room! OK, there are robotic vacuum cleaners, but those just avoid collisions and go around the room—can you even imagine a robot asking you, *in English*, "Should I sweep out that corner as well?" (Because it can see that the corner isn't *all that dirty*, and that *more energy might unnecessarily be expended* doing it—since it *knows from experience* that *you* don't demand that every nook and cranny be *perfectly clean*, because you'd *rather* get the job done quicker?)

We want to see AI put to practical use. Unfortunately, there's hardly any of that happening in the fields we'd like to see it happen in. Sure, there are "expert systems" in the field of medicine and others, and robots that use AI to navigate, but we want to see it in our everyday lives!

But Everyone Claims To Have A Solution and that's one of the prob-

lems plaguing AI. There are so many brilliant minds involved in so much varied research, and no-one seems to be able to arrive at a consensus about what's needed. A robot here is coded to navigate a maze, a chat-bot there is coded to behave like a doctor!

They're all specialised! What we need—or rather, what we want—is a generalised artificial intelligence, something that behaves the way we do: employing common sense, realising when something is repeating, and so on. In fact, common sense and pattern matching—two of the biggest AI problems—just haven't been solved in all these decades! And no, hard-coding common sense by using world knowledge just doesn't cut it.

Imitating human intelligence is another issue: brain modelling apart, there's too much of that going on—when will researchers get to developing an entirely new kind of intelligence? Why does intelligence have to be *human*?

Thinking Machines

We've seen supercomputers beat grandmasters in chess games, but even those instances were riddled with controversy—with the humans claiming that the computer was specifically programmed to beat him! We still haven't seen a computer win a chess tournament, beating many different grandmasters.

But that's just chess! After all, it is a game of logic and mathematics, which come naturally to computers. What we really want to see is a computer that can answer such questions as "Three of us need to enter a room; how many doors are needed?" If a computer or robot can answer these questions using common sense—without specifically being coded to do so—then we will have achieved true artificial intelligence, the *I, Robot* type.

The Current Scene

As of now, there's really nothing new that one would want to write home about. Like we said at the outset, computers and software have become more *knowledgeable*, but not more intelligent.

We need more AI programs to *understand* better. More and more

people are looking to adaptive software and natural language understanding, with logical decision-making in their AI software. This is good, but we're still far from any breakthroughs, and Asimov's Positronic Brain, alas, is just fiction as yet.

A lot of areas of research are proclaiming and promising results soon. However, *soon* is widely believed to be over a decade or two, and the broken promises of the past cause us to take AI timelines with a rather large pinch of salt.

Ai Research (www.a-i.com), for instance, is working on starting off a software as a child, and gradually teaching it and making it smarter. In their words:

"Founded to create true artificial intelligence—making it possible for humans and computers to speak to each other in everyday language—Ai is an international project with a research center near Tel Aviv, Israel.

"The Ai team consists of scientists, researchers, engineers, and language specialists. All work together to nurture Ai's child machine, and to ensure that it will successfully pass the Turing Test within the next 10 years."

("Turing Test" refers to the idea that if a man and a machine can be confused for each other, the machine has passed the Turing Test.)

Artificial Idiots

If we're only talking about the Turing Test, there might be a few projects that will come close in the next decade. However, making machines as smart as a teenager, even, might take a lot, lot longer.

Right now, we're stuck playing games against moronic AI that is stuck debugging a simple program where you've put an OR instead of an AND! You're also going to be irritated by the same software bugs, again and again, until human research brings about true artificially sentient software, which learns, adapts, and can hold its own against human brains! For now, AI is a huge disappointment, and has been relegated to the stack of technologies that didn't keep their promises. ■

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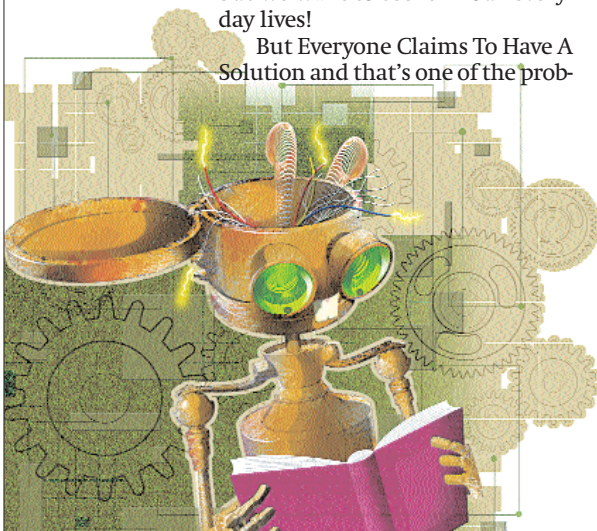


Illustration chaitanya surpur 3D Modelling Vikram Kathare



“Affordable Broadband”?

Are rulers different in different places? No? Then why is broad band so narrow in India

Agent 001

With availability of tech jobs rising, airfares dropping and salaries being hiked, life for the urban Indian never seemed better. We’ve all gotten used to the pollution, pothole-riddled roads and endless traffic jams (especially in my home city of Mumbai), and we’ve learnt to take it in our stride. Slowly but surely, our civic amenities are improving, and people are now demanding more from the government authorities and private companies that control public amenities. Various tabloids and newspapers across the country take up fights for citizens’ rights to better lives, making the bigwigs of the aforementioned government and private sector companies tremble in their boots. Yes, life as an urban Indian is getting better by the day—or is it?

Though I’m all for the betterment of public transport, safety, and the construction of flyovers and highways, I’d much rather see a reduction of potholes and speed-bumps in the most important highway of all—the information superhighway! I’m talking about something basic here, access to the Internet. If you think about it, you’ll realise that the Internet is to geeks what the universe is to astronauts! Alas, much like the Indian

astronauts, we resident Indian geeks cannot do much exploring because of the lack of a proper space programme!

A Pain In The A**

You know what those two *s spell out, and frankly, when I hear about “increasing Internet penetration in India,” that’s the part of my anatomy that begins to hurt, because I know we’re all getting painfully screwed by our ISPs. This is 2006, and yet the majority of India is browsing the Internet at blazing speeds of between 16 and 48 kbps!

A few years ago, the government was kind enough to force ISPs to stop using the term “broadband” so freely: it stated that “broadband is an always-on Internet connection of at least 256 kbps speeds.” So, although we don’t have 64 kbps connections being called broadband, we now have every ISP conveniently overlooking the words “at least” in the government directive, and offering “broadband” connections that have “speeds of up to 256 kbps” for always-on, unlimited usage connections!

Limited MBs

Here’s where all the bandwidth lies! Of my two connections, it’s the limited MB connection that I use the most. Why? Because I have actually got download speeds of 64 kbps i.e. 512 kbps (8 bits = 1 Byte) on it, while my “unlimited connection” never gives me anything above 32 kbps i.e. 256 kbps—actually, it’s more like an average of 25 kbps! And that’s me—others in Mumbai report even lower.

Though this would still look like a dream to many across smaller cities in India, my friends abroad naturally laugh at my plight—the average American can get a 2 Mbps connection for anywhere between Rs 1,000 and 2,000 a month, while people in Scandinavian countries have national bandwidth averages of hundreds of Mbps to 1 Gbps per person! Here, I’m paying over Rs 4,000 for two connections on which I barely download a few GB per month! And I’m considered one of the “lucky few”?

ISPs

The majority of non-dial-up connected Indians pay between Rs 300 to Rs 3,000 for either limited MB connections or unlimited connections that offer speeds below 256 Kbps. Yet, all of those same people think they have “broadband”!

ISPs claim to have brought down prices, but the fact is that they were overcharging us before, and are still doing so now. They claim that the infrastructure costs demand such high prices, and also that they “buy” bandwidth at high prices. The simple truth is that all of us millions of bandwidth consumers have just sat back and accepted our fates. Either that, or we’ve been too busy fighting for better roads and services to care about Internet access. It’s time we changed that!

The Bandwidth Revolution

Let’s start one! Even if it’s as simple a task as calling up your ISP hotline and asking for the price of a 512 kbps, unlimited, always-on connection, and then gasping at the price and hanging up. You could even suggest that they offer you a 512 kbps unlimited connection at a lower price and make up the loss in revenue in terms of advertising—I know I’d gladly watch a few ads on the top (bottom, left, right, or anywhere!) of my screen, and even click on a few of them, just to have a 512 kbps, unlimited Net pipe!

Perhaps someday you *actually* might be able to watch or listen to streaming video or audio, instead of going to a site with such content and having to select your connection speed as “dial-up” rather than “broadband”!

If we all do our bits, perhaps Indian ISPs will wake up to the fact that they *will* lose out their customers to the first ISP that actually offers affordable broadband. All that’s required is one national ISP to make a policy change, and I know I’ll switch immediately.

However, as of now, with all the “limited MB plans” available out there, I have no option but to hand “broadband” and the ISPs that fail to provide it the dubious title of “technology that failed to deliver!” ■

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Illustration chaitanya Surpur



Reality Bites...

..especially when you awaken from sweet, Virtual dreams

Robert Sovereign-Smith

Remember those 3D comic books that came with glasses with one blue and one red lens? There were movies that used the same principle...

The idea was simple: make movies or comics, which were all so boringly two-dimensional, into something that *appeared* three-dimensional, and thus more real! These were perhaps the first attempts at Virtual Reality (VR), and they failed miserably!

Move along forward in history and we come to the basic displays of today, which are basically 2D, but offer the depth and immersiveness of looking through an actual window at all the action happening on screen! Games, movies, basic television, that India vs. Pakistan cricket match... they all look absolutely surreal on our televisions or computer monitors today. However, they have no interactivity!

Think about it. If you were standing at your window, looking out at the world (perhaps at the street below), you would be experiencing a real-life scenario, right? Now, put a camera into the same window, and sit in a closed room and watch the same scene play out on your TV or monitor... get the picture?

The Next Step In Entertainment...

VR was supposed to be the next big thing in terms of entertainment. It seemed that everyone with a science degree was working on VR in some way or the other. A lot of weird gadgets were developed, and none of them delivered what they had promised.

Many fans of VR and developers in the VR field will aver that it was the general public that expected too much, too soon, while many others place the blame of failure squarely on the researchers, saying that they got carried away by the initial progress and made ridiculous claims...the debate continues, but the truth is, VR bombed big time!

The problem was simple: in order to be even called *virtual reality*, a device or technology had to immerse the user in a world that was indistinguishable from the real one. Though the field of graphics was moving forward by leaps and bounds—which is best understood by watching the evolution of special effects scenes in science-fiction and fantasy movies—everything else remained where it was. The problem was that we were approaching *visual reality*, not *virtual reality*!

Visual Reality

Have you played any of the latest games? For they are beginning to look incredibly real. It's doubly real when you look at the latest movies and the special effects—if anything, we've achieved visual surreality! But forget the movies, because we still haven't figured out a way to make them interactive, even if directors let you choose your own endings on DVD versions of major blockbusters. The fact is, games are the most immersive of all forms of entertainment, because you're actually the proponent in one, instead of being a bystander!

Gaming Goofs

Now games come with their own share of problems. Visually, everything in today's games can look as good (and real) as you want it to. If you spend enough to buy the latest hardware, you can run games

such as *FEAR*. at the highest settings and enjoy the near-real experiences on offer! However, all this is just visual, and just seeing *isn't* believing!

A few of the problematic areas in games are the physics and AI factors. When you see someone standing on thin air, or getting stuck in a corner just because your team-mate refuses to move out of your way, it's a rude awakening!

Other Interests

Another very important but embarrassing implementation of VR was in the pornography industry. The concept was simple, instead of sitting back and watching, you would much rather participate in your fantasies. At least that was the initial idea. Thanks to the same drawbacks that have plagued games, this, too, turned out to be just another un-achievable idea.

Useless?

Not at all! VR did not keep the promises that its supporters made in terms of entertainment, and that's the reason it finds its way into Digit's demerit list. However, mass consumption aside, VR is very, very helpful in a lot of fields. Take flight simulators, for instance. Here, VR is the perfect pilot training tool, because it allows people to learn to fly without actually endangering a plane or themselves if they make a mistake. Then there are its applications in the field of medicine, and so many doctors are now training on computer-controlled dummies, robots and even software—practising operations that will save so many lives.

VR is also used to train soldiers, and can be used to construct the surface of Mars for instance, by collating data from all the probes we've sent there.

The bottomline is that though VR holds much promise, it's being held back by the lack of development in areas such as AI. It's turning out to be just another audio-visual experience, it's nowhere near what's needed in terms of entertainment computer generated realities! ■

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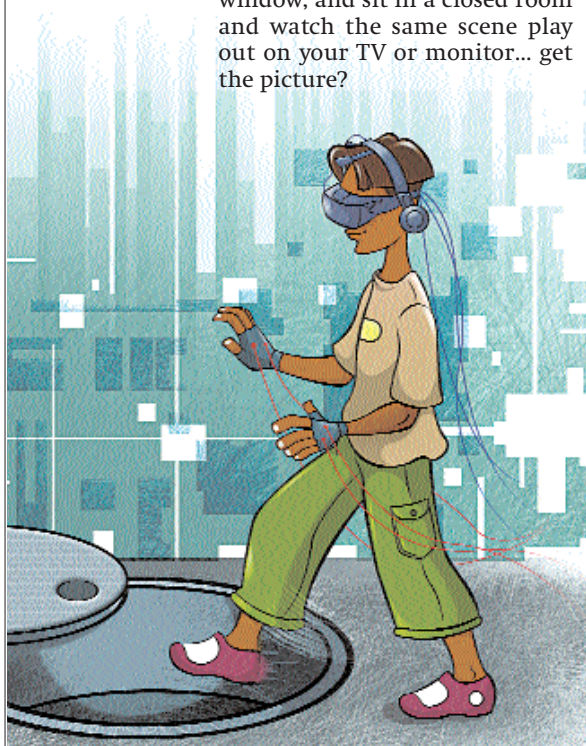


Illustration chaitanya Surpur



Papierlove

Or how I learned to stop worrying and love the Document

Nimish Chandiramani

Getting under top management's skin, *Method #32435*: Generously apply layers (to taste) of important/important-looking paper on desk.

Nothing frustrates managers like inefficiency or the perception thereof. And the sight of mounds of paper on one's desk creates that perception quite well. Depending on paper to get your work done is quite ineffective, they would say. It could easily get lost, torn, burnt, be the victim of a coffee spill, or just simply become old and illegible. There must be a better way, and technology must provide.

As early as 1975, corporate bigwigs fantasised about an office without paper—a streamlined, seamlessly integrated workplace where one doesn't have to make endless trips to the printer, and lost documents are a little joke that colleagues share at the water-cooler. And not without reason—red tape was rampant even for the smallest of tasks, and the mounting volumes of paper all but clogged the lines of efficiency in the workplace. It was estimated that people

spent at least ten hours a week just

sifting through paper. Add to that the fact that paper costs ate up about one to three per cent of revenue, and paper-hatred makes perfect sense.

The Promise

The intervention of technology would automate most tasks—no more filling out forms in triplicate, no more running around offices to get paperwork processed. Information would be easily stored in the electronic format, available almost instantly to those who needed it via a fully-indexed search function.

As the years trundled on, the possibility of a paperless office seemed to come closer to reality. From tools such as Adobe Acrobat to full-fledged collaborative solutions for company intranets—everything promised to ease us into the nirvana of clean desks. And so much did companies believe in it that many of them even instated a “Clean Desk” policy, where employees were encouraged to leave their desks free of any paperwork, or suffer their unannounced disposal.

Indeed, paper has been eliminated to a massive extent thanks to the wonders of technology. Paperwork is increasingly being taken online. Collaborative technologies like the wiki have made knowledge-sharing and management much easier than a shelf of reference books and assorted documents. And yet, we always seem to be one step away from the paperless office.

The Reality

The great irony of the paperless office is that while technology can help eliminate paper, its development has actually increased its proliferation. We've never had access to as much information as we do today, and what do we do when we find an interesting article on the Internet? Why, print it, of course! And with the cost of printing a page lower than that of your average cough lozenge, hardly a grey cell is expended in thinking about hitting that Print button.

The fact is, much though we

hate paper, we love it. It's an incredible medium for information sharing. It's high-resolution, supports both colour and black-and-white display, it's ultra-compact, ultra-portable, ultra-cheap, requires no expertise to use, and even smells good when old. People still love paper for its tactile, tangible feel, and that doesn't look likely to change in the coming years. The debacle of gadgets like dedicated e-book readers proved just that.

And then there's the question of whether technology is really the great enabler. What's easier, fumbling around with a computer program to take notes, or scribbling them down on a notepad? Until technology achieves the incredible ease-of-use of paper, it's going to remain a preferred medium to jot down thoughts and ideas quickly. Sure, there won't be a full-text search available, but people don't seem to mind that. Moreover, handing in documents in paper has the psychological effect of assuring one that the task has indeed been completed.

There's so much that could go wrong with computers—a corrupt hard disk could be the death of an organisation that chooses not to have anything to do with paper. A system crash or an incorrect command could undo hours of work. With so much that could go wrong, can you really blame yourself for wanting a hard copy of your work? And we still haven't talked about legal documents that require physical copies with real signatures—the idea of a digital signature is still indigestible.

The role of technology in the office is to minimise the use of paper to save on costs and productivity. Even now, documents go through all their review cycles in the electronic format, to be printed out only when final. Technologies like fax over IP and printers that print on both sides of the paper also play their own little role in the big picture of the paper-efficient office. But when it comes to the actual meaning of the phrase, the paperless office is an urban myth—so hang on to your notebooks. ■

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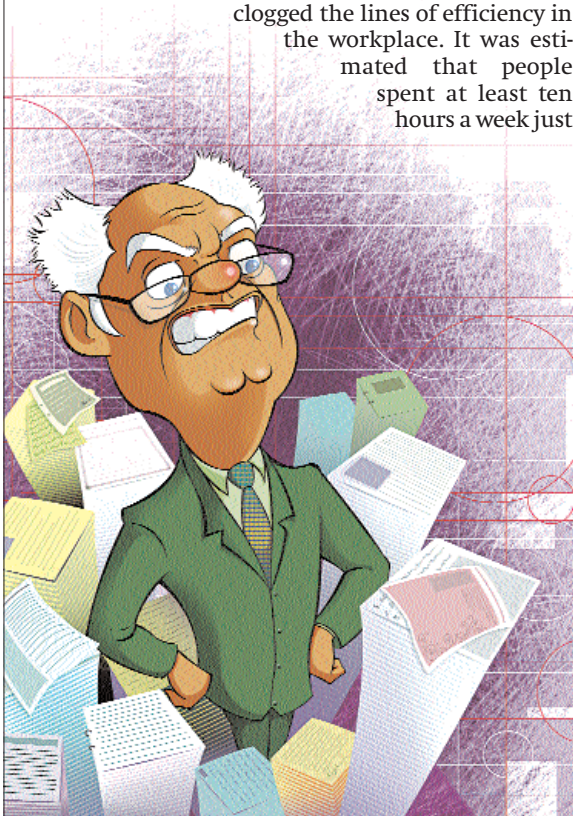


Illustration Chaitanya Surpur



FIFTH ANNIVERSARY

Voice recognition is a technology of the future. Problem is, it *always* has been a technology of the future!

Robert Sovereign-Smith

We don't mean to malign any particular company, but here's part of a Web ad for a certain dictation software: "Send e-mails and instant messages, surf the web, chat and create documents—all by speaking. With (name of software), you'll be faster than ever before—and have more fun with your PC."

Sure it's fun. Speak, and watch the words appear in, say, MS Word. It's fun in the beginning, then you realise you need to train the software if you want to get any work done. OK, so you train the software a little, by reading out the pages of text it presents you (so it can get used to the nuances of your voice). Then you try it again, and it's a little better—but it's already less fun. The software urges you to train it some more, and you go ahead. After a lot of training, you think, "I can finally speak to my computer!"—and happily sit down to compose an e-mail by speaking.

Only to find you need to reach out to the keyboard approximately once every 10 seconds for the mistakes it makes. Mic to keyboard and back to mic. It's no fun any more. It doesn't work. You repack-age the software—without making a copy of it, of course—and sell it on eBay. End of story.

Why?

Think about it: the sheer convenience of being able to yack away and have it all appear in an application. If these products were that good, why doesn't *everybody* use it? Have you personally seen anyone using it on a regular basis? Probably not. So, well, why doesn't it work? If that's too harsh a question, let's put it this way: why hasn't voice (or speech) recognition software become as popular as it should have, given its potential?

The answer is, very simply, that speech recognition is very difficult to achieve.

Unnaturally Speaking

While speaking into your mic using dictation software, you must not cough—it'll show up as a word. You can't say "umm..." or "errr..." because it'll either show up as a word, or modify the word just before that. You can't speak too fast. You can't speak too slow. You need to first find a sweet spot for your pace—which is difficult—and then stick to it, which is even more difficult. You can't use the software if your spoken English varies too much from what is considered standard English. Then there's ambiguity: trivial examples like "I scream" and "ice-cream" apart, did you say "eye" or "I"? "Right" or "write"? Then, you can't speak out peoples' names or other proper nouns: they won't be recognised.

Also, there's the huge issue of pauses: if you pause for too long—even without an "umm" or "errr"—the software gets thrown off. And what about sentence structure? When does one sentence end and the other begin? The software needs to figure this out from your pace—and this isn't taken care of during the training! Then, punctuation! Try saying "then, punctuation!"—the software simply cannot place that comma and that exclamation mark where they should be!

One would probably also need to change one's accent—a drastic measure, to say the least—for commercial speech recognition

software to get what you're saying. True, localised versions could be made available, but how many? The costs would be prohibitive.

We could go on, but we've made our point: as of today, you just can't speak naturally into software. And if you must, it'll be so slow that you'll be better off with a keyboard.

I'm Unique, So Are You

If you've read this far, you'll have realised that the entire problem lies in the fact that no two people speak the same way or pronounce words the same way. It would be quite easy to design a system for a single person.

How does speech recognition work? First, the phonemes need to be recognised (phonemes are the basic sounds, such as the "ou" sound in "sound." People don't even say the basic sounds the same way! Then, the phonemes need to be strung together to form words. There's a problem at this stage as well: think about when you say "meet to." The "t" in "to" is hardly audible, so it sounds like "me too." After this, the words need to be strung together into sentences. Here's where the gap problem comes in: in earlier systems where you spoke one word at a time, this wasn't a problem, but in continuous speech, people speak differently when it comes to pauses between sentences.

Again, we could go into the technicalities and explain why it's so difficult, but suffice it to say that it is!

The only way out is true personalisation, and to really personalise the software, one could conceivably employ sophisticated neural networks, which can learn from experience. These networks would have to work similarly to the way the human brain understands speech, which is a very, very complex affair. And now, we're again talking about the day when we'll have true AI (Artificial Intelligence). But that's the direction some researchers are moving in. As we said, it's in the future, and it looks like it always will be—at least until there's a breakthrough in AI! ■

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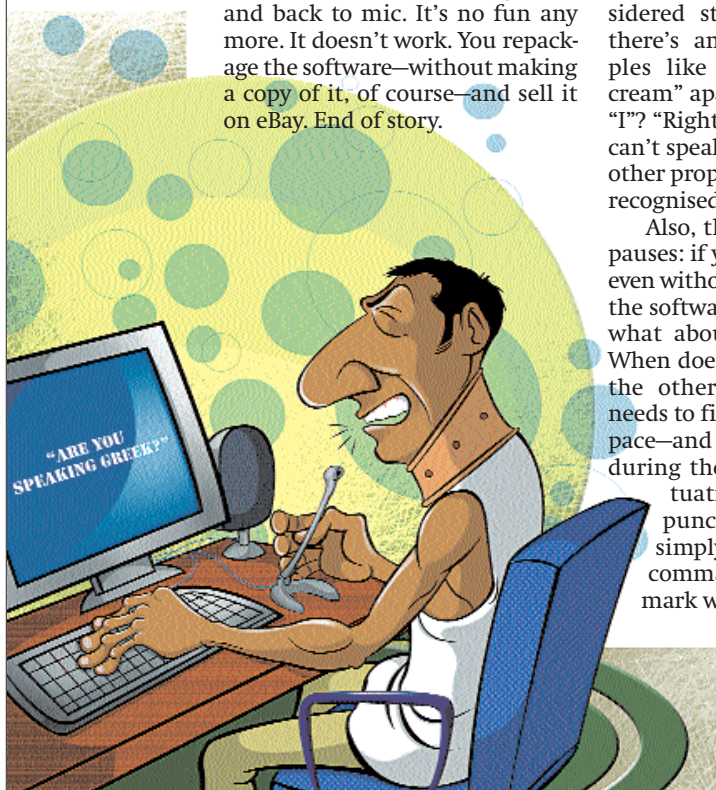


Illustration Chaitanya Surpur



FIFTH ANNIVERSARY



Thought Computing



Computing at Lightspeed



Longer Lasting Batteries



Everything in a Cell Phone



The Ultra OS

Digit's Tech Desires

Things we'd like to see before moving on the the
Wild Blue Yonder

At The Speed Of Thought

Why can't computers read my mind?

Robert Sovereign-Smith

Have you ever wondered about the miracle that is the human body? Think about it: you go out, buy yourself this copy of *Digit*, sit down to read it, and have reached this article. Picking up this magazine, flipping pages, reading, understanding the words printed on this paper, forming an opinion about whether you like this article or not... all these actions seem to require absolutely no effort at all. Yet, in order to be able to accomplish this, the body has gone through hundreds of thousands of years of evolution, and is made up of one of the most complex networks (veins, arteries, nerves, muscles, food canal, etc...) known to mankind!

Every time you experience something, there's a system hard at work that's more complicated than all the computers of the world put together. Yet it just comes to us so naturally!

Now, think of the way you use a computer: you have to switch it on, wait for it to boot, then use a mouse and keyboard to try and get it to do what you want. There's complicated software to be handled, there's problems and limitations of the hardware, there are a myriad problems, but the worst of all is that you have to actually, physically, control input using motor co-ordination.

The Physicality Of It All

Now imagine if you could sit back, relax, and just look at your computer screen and then "think-type" instead of having to touch-type! What about if you could just focus on an icon and *think* "double-click" or "open" instead of actually doing so?

Sounds unbelievable? Well, the few lucky souls who visited the CeBIT exhibition in Germany know otherwise!

Called the Berlin Brain Computer Interface, the prototype on display had two people rigged up to a really weird-looking headset with a zillion wires attached to it, and then had them play the clas-

sic game *Pong*. You can see a video of it on YouTube.com (just search for "cebit thought"). Though it's not perfected yet, if you can move your bat in pong, in time, you should be able to do a lot more.

Your Thought Is My Command

Now here come the interesting bits: the beauty of thought computing doesn't just amount to being able to control your mouse with your thoughts, or silently telling your computer to launch Word, and then proceeding to *think* out that letter you were meaning to write...

Think (pun intended) about it: almost everything has a computer chip in it these days. From the washing machine to the toaster to your car, everything has a circuit board and some sort of firmware to control some function. It's not an over-imaginative mind that will foresee this sort of headset being made wireless—and hopefully a lot smaller as well!

Though it will take some time to achieve, we definitely seem to be on the right path towards thought controlling everything that can be controlled. We could see little chips being connected to our brain—permanently, like implants—and then be able to walk into a room and have the lights come on automatically, just by thinking, "It's dark in here!"

What about being able to drive a car just by sitting back and thinking about the direction you want to turn? Future wars will perhaps have no people actually fighting them, just thought-controlled machines attacking each other—may the stronger brain win!

The possibilities are endless, and as with every breakthrough technology, could be put to use in either useful or harmful ways. Of

course there are always concerns, especially when a technology interfaces so closely with our brains...

Controlled Thought?

Thought control is good, but controlled thought will have people up in arms! The fact is, what most of us would like is a one-way flow of information, from our brains to the machines. The reverse is not as pleasant. Though there could be a myriad of new inventions if machines could send information directly to our brains, something tells us that none of us would ever completely trust such a system.

Still, it could mean the end of display technologies: Imagine being able to experience a movie or game instead of just watching and listening to it?

For Now

We're just happy to finally be going to that next level of input devices, which sorely needed a revolution in order to make life easier. Even if it's just a way to ease our pain caused by carpal tunnel syndrome, because of excessive mouse and keyboard usage from cleaning up the spam from the hundreds of e-mails we receive each day, we'd rate thought-controlled computing as our deepest desire for the decade ahead! ■

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Illustration Pravin Warhokar

Resume

Breaking The Bottleneck

I just want a faster PC!

Nimish Chandiramani

It's a shame how even an ultra-fast PC with a dual-core processor and oodles of RAM still takes ages to copy a file from a CD to your hard disk. Or how Windows XP refuses to load faster than 25 seconds. And how your favourite game will run at 50 frames per second at the highest setting, but will still have you twiddling your thumbs while you wait for the next level to load. You're probably getting the drift here—it's all very well to make leaps and bounds in technology, but what's the point if you still have a few rubberbands holding you back? It's like running to a car in the rain without getting wet, only to find out that the guy with the keys is still 50 metres away.

The Fat Slug

The first thing that needs to go is the hard disk. While data can zoom along on your motherboard's system bus at speeds approaching 10 Gbps, the SATA-II hard disk interface ambles on at a leisurely 300 MBps at peak per-

formance (around 150, realistically). Clearly something needs to be done. While we pray for the death of the hard disk and its impending replacement by new technologies such as carbon nanotubes (read about alternatives to the hard disk in *Digit* March 2006), work is already being done to do away with the hard disk even in today's PCs.

Well, to be honest, the idea has been there for ages—use solid-state storage. RAM chips are capable of data transfer rates of 6 to 8 Gbps, and it makes more sense to have data in there rather than sitting on a hard disk platter. There was just one catch—RAM is volatile, so any data on it is erased as soon as you stop supplying power to it. The answer is to supply a small battery that will keep the data alive even when the computer is switched off, and *voila!* No more waiting for programs to load into memory—they'll already be there!

At Computex 2005, Gigabyte introduced iRAM, which is a PCI card with DIMM slots for RAM chips, which can be used as permanent storage. It fools the PC into believing that it's actually a hard disk using the SATA II interface. And therein lies the problem. You see, while you're still gaining the advantage of greater reliability thanks to no moving parts, you don't gain speed, because the SATA II interface will limit you to a maximum of 300 MBps!

A much better (read much, much more drool-worthy) implementation is what the guys at Atom Chip (www.atomchip.com) have come up with—they base their super laptops completely on their quantum-optical RAM. The latest SG220-2 laptop sports 2 TB (yes, that's Terabytes!) of quantum-optical memory. Try to relate that to your sit-

uation today—a 2,000 GB hard disk? Wow! 2,000 GB of *system memory*? {Faint}

Take Me Into The Light

There is only one ultimate speed—the speed of light. We're not going to rest till all technology moves at said ultimate speed, which is why we're so obsessed with making fibre optics work everywhere possible. Thanks to fibre optic cables, it's actually possible to have an Ethernet network that works at 10 Gbps. But what good can we get out of this if the copper connections on the Ethernet cards and motherboards only support 4 or 5 Gbps?

Enter Intel, which has been researching the possibility of bringing fibre optics to the motherboard. Instead of the copper tracks we have today, components will be connected to each other using little fibre optic lines. This will oust copper—which can only do 10 Gbps at its peak—for fibre optics will take these transfer speeds to anywhere between 30 and 60 Gbps. And one hallowed day, fibre optics will be used *inside* chips as well—imagine over a billion transistors connected optically without even needing a heatsink!

The catch (for there must be one) is that while fibre optic materials are getting cheaper, the equipment to convert electrical signals into optical signals and vice versa is dauntingly expensive. As of today, there is no way that any of the above dreams can be commercially viable.

Intel to the rescue again—in 2004, they tested a new microchip, called a modulator, which works at 1 GHz, is made of silicon, and is a far sight cheaper than other modulators, which were based on much more expensive materials like gallium arsenide.

It's still going to take around 10 years or so, but the super-fast silicon-optical chip isn't a hilarious fantasy any more.

And now the ultimate question: What does one do with a PC like that? ■

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Illustration Pravin Warhokar



Batteries

Will someone please give the Energizer Bunny a run for its money?

Ram Mohan Rao

We've talked about human nature elsewhere in this issue, and we return to it now: how many times have you said to someone on the phone, "I'll call you back! My battery is runnin'..." [Beep Beep Beep] And then, of course, how many times have you gone asking people around the office, "Does anyone have a <insert brand name here> charger?" All this is as much a part of our lives as our mobility.

Is There An Answer?

The answer is simple (except in cases where you don't have access to a power outlet): always carry your charger with you in the pocket of your jeans (or in your purse). And charge your device religiously every morning—all it takes is a half-hour each day, and it can happen in the background while, for example, you get ready for work.

Still, we hanker for longer battery life! We even curse the phone or PDA or laptop—as in "This bloody thing keeps running out!"

Well, run out it will, with current-gen battery technologies. So, being pragmatic about it, we (a) realise we won't change our ways, and (b) hope for all the innovative companies out there to come out with longer-lasting batteries.

Some companies, knowing how demanding and lazy we are, realised there's a zillion-dollar market for "betteries." It turns out that the same technology that can be used in hybrid cars—as in fuel cells—can also be used for portable devices.

The Fuel Cell

"Fuel cells for portables," as a phrase, was being bandied about quite a long time ago. In 2003 or so, we'd chanced upon a prototype laptop-fuel cell combo. The fuel cell looked like a little tanker attached to the back of the laptop; it was the same width as the laptop. It was an ugly prototype that no-one would use. But we

now have fuel cells for laptops and other portables that are much smaller than the devices they power.

Fuel cells are mainly different (from the user's perspective) from regular batteries in that you don't connect them to a power outlet to recharge them; they're cartridges, and you refill them by actually pouring fuel (often methanol) into them. That's if the companies decide to market them as refillable.

The Story Thus Far

At CES 2006, Panasonic showed off a fuel cell-equipped laptop. The company said it would provide 20 hours on a single 200 cc tank of methanol, and the fuel would be provided in cartridges.

15 May 2006, Casio hopped on the portable-fuel-cell bandwagon, promising to offer a compact battery for laptops in 2007. The prototype they had was a 6.5 x 1.9 x 1.8 cm unit, and its power capacity, translated into the size of today's batteries, meant a fuel cell the size of a standard Li-ion laptop battery would last four times as long, according to Casio—close to Panasonic's 20 hours. Temperature is a potential problem: 280°C is the temperature the cell gets to during operation! However, the cell packaging means the external surface temperature would be more like 40 degrees—certainly bearable.

We learnt that it's Toshiba that has the distinction of having produced the world's smallest methanol fuel cell. Back in September 2005, the company also developed two prototypes of fuel-cell-powered MP3 players, Flash-based and hard disk-based respectively. The Flash player ran 35 hours on a single 3.5 ml charge of concentrated methanol, and the hard disk-based player runs about 60 hours on a single 10 ml charge—if you use it for five hours a day, it will last 12 days!

The above list of prototypes is in no way exhaustive: there are many companies out there developing micro fuel cells. But what's nanotech doing? Well, no prototype gadgets yet, but nationalgeo-

graphic.com reported the following back in January 2005:

"Scientists have invented a plastic solar cell that can turn the sun's power into electrical energy... The plastic material uses nanotechnology and contains the first solar cells able to harness the sun's infrared rays... Like paint, the composite can be sprayed onto other materials and used as portable electricity. A sweater coated in the material could power a cell phone or other wireless devices."

That "could power" doesn't sound convincing enough, somehow: besides, we haven't heard anything about nano-sprayed fuel since that press release. Perhaps 2010 is a realistic estimate for prototypes based on that technology.

But coming back to fuel cell-powered gadgets, they're very much there, except they aren't on store shelves yet. However, 2007 could well be the year.

Not Everything Is Rosy

For once, we end on a negative note: will 2007 really be the year? "Toshiba May Bid Laptop Batteries Goodbye: New fuel cell, coming next year, could provide 10 hours of power for portable PCs." That was what IDG News Service reported in March of 2003. Where's that fuel cell?

Also, once these gadgets are out, we're going to complain about (a) size; (b) having to carry bottles of fuel; and (c) the fuel spilling into our pockets or handbags. But that's just human nature! ■

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Ultimate Portability

I want to own a device that fits in my pocket and is as powerful as a laptop!

Robert Sovereign-Smith

Thus far, portable computing is something that's strictly restricted to the upper management levels of almost every company. Unless your job role specifically demands that you be connected on the move, you're not going to be getting that company-provided laptop you're hoping for.

Let's say you're one of the senior sales executives in your company. You haven't reached the level in your company as yet where you're provided with a laptop and/or PDA. However, it would be nice to have access to the latest sales figures and perhaps information that could help you make your sales. A presentation or two wouldn't hurt either. Apart from the company not willing to spend the extra money, you also might not be too keen on adding another three or four kilos of weight to your everyday luggage.

Convergence

This word has made a huge impact on portable computing. Before you knew it, cell phones, which used to be devices you only made and received calls on, started offering basic PDA functionality. Next came the camera phone, which put a phone, a PDA and a basic digital camera all into one ultra portable device.

Needless to say, sales figures went through the roof—everyone wanted the MFD of communication devices—and we have the success of various Nokia and Sony Ericsson “smart phones” to prove it.

Stagnancy

Though technology improvements are shrinking products faster than ever before, the size of our fingers are limiting further shrinkage. Yes, it's the human anatomy and sight limitations that are keeping devices such as cell phones at a very standardised size. Too small a display and no one wants the phone; minuscule keypads also

bring down sales. However, with smart camera phones getting better by the month, it's not hard to imagine that cell phones will soon be as powerful as the computers of today. When you think about it, current-generation phones already have faster and better processors than the first few generations of desktop computers!

However, we need a revolution in technology in almost every field before we can make true portable computing devices.

The Baddies

LCDs: Every mobile device depends on this technology to provide screens. However, being fragile and unbendable, they've limited how small laptops, PDAs and cell phones can get.

Batteries: We're desperately seeking more battery power for all our devices. Just a couple of hours of charge for regular use is not good enough for them. What we need are batteries that can last a day. Though there are the options of fuel cells and other battery technologies available, it just seems easier to find components that use less battery power.

Input Devices: Keypads, touch screens, foldable keyboards—almost every innovation has been experimented with; we're now left with hoping that something revolutionary comes along and changes the way we interface with portable devices. Smaller keypads will just not cut it!

The Desire

OK, enough complaining! What the world needs is a device that has the functionality of a laptop, in a size comparable to a pocketable cell phone.

LCD technologies can be replaced by paper displays—this we already know. However, what if we could project the display instead of rolling it up? Perhaps even holographic displays

are worth looking at, provided they're made to be less power-hungry. As of now, paper displays seem to be the answer.

So, considering that we have a cell phone with a powerful enough processor that can run, say, an OS akin to Windows XP, and use Flash-based storage as the hard drive, all that's left is a cool way to somehow bundle a full-sized keyboard into the mix, and you'd have the ideal portable computing gadget!

Thankfully, new technologies from companies such as iBiz (www.ibizcorp.com), such as their infrared/laser keyboard, which can display a virtual keyboard in front of you on any surface you choose, might finally do away with the space troubles associated with bundling a full sized QWERTY keyboard into a device.

If all goes well, you should be looking at the first ultimate portable computer in less than five years. A guesstimate, because the technologies that will power one are still being developed. But if the market is there, can the product be far behind? ■

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FIFTH ANNIVERSARY

FIVE OF DIGIT'S TECH DESIRES ■ FIVE OF DIGIT'S TECH DESIRES ■ FIVE OF DIGIT'S TECH DESIRES ■ FIVE OF DIGIT'S TECH DESIRES

UtopiOS

I never want to bother with drivers or compatibility again. Ever!

Nimish Chandiramani

It's a beautiful day outside, but you don't care. It's a beautiful day inside, too—the installer for your much coveted Linux distro approaches the hallowed 100 per cent mark as you rub your hands in glee. You reboot into your new OS, and oh horror! Your Ethernet card isn't supported! How are you supposed to connect to the Internet? As you poke around trying to figure out what to do, you find that even more of your hardware turns up as "Unknown Device." Countless profanities and numerous clumps of ripped-out hair later, you're back to good old Windows, and have vowed never to go a-wandering for another OS again.

Meeting Ground

We are, of course, no strangers to the desire for our applications to run on all OSes, irrespective of which one it was written for—Windows, Linux, Mac, even Amiga. And to a very reasonable extent, this is quite possible, thanks to Compatibility Layers such as Wine, which let you run Windows applications on Linux. Applications give Wine the same instructions that they do a Windows PC, and Wine translates those instructions to make them understandable to the Linux PC. Ditto Darwine, the Wine that will let Mac users run Windows applications.

While everything seems all hunky-dory on the application front, there's a deeper, more painful issue to be tackled—drivers. Emulation takes a big bite out of system performance, and for something as critical as device drivers, the very idea of using emulation is horrifying. The only answer is to write drivers specifically for the OS. Right.

The Hidden Truths

A device driver is a piece of software that lets the operating system's kernel talk to your PC's hardware. The driver gives the OS a Hardware Abstraction Layer (HAL), which basically obviates the need for the OS to know exactly what hardware it's running on. All it needs to do is tell the driver what it wants the device to do—the rest is up to the driver.

Things start to smell a little fishy here—if drivers are separate from the main OS, why are they tied so closely to it? A printer driver, for example, will have a function called *print*, which the OS can use every time it wants to print something. Since all device drivers are written in C, they should work with anything that calls their functions. Believe it or not, we already live in a world where theoretically, device drivers need to be written only once—they can then be used in Windows, Linux, Unix, and any other OS. This means that you wouldn't need to go hunting for Linux drivers for your hardware—if it was supported in one OS, it's supported in all!

The Bitter Pill

The reason we struggle so much for drivers is that there's no *standard* way for operating systems to talk to drivers—Windows may say *print()*, but Mac may say *printme()* for the same function. Windows has the WDM (Windows Driver Model) standard, but it's just designed to work for all versions of Windows. Windows drivers also come bundled with a lot of (probably unnecessary) additions. No real printer driver is 25

MB—it's the additional utilities like ink-level monitoring et al that add to its bulk.

Linux, on the other hand, has no real driver standard—drivers can even stop functioning after a kernel update! Moreover, each distributor might modify the kernel a little—imagine having a Linux driver that doesn't even work with all distros. Eeyugh!

Are We There Yet?

Not too long ago, we stumbled upon a project called DriverLoader (www.linuxiant.com) that lets you use Windows network drivers as is in Linux, and without emulation, too. It builds a wrapper around the driver that simply links the Linux instruction to the instruction in the driver as written for Windows. If this were to keep developing, we'd soon have a Linux that didn't care about drivers—"Oh, I see you have Windows drivers for this device. Oh well, that will do too."

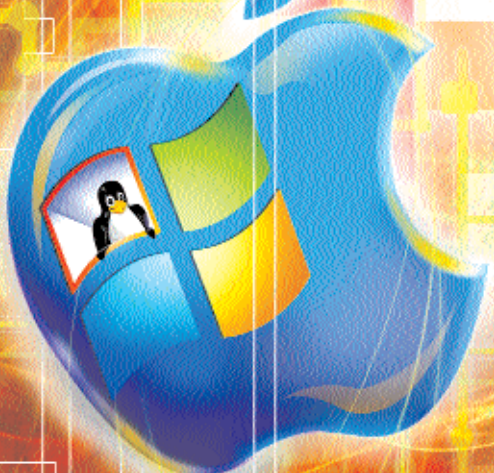
The possibility of this desire fulfilled—to never have to be bound to an OS—is eerily possible; so much so, in fact, that it's a wonder nobody thought of it yet. Or have they?

ReactOS (www.reactos.org) is a project that is working on making an open source Windows clone. It can run Windows applications and use Windows device drivers with few or no hang-ups. Later versions, the team promises, will also let you use applications and drivers written for the Linux and Unix platforms, making it possible to even run Macintosh applications, though probably not out-of-the-box just yet. Could this be the next big thing—the OS that runs *everything*? We itch in anticipation.

Of course, there's a better way out than developing a whole new OS—a single, universal standard for developing device drivers that all OSes will implement and all device manufacturers will use. That's on our wish-list too—right up there with world peace. ■

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Experts on Tech

Five guest columnists on their pet areas—from Open Source to Web 2.0



Venkatesh Hariharan
Head, Open Source Affairs, Red Hat India Pvt Ltd & Co-founder, IndLinux.org

No English Please, We're Indian

Sometimes, one good question is enough to change our lives. For me that one question came like a bolt from the blue in January 1997 when I interviewed a certain distinguished American professor: "Why is it that you produce software for the rest of the world, but very little for your own country?" he asked.

The software exports business was in a gung-ho mood, fears of the Y2K bug was driving business to Indian companies, and the domestic IT industry was a poor cousin of the dollar-earning software exports business.

I asked the good professor to explain what he meant.

Professor Keniston had visited several e-government projects in rural Madhya Pradesh, Tamil Nadu and other places, and tracked their progress over the years. A social psychologist by training, he has a keen interest in seeing how rural India uses computers and the Web to promote development, political transparency, and social justice.

"Your country is very strange. All software is available only in English, an alien language."

My first reaction was, "Why should people who speak Hindi and other Indian languages need computers?" To my mind, computers were an urbanised, westernised phenomenon, and the idea of rural non-English-speaking people using computers was an alien thought.

The interview was published, and we kept in touch. I kept sending Keniston news items on language computing, and

gradually developed an interest in this area. A few months later, I read about Harsh Kumar, general manager of Konkan Railways, who had developed Indian-language fonts that he was giving away for free. Manu Parpia, then president of the Manufacturers Association of Information Technology (MAIT), liked the idea. Manu and Vinnie Mehta, executive director of MAIT, helped us set up a stall at the IT India/Comdex 97 event in Delhi in December 1997, where we launched these fonts. That was an experience that truly brought home the need that Prof Keniston had so astutely perceived.

At the event, Harsh and I were giving demos of the Indian language fonts. Many of the people visiting our stall wanted

people collaborating over the Internet and distributed for free was highly exciting.

After returning to India, I joined the newly set up IIT-Bangalore. The remarkable Prof S S Sadagopan encouraged me to continue my research on bridging the digital divide. It was at IIT-B that I wrote an article titled "Why Linux Makes Sense for India." The thrust there was that if the collaborative model of open source was leveraged to localise Linux and other open source software to Indian languages, it could spark off a grassroots revolution and truly take IT to the masses. The upshot of this article was that Prakash Advani, who was setting up a company called FreeOS, came forward to fund this effort. This led to the

"Within the next five years, we will see a profusion of activity on the Web evolve around Indian-language computing"

to know how they could use their own computers in Indian languages—and they wanted the software NOW. Over the four days of the exhibition, we gave away thousands of copies of the fonts.

I spent 1998-99 traipsing the corridors of MIT and Harvard looking for appropriate, affordable technologies that could be brought back to India. Most of the professors and students there seemed to be using a geeky OS called Linux. Of all the cool, fantastic, futuristic technologies that I saw, the one thing that really stood out as being beneficial to India was the collaborative model of open source software development that led to the development of programs like Linux. The idea that sophisticated software programs can be developed by

creation of IndLinux.org, a non-profit that localised Linux to Hindi and worked with different language groups across India.

Looking back, working with Linux seemed very logical because our objective was to take computing to the masses. The GPL ensured that our work would be freely available.

Today, Linux and open source software like Open Office are available in all major Indian languages. Within the next five years, we will see a profusion of Web sites, search engines, blogs, and social networking sites evolve around Indian-language computing.

Looking back, I am struck by the irony of it all. It took an American to open my eyes to the need for computing in Indian languages! Such is life. ■

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Jon S. von Tetzchner
CEO, Opera
Software ASA

With all the hype surrounding Web 2.0, I want to take a step back and ask the question: what is Web 2.0? Is it a term we use to describe social networking sites like MySpace or Friendster? Does it mean any Web application using AJAX? Is it “just better” than Web 1.0?

I'd like to think of it as a movement—an evolution—in the way users and information interact on the Web. The Web doesn't progress like software from one version number to the next; rather, it evolves organically over time with the introduction of new technologies. Those technologies, like AJAX, help drive the Web's progression from static content to dynamic applications. Those applications—such as Google Maps and Yahoo! MyWeb—in turn create new ways for users to access, share, and shape content.

Today, Web-based applications have the power to tie that content together and merge it with other Web services for convenience, ease of use, or greater functionality. When we started Opera eleven years ago, we envisioned a browser that was a perfect window into the multimedia Web—a world filled with rich video, images and content. But now, as applications have redefined the Web, so too have we redefined the Web browser. Rather than being a window into a largely unchanging world, the browser now serves as a launching platform for applications.

With Opera 9, our newest browser, we've made our own leap into Web applications by creating Widgets. Widgets are

small Web applications with a specific function. It might be a simple game or a meta-search application now, but it's easy to picture the day when these are full-featured Web versions of existing desktop applications. It's also easy to picture the day when the traditional role of the desktop operating system is reduced.

On your computer now, your operating system probably launches almost all your applications. On your computer four years from now, your OS will exist to control a limited set of applications, several system tools, and most importantly, launch your browser. All the applications you currently use—word processors, games, video editors—will be accessed directly from that browser.

“Four years from now, all the applications you currently use—word processors, games, video editors—will be accessed directly from the browser”

Mash-ups are one early example of the beauty of Web-based applications that you will soon access from the browser. By aggregating information from several Web services, these mashups offer a new level of usability and ease for the consumer.

Shopping for a home? You could keep several browser tabs open with several real estate agencies, maps, and other tools. Jumping back and forth could easily and quickly become a nightmare. But if a mashup can bring these tools together—in one place—that convenience gives you an immediate value.

If they can be launched from your browser, applications can go wherever a browser can. For Opera users, this improved accessibility means the browser can launch applications on portable devices such as the Nintendo DS—or on many mobile phones available today.

Extending applications to mobile phones fundamentally improves how consumers interact with the Web. Today, Opera is collaborating with two Norwegian partners—FAST Search and Transfer and Telenor—to bring location-based Web services and applications to mobile phones.

Imagine entering your destination into a Web site. Since the site knows your location, it can tell you not only that the nearest bus stop is 100 metres away, but also that the bus you want arrives in two minutes.

But these innovations won't happen for Opera alone because technologies at the heart of this Web evolution are largely based on open standards. Opera has been a loud and long-standing

advocate of open Web standards because they help ensure a level playing field for all participants. And they make it easy for developers to do what they do best—drive the innovation that shapes the Web's continuing evolution.

I've talked a little about the future. But the present excites me, too. Developers working today rely on these technologies to push the boundaries on applications and the Web. The first Web revolution started with a few individuals working into the early hours of the morning to create sites that consumers could use. This revolution is in the same infant stage: developers toiling away on their own or in small groups to create something that has the power to touch millions.

This has always been our goal at Opera from our first days in the offices at Telenor. It still is. ■



Matthew Szulik
CEO and Chairman
Red Hat Inc.

Keep It Open

Each time I have had the pleasure of visiting India, I have been overwhelmed by the creativity and talent of its people, and the growing acceptance of open source software. India is a country steeped in history and driving towards a positive future.

Unburdened by the legacy of closed models that are common in other places around the world, India has moved forward on its own ingenuity, building on the technology foundations of Linux and open source software.

Open source is creating opportunities on a global scale. Building an environment for unprecedented collaboration. Generating value for the enterprise. Allowing the ability for companies and countries to compete in a worldwide market.

In the open source model, innovation has no borders. There are no restrictions. Whether you're building software in Silicon Valley or Mumbai.

It's clear that the restrictive nature common to proprietary software is eroding. The cracks in the walls are starting to show. In India, many of those walls were never there in the first place.

One reason is that the open source environment is inherently flexible. This allows greater ability to localise content—a critical factor in providing viable technology to India's citizens. It also creates the opportunity for a compelling desktop operating system for India.

I am also encouraged to see India progressively move toward the role of open source contributor. India is using its wealth of knowledge to build solutions for India, as well as contributing towards other areas

of the world seeking similar solutions. Open source was built in this way.

Around the world, access to technology means more users. And when users have the ability and the means to contribute—without geographical or structural boundaries—growth becomes exponential.

The opportunities are real and they are enormous. And it begins where access is needed most. Red Hat is proud to be a key contributor to the One Laptop Per Child project. Through this work, young people, even in the world's poorest and remotest areas, may have the chance to connect and participate in society in ways that were once impossible.

As open source continues to

our communities. But not to rebuild simply what we came to accept before, instead to build a new social fabric. A fabric that connects people as neighbours who may be continents away. A fabric that unites people with like interests, while ignoring artificial barriers like race, religion, power, money. A fabric that celebrates and nurtures great ideas, no matter where they come from.

The lessons we have learnt of the power of collaboration can now translate beyond building software. It is time for us to take our process and share it with the world. To change lives through teaching people how to build and connect ideas in the way that we in the open source movement have learned to do.

“Software is only the beginning. We now have to challenge to keep open other sources of content: music, text, even ideas”

rise to prominence, it presents a new set of challenges for the open source community and Red Hat as a company. And as open source software rises, so does the fight to keep it open. But software is only the beginning. We now have to challenge to keep open other sources of content: music, text, even ideas. All are interrelated.

We believe a key part of our mission as a company is to strengthen the social fabric through the democratisation of content. To foster an environment where the work we create is free from conditions of artificial control. Where individuals can access global sources of information—bypassing the traditional gatekeepers.

The advance of technology in the last 10 years has given us a gift. The gift is the opportunity to rebuild the collaborative social structures that have eroded in

As in software code, when content is open all of us can learn from it, build upon it, and use it to create.

When we are free to develop new content in an open way—that's when knowledge will progress at a the kind of pace that India has seen with building technology infrastructure around open source. At Red Hat, we want to teach people how to develop content with the intent of sharing it.

I ask, how would the human condition change if millions of people around the world were building on each others ideas. Sharing, collaborating—without artificial restriction. This was the promise of the library, and now of the Internet on a global scale.

I want to thank my friends in India who have worked so hard to adopt and contribute to open source technology. The impact of your work is recognised around the world. ■



Pat Gelsinger
Senior Vice
President
General Manager,
Digital Enterprise
Group, Intel

New Devices, More Mobility

The world has gone mobile. Just look around. Laptops are everywhere, Wi-Fi hotspots are in airports, hotels, and street corners, and over 200 million people in India own a cell phone! The mobile computing revolution began years ago with laptops built upon Intel Centrino technology and it has grown rapidly ever since. Now get ready for the next revolution as the Internet gets more personal with ubiquitous connectivity, new form factors that blur the lines between cell phones and laptops, and amazing new human interfaces.

One tenet for the future of mobility lies in completely ubiquitous connectivity. Not the islands of connectivity that we have with today's generation of Wi-Fi hotspots, but complete connectivity. Whether you're stuck in traffic in Bangalore or working in your village or farm, you will always be connected to a high-speed, high-bandwidth data and voice network.

WiMAX promises to deliver mobile, wireless broadband connectivity with 1 to 5 Mbps at ranges up to 70 km. Wi-Fi gives coverage like a cordless phone; WiMAX offers coverage like a cell phone. In pursuit of making WiMAX a true global standard, Intel is working with legislative and regulatory bodies worldwide to establish 2.3-2.5, 3.5, and 5 GHz as global frequency bands for WiMAX. The spectral efficiency and extended coverage characteristics of WiMAX make it ideal to provide significantly lower cost-per-data-bit mobile broadband connectivity in places where there is no other means of providing broadband connectivity. We are encouraging

regulators to rapidly allocate large blocks of spectrum in a technology-neutral way.

As users get more connected, opportunities present themselves for new and exciting form factors. Today I have incredible functionality with my notebook PC, but it's just too large. Smartphones are wonderful communication devices, but are severely limited in software compatibility, are limited in bandwidth, and offer only compromised data services. The future will be the best of both without compromises. A new category of device is emerging, which blurs the line between laptops and cell phones: Ultra Mobile PCs (UMPCs). Intel and several of its partners announced plans for the first of these devices

human interfaces that seamlessly combine multi-channel, high-quality voice with stereo vision on the input. On the output side, we're likewise soon to see high-definition sound, video, and graphics rendering systems. The combination will present the most dramatic step in human computer interfaces since the move from DOS to Windows: computers that can listen, see, and provide both semantic and contextual recognition and learning capabilities.

India's GDP is projected to grow by about 7 per cent this year, making it a prime target of growth for many goods and industries. Technology is expected to grow even faster, further fuelling disposable income within this populous nation.

"Get ready for the next revolution: there will be new form factors and amazing new human interfaces"

earlier this year. They will be roughly four to seven inches in size. Despite their size, these are complete personal computers including wireless connectivity, a full-fledged OS optimised for mobility, and a breadth of applications. Docked to an external display and a keyboard, these devices will feel just like your laptop does today.

PCs have made only modest advances in terms of their user interface. Smartphones are even worse; they have tiny thumb boards or stroke and stylus interfaces that are even more foreign for a human. Fundamentally, humans have needed to adapt to computers, not computers adapting to humans. While speech recognition has made progress, its use is quite narrow and its quality remains poor. Now, though, we are on the verge of having enough computing capability to provide multi-modal

With 54 per cent of the Indian population below the age of 25 years, at a macroeconomic level the technologies I've described above will help drive both higher productivity and higher growth rates for the economy. Your ability to "Go Mobile" plays a critical role at many levels of the economy from the rural to the urban. As a nation, these technologies are critical to enabling the continued rise as a global IT innovator and exporter. In cities, these technologies will help professionals become more productive and help them conduct their business in a seamless fashion. In rural communities, they will help people get connected with technology advancements, furthering their businesses and educational opportunities. The future of mobile computing will enrich all our lives and will help further connect India to the worldwide economy. ■



Donald J. MacDonald
Vice President,
Digital Home
Group, Intel

Driving The Digital Home

The performance and connectivity of PCs is coming to the world of consumer electronics. Combining the convenience and remote control of many consumer electronics devices with the rich content available to PCs over the internet, consumers can enjoy the best of both worlds on their own terms, from the comfort of their living room.

Worldwide, consumers are becoming more technically savvy and demanding of the technology they use in their everyday lives. Trends clearly show that PC and Internet users want to share media between their digital devices throughout their home, on their own terms. One study indicates that by the end of 2007, 183 million devices will be connected in a home entertainment network. While the numbers will vary from country to country, consumers will demand to experience entertainment “on their own terms.” This is the core of the digital home vision.

Intel’s Viiv technology, for example, is designed to deliver a great digital entertainment experience in the home. Consumers can download their favourite movies and songs. You can record live TV with an optional TV tuner card and remote. Organise and share all your photos. Or play games with competitors from around the world. You can now do it all from the comfort of your couch—with a click of your remote control.

At the heart of Viiv is a suite of hardware and software that offers new entertainment

experiences. Consumer electronics-like features for simplified entertainment will make devices in the digital home more fun and easy to use. After initial bootup and when enabled on the system, consumers will have the ability to instantly turn Viiv-enabled PCs on and off, similar to a TV. The PC keeps functioning even after it’s turned “visually off”: for example, while the PC in the living room looks like it’s off, it can still continue to stream music through a digital media adapter to the connected bedroom stereo.

Enhancing performance and responsiveness are the latest processors supporting dual-core computing, which is uniquely suited for multitasking and

technological foundations. Because their two sets of products weren’t built on the same technologies, they typically don’t work together.

Recently, to help drive greater cross-industry support, a cross-industry group to collaborate on specifications for accelerating the development of interoperable products was formed. The Digital Living Network Alliance (DLNA) aims to simplify the sharing of digital content among networked CE devices, mobile devices and PCs.

Leading entertainment providers worldwide are working with Intel to enable countless hours of on-demand, Internet-delivered, digital entertainment that is easy to

“Driving the digital home vision requires a serious commitment by the PC and CE industries to collectively develop guidelines for interoperability”

multi-user entertainment.

Intel has driven greater cross-industry support—such as the Digital Living Network Alliance (DLNA)—by collaborating on specifications for accelerating the development of interoperable products, while also striving to make premium digital content available, because hardware or devices alone will not deliver the digital home vision. A continuing stream of first-class digital content will make the power of new digital devices even more appealing.

Driving the multi-faceted digital home vision also requires a serious commitment by PC and CE industry leaders to collectively develop guidelines and specifications for interoperability. Historically, these industries have followed independent product development paths based on different

access and enjoy on Viiv-based PCs connected to a choice of screens in the living room—or even on the go.

The Personal Computing and Consumer Electronics industries are riding a massive digital media wave, buoyed by the rise in broadband Internet access, escalating consumer interest in all things digital, and cross-industry efforts to satiate that interest. The launch of Viiv in early 2006 demonstrated the need to accelerate the realisation of the digital home vision, where consumer electronics and computing devices interact transparently, and personalised content can be delivered on any device, anytime and anywhere.

You will soon be able to download entertainment from the world’s biggest online providers. If it’s out there—movies, music, or games—you’ll be able to get it. Instantly. ■

Mobile

Mobility is the in thing now, especially since the prices of these increasingly convergent devices are falling. We put the cells of today under our microscope and bring you the low-down on the best, as well as the rest

Imaging: Pradyip Ingle
Photograph: Anand Patil





124 Canon PowerShot S3 IS



126 30 days with...

Digital Passion

Fuelling the pursuit of technology knowledge

Michael Browne and Kailas Shastry

Cell Phones no longer confirm to the brick-like form factor of yesteryear! Their shape, features, performance as well as their battery life has improved substantially over the years. Not only has the cell phone adapted to its user, more and more people in India are getting on to the 'Go anywhere, Connected everywhere' bandwagon. Cell phone manufacturers have also noticed this trend and are making concerted efforts to provide for a vast range of models to pacify every singular need of thier customers.

A typical urbanite wants something that goes as well as it shows, and typical high-end-device-like features have well and truly trickled into the mass market. For example, a megapixel camera, fully featured MP3 player, and FM radio along with business features such as complete PIM,

ability to work with Word and Excel sheets and PDA viewing aren't up-market anymore. A mid-range cell phone now sports all these and what's more, even throws in a couple of extras, making it a true converged device.

The Indian market is especially competitive, and customers want all possible features on their cell phones, while they might not be willing to pay exorbitant prices anymore either!

Improved network coverage and GSM service provider facilities coupled with the sharp decline in the prices of mobile phones have all gone a long way in ensuring a market that is expanding, even as we write.

In this comprehensive cell phone shootout we've reviewed 47 cell phones from all major players. Will definite winners emerge? Will the big names in the mobile arena reign supreme, or will one of the minnows steal their thunder? Read on to find out...



FEATURE RICH CELLPHONES & SMARTPHONES

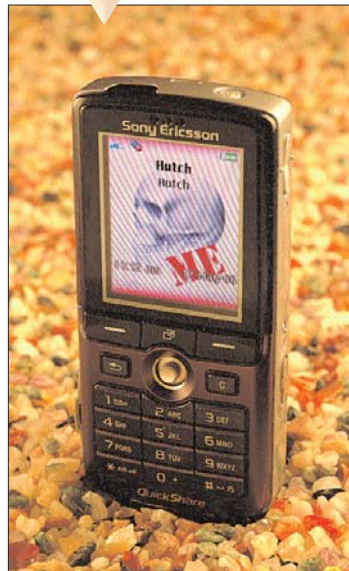
The cell phones in this category ranged from Rs 10,000 to 22,000, a very large range price-wise, but nonetheless, comparable in terms of features. These phones represented the high-end upper-mid-end products that all manufacturers across the board provided us with. The cell phones we received in this category were perhaps the most diverse, in terms of looks, functionality, and definitely, price. In all fairness, it's impossible to compare a Rs 10,000 phone with something that costs over Rs 20,000—regardless of whether they fall into the same category or not. In order to be objective, we've divided these phones into three categories, based on the assumption that India is a very price conscious market. Moreover, each phone has to justify its price.

Rs 10,000 to Rs 12,000

In the Feature Rich category the first mini battle takes place between the Nokia 6600, 7360, and Motorola E398. The Nokia 7360 is the lightest of the three, and is part of Nokia's *L'Amour*—phones that women would want to flaunt. The phone looks snazzy, but we were surprised that it didn't offer Bluetooth connectivity (wireless connectivity includes IR only).

The Motorola E398 impressed us with its build quality—very solid! This is a no frills phone that supports Bluetooth, as well as expandability via a Transflash card—Transflash is advanta-

BEST BUY
digit
JUNE 2006



The Sony-Ericsson K750i—Small Wonder

geous as it has a very small form factor along with fast transfer rates.

The last phone in this group was Nokia's 6600, an ageing model, albeit one of Nokia's best-selling models of yesteryear. The 6600 shows lack of sharpness in its display, which isn't too noticeable at first, but becomes more pronounced as one compares it to some of the newer models. Although spec-wise the screen is a 65K colour, with a 176 x 208 resolution—identical to most Nokia's—the difference is definitely noticeable. Another point against the 6600 is its keypad,

which is hard when compared to the newer crop of cell phones. The E398 also has a keypad that lacks feedback, something to note for SMS junkies, who want to do a lot of typing. The 6600 does manage to hold its own when it comes to functionality, this is a fully functional Symbian Series 60 smartphone, and can hold its own as far as PIM functions go. The menu layout is more intuitive and easy to navigate than the other two models.

As far as camera quality goes, with VGA class cameras that offer a pixel resolution of 640 x 480, these cameras were never going to be anything great. The E398 and the 6600 were the losers here, with a slight lead in image quality going to the newer 7360. All in all, the image and video quality across all the models wasn't worth much fanfare, with the video playback getting distorted and blurry at times.

How We Tested

The Segregation

One of the most subjective tests of them all, testing cell phones is never easy. Specifications can be noted down, but there are just so many impressions, so many facets of a cell phone that cannot be numerically represented. We received 47 cell phones for testing. These ranged from the very basic phones to the high-end PDA's, with prices ranging from Rs 2,500 to Rs 60,000. Now that is a very large price band, which is impossible to compare head-to-head.

To start off, we divided the cell phones into 5 categories, based on price and features. First, we classified the basic and mid-end phones into two different groups, with the basic group consisting of phones up to Rs 5,500. The mid-end phones were those that cost between Rs 6,000 and Rs 10,000. These categories were considered budget categories, and the weightage was on basic features and functionality here.

The phones that cost between Rs 10,000 and Rs 22,000 were considered the feature-rich and multimedia cell phones, these were awarded points for expansion, multimedia playback, presence of a camera and its quality, as well as the functionality. In case some phones lacked basic features, we were more severe with our point deductions—after all, a costly phone should have all the features of a cheaper model, and more.

The phones that fell under the Lifestyle category weren't pitted against each other, because of the fact that people who buy such phones are looking to make a fashion statement, and such tastes are very personalised. The phones that made it into this category, did so because of their sheer flaunt value.

The Business category was made up of five phones that offered PDA-like functionality, such as the ability to create and edit office documents (Word, Excel, PowerPoint) and PDF files.

The Process

We tested all the phones for their ergonomics and ease of use, if there were any quirks—such as a hard keypad, un-intuitive menu structures, etc.—were noted down, and points were deducted. Even finer nuances, such as the body structure, build quality, keypad backlighting, etc., was all taken into account. The actual phones were tested for menu layout, and ease of use of the features present, besides the usual signal quality and integrity tests, which were carried out simply by dialing the mobile from a landline number, the mobile was carried around to places of weak reception and the voice quality was judged and points awarded. The final score was the aggregate of the max and min signal areas.

The feature-rich category was also tested specifically for camera quality, multimedia playback quality, screen quality, as well as additional functions such as ability to work with office documents. These phones were also awarded points for the expandability they provided. The usual gamut of signal reception tests were also carried out.

The Lifestyle series were also put through the same rigorous testing procedures as the others, but they weren't pitted against each other. Any peculiarities were however noted, and in case of any essential functionality found lacking, this was included in the article.

Finally the PDA/business category of phones, these were tested for office productivity and connectivity like Wi-Fi, the regular multimedia tests done on the feature rich phones wasn't carried out on this category simply because the target audience for such phones will not be likely to go on a photo clicking spree. However music and video playback was tested, as well as the usual call and voice clarity tests.

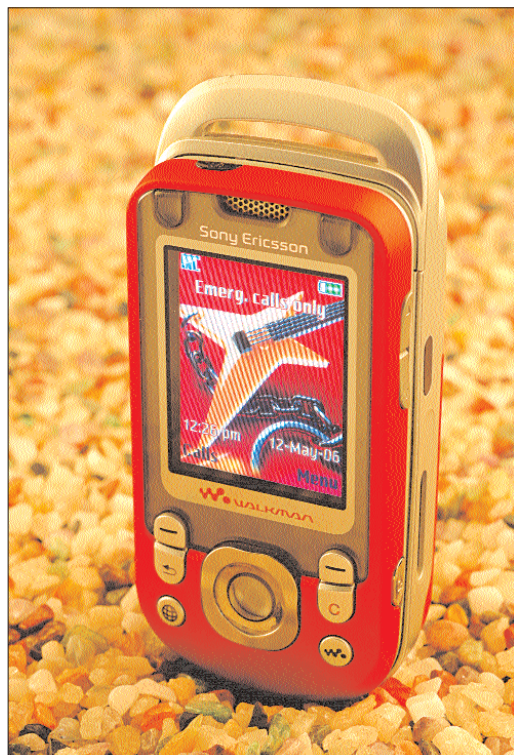
Coming to multimedia playback, the 7360 loses out big time due to lack of expandability. MP3 playback was decent however, with the 6600 and E398 offering similar music and viewing capabilities. Almost all the phones in this category—even the ones in the next price bracket—play both MP3 and AAC files, so it's just overall music playback quality we tested. As far as video playback goes, 3GP is the format of choice of format for cells. Why? Because the format is resource easy, is free and small in terms of file size, therefore video quality tests were done in 3GP format. Nothing much to report on the music and video front, as all these cells are more or less similar in terms of quality of content playback offered.

In terms of productivity, the Nokia 6600 offers the ability to view MS Word, Excel and PowerPoint documents, ditto the 6270, the E398 misses out here. As far as editing existing office documents go, none of these phones will allow the user to do any writing or spreadsheet work. Even the other Symbian cell phones have been designed to allow reading only.

One problem with the Nokia 6600, which deserves a mention, is its slow processor, one of the slowest across all the categories of phones tested. Using a large capacity memory card will only aggravate this, and video playback can get a little choppy. This is one cell that could use more processing power.

Rs 12,000 to Rs 15,000

Moving up the price ladder a bit, we have a fairly decent number of phones priced between Rs 12,000 and Rs 15,000. These phones represent what the discerning user will actually look at. We were also a stricter as far as music and camera quality are concerned, simply because a costlier phone, while not comparable to a



Photograph: Anurag Pathak

The Sony Ericsson W550i—Looks good, sounds better

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SYMBIAN Or NOT

“Symbian is addictive”, said a user, very recently on a popular forum. What is Symbian? Symbian is the operating system used by most smartphones these days. This replaces the typical firmware, with an actual OS, which supports installation and removal of compatible applications, to improve usability and productivity of the cellphone.

There are different series of operating systems for different phones. The Symbian 60, 80 and 90 series are open-ended platforms used exclusively by Nokia. Similar is the Symbian UIQ platform used by Sony Ericsson, for their high-end P series smartphones. Some bestselling examples of Symbian devices are the Nokia 7650, 6600, 6630, 7710, N70, and Sony Ericsson's P800, 900 and 910 cellphones.

Symbian based smartphones could very well replace the PDA in the near future. A typical ‘road warrior’ manager, has to be productive in office as well as in the back seat of a taxi. To do so he typically needs three gadgets, his laptop, his PDA and his cell phone. While on the move, a laptop becomes an encumbrance of sorts, and could actually hinder productivity. The PDA typically alleviates this problem, while losing out on the ability to stay connected. This is where the cell phone, or rather *smart* cell phone scores.

One of the major reasons why Symbian enjoys advantages like much speedier interface and improved security over even a PDA OS like MS Windows Mobile, is the use of the Symbian C++ development platform as compared to the .NET framework that Windows Mobile uses. With support for features like multi-threading, memory protection and pre-

emptive multitasking Symbian is not only faster, but more robust for day to day mobile needs also.

One of the reasons for insufficient penetration of Symbian in the handheld market is the dearth of Symbian C++ programmers. The learning curve of Symbian C++ is such that even C++ and Java professionals have to spend a lot of time learning its ins and outs. This isn't the case with Windows Mobile as the .NET development environment is very programmer friendly. Another limitation of Symbian is that the OS was designed for use on the ARM series of processors.

One of its biggest merits is the support for third party applications. The Symbian OS is so flexible that keeping a series in mind applications can and have been developed for use on Symbian phones. The best possible example is perhaps the Nokia 6600, one of the first series 60 smartphones. Applications developed for it range from Web browsers to even applications that allow your cell phone to act as a remote control for certain TVs and DVD players. In fact, more applications were developed for Symbian OS phones than all other OS-based cell phones combined! Symbian has another very significant advantage—it's very stable, more so than Windows Mobile, and infinitely more so than firmware phones, which are prone to errors and freezes.

We must also keep in mind that Symbian was designed not for high-end PDAs but for handheld devices with limited resources, (like smartphones), this makes Symbian the near perfect platform for multimedia phones and smartphones.

cheaper one, is supposed to do better in most, if not all of the tests thrown at it.

Looks-wise the Philips 768 really took us by storm, it's small, sleek and curvy, with mock chrome and a steel grey-silver finish that was as appealing as water in a desert! It's got the functionality as well, with a more than decent camera and integrated flash. The keypad layout is good, the joystick is fluid, and the keypad backlight is a cool blue that is functional without being intrusive. The 768 has a good display that's clear and crisp. If looks were all that mattered we'd have a winner here.

The Nokia 6630, despite its pluses, has an odd shape—the bottom of the phone widens out, giving the base a much larger rounded footprint—that some love to hate, and others hate to love! The Nokia 6260, the only clamshell model here, featured a swivel screen, but is still nothing special. The Sony Ericsson W550i, sported the most unconventional look and colour, with a bright orange and silver body, giving it a young and trendy feel. The Nokia 6670 looks like a more serious version of their funkier looking 7610.

Coming to camera quality the Sony Ericsson K750i completely ruled the roost, followed by the Nokia 6630 and 3230 and Samsung X700. The autofocus feature on the K750i works well, we were able focus on the object first and then shoot. What happens is pressing the camera button slightly will result in a small focus window, which automatically focuses just like a camera. The 2.0 megapixel camera also meant that in terms of raw pixel count, this camera was way ahead of the other in this price range.

The Nokia 6630 was a distant second, with its large lens and camera rated at 1.3 megapixels. A

neat feature was the zoom of the 6630, it's absolutely smooth. The smoothness of the zoom was even better than the K750i. The Nokia 3230 and Samsung X700 fought it out for the third place, the quality of images and video being about equal, though the edge would probably go to the Samsung, due to its crisper screen.

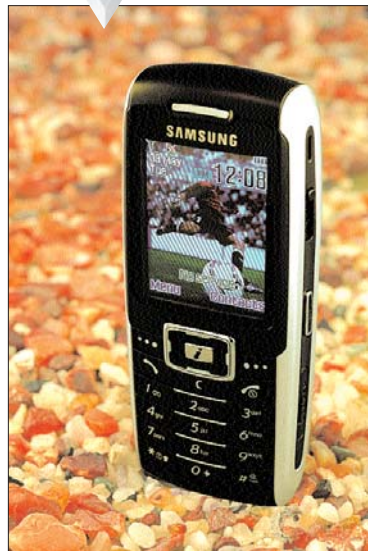
As far as overall image quality goes, while these cell phones certainly aren't in digicam territory yet, they are slowly getting within striking distance. Daylight shots are definitely good, with some very high quality images. Engaging Night Mode, or photo shooting in dim or dark lighting conditions is where all the cell

phones lose out, and badly. Video shooting under these conditions is even worse. There is no way that any of these cell phones can be used for after dark shooting. The K750i also gave the best quality video shooting, followed by the 6630.

The Nokia 6260 gave some of the lowest quality shots, testament to its ageing sub-megapixel camera. A surprise bad performer here was the W550i, its 1.3 megapixel camera just did not live up to its technical specs, and our expectations.

As far as screen clarity goes, the Nokia 6630 is just great, owing to a very classy looking set of default icons, with a sort of shadow effect around them, overall a very professional businesslike look! Seeing as it's a 65K colour screen, we couldn't spot any discernable difference between this and the 262K screens.

BEST BUY
digit
JUNE 2006



The Samsung X700—The best screen in its class

The Samsung X700 also has a very good display with excellent clarity and crispness, maybe more so than the 6630. Views differed about a winner, leading to some heated arguments, followed by more testing, until the decision was made, they're both good! The Sony Ericsson K750i, W550i and Nokia 3230 all deserve a mention here. As mentioned above, the X700 has a brilliant display, one sore point is it could have been a bit larger, (one reason why it lost a couple of points to the larger screen Nokia), which is the same gripe with the K750i. This is one area where scoring was very difficult, kudos to manufacturers for improving the screen quality many fold for the current generation phones.


Coming to MP3 playback quality, which is one of the selling points of multimedia cell phones these days, the winner is the Sony Ericsson W550i. This phone is part of Sony's 'Walkman' series, and features stereo widening, (a DSP effect), which greatly enhances sound clarity and volume. Unlike some of the other phones, the W550i can go really loud, without distortion and we're talking without the headphones! When you plug these in, its like listening to a mini concert, they're really so good. Nothing else comes close! Not in this price category, or for that matter any other. If MP3 *masti* is all you really want out of your cell, (apart from the cell phone features that is), you can blindly get the W550i! The only pain will be, as we mentioned the lack of expansion.

Second place goes to the K750i, which although a tad shy on the volume, (as compared to its musically brilliant companion above), is high on quality and fidelity. These two Sony Ericsson phones were in a league of their own, as far as music playback goes. The Nokia 6630 and 3230 make a decent showing here, with stereo playback, they both sound more than decent with headphones, and clarity is good, it just ain't got the decibels! The Siemens SL75 along with the 6260 brought up the rear, with the Nokia 6260 sounding pathetic, not loud enough, and with distortion even with the earplugs on. Being an earlier model is an excuse, but look past the 6260 if MP3 playback is important to you.

Another area in which phones in this category are supposed to deliver is storage capacity i.e. expandability. Not much use having a great camera and MP3 player if you cannot store more than a few numbers of video clips right?

The Sony Ericsson W550i and the Siemens SL75 were the only two cellphones in this range that didn't come with any memory expansion. This is a definite minus point considering the need for storing all that multimedia content. The W550i does have a very respectable 256 MB onboard—which is quite a lot for a cell phone, and more than enough for a few MP3's and videos. All other cell phones had expansion in the form of memory cards, with capacities up to 1 GB. Nokia's latest cell phones have support dual volt RMMC, (or Reduced Size Multi Media Cards), which are around half the size of an MMC card. Sony Ericsson's cellphones that have expansion slots feature the Memory Stick Duo—a Sony proprietary memory card. The Philips 768 featured a Mini SD memory slot, while the

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Scoreboard

FEATURE RICH PHONES

BRAND	Motorola	Nokia	Nokia	Nokia	Nokia	Nokia	Nokia
MODEL	E398	6600	7360	6630	6260	6670	3230
Features							
Design and Ergonomics							
Form Factor (Candybar, Clamshell, etc.)	Candybar	Candybar	Candybar	Candybar	Clamshell	Candybar	Candybar
Support for Network Bands	Tri-band	Tri-band	Tri-band	Tri-band	Tri-band	Tri-band	Tri-band
Dimensions (mm) L x W x D	108 x 46 x 21	109 x 58 x 24	105 x 45 x 18	101 x 60 x 21	109 x 42 x 23	108.6 x 53 x 20.9	109 x 49 x 19
Weight (gms)	108	122	92	127	125	120	110
Build Quality / Fit and Finish	3.25	3.5	3.5	4	3.25	3.5	3.5
User Interface	2.5	3.5	3.25	4	3.25	4	4
Navigation	2.75	2.75	3.75	3.25	3.25	4	4
Keypad Layout	3.25	3.25	3	4	2.5	2.75	3
Keypad Comfort	2.75	3.5	3.5	3.75	2	3	3.25
Keypad Backlight	3.5	2.75	3.5	4.5	3	3.25	3.25
Basic Phone features							
Display Resolution (pixels)	176 x 220	176 x 208	128 x 160	176 x 208	176 x 208	176 x 208	176 x 208
Display colours (K)	65	65	64	65	65	65	65
Address Book Capacity	1000	1000	1000	1000	1000	1000	1000
No. of Lines Displayed in Message	8	8	6	8	8	8	8
Number of Profiles	3	6	6	6	4	5	5
Themes	✓	✓	✓	✓	✓	✓	✓
Support for Installing New Applications / Games	✓	✓	✓	✓	✓	✓	✓
Memory							
Phone Memory (MB)	5	6	4	10	6	8	6
External Memory Slot / Type	✓/Transflash	✓/MMC	✗	✓/RSMMC	✓/RSMMC	✓/RSMMC	✓/RSMMC
Memory Card Provided (MB)	64	64	✗	64	32	64	64
Hot-Swappable	✗	✗	✗	✓	✗	✗	✗
Internet: GPRS/HSCSD/EDGE	GPRS	GPRS	GPRS, HSCSD, EDGE	GPRS, HSCSD, EDGE	GPRS	GPRS	GPRS, EDGE
Connectivity: IR/Bluetooth/USB/Wi-Fi	Bluetooth	Bluetooth, USB	IR, USB	Bluetooth, USB	IR, Bluetooth, USB	Bluetooth, USB	IR, Bluetooth, USB
Camera							
Image Resolution	640 x 480	640 x 480	640 x 480	1280 x 960	640 x 480	1152 x 864	1280 x 960
Video Capture / Resolution	✗	✓/176 x 144	✓/128 x 96	✓/176 x 144	✓/176 x 144	✓/176 x 144	✓/176 x 144
Lens Protection / Mirror for Self Portrait	✗/✓	✗/✗	✗/✗	✗/✗	✗/✗	✗/✗	✗/✗
Extra and Miscellaneous Features							
Ability to Adjust Brightness/Contrast	✓	✓	✓	✓	✓	✓	✓
MP3 Capability	✓	✓	✓	✓	✓	✓	✓
FM Radio	✗	✗	✓	✗	✓	✗	✓
Voice Recorder / Voice Dialling / Handsfree Speaker	✓/✓/✓	✓/✓/✓	✓/✓/✓	✓/✓/✓	✓/✓/✓	✓/✓/✓	✓/✓/✓
Talk Time / Standby Time	7 / 240	3 / 200	4 / 450	3 / 260	4 / 200	4 / 240	4 / 150
Performance							
Signal Reception	3	3.25	3.25	3.25	3.25	3.25	3.25
Voice Clarity	3	3	3.5	3.25	3.25	3.25	3.25
Processing Speed	3	2.5	3.5	4	3	3.5	3
Quality of Captured Image	2	2	3.25	3.5	2	3	3
Quality of Captured Video	0	2	3	2.75	2	3	2.75
Scores							
Features (out of 60)	33.59	35.28	38.82	41.35	37.89	36.53	41.97
Performance (out of 30)	14.10	15.64	19.91	20.25	16.58	19.28	18.45
Price Index (out of 10)	9.71	9.32	9.61	8.28	7.83	9.37	8.96
Overall Score	57.40	60.23	68.34	69.88	62.29	65.17	69.38
Price (Rs)	10,295	10,729	10,409	13,889	14,689	12,279	12,829



+ Compact;
sturdy build
- Low screen &
camera
quality



+ Application
compatibility
- VGA camera,
slow processor



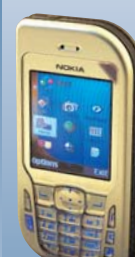
+ Cramped
keypad
- No expansion
slot, low-res
camera



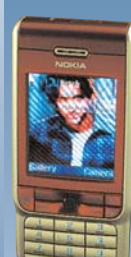
+ Fast CPU,
excellent
keypad layout
- Bulky



+ Large Keypad
- Low-res
camera, one-
handed opera-
tion difficult



+ Application
compatibility
- Very ordinary
camera, odd
keypad layout



+ Good screen,
FM support
- Bulky; slow

FEATURE RICH PHONES

Philips 768	Samsung X700	Siemens SL75	Sony Ericsson W550i	Sony Ericsson K750i	Nokia 6681	Samsung D600	Nokia N70
Candybar	Candybar	Slider	Swivel	Candybar	Candybar	Clamshell	Candybar
Tri-band	Tri-band	Tri-band	Tri-band	Tri-band	Tri-band	Tri-band	Tri-band
101 x 44 x 18	108 x 44 x 19	92 x 48 x 23	102 x 46 x 14	100 x 46 x 20.5	108.4 x 55.2 x 20.5	96 x 46.5 x 21.5	108.8 x 53 x 21.8
85	95	99	80	99	131	103	126
3.5	3.75	3.25	3.5	3.75	3.75	3.5	4
3	3.75	2.25	3	3.5	4	4	4
4.5	3.75	2.5	2.5	3	4	3.75	4
3	3.5	3	3.25	3.5	3.25	3.5	3.25
2.5	3.25	2.5	3.25	3.25	3.5	3.25	3.75
3.75	✓	3	3.5	3.5	4.25	3.5	4
176 x 220	176 x 220	132 x 176	176 x 220	176 x 220	176 x 208	240 x 320	176 x 208
262	262	262	262	262	262	262	262
1000	1000	1000	510	500	1000	1000	1000
6	8	9	6	6	8	7	8
5	4	4	4	7	6	4	6
✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓
10	35	52	256	38	8	72	35
✓/MiniSD	✓/MicroSD	✗	✗	✓/MS Duo Pro	✓/RSMMC	✓/MicroSD	✓/RSMMC
✗	✗	✗	✗	64	64	✗	64
✓	✓	✗	✗	✓	✓	✓	✓
GPRS	GPRS	GPRS, EDGE	GPRS	GPRS	GPRS	GPRS, EDGE	GPRS, HSCSD, EDGE
IR, Bluetooth, USB	Bluetooth, USB	Bluetooth, USB	IR, USB	IR, Bluetooth, USB	Bluetooth, USB	USB, Bluetooth	Bluetooth, USB
1280 x 960	1280 x 960	1280 x 960	1280 x 960	1600 x 1200	1280 x 960	1600 x 1200	1600 x 1200
✓/176 x 144	✓/176 x 144	✓/176 x 144	✓/176 x 144	✓/176 x 144	✓/176 x 144	✓/352 x 288	✓/176 x 144
✗/✓	✗/✓	✗/✓	✓/✓	✓/✓	✓/✗	✗/✓	✓/✗
✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓
✗	✓	✗	✓	✓	✗	✗	✓
✓/✓/✓	✓/✗/✓	✓/✓/✓	✓/✓/✗	✓/✓/✓	✓/✓/✓	✓/✗/✓	✓/✓/✓
4 / 300	7.5 / 450	5/300	7 / 300	9 / 400	6 / 240	7 / 300	3.5 / 260
3.25	3.5	3.25	3.25	3.25	3.25	3.5	3.5
3.25	3.25	3.25	3.25	3.5	3.25	3.5	3.5
3	4	3	3.5	3.75	3	4	3.5
2.75	3	2.25	2.25	4	3	3	3.75
2.5	3	2.25	2.25	3.5	3	3	3.25
39.59	42.89	38.15	36.61	44.76	39.56	43.13	46.88
17.93	20.21	17.10	17.70	21.56	18.68	20.55	21.08
9.58	7.82	7.67	8.59	7.67	9.45	7.38	7.05
67.10	70.92	62.92	62.90	73.99	67.68	71.06	75.01
12,000	14,699	14,990	13,395	14,995	16,409	20,999	21,989



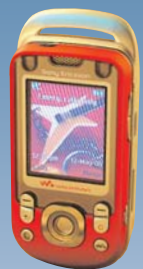
+ Great looks,
great shortcut
keys
- None in partic-
ular



+ Great screen
- MP3 player
cannot play in
background



+ Looks cute
- Screen lacks
clarity



+ Excellent music
quality, snazzy
design
- Camera not
good enough



+ Good camera
and music play-
back
- Small display



+ Decent camera,
good screen
- Bulky; slow
processor



+ Great display,
slick slider,
good camera
- Expensive



+ High-quality
music player,
good camera
- Cramped keypad;
expensive



FIFTH ANNIVERSARY

Digital Passion | Cell Phone Test

Samsung X700 had a Micro SD slot, which is about half the size of Mini SD. Note that these memory standards are incompatible with each other for the most part—except MMC and RSMMC, for which an adapter can be used. For exchanging data between non-alike cards, a card reader will have to be used.

Coming to support for document viewing, once again all the Symbian based Nokia phones had the option to view MS office documents. This is a definite plus, but not necessarily a judge for the other phones, as the Nokia's are classed as Smartphones, with emphasis on the smart features, like enhancing productivity, PDF viewing etc, while the others are more focused on multimedia. This doesn't mean that they give up on functionality in any way, just that the jack of all trades principle is being put to use by manufacturers here, it just depends what combination of features they are focusing on.

Coming to miscellaneous features and quirks, there was a very notable feature that some of the Nokia phones had, which were absent throughout the board. The keypad on the Nokia 6630, 6681, N70 and N91, (not in this comparison), models intelligently lit up when the



The Nokia N70 - Feature-rich beauty

keypad was in use in a darkish area. This is achieved by a light sensor placed atop the phone that will cause the keypad to illuminate once you operate it in dimly lit areas. Very nifty indeed, and a small, and not very costly feature to add! We would like to see more cell phone manufacturers incorporating such features that actually work!

Rs 15,000 and Above

Looks-wise the Samsung D600 is ahead of the other two cellphones in this category, mainly because of its small footprint. The fit and finish of the slider mechanism is also top notch, as is the feel of the keypad, and its layout. Generally slider phones tend to get a bit cramped as far as the keypad layout goes, no such problems here. Second prize goes to the N70, with a steel chrome front and compact looks. One sore point is the slight gap between the chrome bezel and the rest of the body, this becomes a bit of an eyesore after awhile, if you happen to be choosy about fit and finish. Build quality is however right up with the best. The 6681 is the ugly duckling of the lot, by no means an ugly phone on its own, but the chrome call and cancel buttons were just a little too gaudy.

Coming to the cameras of these phones, the quality of the 6681 was found to be lacking on paper—with specs, as well as in practice. The 1.3 megapixel camera just couldn't keep up with the cameras on the N70 and the D600, both rated at 2 megapixels. Picture quality of the N70 was slightly better than the Samsung D600, particularly when using zoom. Video shooting on the N70 was also better.

Note that by zooming we mean a small amount of zoom—any serious zooming distorts the quality of the shot/video, as all the cellphones tested have digital zooms, which unlike an optical zoom, reduces clarity when used. The Samsung was a tad slow in clicking images however, ditto the Nokia 6681, though this was more noticeable on the former. The N70 had no such problems.

The N70 has one camera in the front and one in the rear. This is for video conferencing, and the only issue here is the front camera is VGA, and not a good one at that! It's the rear camera that sports the 2.0 megapixel capture resolution. Both the 6681 and the N70 have sliders that cover the rear cameras, and sliding them down activates the camera mode.

One irritating point noted here—both the Nokia sliders, although smooth to operate, actually rub against the back bezel, and after 50 to 60 times of sliding the 6681 back and forth, the chrome trim surrounding the camera lens actually started wearing off due to this movement. The N70 fared slightly better, but there were scuff marks beginning to appear as well. Quite an eyesore for someone investing as much as these cell phones demand!

Screen clarity is well and truly ruled by the odd man out in the trio—the D600. This screen, (like the X700), was crisp and ultra sharp, Samsung really does produce top quality displays! The icons look lifelike, and the menu layout is just so clean.

Nokia 7710

Lifestyle Phones

All display and no keypad makes the 7710 a confused phone. Nokia's attempt at a complete touch screen phone with no number keypad has most people pleasantly surprised, while some seem to have their own reservations—the primary reason being the said absence and its slow processor. Why are the first of a new Nokia line always slow? First the 6600, and now the 7710.

On the bright side is the wonderful and massive 640 X 320 wide screen display which is great for viewing videos. The Series 90 platform used by the 7710 has several applications written for it, and playing an MPG or an AVI file is possible. Entertainment to go! Its stereo loudspeaker is well... really loud! A 'mere' 1 megapixel camera disappoints a little, considering its price and other abilities. Video is recorded in the standard 176 x 144 resolution.



This is a multimedia phone in the true sense, if you ignore the lag in opening of videos, that is. With GPRS, HSCSD and EDGE support, internet experience is only enhanced by the large screen. With an extensive calendar and innumerable Series 90 applications that can be further installed, the 7710 can do double duty on your office work as well.

The stylus slots in neatly and is as easy to retrieve. The touchpad is sensitive enough and takes in user input without fuss. Simple navigation and selection can be done using the limited keypad too. Nokia wins again in the department of navigation—a new user can get to the different features in no time at all.

The Series 90's flexibility is evident in the 7710. The number of entries in the phonebook, message box, received and dialled call-log, all depend on the shared memory, which pleasantly is 90MB. If you use the MMC card to store pictures and videos, you get virtually unlimited phonebook and log entries.

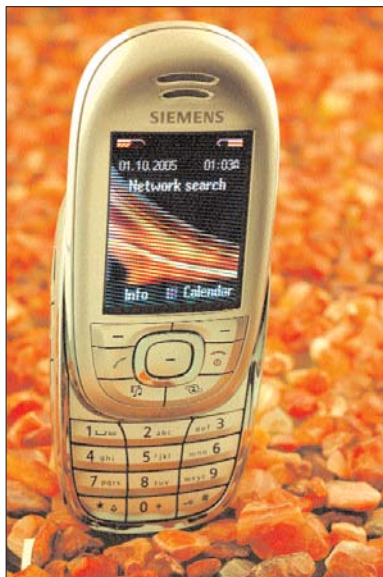
The 7710 is not *chic* per se, but if size matters, it can be an attention grabber. If all fails, just pump up the volume or turn on the video and you will have a crowd around you. We tested this feature and it works!

- + Large and clear display, sensitive touchpad
- No keypad

Rating: 3/5

Text is ultra readable, just as it should be in all phones. Dare to dream, but we wish more cell phones shared Samsung's prolific displays! The 6681 takes second position here, a surprise, since we really expected the newer and more expensive N70 to excel, but this wasn't the case! The Nokia N70 has a larger, but lower resolution screen than the Samsung D600—so obviously the Samsung's screen looks a lot better.

Coming to ergonomics the 6681 with its large call buttons edges out the other two phones, while the N70 would be preferred over the D600 due to the former's better button layout. We aren't talking about the number keypad, rather the soft keys present on the outer part of the phone. The navigation on the 6681 is also the easiest to use, although this depends on what a user is already familiar with.



Siemens SL75 - The sliding beauty

MP3 playback sounded the best on the N70, with the Samsung D600 edging out the 6681 for second place. The N70 with headphones really rocks; not nearly as good as Sony's K750i, and the W series, mind you, but definitely better than the other Nokias. The N70 also has a very loud speaker—around three-times louder than the other Nokia phones we tested. Sound quality wise the 6681 is nearly identical to the 6630, which was in a lower price bracket. The 6681 has the lowest volume levels of the three. The Samsung was also the only one of the threesome to have dedicated buttons for volume control and camera, (chrome finished buttons on the side of the phone), something to watch out for ergonomics and usability wise. It's noteworthy that the media player on the N70 is very plain-jane, earlier Nokia's seemed a bit better as far as layout of the player menu and functionality goes, (including the 6630 and 6681).

When you talk Rs 15,000 or more, expandability isn't an option, it's understood! All these phones featured expandability, with the two Nokia's supporting RSMHC dual volt specifications, while the D600 supported the ultra compact Transflash.

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Connectivity-wise all three phones here featured Bluetooth—something that is mandatory for cellphones in this category. Pretty much all the cell phones across the three sub categories had Bluetooth as a connectivity option, with most vendors doing away with IR, Sony Ericsson phones still feature both options however.

Conclusion

This was the most exciting category, and we actually had to sub-divide it, because of the sheer variety available.

The first mini battle takes place at the bottom of the group, (price-wise), where the Nokia 7360 emerges winner, battling it out with its older sibling the 6600, (which is really showing its age now), and the Motorola E398. Youth and beauty win here, as the 7360 really makes a fashion statement for itself.

The second group sees the Sony Ericsson K750i emerging as winner, expandability, excellent cam and MP3 playback, compactness, this phone has it all, at Rs 14,995, we feel it's a really good deal. The Samsung X700 comes in a decent second, with the two Nokia's just nipping at its heels.

In the top segment, price-wise, the N70 is head and shoulders above the competition, providing a very good camera, clear, loud MP3 playback and all the functionality you're likely to need. Samsung's D600 takes second place, but if you have a budget of around Rs 20,000, we really recommend the N70, simply because of the gamut of features it brings to the equation.



Siemens ME75

MID-RANGE PHONES

If your budget is important, but not the only thing influencing your buying decision, and you need a decent feature-set as well, this is the section of phones you will be looking at!

With looks ranging from 'fairly decent' to 'good' you can actually think of gifting these to a near and dear one. The price band we have chosen is broad—from Rs 5,500 to Rs 10,000. Here again we will split this category, this time into two, below and above Rs 7,500.

Rs 5,500 to Rs 7,000

Phones in this segment are characterised by a VGA camera which also shoots videos at a standard QCIF (Quarter Common Intermediate Format) resolution of 176 x 144. All of them have USB connectivity, for synchronising of contacts and transferring images or video. Additional device-to-device connectivity is in the form of Bluetooth on the Motorola L6 and the LG C2500, while the other phones make do with infrared. Bluetooth offers higher speeds than infrared can, and does not depend on line-of-sight transfers.

Internet connectivity is via GPRS on all phones here—the Nokia 6020 deserves special mention for offering EDGE and HSCSD (High Speed Circuit Switched Data). All phones have a WAP 2.0 and XHTML compatible browser. The browser on the C2500 was the slowest amongst the lot, while the L6 was fast—as fast as navigating through the rest of the phone.

PIM and Contact Management

All phones provide a scheduler where you can set reminders for a particular date and time, and you can also attach a note here. So, equal

Nokia N91

Nokia's answer to the 'Walkman' branded phones from Sony Ericsson comes in the form of N91. Combining some bleeding edge technologies and support for various music formats, the N91, definitely packs the bang to take down its opponents.

Encased in a stainless steel body the phone feels sturdy and solidly put together; however, keeping it spotlessly clean can be a challenge. While the design isn't special, this candy bar phone does seem a little longer than most phones.

The N91 is the first phone to integrate a 4 GB hard drive and thus has the capacity to store a significant chunk of one's music collection. With dedicated buttons for music playback along with an intuitive user interface, the N91 can go toe-to-toe with any MP3 player in the market. Nokia has also integrated a standard 3.5 mm stereo jack into the phone, allowing most headphones to be connected without an adapter. Support for music format includes MP3, AAC, WMA, and MP4. The included stereo headset provides decent quality but there is definitely room for improvement. Transferring music is just a matter of drag and drop as the phone is detected as a USB drive under Windows XP.

As it should be with most music phones, the music capability is well synergised in the phone. Automatic pausing of music when a call comes and subsequent playback on ending the call speaks for the amount of thought put in.

The 262k colour display is brilliant; only to be spoiled by an acceptable, but not great, resolution of 176 x 208. The keypad is exposed by sliding down the media controls. Its keys are too

small for comfort and those with fat fingers will definitely have problems operating the pad.

Speaking of other features this is probably the first phone from Nokia to integrate Wi-Fi 802.11g. Other connectivity options include Bluetooth 1.2 and USB 2.0. The phone also supports EDGE and hence browsing over GPRS is blazing fast.

The N91 also integrates a 2 megapixel camera capable of clicking shots up to 1200 x 1600. It can also record video in MPEG4, H.263 and RealVideo8 formats. The shots taken were good and match up to those offered by competitors.

Priced at Rs 33,999 the Nokia N91 is one of the most expensive music phones around. Considering the 4 GB hard drive, Wi-Fi 802.11g, stainless steel body and other notable features the price tag might seem appropriate but for most of us, it's still too expensive.

+ 4 GB hard drive
- Cramped keypad
Rating: 3.5/5

Lifestyle Phones



points to all contenders here. The Siemens C75 and the ME75; and the K300i also have a useful notes feature. On the L6 and the C2500, this notes feature is absent, so if you need to quickly type in a note you will have to compose an SMS and save it as a draft.

The Siemens phones offer a whopping 1,000 phonebook entries each, with up to 20 fields! The L6 gives you just an address and picture per contact, while the C2500 gives six fields (apart from name) and a picture per contact. Both, the L6 and C2500 can hold 500 contacts.

Memory Capacity

With Internet connectivity and a camera being standard, enough memory to store all those pictures and videos is important. None of the phones here have a memory expansion slot. Call it cost cutting or a deliberate attempt to differentiate between these and costlier models—you simply can't excuse a measly 3.5 MB shared memory on a phone (Nokia 6020) that supports GPRS, EDGE, and HSCSD. The LG's C2500 comes as a pleasant surprise with a respectable 64 MB of memory. The phone offers MP3 functionality, and you can listen to MP3s without even inserting the SIM card. The sound quality is not comparable to dedicated MP3 players, but at least you have something to listen to while waiting for a friend or a bus to turn up. The good news continues with FM reception. The Motorola L6, Siemens C75 and ME75 have a 10 MB storage capacity while the SE K300i has slightly more room with 12 MB.

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Motorola SLVR L7-Sleek and easy to use

Ease of use

The menu and navigation on all these phones is simple and straight forward enough, barring a few quirks here and there. On the L6, for example it will take you a while to get the hang of its menu and navigation select key. The C2500, for some reason had no 'centre click' to select, on a keypad that looks like a 5-way keypad. This means as you navigate to your desired menu, you have to shift your fingers to the left in order to press the soft-key and make a selection.

Once you get used to a particular phone, you will invariably find it comfortable to use. Thus, moving from one phone to another takes a while. You'll understand what we are saying if you have shifted from a Nokia to a Philips or to a Siemens. So, if ease of use is an important criterion to you, give yourself some time with a potential purchase before drawing conclusions. If a friend has the model that you want to buy, borrow it for at least half a day and toy with it.

Keypad

For SMS addicts, nothing is more important than keypad comfort and layout. The Motorola SLVR L6 has the most tactile keypad by far. The C2500 has small but well spaced number keys, but the navigation and softkeys seem like they are jammed together. You can quite easily press cancel when you mean to navigate to the right! The Siemens C75 and ME75 could definitely use softer and less noisy keys. The Nokia 6020's rectangular keypad is easy to type on, but the joystick should have been more responsive.

Show Worthy?

After the RAZR, Motorola's fascination with four lettered names continues with the SLVR which is to be pronounced as 'sliver'. The SLVR L6 comes with a bright and clear blue keypad, and its backlight adds functionality as well as style. Clearly, this is a phone meant not just to talk, but to show off. A striking feature of the L6 is its slimness, but at the cost of being longer and broader than most.

The LG C2500 is small and easy to hold—even toss around! A flash of blue from the keypad, while the phone is in standby, seems like an attempt to grab attention. The Siemens C75 and ME75 have a silver metallic colour, rendering a somewhat retro and laidback look. Nothing special about the K300i and the 6020—they're just average-looking phones.

Rs 7,000 to Rs 10,000

Compared to the previous segment, the phones here are more expensive, and you will expect more out of them. Only the Philips Xenium 9@9e and LG S5200 have a megapixel camera, while the others make do with the modest 640 x 480 VGA resolution.

Motorola PEBL

Lifestyle Phones

It certainly looks more chic than a mere pebble. The phone has a unique flip open mechanism. A mild push to the lid makes it snap open in a brisk and sure way. A clear and pleasing blue backlight accentuated by an all-black colour greets you as the flip opens. The screen is a crystal clear 262k colour TFT, lending a sophisticated feel to the PEBL. A nice, easy-to-press keypad pampers you further. Good first impressions. That's what the phone is about.

On to the features though, there is nothing to rave about—5 MB of internal memory and lack of an expansion slot to begin with. You will have to cut short (quite literally) plans of playing videos or music. A 10 or better still, 20 MB capacity would have been nice. Bluetooth and USB (there is no IR) connectivity, a VGA camera and GRPS comprise the basic plumbing of the PEBL. A mini-USB port is used for headphones, charging and USB connectivity. Surprisingly, and unfortunately, the phone cannot be connected as a USB storage drive, but with a 5 MB capacity, it is not a major loss. This and the oversight on memory though, make us wonder if the PEBL was designed in a studio rather than an engineer's desk.

Storing your friend's and that friend's friend (whom you tried to impress with your PEBL) numbers is not difficult thanks to the 1,000 phonebook entries capacity. The velvety feel of the phone had some of us not liking it, while others were neutral on it. Apart from this, the PEBL is one of the snazziest phones we tested. Flaunters will have a gala time with it. A debate rages in our labs on whether the PEBL is meant to be in the hands of a lady, or if it is meant to woo one...

+ Stylish
- Only 5 MB memory
Rating: 3.5/5



Scoreboard

MID-RANGE PHONES

BRAND	Motorola	LG	Siemens	Nokia	Sony Ericsson	Siemens	Samsung
MODEL	L6	C2500	C75	6020	K300i	ME75	X620
Features							
Design and Ergonomics							
Form Factor (Candybar, Clamshell, etc.)	Candybar	Candybar	Candybar	Candybar	Candybar	Candybar	Candybar
Support for Network Bands	Tri-band	Dual-band	Tri-band	Tri-band	Tri-band	Tri-band	Tri-band
Dimensions (mm) (L x W x D)	113 x 49 x 10.9	101 x 46 x 17	103 x 44 x 17	106 x 44 x 20	99 x 45.4 x 19.2	105 x 46 x 18	106 x 45.5 x 20
Weight (gms)	86	80	85	90	85	95	71
Build Quality / Fit and Finish	3.5	3.75	3	3.25	2.75	2.5	3.5
User Interface	2.75	3	3.25	3.25	2.75	3.25	3.5
Navigation	3	3	3.5	3.25	2.5	3.5	3.75
Keypad Layout	3.25	2.75	3.25	3.25	2.75	2.5	3.25
Keypad Comfort	3	2.25	3.5	3.25	2.5	2.5	3.25
Keypad Backlight	4	2.75	✓	3.25	3	2.5	3.5
Basic Phone Features							
Display Resolution (pixels)	128 x 160	128 x 128	132 x 176	128 x 128	128 x 128	132 x 176	128 x 160
Display Colours (K)	65	65	65	65	65	65	65
Address Book Capacity	500	200	1000	1000	500	1000	500
No. of Lines Displayed in Message	6	4	9	4	5	9	6
Number of Profiles	3	5	8	6	3	8	Quiet Mode Only
Themes	✓	✓	✓	✓	✓	✓	✗
Support for Installing new Applications / Games	✓	✓	✓	✓	✓	✓	✓
Memory							
Phone Memory (MB)	10	64	10	3.5	12	10	3
External Memory Slot / Capacity	✗	✗	✗	✗	✗	✗	✗
Connectivity (IR/BT/USB/Wi-Fi)	Bluetooth, USB	Bluetooth, USB	IR, USB	IR, USB	IR, USB	IR, USB	IR
Internet (GPRS/HSCSD/EDGE)	GPRS	GPRS	GPRS	GPRS, HSCSD, EDGE	GPRS	GPRS	GPRS
Camera							
Image	640 x 480	640 x 480	640 x 480	640 x 480	640 x 480	640 x 480	640 x 480
Video Capture / Resolution	✓/176 x 144	✓/176 x 144	✓/176 x 144	✓/176 x 144	✓/176 x 144	✓/176 x 144	✗
Lens Protection/Mirror for Self-Portrait	✗/✗	✗/✗	✗/✗	✗/✗	✗/✓	✗/✗	✗/✗
Extra and Miscellaneous Features							
Capability of Adjusting Brightness / Contrast	✓	✓	✓	✓	✓	✓	✓
MP3 Capability	✓	✓	✗	✗	✓	✗	✗
FM Radio	✗	✓	✗	✗	✗	✗	✓
Voice Recorder / Voice Dialling / Hands-free Speaker	✓/✗/✗	✓/✓/✓	✓/✗/✓	✓/✓/✓	✓/✓/✓	✓/✗/✓	✓/✗/✓
Talk Time / Standby Time (Claimed)	5.5 / 345	2.5 / 300	5.5 / 300	3 / 300	7 / 300	8 / 450	6.5 / 300
Performance							
Signal Reception	3	3	3	3	3	3	3.25
Voice Clarity	3.25	3.25	3.25	3.5	3.5	3.25	3.5
Processing Speed	3	2.75	3.25	3.5	3.25	3.25	4
Quality of Captured Image	2	2	2	2.5	2.25	2	2.5
Quality of Captured Video	2	2	2	2	2	2	0
Scores							
Features (out of 40)	21.98	24.20	21.80	21.44	22.14	20.50	21.52
Performance (out of 45)	25.88	25.43	26.33	28.13	27.34	26.33	28.80
Price Index (out of 15)	13.70	13.33	12.71	12.66	12.14	11.80	10.93
Overall Score	61.56	62.96	60.83	62.22	61.62	58.63	61.25
Price (Rs)	6,020	6,190	6,490	6,519	6,795	6,990	7,549



- + Sleek; good keypad and backlight
- Poor speaker quality



- + Acts as USB drive; charges via USB
- Bundled earphones a bit uncomfortable



- + Large phone-book
- Joystick unresponsive



- + HSCSD & EDGE connectivity
- Sub-par camera, low speakerphone volume



- + Good build quality; fast browser
- Hard keys



- + Large phone-book
- Sub-par build quality; odd colour combo



- + Protection against accidental deletion
- Only 3 MB memory

Samsung X660	Philips Xenium 9@9e	LG S5200	Motorola L7
Clamshell	Clamshell	Vertical Slide	Candybar
Tri-band	Tri-band	Tri-band	Tri-band
89.5 x 45 x 21.5	89.9 x 47 x 25.5	92 x 46 x 21.7	113 x 49 x 11.5
78	105	92	96
3.5	3.75	2.75	4
3.5	3.25	3	3
3.75	3.25	3	3
3.75	3.75	2.75	3.5
3.25	3.75	1.25	3.5
3.5	3.5	3.25	4.25
128 x 160	128 x 160	128 x 160	176 x 220
65	65	262	262
500	1000	1000	1000
6	6	6	8
Quiet Mode Only	7	4	3
✗	✗	✓	✓
✓	✓	✓	✓
8	20	64	11
✗	✗	✗	✓/128
IR, USB	IR	Bluetooth, USB	Bluetooth, USB
GPRS	GPRS	GPRS	GPRS
640 x 480	1280 x 1024	1280 x 960	640 x 480
✓/176 x 144	✗	✓/176 x 144	✓/176 x 144
✗/✗	✗/✓	✓/✓	✗/✗
✓	✓	✓	✓
✗	✗	✓	✓
✗	✗	✗	✗
✓/✗/✓	✓/✓/✓	✓/✓/✓	✓/✗/✓
3.5/200	8.5 / 800	2 / 200	6.75 / 350
3	3	3	3
3.5	3.25	3.25	3.5
4	3.5	3	3.5
2.5	3	2.75	2.5
2	0	2.75	2
20.80	22.06	25.52	26.71
29.03	27.23	27.23	28.13
9.59	9.17	8.26	8.24
59.42	58.45	61.00	63.08
8,599	9,000	9,990	10,007



- + Dual display; accidental deletion protection
- None in particular



- + Good fit & finish, comfortable keypad
- Poor display quality



- + Simple menu layout
- Keypad hard, cramped



- + Sleek; good backlight
- Large dimensions except for thickness

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If you thought 3.5 MB on the 6020 was too little, well, the Samsung X620 has a measly 3 MB internal memory. Pay more for less?

The Samsung X660 is somewhat better with 8 MB, while the honours once again go to LG—the S5200 has 64 MB and being MP3 capable. The Philip Xenium 9@9e has a passable 20 MB, while the L7 has 11 MB, and is the only phone in this category with expandable memory. Its microSD slot can support cards up to 1 GB.

The WAP 2.0 and XHTML-ready browsers remain standard here as well. The browsers on the X620 and X660 are fast, as is the L7's. The LG S5200 is sluggish when scrolling through Web pages. The two Samsungs can store 500 contacts with 10 fields, while the L7 holds 1,000 names with addresses and photo fields.

Better Keypads and Design?

The Samsung X620's keypad makes more noise while typing than the tones it generates. This apart, we must say the X620 is handy, and a good white backlight makes life with the X620 easy in the dark. The somewhat evolved version of the X620, the X660 is a clamshell design



LG C2500 - MP3 capability, 64 MB memory

and has a dual-display. When its top is closed, a smaller display shows the time and the caller number, you can thus choose to take the call or to ignore it: You can use the volume button to 'reject' a call. The keypad is more comfortable than the X620, and with an 8 MB memory the X660 is a better package any day. However, at an MRP of Rs 8,599, it costs Rs 1,000 more than the X620, which is priced at Rs 7,549.

The Philips Xenium 9@9e costs about Rs 1,000 more than the X620, and has an uninspiring and utilitarian look. Its dual-display works similar to the display of the X660. Adding to the retro look is the leather (could be faux-leather) covering its back panel. The keypad here is one of the best in terms of spacing; you'd have to be a bit tipsy to press a wrong key here! For a phone in this category, we would have liked a clearer display. The fonts look a bit too ragged for comfort. Though the exterior build quality creates a good first impression, the display can be a turn-off for the executives that this phone seems targeted at.

At the higher-end of this segment, at Rs 10,000, sit the LG C5200 and the Motorola L7. Now, this C5200 looks and even feels just like the Samsung D600: A coincidence or an inspiration? LG also offers Bluetooth; harping it rather proudly above its display. The number keys are a bit too small, but manageable. However, its small and cramped navigation keys can be a problem unless you have nimble fingers. The keypad could use brighter lighting to make the lettering clearer. For the record, its look-alike—the Samsung D600 has an excellent backlight. The only phone to have an expandable memory in this segment, the Motorola L7 is similar to its cousin, the L6, except for the memory slot. For the difference in price, we think it fair to expect at least a higher resolution camera if nothing else. But this wish remains just that—a wish.

Conclusion

'Can spend just a little more, but want a lot more'. A wish that is no doubt difficult to fulfill. But, with consumer reigning king, this wish it seems, has been catered to. Style, superb build quality, a nice keypad and an external memory slot took the Motorola L7 to the throne—just edging out the competition. Our only rant is that a higher resolution camera should have been included, instead of the VGA camera that it ships with.

Give or take one feature or even slightly better ergonomics and the result for the second place would have changed—that is the closeness of the battle fought. The contenders were the Nokia 6020; and the two LGs—the C2500 and the S5200 with their impressive internal memory of 64 MB. The 6020 and C2500 clock high overall scores in our tables mainly due to their competitive pricing. If you don't mind the higher price tag, you should take a serious look at the LG S2500, which has better ergonomics, a good 1.3 megapixel camera and MP3 playback. However, because of the price difference, the S2500 lost out to the LG C2500, which is the winner of the Digit Best Buy Silver award for this test.

Motorola V3i

Lifestyle Phones

Trendsetting designs have been the hallmark of many Motorola cell phones but somehow they always fell short of critical acclaim; due to shoddy implementation of great ideas. With the introduction of V3 RAZR, Motorola changed all that. Despite the radical design though, the phone did fall short in some aspects. With the V3i, Motorola has fixed most of the shortcomings that the V3 RAZR had.

The V3i sports the same metallic body but its new aggressive colour combination gives it splendid character. Inclusion of Motorola's monogram on the front accented with a blue backlight definitely makes an impact. Measuring 96 x 50 x 12.7 mm and weighing just 95 g, the V3i is still the slimmest clamshell phone.

The small external screen is now capable of 65K colour; unfortunately the resolution still remains the same at 96 x 80 pixels. Buttons on the sides of the phone allow voice recording and changing of profiles on the fly without opening the flap.

Opening the flap leads to a big 2.5-inch, 256K colour screen capable of delivering crisp and vibrant pictures—it also remains useable in daylight. Unlike keypads on other phones with raised buttons, the keypad on V3i flushes with the body. Getting used to the flat keys with short travel and blue backlight takes time, nevertheless they are comfortable.

The camera resolution has been bumped to a megapixel. Outdoor photographs come out better than indoors, and the video quality is good enough for the sensor provided on the phone. You also get quad-band support, Bluetooth, a VGA digital camera with 4x zoom, GPRS, PIM functionality, MPEG4 video playback and Java support. The V3i has 10 MB of internal memory and it can be further upgraded using the Transflash cards. Motorola has been generous enough to provide a 256 MB card with the phone. The new V3i also has out of the box support for iTunes, though the service isn't yet launched in India!

Priced at Rs 13,045, the V3i is a head turner for sure and garners attention wherever it goes. Targeted towards fashion conscious buyers the Motorola V3i is definitely worth the money if one can put up with Motorola's not so intuitive user interface.

+ Slim, fashionable and practical

- Average Camera

Rating: 3.5/5



BUDGET PHONES

Increasingly inexpensive and convenient to own, everyone from your friendly neighbourhood fruit vendor to your bus driver—seem to be dancing to their own ring tones. The mobile phone is empowering the common man like no technology has done before.

This category is about phones for the masses, or in a word, affordable. Amongst the phones we tested, we classified those that fell below the Rs 5,500 price as Budget phones. Starting at about Rs 2,800, these humble gadgets do just what a phone is supposed to do—make and receive calls and exchange SMS. And, they do so with no fuss or frills.

As price is the major criterion in this category, let us break it further into three smaller price-bands and look at each group separately, to help simplify your choice.

Below Rs 3,000

In our test, the most inexpensive phones were the Motorola C139, the LG B2050 and the Nokia 2600 priced between the Rs 2,800 to Rs 3,000 range. The C139 could definitely use a better keypad and a more liberal spacing of keys: the cost of an affordable phone need not be sore fingers. The clarity of its tiny colour screen would have been acceptable a couple of years ago, but not today. A positive of this phone though, is its impressive battery life—450 hours of claimed standby time and 11.5 hours of talk time. Sur-

prising for a phone in its class, is that it allows you re-arrange its menu items. Life does offer small pleasures!

The LG B2050 shares the woes of the C139 when it comes to keypad feedback. However, the placement of the keys is well thought of, reducing the chances of pressing a wrong key. The screen is pleasant to see, as it is with most LG phones. The kill-joy, apart from the keypad is the slow response while composing messages. Considering that many buyers in this segment will be students with an SMS habit, this something that Motorola should look at.

In terms of usability, the LG phones are as friendly as their Nokia counterparts, as their menu system is inspired by the latter's. This makes the B2050 and the B2070 (reviewed in the next price-band) extremely easy to use, even for a first timer. Some LG uniqueness is maintained though: The right-navigation button in standby mode opens up a shortcut to inbox, voice mail, scheduler and alarm. Overall, the B2050 is an impressive phone.

The Nokia 2600 gives us very little to complain about—we could



LG B2050 - Looks cute, works without fuss

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only crib about the size of the keys comprising its last row—evidently; practicality has been compromised for a more appealing look. As with most Nokias, navigation holds no surprises or irritants in the 2600.

The Nokia 2600 and LG B2050 are phones that you will not be ashamed to use in your college or workplace. They may not look great, but they are certainly not cheap-looking either—from a distance, at least.

Many of us here at *Digit* found the B2050 'cute', while some just thought it was 'feminine'. Nothing wrong with that, of course. Up on closer inspection though, it does look and even feel very plastic, making the Nokia 2600 look better on the whole.

Rs 3,000 to Rs 4,000

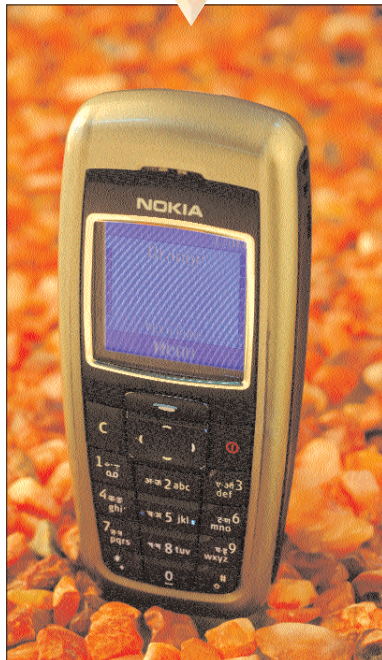
Next in line were Sony Ericsson's J100i and J220i, priced at around Rs 3,800. The J100i is as basic and barebones as the C139, which incidentally is a whole thousand rupees cheaper. And that says it all about the J100i. The J220i is the better of the two with a clearer screen and a more forgiving keypad. Its menu navigation is intuitive making this a good first phone to own. The navigation keys on the J100i and the J220i function as shortcuts to the alarm, phonebook and to the SMS compose box—accessing contacts and sending a message is literally a button away.

The LG B2070 is an avatar of the B2050 with an FM radio. Radio reception is good outdoors but can be a concern in a closed environment. Its stereo headphones, which double as a microphone, reproduce vocals very well but not bass.

In the sub Rs 4,000 range, the Nokia 1600 tried a new, and unusual, keypad design, but lost points on ergonomics because of its—typing an SMS is an ordeal on this phone. On the brighter side, its clear white backlight and good loud-speaker make up for the odd keypad.

The J100i and the J220i are dual-toned with soft colours that blend in well with each other, but alas, the plastic feel remains. The B2070 shares its look with its cousin, the B2050.

BEST BUY
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Nokia 2600-Value for Money

Rs 4,000 to Rs 5,500

Joining the FM bandwagon is the Sony Ericsson's J230i at the higher end of this budget segment. The J230i is an avatar of the J220i, packed with an FM radio. Like the other phones we got in this class, the keypad of the J230i feels a bit dead and takes the joy away.

Wrapping up this budget segment at the Rs 5,000 border, are the Nokia 3120 and 6030 phones. The 6030 offers a generous ten fields per entry in its 250 contacts capable phonebook. The 3120 gives you 256 contacts with four fields per contact. There is little else to distinguish these two phones which are separated by about Rs 400. The 6030 has a 65k colour screen while the 3120 has to make do with a screen offering only 4k colours, though the difference in clarity is not very noticeable. On the 6030, we were at ease with its large softkeys, but did feel that the number keys could have been bigger for the SMS junkies amongst us.

The SE J230i offered the best audio quality—through its earphones as well as its speaker. The good news continues with the FM reception: the J230i fares much better than the LG B2070, both in terms of the FM audio quality and the ability to pick up signals indoors. On an otherwise white and silver body, there are two careless spots of orange vying for your attention. This might good if you want your phone to generate curious looks in college, but not quite so in a conference room. The 6030 is a typical block look Nokia—unassuming, simple with no make up. The most graceful of this lot is the 3120 which can pass off as an executive's phone. Dual-tones that work well, good fit and finish—all make it a neat looking package.

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Nokia 6030 - FM radio adds value

Conclusion

Barring FM radio on the Nokia 6030, LG B2070 and the Sony Ericsson J230i, there were no models to go gaga over. With hardly any price differences and features separating the phones in each price-band, our job was not easy. Giving a fair weightage to the price did not mean that the least priced phones

Beauty

is

in

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For further information,
turn to page no. 123

Scoreboard

BUDGET PHONES

BRAND	Motorola	Nokia	LG	Sony Ericsson	Sony Ericsson	Nokia	LG
MODEL	C139	2600	B2050	J220i	J100i	1600	B2070
Features							
Design and Ergonomics							
Form Factor (Candybar, Clamshell, etc.)	Candybar	Candybar	Candybar	Candybar	Candybar	Candybar	Candybar
Support for Network Bands	Dual-band	Dual-band	Tri-band	Dual-band	Dual-band	Dual-band	Dual-band
Dimensions (mm) (L x W x D)	98 x 45 x 21	107 x 46 x 20	105 x 44 x 15.9	102 x 44 x 18	100 x 44 x 18	104 x 45 x 17	104 x 43 x 15.9
Weight (gms)	85	94	72	82	70	85	73
Build Quality, Fit and Finish	3.25	3.5	2.5	2.75	2.75	3.25	2.5
User Interface	3	3.5	2.5	3.5	3	1.25	2.5
Navigation	3	3	2.5	3	3	3	2.5
Keypad Layout	2	3.75	2.5	3.75	2.25	1.75	2.5
Keypad Comfort	2	3.5	2	3.25	3	3	2
keypad Backlight	3	3.75	3.5	2.5	3	2.75	3
Basic Phone features							
Display Resolution (pixels)	96 x 64	128 x 128	128 x 128	128 x 128	96 x 64	96 x 68	128 x 128
Display Colours (K)	65	4	65	65	65	65	65
Address Book Capacity	100	200	200	200	250	200	200
No. of Lines Displayed in Message	3	4	4	3	3	3	4
Number of Profiles	2	5	5	7	4	4	6
Phone Memory (MB)	0.5	4	1.4	0.6	0.5	4	1.4
Support for Installing New Applications/Games	✗	✗	✗	✗	✗	✗	✗
Connectivity: IR/Bluetooth/USB/Wi-Fi	NA	NA	NA	NA	NA	NA	NA
Miscellaneous features							
Adjusting Brightness/Contrast	✓	✓	✓	✓	✓	✓	✓
Voice Recorder/Voice Dialling / Hands-free Speaker	✗/✗/✗	✓/✓/✓	✓/✓/✓	✗/✗/✗	✗/✗/✗	✗/✗/✓	✓/✗/✓
FM Radio	✗	✗	✗	✗	✗	✗	✓
Talk Time / Standby Time (Claimed)	11.5/400	3.5 / 200	2 / 200	6 / 280	300 / 8	5.3 / 450	2.5 / 200
Performance							
Signal Reception	3	3.25	3	3.25	3.25	3.25	3
Voice Clarity	3.25	3.5	3.25	3.25	3.25	3.5	3.25
Processing Speed	3.5	3.5	3.25	3.5	3.5	3	3.25
Scores							
Features (out of 50)	19.14	28.96	28.53	22.45	22.12	24.01	30.15
Performance (out of 30)	19.2	20.4	18.9	19.8	19.8	19.8	18.9
Price (out of 20)	17.67	17.43	16.72	13.35	12.84	12.66	12.53
Overall	56.01	66.79	64.15	55.60	54.75	56.48	61.58
Price (Rs)	2,830	2,869	2,990	3,745	3,895	3,949	3,990



+ Good battery life
- Hard keypad, sub-par display



+ Sturdy, good screen, call screening
- None in particular



+ Simple menu layout
- Hard keypad, keypad backlight weak



+ Easy messaging
- Poor fit and finish



+ Light
- Hard keypad



+ Speed dialling to SMS, fast UI
- Peculiar keypad layout



+ Good internal memory, good FM reception
- Sub-par build quality



Sony Ericsson	Nokia	Nokia
J230i	3120	6030
Candybar	Candybar	Candybar
Dual-band	Tri-band	Dual-band
102 x 44 x 18	102 x 43 x 20	104 x 44 x 18
84	84	90
3.25	3.25	3.25
2.25	3.75	3.75
3	3	3
2.25	3.75	4
2	4	3.75
3.25	4	3.5
128 x 128	128 x 128	128 x 128
65	4	65
200	256	250
5	4	4
6	6	6
0.5	0.5	3
✗	✓	✓
NA	NA	NA
✓	✓	✓
✓/✗/✓	✓/✗/✓	✓/✗/✓
✓	✗	✓
6 / 280	6 / 410	3 / 300
3.25	3.25	3.5
3.25	3.5	3.5
3	3.5	3.5
29.98	29.90	34.22
19.2	20.4	21
11.38	10.14	9.40
60.56	60.44	64.62
4,395	4,929	5,319



+ Good FM quality
- Poor keypad ergonomics



+ Elegant and sleek
- Sub-par audio quality



+ Changeable covers, good battery life
- None in particular

could be forgiven for bad ergonomics. After painstaking calculations, we found the Nokia 2600 to be both inexpensive as well as easy to use, thus being crowned the *Digit Best Buy Gold* in this category. It also packs a handy expense manager feature and changeable front and back covers.

Others who staked claim to the Gold position were the FM phones B2070, J230i and the 6030. The B2070 is plagued by slow response, the J230i has an ill-conceived keypad—however none of these quirks were found on the 6030. It costs about Rs 1,400 more than the 2600, but for that extra money you get an inbuilt FM radio, a good 65k colour screen (the 2600 has a 4k screen) and a phonebook with 250 contacts, each with 10 fields. We have no hesitation in awarding the *Digit Best Buy Silver* award to the Nokia 6030. ■

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Motorola	Motorola India Pvt. Ltd	0124 - 2303212	NA
Nokia	Nokia	011 - 30303838	NA
O2	Creative - e - biz.com Ltd	9323966815	cr_mum@yahoo.com
Palm	Palm India	9892049064	krishnadeep.baruah@palm.com
Philips	Philips India Ltd	022 - 6691 2000	s.n.roy@philips.com
Samsung	Samsung Telecommunications	0124 - 4398005	yuvraj.mehta@samsung.com
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O2 Xda Atom

"Small but loaded"

The hot new Xda Atom from O2 is a PDA phone that packs in loads of features in an extremely small form factor. Measuring an impressive 58 x 102 x 18.5 mm and weighing just 140 gms, the Atom is a tad smaller than its predecessor, the highly successful Xda II Mini.

Encased in an elegant piano black casing, the Atom sports a 2.7-inch screen. The fascia sports large send and end keys, a 5-way navigation pad, and keys assigned to the Start Menu and the MediaPlus application, along with two tiny speakers. There are two volume keys on the left, voice recorder and camera keys on the right, and a power button on top. The camera lens, the self-portrait mirror and flash are located on the rear while the bottom is where you will find the USB connector, the headphone socket and the reset button. While Windows Mobile 5.0 implements softkeys to enhance one-handed operation, the Atom, unfortunately, does not come with dedicated softkeys.

Powered by an Intel PXA272 processor running at 416 MHz, the Atom comes with 128 MB of ROM and 64 MB of RAM. You can add more memory by using the mini-SD slot located on top. The 2.7-inch touch-screen supports 262K colours at a resolution of 240 x 320. Connectivity options include triband, GPRS/EDGE, infrared, Bluetooth 1.2 and WiFi 802.11b. The camera is a 2 megapixel CMOS that can capture both stills and video. Other goodies include an FM tuner, strobe flash and a bundled stereo wired headset. You can even record from FM in WAV or AMR formats. The device synchronises with a PC via a USB cable.

The Atom runs the new Windows Mobile 5.0 operating system, the most notable feature of which, in our opinion, is persistent storage. This means this phone will not lose any data or



O2 Xda Atom - Powerhouse in your pocket

installed programs when you run out of battery power. Office applications (Word Mobile, Excel Mobile and PowerPoint Mobile) now support embedded images, charts and tables. Standard PIM applications such as Calendar, Tasks and Notes are all there. All data can be easily synchronised with your PC. O2 has thrown in a few of their own applications, including the O2 MediaPlus, SMS Plus and Equalizer. MediaPlus lets you play and view various media—radio, music, pictures and video, from a single window. O2 SMS Plus lets you view your text messages in an instant messaging format. The O2 Connect application informs you of system updates. The Setup Wizard combines a number of otherwise scattered settings in one place, helping you get started in a jiffy. Apart from these, you also get an Auto Configurator, a photo editing application and a self-diagnostic tool.

The glossy casing attracts fingerprints and dust, so you may end up spending a lot of time cleaning your phone. The 416 MHz processor is capable of running most applications and games with ease and lets you multitask. The new OS still retains the nagging "Smart Minimise" feature that does not close applications even when you tap on the close button. However, this can be easily circumvented by using a task manager such as SPB Pocket Plus or SmallMenu (or using the Memory module in Settings to shut down applications manually). Phone clarity is good, even in areas with low network coverage. You can use the speakerphone in a noisy environment. WiFi and Bluetooth also work well.

The stylus is a bit skinny and the touch-screen too sensitive. You can use the virtual keyboard or handwriting recognition to input text. However, due to the screen size, the virtual keyboard is quite small. The screen display is vibrant, but visibility is reduced under sunlight. The camera application is slow to use, and does not redeem itself with

The Nokia 7370

Lifestyle Phones

Nokia wanted in the flip-phone category, the love that Samsung and Motorola seem to be wallowing in. The 7370 is an entry for the lifestyle segment. It tries to shake off the 'rugged and utilitarian' impressions that Nokia has, with a swivel display that rotates 180 degrees in both directions! Alas, it cannot do a complete 360.

A rather unusual brown is used to colour the 7370. This in itself makes the phone stand out in the crowd of blacks and silvers. Being a phone that is made to please, the display quality is good with a 262K colour screen. A nice white backlit keypad offers a clear viewing of the keys in the night and looking graceful at the same time.

Keeping costs low means no expandable memory—you will have to make do with a 10 MB internal memory. Not good enough, considering its 1.3 megapixel camera whose high resolution photo can be as big as 400 KB each. 20 of such images would occupy about 8 MB which is how much you will have left after SMS, Phonebook and call logs take up

their share.

As the display slides 180 degrees both ways, the screen re-orient itself. A minor irritant is that when the screen is closed, the name 'Nokia' appears in reverse direction of the display. Rather silly, we think.

A slide type phone with bold keys and large display along with a curvy design with soft white keypad light makes the phone, in our opinion gender neutral. If your decision boils down to a phone with good build quality and off beat looks coupled with functionality, 7370 is a nice, fast phone for you. And, it does not cost the earth either.

+ Good display quality, easy navigation
- Only 10 MB internal memory
Rating: 3.5/5



quality either—images taken in low light turn out to be quite noisy. Audio output from the inbuilt speakers is decent; the wired stereo headset provides much better quality when listening to music. The 1530mAh user-replaceable lithium-polymer battery lasts for a decent two to three days under standard usage.

i-mate Jasjar

Heavy-Duty Communication

It is difficult to classify the I-mate Jasjar as a PDA phone: The Jasjar sits somewhere between a PDA phone and a laptop. Considering its design and bulk, you could classify it as a mini-Tablet PC. Its 81 x 128 x 25 mm dimensions and whopping 285 gm weight make it difficult to be carried around in a pocket.

Sitting on a table: you see a speaker at the top and a 1.3 megapixel camera, the flash and the battery compartment at the bottom. The front side has stereo speakers, buttons for camera, voice recording, and backlight, along with an IR port and a volume slider. The left is where you find the SD expansion slot and the power button, while the back sports the headphone jack, a soft reset button, a USB connector, two capped connectors for external antennas and the stylus silo. You also find two phone control buttons on the hinge. Open the device, and you are now looking at a 62-key QWERTY keyboard and a 3.6-inch, 65,000 colour VGA display. You can now use the Jasjar the way you would a laptop—sitting on a desk with the screen in front and the keyboard at your fingers. You can also swivel the screen 180 degrees and fold it on top of the keyboard to convert the device into a regular pocket PC. If it is switched on, the display orientation changes automatically from landscape to portrait and you can use the stylus on the touch-sensitive screen. A five-way navigation control under the screen lets you browse through menus and select options. Since the phone is 3G-capable, a second lower quality camera is also present to enable video telephony.

Under the hood, the Jasjar is a tri-band GSM phone that also supports the 2100 MHz UMTS 3G band. Powered by an Intel Bulverde 520MHz processor, 128 MB ROM and 64 MB RAM, the Jasjar runs Windows Mobile 5.0. Connectivity options run the whole gamut—infrared, GPRS, Bluetooth 1.1, and WiFi 802.11b—EDGE is sadly lacking though. All the wireless modules are controlled using one application, the Wireless Manager. Standard applications include Pocket Outlook, Windows Media Player, MSN Messenger, Pocket Internet Explorer, Pocket Office and Voice Notes. Value Added Applications include Video Telephony, Smart Dialing, T9 Phone Pad, Wireless data manager, MMS with video clip support, and PDF Viewer. The 1.3 megapixel camera can capture stills at 1600 x 1200 pixels (extrapolated) and at its native resolution of 1280 x 1024 and lower. Video capture resolutions supported are 320 x 240, 176 x 144 and 128 x 96. The full VGA screen acts as viewfinder when the camera is switched on. Apart from the device and the removable battery, the box includes a wired stereo headset, USB cable,

Feature-wise, the Atom has just about every feature one would want. Sure, you can buy a laptop its price. But will you be able to carry it in your pocket?

+ Excellent Form Factor

- Average Camera

Rating: 4/5

travel charger, 2 styli, carry pouch, application CD, user manual, and a quick-start guide.

As far as performance is concerned, you will not find the Jasjar lacking. The processor is zippy and handles most games and applications with ease. Phone clarity is excellent and usable even in areas with low network coverage. The basic office mobility features work well. E-mail is great when using i-mate's push email service—find yourself a WiFi hotspot and you are virtually be sitting in your office. WEP encryption security is



i-mate Jasjar - Big on size, Big on features

Sony Ericsson W800i

Lifestyle Phones

In the wake of the Apple iPod's phenomenal success, it was but natural for Sony to revive its once iconic 'Walkman' brand in some form or the other. The W800i from Sony-Ericsson (SE) is the first cell phone to sport the 'Walkman' logo and holds lots of promises. Except for some cosmetic differences this phone is an exact replica of SE's K750i phone.

The W800i is available in an orange-white combination to make appeal to the younger generation. Weighing just 100 grams and measuring 100 x 47 x 21 mm, the W800i is light and compact. The 1.8-inch, 262K colour screen is bright and crystal-clear. The 176 x 220 screen renders colours vividly and is a good aide for playing games or for browsing through photos. The joystick and the keypad on the W800i offer good tactile feedback—SMS junkies will love it. The interface is pretty much unchanged except for the inclusion of the Walkman media player and a dedicated button for the same.

The W800i comes bundled with a 2 megapixel digital camera—the same as on the K750i, and is graced with GPRS, HSCSD and tri-band support but no EDGE. For short-range communication Bluetooth, infrared and USB 1.1 port is offered. The phone comes with 38 MB of internal memory, a Memory Stick Duo slot and a bundled 512 MB card. It also features MMS and e-mail, and Java 2.0.

While powering the device, you can choose to use it as either a phone or a just a media player. Choosing media player increases battery life for longer media playability. To do justice to the Walkman moniker Sony-Ericsson has significantly improved the audio quality on the W800i, which when coupled with the bundled Fontopia ear buds from Sony matches any standalone MP3 player on the market. The player supports MP3 and AAC playback but lacks support for DRM protected file such as those downloaded from iTunes or Napster.

One good thing Sony Ericsson has done is the inclusion of a standard 3.5mm jack via the headset which allows you to connect any headphone to the phone or connect the phone to a Hi-Fi for heart thumping sound. As with many Walkman's the Mega Bass feature also shows up on this Phone and it dramatically improves bass. The W800i in the media player mode gives a battery life of at least 18 hours—more than enough.

Priced at Rs 20,000 the W800i is sensibly priced. Our verdict? If you have the money, go for it, it's been a while since such a good cell phone has hit the shelves.

+ Excellent music playback

- Gaudy colour combination

Rating: 4/5



provided. The Jasjar's multimedia capabilities are also quite decent and you will find the audio output from the stereo speakers to be adequate. Bluetooth worked well with the Jabra BT-200 wireless headset. Also usable was the device's WiFi module. We tried the latter with an Asus WiFi router and could connect without issues. Getting the Jasjar to work with GPRS was also simple. The device did not have any trouble figuring out which connections were live, and switching back and forth between WiFi and mobile networks was smooth. Browsing the Web with the inbuilt IE browser was passable. The large screen size makes working with spreadsheets, documents and Web pages simple. With its removable 1620mAh Lithium Polymer battery, you can expect a period of two days before looking for an available power socket, unless you use it extensively.

You don't really need to open the device to answer a call, just press the green button on the side and you can use the speaker provided on the outside. This involves holding the Jasjar close to

your ears, which doesn't look too smart. You would thus want to use the bundled wired headset or purchase a Bluetooth set, rather than hold a brick to your face. The QWERTY keyboard is an asset and can be used even with fairly large fingers. You will find that it is much better to use your thumbs for data input rather than use it laptop-style. With the keyboard, you will hardly need to remove the stylus since most functions can be performed using the keys. However, the significant weight of the device doesn't make it too convenient for prolonged use. The keyboard usability is enhanced by the presence of a light sensor that detects the amount of available light and if required, switches on a reddish backlight for the keys.

Overall, the i-mate Jasjar is a capable communications device for business users who can carry it in their executive briefcases and most importantly, can afford the price tag.

+ Integrated QWERTY keyboard, Dual mode GSM/WCDMA
- No EDGE, Bulky, Expensive
Rating: 3.5/5

Nokia 9300/9300i Communicator

All work and no play

After Nokia's brick-sized 9500 Communicator, comes its smaller siblings—the 9300 and the 9300i Communicators. 9300i is the newer of the two, major additions being the inclusion of Wi-Fi and Bluetooth 1.2, as compared to the 9300's Bluetooth 1.1. Both the 9300 and the 9300i are almost identical and you will hardly be able to tell the two apart if it were not for the 9300i's dark-grey casing, as opposed to the silver of the 9300.

Business-oriented, the Communicators are practical devices almost to the point of being boring.

Measuring 132 x 51 x 21 mm and tipping the scales at 172gm, you will not have any issues carrying these devices in your pocket. Apart from a small power key on the top, you will find a fairly large and comfortable numeric keypad and a 128 x 128 65K colour display as its fascia. It opens to a 640 x 200 pixel transreflective display with 65K colours. Four soft keys are placed on the right of the display. The bottom half has the QWERTY keyboard. Here, dedicated numerical keys and a row of eight application buttons (including a "My own" button that you can program) along with the five-way joystick make working with this device a breeze.

Powered by a processor running at 150 MHz, the 9300/9300i features 80 MB of shared internal memory and runs Symbian OS 7.0s on the Series 80 platform. Memory is expandable by way of MMC cards and a 128MB card is bundled. Thankfully, you don't need to remove the battery to access the memory card, though you still need to open the back cover. This triband GSM device with support for EGPRS and HSCSD also offers IR and Bluetooth. The WiFi in the 9300i is the fast 802.11g (54 Mbps) variant. Other features

include a native e-mail client that supports POP3, IMAP4, SMTP and Open Mobile Alliance data synchronisation; with attachment viewers. The phone also offers mobile fax, synchronisation with Outlook, a PDF viewer, an HTML browser, Office applications compatibility with the most common features of Microsoft Word, PowerPoint, and Excel, and finally speakerphone and conference call capabilities.

With support for 40 polyphonic ringtones and playback of common audio formats including MP3 and AAC, it is also possible to use it as a portable audio player. There is support for RealVideo, MPEG4, and H.263 video. Keeping its target audience in mind, the device does not have a camera. A lack of vibration alert is surprising, since users would surely want to be alerted discretely of incoming calls or messages during business meetings. Personalisation is limited to changing the theme and wallpaper.

Phone clarity on the 9300/9300i is excellent and we would expect nothing less from Nokia. Battery life too, is good. However, the phone could do with a speedier CPU—there is a noticeable lag while launching applications, though menu navigation and other operations seem to be fine. The keyboard should actually be called a thumb-board since it is more suited for typing short notes and e-mails using your thumbs. The five-way joystick, though comfortable on the thumb, is a little finicky and should be improved.

To conclude, both the 9300 and the 9300i are practical communications devices for business users who want a no-frills solution on the move.

+ Practical business usage, WiFi 802.11g on the 9300i
- No camera, No vibration alert
Rating: 3.5/5 (9300/9300i)



Nokia 9300i - The business phone

Palm Treo 650

Business on the Go!

The Palm Treo 650, a worthy successor to the Treo 600, still retains its charm as the best PDA-Phone device. With the Treo 650, Palm hasn't done anything revolutionary but made sure most of the drawbacks of its earlier product were fixed, and has added some new features.

The design still remains the same—that's good because the Treo 600 had the perfect balance of size, weight and pocketability; why mess with perfection? The metallic grey and chrome outfit lends the phone smart look and speaks clearly to its targeted audience.

The Treo 650 is powered by a 312 MHz Intel 'Bulverde' Processor, which has enough juice to put the low-resource Palm OS through its paces. The Treo's 2.5-inch, 65K colour screen is one of the most beautiful displays we have seen on any phone. Its 320 x 320 resolution renders sharp text and icons; images are life-like on it.

The Treo 650 uses non-volatile memory and doesn't require power to retain its data, so in case the battery runs out, the data remains safe and intact. With just 32 MB onboard (23 MB useable) there isn't much you can do; however an included SDIO slot allows the Treo's storage capacity to be upgraded to 2 GB; apart from accepting SDIO capable peripherals such as GPS navigation units or high-resolution cameras.

The inbuilt VGA camera can't match what is available on most phones, however it clicks good photos and is a definite improvement over the Treo 600's camera. It also allows video recording and subsequent playback. Integration of Bluetooth is an added bonus for the occasional file sharing; it also allows browsing the internet via a Bluetooth dongle. With the Treo 650, Palm has introduced user-replaceable batteries—a big boon especially for people on the move. Its big, chunky battery holds enough juice to power the Treo 650 for four days or more, on moderate usage.

The Treo bundles RealPlayer and can play MP3 in stereo, but stereo headphones need an optional stereo adapter. The inbuilt speaker volume is high and the ringtones are melodious. A small switch on the top of the phone can mute all sounds, and put the phone in vibrate mode.

As for its PDA capabilities, the Treo 650 has all the common apps provided with standard Palm OS PDAs. Contacts, Calendar, Memo, Web browser, Versa mail, etc., all make for a very strong application bundle and should take care of most needs. The Documents to go application bundle makes allows one to both view and edit MS Office files on the fly, permitting data synchronisation over the PC—just transfer them on to the Palm Treo 650 and you are ready to go. The Blazer Web browser is quite fast and it successfully rendered most of the sites we visited. It also supports cookies and offers cache management. Messaging is brilliant and SMS messages are shown in a conversational format, collating communication with a contact as a unit—better than having multiple entries. Bluetooth support however can improve; if you interrupt a Bluetooth transfer the device at times hangs and requires resetting.

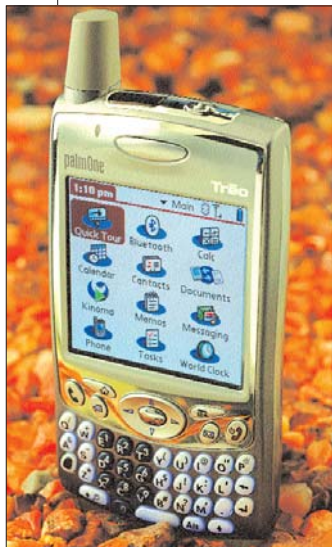
Usability is Treo 650's trump card; nothing comes close to the one-handed operation offered by the Treo 650. Though a stylus is provided, you hardly need it. Most operations can be done using the multitude of buttons. Its QWERTY keyboard is comfortable, once you get used to it. The keyboard is backlit by a bright light and is clearly visible in low-light conditions.

The small stub antenna on the Treo 650 might give the phone an odd look but it makes sure that signal reception is good. During our test the Treo presented no problems as far as reception and sound quality were concerned.

Priced at Rs 29,999, the Treo 650 is one of the best PDA-phone devices we have reviewed so far. Though it lacks features such as Wi-Fi and a good camera, and comes with low inbuilt memory, it makes up for it by offering the best display screen and a purposeful application bundle.

- + Seamless one handed operation
- No Wi-Fi, less onboard memory

Rating: 4.5/5



Palm Treo 650 - The best one handed operation ever



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If You Find A Better Institute To Learn Any Of These Courses, Join It

THIS MONTH'S CHALLENGE

Show us a way to delete the Recycle Bin from the Desktop and also remove 'Shared Documents' from Windows Explorer in Windows XP

Write in with the subject "Take a crack", and your postal address, to takeacrack@thinkdigit.com with your solution

Delete the Recycle Bin from the Desktop and remove the Shared Documents



LAST MONTH'S CHALLENGE

Automate the installation of Windows XP

Win!



Take a Crack and win

Computer Security

by Ditter Gollmann

Published by WILEY-INDIA

LAST MONTH'S WINNER

Mohd. Arif

Room No-298, Plot - 19, Gate-5, O.C.C, Malwani, Malad(w), Mumbai -4000 95

Rules and Regulations

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You can create a CD that can install Windows automatically, putting in all the details and answering all the dialog boxes. The secret behind the unattended nature of the whole thing is the answer file, which tells Windows what to do while it's installing. The answer file can be created using Windows Setup Manager.

Using this tool, you can make the answer file so powerful that you can even tell Windows to include or exclude individual components, set the display resolution, and more. Here's how you do it.

Step 1: To begin with, insert your Windows XP installation CD into the drive and copy the entire contents of the CD to a folder on your hard drive.

Step 2: Navigate to the **Support > Tools** folder on the CD and double-click the **Deploy.cab** file. Copy all the files to a folder on your hard disk.

Step 3: The crucial part begins now—creating the answer file. To execute the Windows Setup Manager, double-click the **Setupmgr.exe** file from the contents of **Deploy.cab**, which you just copied onto the hard drive. The next step explains the option you need to select from the first few dialog boxes that appear.

Step 4: The first few steps of the wizard are self-explanatory. Select the following options from the successive dialog boxes: **Create a new answer file**; **Windows unattended installation** (Select the appropriate Windows version); **"Fully automated"**; **"No, this answer file will be used to install from CD"**; and finally, accept the license agreement.

Step 5: Under General Settings, you can customise the installation of Windows by providing the default name and organisation, display settings, time zone and the product key. Fill in the fields using the drop-down lists or by keying in the details. If you don't select an option from the drop-down lists, the default values will be used.

Step 6: Under Network Settings, configure the computer name, administrator password, networking components and workgroup. If you are specifying the Administrator password, make sure you check the option to

encrypt the password in the answer file. If you have a static IP address, you can specify the settings under the Networking Components section.

Step 7: Use the Advanced Settings section only to configure telephony, browser and shell settings and installation folders. Under Browser and Shell Settings, click the browser settings button to set the home page and add Favorites. If you are on a network, you can also specify the proxy settings.

Step 8: After you're done, click Finish and save the answer file as **"winnt.sif"** when you are prompted. Advanced users can further tweak the answer file by referring to the Help file called **Ref.chm** in the same folder as the Setup Manager. Finally, copy the answer file to the **i386** folder in the Windows XP installation folder you created in the beginning.

Step 9: To burn a bootable installation disc, you need the boot sector of the Windows XP CD. Download it from www.tacktech.com/pub/microsoft/bootfiles/bootfiles.zip, and extract the boot sector file to a folder. This file will be used with Nero Burning ROM to create the bootable disc.

Step 10: Launch Nero and select CD-ROM (Boot) from the New Compilation dialog box. Under the Boot tab, specify the boot sector file you extracted. Set the emulation as "No emulation", and keep the boot message blank. Most importantly, remember to set the "Number of loaded sectors" as 4.

Step 11: Under the Burn tab, set the write method to disc at-once. Click the New button to begin adding files and folders to the compilation. Drag all the contents of the Windows XP installation disc that you copied to your hard drive (with the answer file in the **i386** folder) into the left pane.

Step 12: Insert a blank CD into the optical drive and hit the Burn button. Wait a few minutes and there you go! Your unattended Windows XP installation disc is ready!

We urge you to bear in mind that since the installation is customised, you should refrain from lending out the disc you just created. ■



FIFTH ANNIVERSARY

Digital Passion | Geek Dreams

With 12 to 24x optical zoom, a plethora of shooting modes and a 6-megapixel CCD, this camera sure is drool-worthy!

Canon's PowerShot S3 IS, styled in gun-metal grey, is the latest addition to the PowerShot S-series, the third generation in their "super zoom" digital camera range.

The 12x optical zoom lens can be supplemented with the optional lens adapter, which allows the optical zoom to be boosted to a fantastic 24x. Besides, the Optical Image Stabilizer makes sure tele-photographs don't end up looking fuzzy.

The Canon PowerShot S3 IS has a 2-inch LCD panel, which can be turned and twisted in multiple directions—a great feature for experimenting with new shot angles. What sets the camera apart is its capability to capture video—at 30fps, VGA quality, and up to 1 GB with stereo sound—really neat for a still camera. The camera has a dedicated movie

button, making switching between modes convenient.

The S3 IS comes with a plethora of shooting modes including full manual, Aperture Priority and Shutter priority, making for complete shooting flexibility. Unique features such as Colour Accent and Colour Swap result in fantastic effects. Apart from these, there are also the regular predefined shooting modes—night, snow, fireworks, and so on.

The new 6 MP CCD sensor now supports speeds from ISO 80 to 800, enhancing low-light shooting capabilities.



Imaging Sivalal S

Creative I-Trigue 3400

June 2006

Sanket Naik

After we were done with our speaker set shootout of last month, the Digit Test Centre was littered with speakers from various brands. I refrain from listening to music during office hours, but there were so many great speaker sets around—and just because they were there, I thought of hooking up a 2.1 set to my PC. Pottering around, I chanced upon the Creative I-Trigue 3400, which the company describes as “Premium Fidelity” and “fashionable and functional.” They were to grace my desk for the next 30 days.

Day 1

This set comes with accessories for connecting auxiliary devices—companies normally don’t provide these. At first glance—and at later glances as well—what sets these speakers apart are **the beautifully-crafted satellites, each with three one-inch titanium drivers.** The wooden subwoofer sports a milky-white exterior, as opposed to the orthodox black.

Day 3

Visitors to the Test Centre seemed to be turning their heads in the direction of my desk, and I assumed it was because of the flashy speakers. Now what use is a premium speaker set if you don’t turn up the volume? So I did, but my co-workers were more than a little irritated. “All right, all right,” I grumbled, and turned down the volume down. But at this setting, the tiny drivers don’t lend depth to the sound, and the music sounds flat. Not good.

Day 4

The **subwoofer is front-ported,** and this allows it to be placed close to the wall—good if your room is small. **The build quality is excellent,** and the satellites even survived a nice four-foot fall.

Day 5

Working late has its advantages: I merrily cracked open the volume knob. The set does deliver good sound at full volume. **The bass is overpowering at times,** though; with the highs being generally predominant. **The set is lacking when it comes to the mid-frequencies,** again because of the small drivers.

Day 8

It’s been eight days and I’m satisfied with the quality of the set. Not overly so, but in general, yes. Except for some comments being passed about the colour I’d chosen: light pink. The set comes in ten colours, but we only had the light pink at the Test Centre! That in combination with the white of the subwoofer is raising many an eyebrow!

Day 14

Trance sounds great on these speakers. Sphongle and Buddha Bar is what I’ve been listening to for the past few days. **Soft rock as well as pop need a little fiddling around with the equaliser** to make the music sound decent—again, not a good thing in general. Rock, on the other hand, sounds great when the volume is set to above 50 per cent.

Day 18

Virus attack! I was forced to take a break from playing music off my PC. But **I did have the option of connecting my MP3 player to the speakers!** The little round remote control pod for the speakers has a line-in jack that makes connecting any device convenient, and right next to the line-in jack is a headphone jack—again, very convenient.

Day 25

Quake III fever was back at the Test Centre, and we got into some serious fragging post work hours. In the heat of the moment, I fired the speakers to nearly 75 per cent volume and **did-they-sound-good!** I abandoned the party and tried out the set on a couple of other games. The sound was consistently good, but naturally, there’s only this much that a 2.1 set can accomplish in terms of creating an immersive experience.

Day 30

This is a beautiful 2.1 speaker set—but take note: **the predominant focus is on aesthetics.** The sound is indeed good, but not quite up to an audiophile’s standards. Remember that a good part of the money you’ll spend on this set—if you do—will pay for the design!

sanket_naik@thinkdigit.com



132 New & Notable



134 Please Go Paid!



138 Tips & Tricks

Digital Tools

Technology For Personal And SoHo Productivity

Net gain

Maths, Minis, And More

Jyotsna Rege

Goowy explains that their purpose is to offer a "fresh desktop-like experience on the Web"

As this was an anniversary issue, we decided to include two sites in this space—one that takes your desktop to the Web, and one that could get a neuron or two fired up.

www.goowy.com

When we heard about Goowy.com, we didn't expect to take the site seriously. Honestly, with a name like Goowy, what can you expect? Our first glimpse revealed it was some sort of e-mail and Web storage site. As it turns out, Goowy is a site that has IM, mail, file storage, games, personal organisers and more rolled into one—making up what they call a "webtop."

This Flash-based site is rather original in concept. Goowy explains that their purpose is to offer a "fresh desktop-like experience on the Web." We tried a guest account, and what we got was a sort of a desktop, with a toolbar at the bottom. The "webtop" has several functions neatly arranged. There's Goowy mail (but imagine an address@goowy.com—how uncool is that?), IM, a page to manage contacts, and a calendar. The IM has four service providers—AOL, Yahoo, MSN and ICQ; you can access two or more messengers simultaneously. You also get

storage space for your data. And there are the "Minis"—where you have weather reports, news, and videos, besides Flash games.

Goowy.com is impressive primarily for the desktop-on-the-Web feel. It's novel—you have to log in just once to access all the features instead of logging in individually for, say, blogging, IM, and so on.

The design is impeccable—it actually does feel like a desktop, with reminders sliding up as in Outlook, tooltips for the icons at the bottom,

will amaze you: you need to exercise some patience before you get a hang of digging out the information you need.

On the left of the main page is an index that lists the main categories. Clicking on these takes you into sub-categories, and so on. There is, of course, a search window on the main page. Reading up "About Math world"—a link under Destinations—helps understand the site a little better. Then there's "Math news for you" to read up on what's new on the mathematics front, besides checking out recent contributions to the site.

To simplify the explanation for a term or expression, the site makes effective use of an inter-linked framework of descriptions. If, for example, you were to look up quadratic equations, going to Algebra > Algebraic equations > Quadratic equations takes you to the required expression. But here's the tricky bit: the page defines a quadratic equation as a "second-order, polynomial equation in a single variation x"! If you scraped up quadratic equations from memory and don't have a clue as to what a polynomial equation is, you can begin by clicking on the hyperlink. The linked page then goes on to describe the quadratic formula, the development of the quadratic equation through history, and so on. You'll eventually find what you're looking for, but you do need to have your basic maths in place—which again, the site helps you with.

Mathworld is helpful at all levels—whether you're in school and need to understand all about the Fourier series or whether you just need to quickly solve a probability problem (and have even forgotten what probability is all about). The only hitch is there really is a lot of information—you'll need to get the hang of clicking in the right places to get to what you're looking for. ■



This isn't a desktop—it's what Goowy calls a webtop

nice colours, and more. Functionality-wise, it's good, really: you get most of your everyday stuff under one banner. Last we checked, this up-and-coming site offered 1 GB of file storage, 2 GB of mail, and a forum had been added. Take a look!

http://mathworld.wolfram.com

A mathematics resource, here's a maths encyclopaedia that would be an enthusiast's answer to fevered prayers for comprehensive information on any subject under mathematics. Not only does the site have a huge repository of formulas, theorems and explanations, you can also contribute your own facts and definitions.

The site is "intended for students, educators, math enthusiasts, and researchers," and is easy enough to navigate. The sheer amount of content



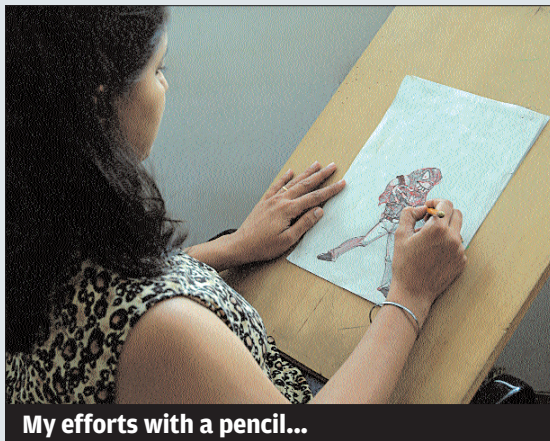
For anything maths-related, just head to MathWorld

jyotsna_rege@thinkdigit.com

Etching A Sketch

I've been fascinated by the graphics tablet that the designers use here. Even as I watched them sketching and drawing, I wondered if their ease arose from constant use of the instrument or if the gadget was just plain easy to use. Did it feel very different from sketching using a pencil?

Jyotsna Rege (jyotsna_rege@thinkdigit.com)



1

It's an unwritten law that if a hand-sketched image is to be scanned, it better be worthy of veneration! My initial attempts at drawing drew sniggers from colleagues. I should not have been surprised—it's been ages since I wrote with a pen. The memory of a pencil is even further off. Although I knew the rudiments of drawing, it had been too long ago. So I decided to do myself a favour...

At the designers' corner, Pradeep, one of our designers, showed me how to use the Graphire graphics tablet. It looked like a high-tech slate; I spent some time doodling on the PC. After a five-minute exercise with the tool, I realised that using it would be much tougher for someone not accomplished with a pencil. You don't have to be really good at drawing, but a deft hand is a definite requirement.

2

A three-hour, four-day summer course promised improvement in my sketching and drawing skills. At the end of my sessions, I did find my "art" markedly improved. I put in a lot of hard work, and then, soon enough, I was ready to scan it! The imperfections seemed more obvious on the screen, but anyway...

For my drawing, I chose an action figure—an object that, I discovered, was challenging enough. Working on a tablet makes things easy—a wrong stroke can just be undone! Besides, for symmetry, I could always invert an image to create an exact match. Satisfied with what I had sketched, I tried my hand at colouring it.

3

Working with colour was next. I couldn't colour the earlier image—it was replete with pencil shading. I made another drawing, and used pastels for the colour. I had to be careful because every wrong stroke required a bit of covering up.

Colouring an image on the screen is much, much easier than with pencil and paper. I can create a layer for my original sketch and colour on the layer, akin to placing a tracing sheet on paper and then colouring the tracing sheet. And I found that I could create as many layers as I wanted. Cool!

4

I finally finished the second piece too. The whole cause cost me more time than I expected to spend, courtesy my rather average drawing skills, but my efforts have a proud place on the *Digit* pin-up board, not to mention on our backup server!

I found that I was done a lot faster with the graphics tablet, and because I could undo, I had a much more professional looking drawing. The colouring, thanks to my experimentation with layers, was really good too.

Fun Quotient: **3/5**
Total Time Taken: **1.5 + 1.5 = 3 Hours**



Fun Quotient: **4/5**
Total Time Taken: **1 hour 45 mins**



AND
THE
WINNER
IS...

Good old sketching is fun, but if you want to save on time and need a record of all you sketch, draw and colour, the tech way is the only way. A graphics tablet is easy to use, and if you're adept at Photoshop, the PC is really neat. But the use of the tablet assumes a

reasonably deft hand. Although you can conceivably scan an image into Photoshop and then work on it, it's not entirely feasible. For ease, its technology. For practice and developing your art, it's definitely pencil and paper.

New & Notable

Kingston DataTraveller ELITE PRIVACY

Your data vault on-the-go

Kingston's PRIVACY series of USB Flash drives has always stirred users' fancies. The drive we received for testing offered a very decent 2 GB. It's great in terms of design, build quality, and aesthetic appeal.

Once inserted into a USB port the drive gets detected, but you can't access data just yet. Instead, the Kingston software will autorun; the software is on the drive's system area, which cannot be formatted. The purpose of the software is password protection: only after the correct password has been entered will the drive become accessible. If the password is incorrect, the drive will not show up in Windows. The password can only be reset by formatting the drive!

Data transfer rate is better than the other drives we've tested. The DataTraveller ELITE PRIVACY is perfect for moving large amounts of data to and fro, but Rs 8,500 is a little expensive.

Company **A A Infoways**
Price **Rs 8,500**
Phone **011-26442261**
E-mail **info@infoways.com**
Web site **www.kingston.com**

Rating 

Tech-Com DSC-512X PLUS

Just a good camera

The DSC-512X PLUS camera may not look extraordinary, but it has a 7-megapixel CCD with 3x optical zoom. The display is a 2-inch colour TFT LCD. There's no viewfinder, so shooting in bright sunlight is somewhat difficult. Inbuilt memory is only 32 MB but thankfully, an SD/MMC card slot is provided. The camera supports the PictBridge interface.

The photos we clicked were crisp, and the colour vivid. Video shooting is supported. The inbuilt flash is good enough even for pitch-dark conditions.

Tech-Com has also provided four games with the camera, and the software package includes Ulead Photo Explorer 8 SE. The bottom-line—a decent buy!



Company **Shree Sagarmatha Dist Pvt Ltd**
Price **Rs 7,990**
Phone **011-26428541**
E-mail **contact@techcomindia.com**
Web site **www.techcomindia.com**

Rating 

Leadtek Winfast PX7900GTX

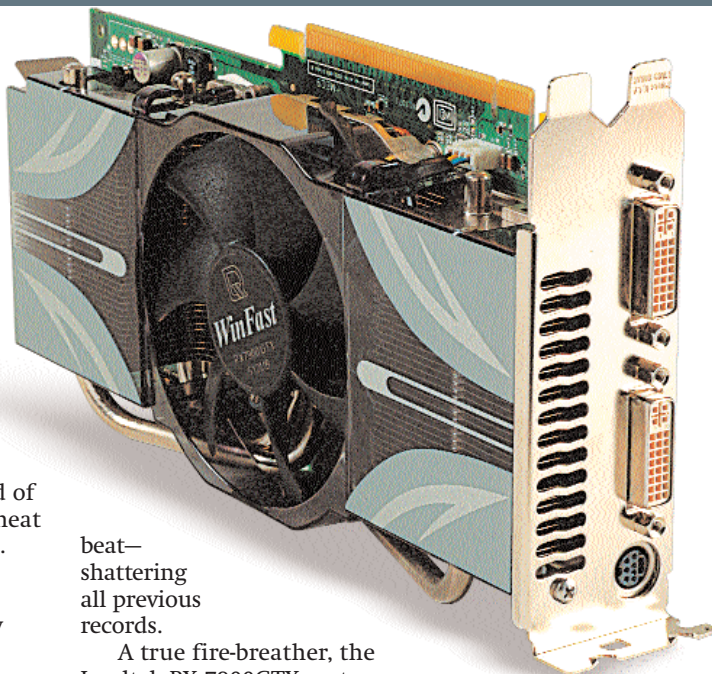
A monster of a graphics card

This GPU is the latest from NVIDIA. It's based on NVIDIA's newest and fastest 7900GTX chipset. It features the same 24-pixel pipeline architecture of the 7800GTX series, but with a lower transistor count, meaning significantly lower heat dissipation. The low transistor count also means NVIDIA could up the clock speed, which they haven't missed out on.

The Leadtek PX7900GTX features a 650 MHz core and 512 MB of GDDR3 memory @ 1600 MHz. Add to that full Direct X SM 3.0 compliance and HDR support, and you have a monster of a card on your hands! And the card does look monstrous, thanks in part to the huge heat sink, which has cooling pipes dissipating heat away from that supercharged core. One serious accomplishment here is the temperatures, which were well in check—easily within limits for a card of this calibre. The memory is also actively cooled via the heat sink, which is integrated with a large-diameter slow fan. Noise levels are tolerable.

Apart from the driver CD and free software, the card comes bundles with a full version of Serious Sam 2, a new game, which should give this card an easy workout. Also bundled are the composite cables, and the DVI to D-Sub adapter; the card comes with two DVI-I connectors, so if your monitor has only D-Sub, you will need to use this.

Performance-wise, this board is no slouch! 3D Mark 2005 put up scores in excess of 11000—an all-time high among all the cards we've tested! We started up DOOM 3 and were greeted with a straight 100+ fps score. To make things interesting we cranked up the resolution while enabling full AF and AA, and even at these settings the card didn't miss a



beat—shattering all previous records.

A true fire-breather, the Leadtek PX 7900GTX costs a whopping Rs 35,000. Premium products don't come cheap, now, do they!

Company **Top Notch Infotronics (I) Pvt Ltd**
Price **Rs 35,000**
Phone **044-26616201/202**
E-mail **zebronics@zebronics.net**
Web site **www.leadtek.com**

Rating 



Vantec AVOX-100 Jukebox

Storage, movies, music and more!

Vantec's AVOX-100 Jukebox is a nifty 2.5-inch hard drive enclosure: you need to add the hard disk. It can play movies and music and display photographs on a TV set, and also acts as a standalone backup device—you can copy files directly from other USB devices such as thumb drives and digital cameras without the need for a PC.

The case is powered by a power adapter; it can also run on standard AA batteries using the provided battery adapter. The device can work like any other external USB storage device (as in plug and play). A little switch lets you toggle between three modes: storage, TV, and USB host.

When connected to a TV, files can be accessed via an easy interface. In our test, the device easily played DivX and MP3 files. A slideshow of photographs worked great. Data backup from other USB devices works without a hitch.

For its versatility, we think the Vantec AVOX-100 is worth the Rs 5,000 price tag.



Photograph Sandeep Patil

Company **Apical Impex Pvt Ltd**
Price **Rs 5,390**
Phone **9821349177**
E-mail **tejas@apical.in**
Web site **www.vantecusa.com**

Rating



Sony VGN-SZ18GP/C

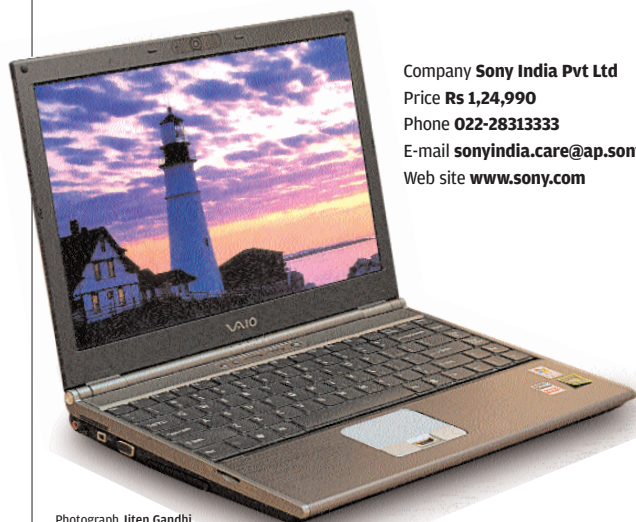
Razor-thin

It's a Sony, and it's powered by a Mobile Intel Core Duo processor running at 1.8 GHz. Other specs read 512 MB DDR2 RAM @ 533 MHz, an 80 GB hard drive, and a DVD-RW. The 13.3-inch wide-screen display supports 1280 x 800, and is one of the slimmest displays we've seen on any laptop we've ever tested! Image quality is crisp, colours are vivid, and the large viewing angles mean great visibility.

A new concept called the Hybrid Graphics System means you can change from Stamina mode—where an Intel GMA 950 graphics processor is used for low-power computing—to Speed mode, where an NVIDIA GeForce 7400 Go allows for high-powered gaming (at the expense of greater battery consumption).

Other features such as a Web camera integrated into the display, a memory card reader supporting almost every type of card, and Wi-Fi connectivity round up the features list. Rs 1,24,990 is, we think, a good price point for this notebook.

Rating



Company **Sony India Pvt Ltd**
Price **Rs 1,24,990**
Phone **022-28313333**
E-mail **sonyindia.care@ap.sony.com**
Web site **www.sony.com**

Photograph Jiten Gandhi

PENPOWER WorldCard Color

Digitise those cards!

For the busy marketing executive, the sudden availability of business card readers is a welcome development. PENPOWER's WorldCard Color is one such device that offers a no-frills approach to digitising business / visiting cards. It's bundled with seemingly intelligent software that recognises details from cards—company and person's name, address, phone number, e-mail ID and Web site. Scanning and extracting these details takes about 10 seconds per card.

The device installed without a hitch when we tested it on Windows XP. The software is intuitive, and bundles along features such as a *Mail To* the e-mail ID that was read, *Go To* the Web site, a powerful search feature, alphabetical sorting, and even the capability to read from an image file! With a resolution of 600 dpi, it can even be used a regular scanner for small (A6) documents such as ID cards, driver's licenses and so forth.

Company **Access**
Price **Rs 8,450**
Phone **022-23840789**
E-mail **cshah@bom8.vsnl.net.in**
Web site **www.penpower.us**

Rating



Photograph Anurag Patil

Please Go Paid!

Using pirated software only because “everybody else does” is all but an excuse. Here’s how to go about buying legal software—flavours of Windows XP and more

My friend had just assembled a computer, and realising he hadn’t bought any software, he called me to ask if he could “borrow” my installer CDs! Now, I’m known for my strong views against piracy, and I decided to make him my first lecture victim for the summer! Determined to make him realise the importance of buying the original software, I headed for his place.

My friend’s not a cheat—he’s just misguided because of all the piracy that takes place around here. Even system assemblers load pirated OSes and software when they provide you with a machine. Had he not decided to buy his machine in parts and assemble it himself (he had always wanted to do so), he would have got a machine with an OS and the most popular paid software—MS Office, Tally, Norton SystemWorks, and the likes—all pirated, all at no extra cost. The phrase “but everyone does it” is no justification for committing a crime, and my friend understood. But though he agreed to pay for the OS, he was quite confused about how to go about buying it. I decided to use my regular slot in *Digit* to tell all of you what I told my friend.

The OS

Windows XP is the unanimous choice, but not many know that there are various flavours available. There’s the Professional Edition, Home Edition and Media Center Edition. Home users should not consider Windows XP Home crippleware, as popular belief goes, because all that the Home Edition does not have is some advanced tweaking tools and lack of support for IIS. Most home users will never notice these differences, and can pay less to obtain your legal copy!

XP Professional is the most powerful flavour of the lot, but there are complications when buying it. For example, if you’re buying the OS for just a single computer, you can opt for the Box Pack, which contains the installer CD, the Manual and the End User

Software	Price (Rs) (Box/Paper License)
Windows XP Home	3,500 (OEM)
Windows XP Professional	9,500 / 6,270
Windows 2003 Server	32,200 / 24,140
Client user licenses for 2003 Server	1,165
MS Office 2003 Standard	13,100 / 12,390
MS Office 2003 Professional	16,100 / 15,330
Adobe Photoshop CS2	35,570 / 32,500
Adobe Illustrator CS2	27,440 / 26,660
Adobe Creative Suite 2 Standard	48,250 / 45,000
Adobe Creative Suite 2 Professional	64,260 / 60,000
Adobe Acrobat 7.0	15,300 / 14,200
Macromedia Director 10	58,450 / 56,600
Macromedia Flash 8	19,700 / 19,000
Macromedia Studio 8	49,130 / 47,100
Norton Anti-Virus 2006 (Single user)	1,600
Norton Corporate Edition (10-user pack)	6,500
McAfee 10.0 (Single user)	1,350
McAfee AVSS (10-user pack)	8,600

License. The box contains a serial key that can be used only on one computer, and you will need to preserve the license to prove the authenticity of your copy. Now, if you have 15 computers or more in a SoHo setup, it would be stupid (and expensive) to buy 15 box licenses. So, you have the option of buying the Paper License. This means you get only one box and one serial, but can use that to install XP Professional on all your computers. The advantage is that you cut down on paperwork and costs, and all your computers have a single serial.

Those of you who want to buy a copy of Windows Server 2003 will need to remember that apart from the cost of a Server 2003 license, you also need to pay for a Client Access License (CAL). This is the license for the users who will connect to and use the server. Server 2003 comes with licenses for five to 10 users, and if you have more, you will need to buy the CAL for more users.

Open Source

Those of you who are averse to paying anything at all should seriously consider shifting to Linux. The beauty of this is that whether you need it for desktop or server use, you will never pay a penny—of course, you’ll have to learn about Linux and pretty much start from scratch!

When it comes to office suites, most of us Indians use pirated versions of MS Office. If you want to stay out of trouble without coughing up—and MS Office comes with a hefty price tag—you can always give OpenOffice.org a try; it’s an excellent replacement for MS Office! ■

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

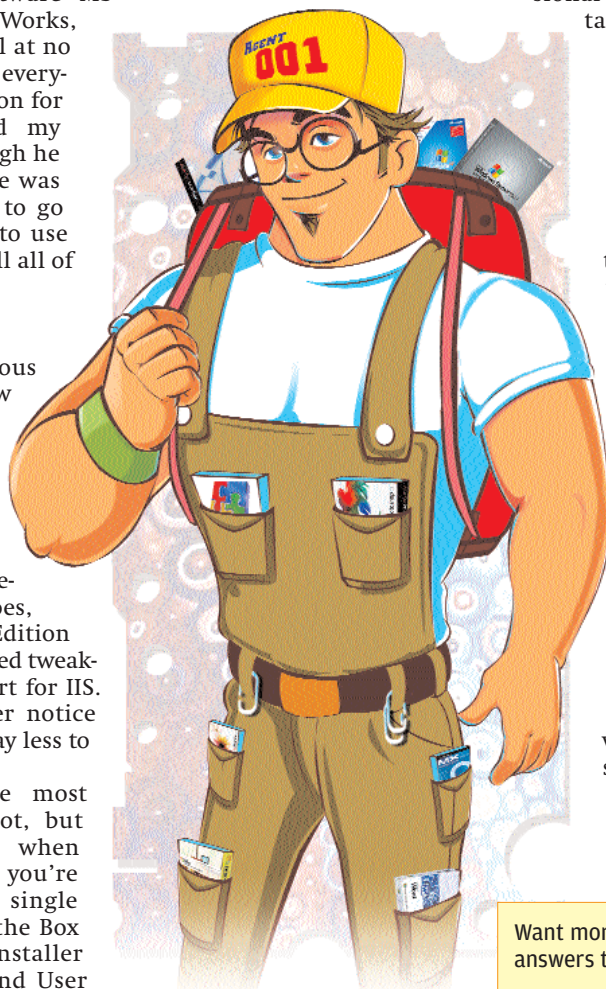



Illustration Pradip Ingale

Boost My Brain

Q I have a Pentium 4 3.0 GHz on an 865 GV motherboard with 256 MB of RAM. I want to upgrade the memory to 512 MB or higher. On opening my PC, I found that I have two 128 MB modules. My question is, what should I be looking at before buying the memory modules? What frequency modules will I require for my motherboard, and what will be the approximate price?


Hari Raj K

 Motherboards based on the Intel 865 chipset support dual-channel memory capability, and that's the reason you have those two 128 MB memory modules. For your motherboard, therefore, I'd suggest you opt for two 256 MB modules instead of one 512 MB module, so as to take advantage of dual-channel mode. These boards support DDR 400 MHz modules, so while buying, you will have to specifically ask for DDR 400 MHz. The approximate price of 256 MB DDR 400 MHz memory modules is around Rs 1,000. Opt for modules from brands such as Kingston, Transcend or Hynix.

The Brand Matters

Q I have a budget of around Rs 1,100 and want to buy a pen drive. What is the maximum capacity that I can get within my budget, and what brand should I opt for?

Ashad Ullah

 I think you need to be a little careful when buying a pen drive. The market is full of spurious drives that cost a third of what good, branded stuff costs. I suggest you buy a drive from a branded player such as Kingston or Transcend. For Rs 1,100, you will get a 512 MB branded drive.

Not Quite Music To My Ears

Q I bought an MSI MEGA 533 MP3 player, but I'm not satisfied with the bundled earphones—they are too tinny. Please recommend good earphones!


Tanmoy Mallik

 You're right—most MP3 players are bundled with bad earphones. I would suggest you buy original Sony earphones for your player: visit Planet-M or any other good music store. Sony has some quality earphones called Fontopia, and you can get them from shops selling foreign goods—or you can import them from the US via your friends. There's quite a range in the Fontopia series, and prices range from \$15 to \$49 (Rs 700 to 2,300).

A Burning Question

Q I have an Intel Pentium 4 3.6 GHz processor on an Intel 915GV/GL motherboard with 256 MB of RAM. I have a CD-ROM drive I would like to upgrade to a DVD-Writer. What brand?

Via e-mail

 I recommend either a Lite-On or a Sony DVD-Writer for your system. The Lite-On SHOW-1693S is the model you should be looking



Ask Away!


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

for. If you're unable to locate a Lite-On dealer in your area, opt for the Sony DRU-810—it's comparable to the Lite-On in all respects, and is widely available.

On An Equal Note

Q I want to buy a laptop primarily for home use. I will be using it of for photo editing, converting songs, surfing, and word processing. I have two models in mind—the HP Pavilion DV1615TS (1.7 GHz, 2 MB cache, 400 FSB) and DV1624TN (1.66, 2 MB cache and 667 FSB). The other specs are pretty much the same—80 GB HDD, 14-inch WXGA and so on. Which model should I opt for? Do you know of any better models? Rs 50 to 60K is what I'm looking at.


Madhabi Roy

 Any current-gen laptop with sufficient processing power will be good enough for your needs. Of the two HP models I would suggest the DV1624TN, because it has the latest Intel Core solo processor and the supporting 945 chipset. The other model is based on the older Sonoma platform—nothing wrong with it, but it is an older platform. As far as other vendors are concerned, you can look at IBM (now Lenovo), Toshiba and Fujitsu. And regarding after-sales service, HP and IBM have the upper hand.

Power For My Tower

Q I want to buy a UPS. I have a typical PC setup with a CRT monitor; can you help me select the right one, and also tell me about the important aspects of a UPS?

Karthik S


 Apart from backup power, a UPS should also provide voltage regulation. This is an area not many brands are good at. I personally have been using APC's BackUPS ES for two years now and haven't come across any problems; moreover, it also has automatic voltage regulation. It costs about Rs 2,500.

Obsolescence Alert

Q I need some advice on graphics cards. I have a budget of around Rs 16K. I can't decide between the GF6800XT 256MB, GF6800XT 512MB and the GF7600GT 256MB. My card should last me a good two years at least. What do you suggest?

I was also wondering if it's better to opt for an integrated solution now and buy a card later, when dx10 is supposed to be out with Vista. Finally, which is a better combo—the AMD X2 3800+ with DDR400 RAM or a Pentium D940 with DDR II 667 MHz RAM?

Anirudh

 I'd say the GF6800 series is already outdated to a certain extent. You can very well go for a GF7600GT card—these are the latest, and are fast enough to run most games. I don't think it will last two years, though! If you can delay your purchase by a couple of months, get a GF7800-based card.

Of the two processor-RAM combos you've mentioned, I'd recommend the AMD X2 3800+ for performance. ■

THE REGISTRY

The HKEYs Demystified

The Windows registry is organised in the following way.

HKEY_CLASSES_ROOT:

Holds all file types and their associations

HKEY_CURRENT_USER:

Holds the settings for the user that's currently logged in

HKEY_LOCAL_MACHINE:

Holds your computer's configuration information—both hardware and software

HKEY_USERS:

Holds the settings of all user accounts on your PC

Kill Apps Faster—I

If you're the impatient type and can't be troubled with the wait while Windows shuts down errant applications, there are two ways out for you—either make Windows shut down hung processes automatically, or reduce the time that Windows waits for before killing it.

To shut down applications automatically, open the registry editor (Start > Run, type "regedit" and press [Enter]), and navigate to `HKEY_CURRENT_USER\Control Panel\Desktop`. In the right hand pane, double-click "AutoEndTasks" and change the Value Data to 1 to enable automatic app kills. To disable the feature, change the Value Data back to "0".

Note: Keep in mind that if you want to apply this tweak—Windows might end up killing critical services before they have time to recover themselves, increasing the possibility of a system crash.

Kill Apps Faster—II

The second option is to reduce the time Windows waits for before showing you the "End Program" dialog box. Follow the instructions above to get to `HKEY_CURRENT_USER\Control Panel\Desktop` and double-click on "HungAppTimeout" and change the value data to the time (in milliseconds) you're willing to wait for an



Tips & Tricks

SECRETS THAT KEEP YOU AHEAD IN THE RACE

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WINDOWS XP REGISTRY HACKS II



Illustrations Harsho Mohan Chatteraj

unresponsive application. If you find applications that take too long to close when Windows is shutting down, you can also set the time that Windows will wait for before killing it. You'll find this value under "WaitToKillAppTimeout" in the same pane.

Kill Apps Faster—III

If you want to change the time that Windows waits before killing a system

service when shutting down, navigate to `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control` and double-click on "WaitToKillServiceTimeout" and enter a more acceptable value than the default 20000 milliseconds.

Save Your Tweaks

If you're a compulsive registry tweaker and like to switch between different settings often (like showing

and hiding the Administrator as above), you can save yourself some time and considerable inconvenience by using this simple method. Navigate to the key whose value you're changing. Go to **File > Export** and choose a save location and name for the exported registry file (extension: .reg). Open this file in Notepad. You will see "Windows Registry Editor Version 5.00" at the top, followed by the path to the key you just exported ("[HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Run]" for example). Leave these two lines alone, and delete everything but the value you want to keep. For example, in the "Kill Apps Faster—III" tip, all you need would be the "WaitToKillServiceTimeout" key—the rest can be removed. Save as many copies as needed with different values for the key. For example, we saved one file called showadmin.reg with "Administrator" as 1, and another called hideadmin.reg with the value as 0. To change the settings, just double-click these .reg files. No more running into Regedit all the time!

Now that you've saved tweaks in different files, you can also share them with friends! Just make sure that they're not too application or user-specific. The safest option would be to share tweaks that apply to Windows directly.

A Background Image For Explorer Toolbars

To display a background bitmap for Windows Explorer toolbars, navigate to `HKEY_CURRENT_USER\Software\Microsoft\Internet Explorer\Toolbar` and create a new String value by right-clicking in the right hand pane and selecting **New > String**. Call it "BackBitmapShell". Double-click on it and enter the path of the image you want to use as a background. The image must be in the .bmp format.



Change Processor Performance Settings

Note: This tweak only applies to laptops using Intel SpeedStep or AMD PowerNow! Processor performance management.

To change the way Windows XP's inbuilt processor management works, navigate to `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\P3\Parameters` and in the right-hand pane select **New > DWORD** and call it `HackFlags`. Enter the following values for the corresponding effect:

- 0 = disable native XP support
- 1 = use the settings inherited from Intel's software
- 5 = the system can support all processor modes even when running on battery.

Stop Paging The Core Windows System

On systems with at least 1 GB of RAM, you can configure the Windows core system to run completely out of memory. Keep in mind though, this will limit the performance of other applications and may even cause problems with applications like Adobe Photoshop, which depends on the Windows swap file directly. Navigate to `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\Memory Management` and create a new **DWORD**, calling it `DisablePagingExecutive`. Set the value data to 1 to disable system paging, and 0 to return to its default setting.

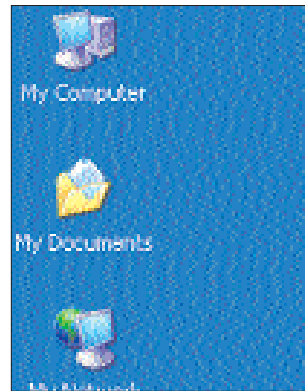
Optimise Windows For Larger L2 Caches

By default, Windows XP is optimised for processors which have 256 KB of L2 cache memory. However, if your processor has more (verify this with your vendor), you should modify its settings to make better use of it. Navigate to `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session`

`Manager\Memory Management` and in the right-hand pane create a new **DWORD** value and call it `"SecondLevelDataCache"`. In the value data, enter the number for how much L2 cache memory your processor has (make sure you select the **Decimal** radio button when you do so). The changes will take effect once you restart windows.

Put My Computer Back On Top

Do you prefer the old Windows 98 desktop layout where **My Computer** was at the top rather than **My Documents**? Navigate to `HKEY_CLASSES_ROOT\CLSID\{450D8FBA-AD25-11D0-98A8-0800361B1103}` and double-click on `"SortOrderIndex"`. To choose which icon goes at the top, use the following values:



Bring My Computer to its rightful location

48 (hexadecimal): **My Documents**

54 (hexadecimal): **My Computer**

If the setting doesn't work immediately, right-click on the desktop > **Arrange Icons By > Type**. Though you can achieve the same thing just by dragging

the icons into whatever order you want, this tip will help you keep it that way even if you choose to automatically sort the icons by any parameter—Name, Type, Size, etc.

Change The Colour Of Encrypted Files

When you encrypt a file in Windows XP, its filename begins to display in a bluish green colour. To change this colour, navigate to `HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Explorer`. If it doesn't already exist, create a new **Binary** value called `"AltEncryptionColor"`. To change the colour, edit the value data for this binary value. The colour will be represented by **RR GG BB 00**, where **RR** is a number that denotes the value of

Add Rename and/or Delete to special folders

You can add a **Rename** or **Delete** command or both to the right-click menu for special folders like **My Computer**, **My Documents** and so on if you know the **GUID** (Globally Unique ID) for that folder. Just navigate to `HKEY_CLASSES_ROOT\CLSID\{GUID}\ShellFolder` and add or modify a **Binary** Attributes value (**New > Binary value**) to change the setting. In place of **{GUID}**, use one of these:

Description	Globally Unique Identifier (GUID)
Administrative Tools	{D20EA4E1-3957-11d2-A40B-0C5020524153}
Briefcase	{85BBD920-42A0-1069-A2E4-08002B30309D}
Control Panel	{21EC2020-3AEA-1069-A2DD-08002b30309d}
Fonts	{D20EA4E1-3957-11d2-A40B-0C5020524152}
History	{FF393560-C2A7-11CF-BFF4-444553540000}
Inbox	{00020D75-0000-0000-C000-000000000046}
Microsoft Network	{00028B00-0000-0000-C000-000000000046}
My Computer	{20D04FE0-3AEA-1069-A2D8-08002B30309D}
My Documents	{450D8FBA-AD25-11D0-98A8-0800361B1103}
My Network Places	{208D2C60-3AEA-1069-A2D7-08002B30309D}
Network Computers	{1f4de370-d627-11d1-ba4f-00a0c91eedba}
Network Connections	{7007ACC7-3202-11D1-AAD2-00805FC1270E}
Printers and Faxes	{2227A280-3AEA-1069-A2DE-08002B30309D}
Programs Folder	{7BE9D83C-A729-4D97-B5A7-1B7313C39E0A}
Recycle Bin	{645FF040-5081-101B-9F08-00AA002F954E}
Scanners and Cameras	{E211B736-43FD-11D1-9EFB-0000F8757FCD}
Scheduled Tasks	{D6277990-4C6A-11CF-8D87-00AA0060F5BF}
Start Menu Folder	{48e7caab-b918-4e58-a94d-505519c795dc}
Temporary Internet Files	{7BD29E00-76C1-11CF-9DD0-00A0C9034933}
Web Folders	{BDEADF00-C265-11d0-BCED-00A0C90AB50F}

Enter these settings in the **Attributes** value to add the new context menu items: These will appear under the **File** Menu in Explorer:

- 50 01 00 20—Rename only
- 60 01 00 20—Delete only
- 70 01 00 20—Rename and Delete

These will appear under the **Edit** Menu in Explorer:

- 41 01 00 20—Copy only
- 42 01 00 20—Cut only
- 43 01 00 20—Copy and Cut
- 44 01 00 20—Paste only
- 45 01 00 20—Copy and Paste
- 46 01 00 20—Cut and Copy
- 47 01 00 20—Cut, Copy and Paste



Red in the colour, BB the value of blue and GG the value of Green.

Send Outlook XP To The System Tray

Jealous of lucky Outlook 2003 users who get to hide Outlook in the system tray? Fear not. Navigate to `HKEY_CURRENT_USER\Software\Microsoft\Office\10.0\Outlook\Preferences` and in the right-hand pane, select **New > DWORD** and call it "MinToTray". Set the value data to 1, reboot, and Outlook will now sit in the system tray when you minimise it. You won't get anything from right-clicking on the tray icon, though. To reset this to its prior condition, either delete "MinToTray" or set its value to 0.

Show Me The Admin!

When you install Windows XP, it creates a system administrator account (called, by some strange coincidence, Administrator), which will be visible on the login screen only till you



Revealing the hidden Administrator

create a new user account, after which it is hidden from you. To add the Administrator back to the login screen, open the Registry Editor and go to `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Winlogon\SpecialAccounts\UserList`. Double-click on Administrator if it's there and change the Value Data to 1. If you don't see it, create it by right-clicking in the pane and selecting **New > DWORD**. Name it Administrator and then change the Value data to 1. The next time you start your system, you should see the Administrator in the login screen as well.

Set Programs to Run on Startup Only Once

You've probably encountered RunOnce if you've ever diagnosed your system for startup programs. Programs entered in the RunOnce key will, as the name suggests, run just once before being removed from startup. To add a program to the RunOnce category, navigate to `HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\RunOnce`. Right-click and select **New > String value**. The name of the value should be the name of the program you want to run, and the Value Data should be the path of that program.

Start Command Prompt From Directories

When you start the Windows Command Prompt, (Start > Run, type "cmd" and press [Enter]), it starts in your user directory. This registry tweak will let you start command prompt in any directory that you choose. Navigate to `HKEY_CLASSES_ROOT\Directory`

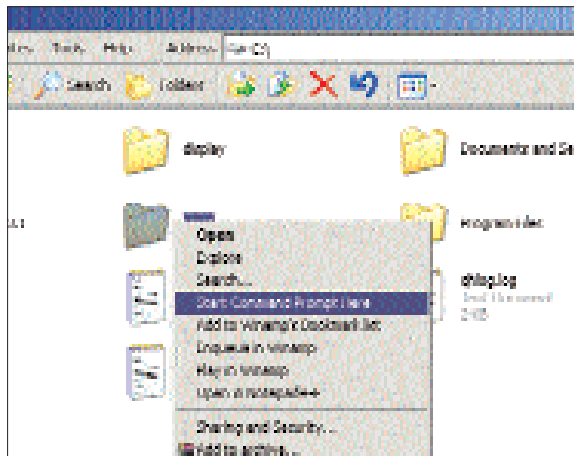
\shell. Right-click on the "shell" key and select **New > Key**. Call it Prompt. On the right pane for the Prompt Key, change the default value data to "Start Command Prompt Here" (without the quotes). Now, under the Prompt Key, create another key called Command. In the default value here, enter "cmd.exe /k cd %1" (again, without the quotes). You should now be able to right-click on any folder and start the command prompt from there.

Increase the USB Polling Interval

Windows constantly checks (polls) USB ports for connected devices. If you don't have any USB devices



The settings for the "Start Command Prompt Here" feature



The menu item in action

connected, you can increase the poll interval to save on resources and power. Laptops especially will be able to enter the power-saving mode faster. Navigate to `HKEY_LOCAL_MACHINE\System\CurrentControlSet\Control\Class\{36FC9E60-C465-11CF-8056-444553540000}\0000`, right-click in the right hand pane and choose **New > DWORD**. Call it "IdleEnable" and set the value data to 1. This will enable USB idling and will increase the polling interval.

Disable the Windows Key

If you don't want to use the special Windows key, you can disable it in the registry. Navigate to `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Keyboard Layout`. If it doesn't exist, create a new Binary value (**Right-Click > New > Binary Value**) and call it Scancode Map. Double-click on the value and enter this value data:
00 00 00 00 00 00 00 00 03
00 00 00 00 00 5B E0 00 00
5C E0 00 00 00 00
Restart Windows for this to take effect.

Disable Windows CD Burning

To disable Windows' default CD burning function, use this tweak. Navigate to `HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Policies\Explorer` (or the same key in `HKEY_LOCAL_MACHINE` if you want this to apply to all users) and create a new DWORD by right-clicking in the right-hand pane and selecting **New > DWORD**. Call it "NoCDBurning" and set its value data to 1 to disable CD burning. To enable it again, just change the value data back to 0 or delete the DWORD altogether.

Bring Windows to Front à la X-Windows

In X-based operating systems like Unix and GNU/Linux, you have the option of being able to bring windows to the foreground by just hovering the mouse cursor over them. Here's how you can do it for Windows XP too. Navigate to `HKEY_CURRENT_USER\Control Panel\Desktop`. You will find a binary value called "UserPreferencesMask". This is different for different people, so this part is a little



Set Up A Virtual Private Network

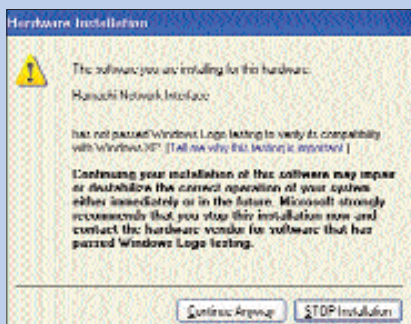
It isn't as difficult as you probably thought—courtesy a VPN utility called Hamachi

Sanket Naik

Virtual private networks, or VPNs as they are known, are private networks routed through public networks such as the Internet. For example, if your company has a branch office, then instead of using leased lines to connect to it, you can opt for a VPN.

The immediate advantage is a reduction in cost. While there are many VPN solutions available, we will here take a look at Hamachi, a small, minimum configuration VPN utility with NAT-to-NAT traversal capability. NAT-to-NAT capability means two computers on different domains can be connected for direct communication.

So what's in it for you? If you are on, say, ISP A, and the other office or your friend is on ISP B, transferring files or sharing directories won't be possible, since your domains are different. Hamachi, however, lets you achieve just this.



Ignore this warning window and just continue

STEP 1 Download And Install

You need to get the Hamachi client, and all you have to do is head to www.hamachi.cc—it's a 650 KB file. Once it's downloaded, install it in the appropriate directory. While installing, you will be prompted to install hardware. Don't panic—just click Next and everything will be OK!

STEP 2 Start The Wizard

Once the setup is done, on the last screen, check the box "Launch Hamachi" and then click Finish. As soon as the Hamachi client launches, a first-time setup wizard also pops up along with the client.



Joining an existing network

STEP 3 Create An Account

To switch on the client, you need to click on the power button that has the standard power symbol we see on most devices. Once on, the client will connect to some backend servers and then assign you a private Hamachi network address. The assigned IP is unique to your machine, and it will be used for connecting to various other computers on the Hamachi network.

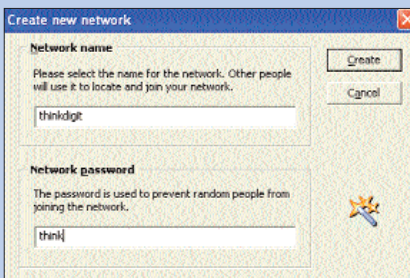
Before connecting to the server, the client will prompt for an account name. Just select any name you like—it need not be unique—and then click Create.

STEP 4 Obtaining The IP

When the client is offline, the IP is generally denoted as 0.0.0.0; as soon as it connects to the backend server, it will change to something like 5.38.x.x. Once the unique IP appears, you're all set to host a small Hamachi network. Alternatively, you can join a different network. Let's look at both scenarios.

STEP 5 Hosting A Network

To create your own network, click on the little Network button indicated by three dots and connecting lines. In the menu, select "Create new network". In the next dialog box, you need to enter two things—first a name for your network, and secondly, a password to



Select the appropriate Network Name

prevent unauthorised connections.

Once you key in both, click Create. The network will be created, and will be displayed in the client with the name you specified earlier. Now any friend who wants to connect to your client just has to type in the name of your network and provide the password.

STEP 6 Joining A Network

To join a network, you again click on the network button and select Join Existing Network. In the following dialog box, type in the name of the network you want to join and the correct password, then click Join. Once the connection is established, you will see all the other computers connected to the same network.

STEP 7 The Business Of Accounts

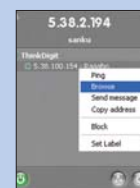
Once the connection is established, you can access shares on other connected machines and they can access yours. But before that, you will need to make an administrator account on Windows XP for your friend. Go to Control Panel > User Accounts and select "Create a new account". Give an appropriate name to the account. In the next dialog box, select the type of account as Computer Administrator and then click Create Account. Once the account is created, click on it and assign it a password so as to prevent unauthorised access.

STEP 8 Accessing Stuff

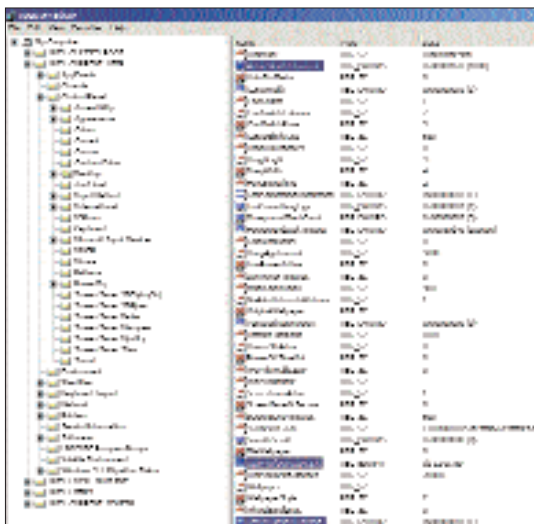
Once you've created a user account for your friend, you can browse his shares simply by right-clicking on your friend's name in the Hamachi client and selecting Browse. An alternative way to do this would be to go to Run and type in your friend's Hamachi network address followed by the share name, for example, \\x.x.x.xx\\music. Make sure the shared folder doesn't have write access—just to avoid network worms and virus infections.

You've just set up a VPN! ■

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It's easy to browse the network once it's set up



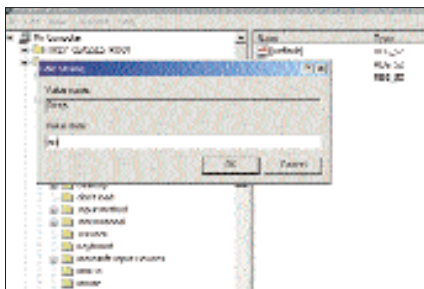
Enabling Active Window Tracking

tricky. What we need to do is add Hexadecimal 41 to the first Hexadecimal number in the value. For example, the "UserPreferencesMask" value in our test PC had the value "90 12 01 80". Start Calculator and select **View > Scientific**. Select the Hex radio button in the top row and add 41 to the first two numbers (in our case, 90 + 41, which gave us a result of D1). Now edit the "UserPreferencesMask" value data and replace the first two digits with the result you just got (ours now reads D1 12 05 80).

The next step is to create a new DWORD called "ActiveWindow Tracking" (if it isn't already there) and set its value data to 1. Next, create (or edit) the "ActiveWndTrkTimeout" DWORD. When entering its value data, choose Decimal and type in how many milliseconds you want to wait before switching windows. Now restart Windows and *voila!*

End The Beeping

Do random Windows events cause your PC speaker to beep in that annoying manner? Shut it up permanently. Navigate to **HKEY_CURRENT_USER\Control Panel\Sound** and double-click the "Beep" value. Change the value data to "No", and you won't hear a peep...er...beep again.



Joining an existing network

Enable Your Network Adaptor's Onboard Processor

If your network card has an onboard processor (you can find this out from the vendor's Web site), it can take off the load of network processing from your CPU. Navigate to **HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters** and create a new DWORD called "DisableTaskOffload". Set its value to 0 to enable offloading network processing onto the network card. Restart Windows for this to take effect.

Change Outlook XP's Restricted Files

Outlook blocks attachments with the following extensions by default: ade, adp, asx, bas, bat, chm, cmd, com, cpl, crt, exe, hlp, hta, inf, ins, isp, js, jse, lnk, mda, mdb, mde, mdz, msc, msi, msp, mst, pcd, pif, prf, reg, scf, scr, sct, shb, shs, url, vb, vbe, vbs, wsc, wsf and wsh

However, if you want to allow any of the above file types, navigate to **HKEY_CURRENT_USER\Software\Microsoft\Office\10.0\Outlook\Security** and create a new string value called "Level1Remove". In the value data, enter the extensions that you want to allow, separated by a semicolon. For example, "exe;bat;pif" and so on. Do remember that these file types are often used to spread malicious code, so be careful when using this trick.

Optimise Your Hard Disk When Your PC Is Idle

This tweak will make Windows rearrange data on your hard disk when the PC is idle, so that applications will run faster. Navigate to **HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\MicrosoftLayout** and create a new DWORD called EnableAutoLayout (if it isn't already there). Set the value data to 1 and restart your PC. When you leave your PC idle now, Windows will optimise your hard disk.

Copy NTFS Permissions

If you copy files from one NTFS drive to another, it loses its permissions, inheriting the default permissions of the new drive. To make Windows preserve the current permissions, navigate to **HKEY_CURRENT_USER\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\Explorer** and create a new DWORD called "ForceCopyAclwithFile". Set the

value to 1 to preserve the original permissions.

Set Disk Defragmenter Options

The Windows XP disk defragmenter doesn't really allow you much in the way of customising the defragmentation. To set a defragmentation method, navigate to **HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Applications\Defrag\Settings** and create a new key called Method under Settings. In the Method key, edit the (Default) string and set it to any of these options: **FULL** - Defragment files, space and optimise programs. **FULLNOAPPLOG** - Defragment files and space.

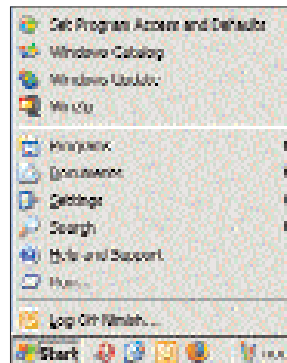
FILES - Defragment files only.

SPACE - Defragment space only.

To decide whether to run scandisk before starting the defragmenter, create a key called "scandisk" under Settings and set "(Default)" to TRUE or FALSE.

Disable Shut Down

If you don't want anyone to shut down your PC, you can disable the command altogether. Navigate to



Where did Shut Down go?

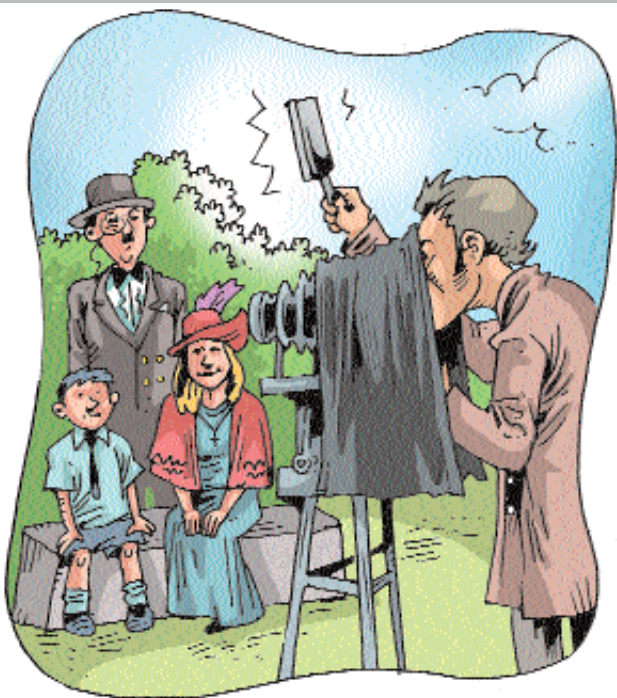
HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Policies\Explorer. In the right-hand pane, right-click and select **New > DWORD Value** and call it "NoClose". Set its value to 1 to disable shutting down the PC.

Re-initialise the registry without rebooting

If you don't want to restart or log off to make a registry tweak work, try this instead:

Use **[Ctrl] + [Shift] + [Esc]** to bring up the Task Manager. Under the Processes tab, select "explorer.exe" and click on End Task. Note: This will kill any Explorer windows you have open. Explorer.exe will restart automatically because Windows can't run without it, and your new registry settings will now be loaded. ■

DIGITAL CAMERAS



Shooting In RAW Format

If your camera has a RAW capture mode, it's a good idea to try it out. Here are some things you need to know.

What is RAW?

RAW is not really a single file format at all. Every camera manufacturer has its own native file format; all these formats are collectively referred to as RAW. For example, Canon RAW files use the .crw and .cr2 extensions, and Nikon cameras use the .nef extension. They are all unique as well proprietary—the files in these various formats are incompatible.

But no matter what flavour of RAW you use, the basic idea is the same. RAW files are uncompressed, perfect representations of what the camera's image sensor captures when you press the shutter release. RAW images are totally unprocessed. Contrast this with JPEG photos, where the camera performs tasks such as white balance adjustment, colour correction, and image sharpening.

Most importantly, RAW files preserve all the colours

originally captured by the camera, usually 12 bits per pixel. When a picture is saved as a JPEG, the camera reduces the total number of colours to 8 bits per pixel. The higher colour fidelity of RAW makes for better photos, especially if you do a lot of editing on your images.

Disadvantages Of RAW

There are a couple of disadvantages to working with RAW, however. First and foremost is the time it takes to save each image on your camera. Most modern cameras can save even large

JPEG images more or less as fast as you can shoot them. But RAW images are another story. On a typical 6-megapixel camera, for instance, each RAW image takes about 40 seconds to get saved to the memory card.

File size is another consideration. Top-quality JPEG images could typically be just above 2 MB each, but their RAW counterparts are about 4 to 5 MB. If you have a smaller memory card, this is something to consider.

Fortunately, there's nothing particularly unusual about moving RAW files from the camera to the PC. Use whatever technique you prefer. But after the pictures are on your computer, RAW is a different story.

RAW-Compatible Software

In the past, most image editors didn't understand the RAW format, and it was also difficult to view, edit, and organise RAW photos. But thankfully, that's changed. No matter what popular commercial photo editor you use, you'll get RAW support if you upgrade to the newest version.

However, Windows XP doesn't understand RAW files. In your folders, RAW images appear as nondescript icons instead of thumbnail previews. And if you double-click on a RAW file, it won't open the Picture and Fax Viewer to display the image.

There is, however, a

solution: Microsoft's free RAW Image Thumbnailer and Viewer. This PowerToy lets you preview, see thumbnails, and print RAW images as if they were any other file format that Windows understands. It also gives you the ability to see RAW images on the desktop without special RAW image management software. Download the PowerToy for XP from www.microsoft.com/windowsxp/downloads/power toys/xppowertoys.msp.

Depending upon what image editor you use to edit RAW files, your experience will vary. Most programs allow you to make some initial adjustments to your RAW photo before loading it onto the editing canvas—more on this later.

Should You Use RAW?

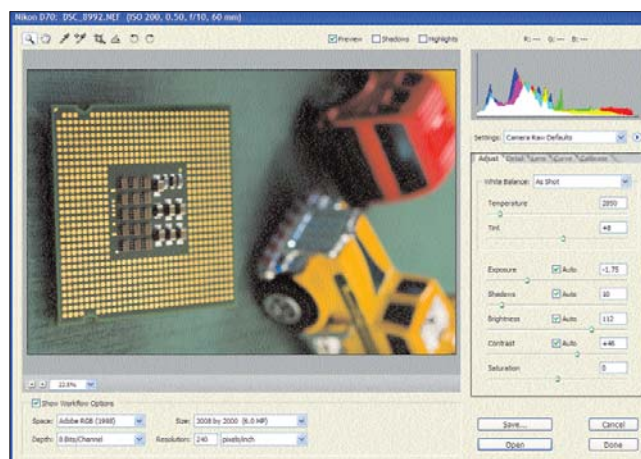
If you need to spend money to experiment with RAW, think twice. JPEG, used with low compression, gives results that are surprisingly similar to RAW. RAW's real benefit comes in by making it easier to get high-quality results when you edit your photos on the PC. If you rarely spend much time editing your photos, using RAW may be more trouble than it's worth.

RAW Gives Richer Pictures

With a RAW file, the process of applying the required algorithms is given to your computer rather than to your camera. This means the conversion process can take advantage of the more powerful processor in your computer as opposed to the processor in your camera. And, because your computer's more powerful processor is being used, camera manufacturers have the option of using more powerful algorithms to process your photograph than could be used in the camera. This can have the effect of giving you richer, sharper pictures.

Pre-Edit In RAW

A great reason for shooting in RAW is the ability to make exposure, white



If you shoot in the RAW format, you will find myriad options by which you can edit your photographs



Organising Your Mail

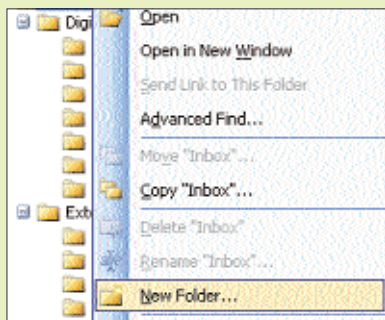
Outlook is a wonderful e-mail client. Here's how to get it to keep your mails organised

Sanket Naik

If you use Web mail services such as Gmail, Yahoo!, Hotmail, etc., you don't need to read further. But do read on if you use Outlook 2003 which, with its plethora of features, is without a doubt the best e-mail client out there!

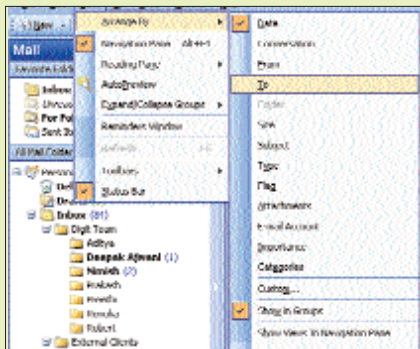
Regular use of e-mail clients coupled with the daily chaos of a workplace can easily result in your Inbox becoming ridiculously cluttered. Here are some tips on how to set up and organise your mailbox, and make the most out of MS Outlook 2003.

STEP 1 Group Similar Messages
In Outlook 2003, all messages are delivered to the Inbox. By creating separate folders, you can arrange the mails properly. Create folders according to teams, projects, and departments—or categorise them in any way that makes sense to you.



Creating new mail folders

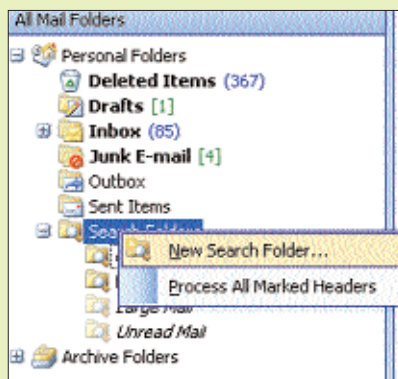
Go to the All Mail folder, right-click on Inbox and then select New Folder. Single-click the new folder and then rename it as you like. Now, if you want to create more sub-folders under this new folder, repeat the above process.



Sort e-mails by any criteria you choose

STEP 2 Sort E-Mails By
You can specify how Outlook sorts incoming mails. They can be sorted by Date, From, To, Size, Flag, Importance, Subject and Conversation.

To set the default view, go to the View menu, select Arrange By, and choose the option that suits you best.



Creating "virtual" folders

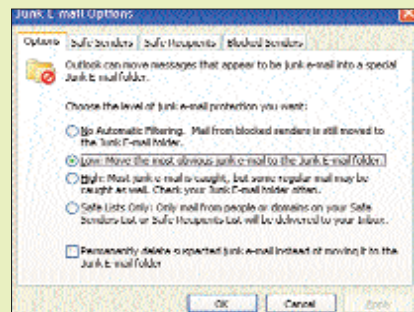
Every time Outlook starts, it will sort the new mails according to whatever settings you chose.

STEP 3 Virtual Folders
While sorting does help in quick retrieval of mails, one still needs to search for them. Outlook 2003 allows creation of virtual folders for search. By default, Outlook has three search folders—for Large mails, Follow up, and Unread mails. You can go about making as many search folders as you like. Creating virtual folders helps keep together mails that pertain to a particular project, meeting, and so on.

To make new search folders, right-click on Search Folders in the All Mail Folders window, and then select New Search Folder. In the following dialog box, you can select from the predefined search criteria, or you can define custom search criteria.

STEP 4 Keep Junk At Bay
Outlook provides an inbuilt Junk filter that diverts unsolicited mails to a separate folder. You can create a White List of senders who will never be blocked, and also mark as junk the few mails that slip through the junk filter.

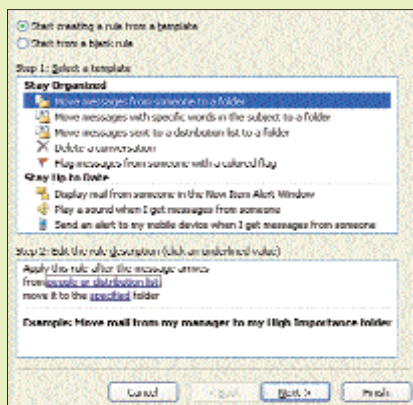
To turn on the Junk filter, Go to Tools > Options > Preferences. Under E-



The junk filter settings in Outlook 2003

mail, click on Junk E-mail. In the next dialog box, specify the level of junk e-mail protection—there are four options: No Automatic Filtering, Low, High, and Safe List Only. If you get loads of spam, you might want to set the filter to High—but remember to regularly check the junk folder for mails that have wrongly been marked as junk!

STEP 5 Smart Rules
Mailbox rules are a smart way of automating manual work. For example, you can use them to move specific mails to separate folders, mark meetings, auto-delete mails from specific people, etc. Mail rules will save you lot of time and are an effective way of organising your mailbox.



Set up filters so mails go where they should

To set rules, go to Tools > Rules and Alerts. In the Rules And Alerts window, go to the E-mail Rules tab. Click on New Rule, which opens the Rule Wizard. Outlook already has some predefined templates: you can start defining rules using them, or start with a blank rule. ■

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balance and other edits to your photo before you even create the photo. Photo editing applications such as Photoshop handle most exposure and white balance editing on JPEG, TIFF and Photoshop files by removing data from the photo. To test this out, launch a photo in Photoshop, and open the Levels panel (**Image > Adjustments > Levels**) where you'll see a histogram for your photo. At the bottom of the histogram will be three diamond-shaped sliders. Move in the left and right sliders toward the centre. In most photos, this will have the effect of increasing the contrast of your photo. Click OK, and your levels changes will be accepted. Then reopen the Levels panel, and you'll most likely see the histogram with open vertical lines. These lines indicate missing information or data that has been removed from the photo in order to achieve the effect you saw on your monitor.

With a RAW photo, you can make these levels and other adjustments before you use the conversion algorithms. In Photoshop CS, this is done when you double-click on a RAW photo. Photoshop will present you with a panel with various exposure, white balance, contrast, saturation, shadow and other adjustment options in addition to a very large thumbnail of your photo. You can play with these adjustments and Photoshop will adjust the thumbnail photo to give you a very good representation of what the final photo will look like if you accept these settings. When you click OK, your editing adjustments are made to the algorithms that convert your RAW data to reflect the changes you want to make in the photo.

The most important thing to remember here is that your adjustments are being applied while your photo is being created. This means that no data is lost, and your photo will have all the tonal characteristics that are possible with that file. Because no data is lost when

you adjust a RAW file, this gives you the ability to make exposure changes to your photo that are as wide as two f-stops or more. This is the reason many commercial photographers shoot in RAW.

Lenses For Digital Cameras

If you're planning to buy a lens for your digicam, how do you distinguish between the different kinds of lenses? Wide-angle or telephoto? What focal length and what speed? There are several questions you need to answer for yourself. Here's a brief primer.

Choosing The Focal Length

Focal length is probably the most important factor to be considered when choosing a lens: it determines the field-of-view of the photos you will be able to take with your camera.

The two main types of focal length are telephoto and wide-angle, and while telephoto lenses have a narrow field-of-view and are best suited for close-up shots and portraits, wide-angle lenses have a wider field-of-view which is perfect for indoor photography and landscapes.

Keep in mind that the performance of lenses differs from camera to camera.

Fast And Slow

When you hear about fast and slow lenses, people are referring to a lens' maximum aperture, which is the maximum amount of light that a lens can let in. A simple rule of thumb is that a fast lens lets in a lot of light, while a slow lens lets in less light, which defines how your photos will look.

Maximum apertures are measured in f-stop numbers, which are actually a ratio of the size of the lens aperture and focal length. The smaller the f-stop number, the more light is let in. An increment in the f-stop number doubles the amount of light let in, so f1.4 lets more light than f2.0.

This may seem confusing at first; the easiest way to make sense of it is to remember that fast lenses are best suited towards successful photography in darker lighting conditions, and slow lenses are targeted towards photography in brighter conditions.

Zoom Lenses

Unlike a fixed-focal-length lens, a zoom lens often gives you the diversity of a range of focal lengths all rolled into a single adjustable lens. This can be great if you often have to switch between various lenses for different shots, but it is important to remember that not all zoom lenses have a constant maximum aperture, and those that do are often larger and more expensive.

The maximum aperture can be reduced as you zoom in using a lens with a variable maximum aperture, but this

may not be as important to some as the reduced cost and size of such lenses.

Add-on Lenses

Add-on or accessory lenses are targeted at compact digital cameras, and allow you to significantly lengthen or reduce the camera's inbuilt focal length while at the same time being able to automate camera functions including f-stop settings and focusing. These lenses can be excellent low-cost add-ons to your digital camera, with telephoto add-on lenses being able to increase focal lengths by up to 300 per cent, and wide-angle versions allowing for reduction in focal lengths of up to 30 per cent.

A fish-eye lens is an extreme wide-angle lens that has an angle of view exceeding 100 degrees—sometimes more than 180 degrees—and which renders a scene as highly distorted. ■



Above: A photograph that's clicked normally

Below: The same scene shot using a fish-eye lens



A box of antivirus software with the word "ANTIVIRUS" prominently displayed in large, bold letters.

ANTIVIRUS

A large, bulky CRT computer monitor with a dark screen.

CRT MONITORS

A silver laptop computer with its screen open, showing a desktop environment.

LAPTOP

A 3.5-inch internal hard drive with its top cover removed, showing the internal platters.

**INTERNAL
HARD DRIVES**

A laser multifunction device, possibly a copier or scanner, with a flatbed and control panel.

LASER MFDs

A laser printer with a control panel featuring several buttons and a small display screen.

LASER PRINTERS

A flat-panel LCD computer monitor with a thin bezel.

LCD MONITORS

DO IT YOURSELF

TECH

DRIVE YOUR DEVICES

A portable MP3 player with a small screen and several buttons.

MP3 PLAYERS

A slim optical drive, likely a DVD or Blu-ray drive, shown from the front.

OPTICAL DRIVE

A pair of small, black computer speakers, one of which is shown with a cable attached.

SPEAKERS

Viruses And Anti-Viruses

Here's all you need to know about evil code and
the software that keeps you safe from it



Jayesh Limaye

When it comes to security, all of us are paranoid, and with good reason. With millions of ways to exploit our computers or data, and hundreds of thousands of people trying to do so, can you blame us? But how many of us are *really* careful, or even know what to do when the bits hit the fan? This workshop will help you do just that...

Am I Infected?

So how do you know if your computer is infected with a virus? Here are some indications:

- ❑ It runs considerably slower than usual
- ❑ It frequently stops responding
- ❑ It crashes and restarts
- ❑ Applications don't properly
- ❑ One or more disks are inaccessible
- ❑ You see distorted windows and dialog boxes
- ❑ Files get deleted for no reason
- ❑ You get strange error messages
- ❑ You see strange behaviour in your e-mail program

What Are The Kinds Of Virus Scanners?

Anti-virus software are of two types—those that can be invoked when needed, and those that are always active in the background.

On-Access Scanners

Also known as Memory Resident Scanners, these run in the background when the PC is running. The function of an on-access scanner is to monitor all activity on your machine such as files being read or accessed, downloads, receiving, sending or reading e-mail, and so on.

If, while monitoring activity, the on-access scanner encounters a file whose activity it identifies as virus-like (such as a file trying to dial a certain number or trying to e-mail something from your PC), it informs you or takes some kind of action (depending on how you've configured it).

Since they always run in the background and constantly access files, on-access scanners invariably slow down your system, at least to some extent and depending on your system specs. Most on-access scanners allow you to disable on-access scanning temporarily. If, for example, you need to run a resource-hungry application such as a 3D game, you might want to disable on-access scanning, provided you're not connected to the Internet and are not accessing files from removable media.

You should never install two on-access scanners on your machine because each of them is likely to detect the other as a virus, and this can even cause your system to crash.

On-Demand Scanners

These scan files or folders at the user's request. All anti-viruses are on-demand scanners; some are both on-access as well as on-demand. On-demand scanners are useful when you want to scan a file or folder where you want to make sure there isn't a virus. For example, if you're burning a CD and giving it to a friend, it's a good idea to scan it first.

You may install as many on-demand scanners as you wish. Having more than one can be a good thing—two anti-viruses can detect more viruses! You should, however, remember to run on-demand scanners separately. Also, take care before you run an on-demand scanner that an on-access scanner is not already running.

What Is Heuristic Scanning?

All anti-virus software depend on virus definition files which contain virus "signatures" to identify a virus. This is traditional scanning and here, the anti-virus looks through files and searches for strings that resemble the signature of a known virus. But newer viruses are always being unleashed, and their signatures obviously won't exist in the database. What does the anti-virus do in that case? It falls back on its heuristic scanning capabilities.

The heuristic scan capability of an anti-virus is its ability to detect an undefined virus from its suspicious activities. It works on the principle that viruses usually use certain methods of infecting other files, and if an application is found to be using such methods—or exhibiting such typical behaviour—it is detected as a virus.

A file can also be wrongly detected to be a virus. This happens more often when the heuristic "sensitivity" is kept high. You need to decide the course of action in such a case by taking a look at the filename. There's a trade-off here: if you keep the sensitivity high, you're safer, but you'll get more false alarms.

What Is A firewall?

All Internet communication takes place by exchange of individual packets of data. Each packet is transmitted by a source machine towards a destination machine. When the latter receives the packet, it sends an acknowledgement packet to the source machine that the packet has reached it. For the receiving computer to know who sent it the acknowledgement packet, it must also contain the IP address and port number of the source machine.



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A firewall inspects each and every packet that arrives at your computer before it is seen by any other software running on your system. Similarly, it also inspects every packet being sent from your computer—before it is sent. It can “filter” arriving packets based upon any combination of the originating machine’s IP address and port and the destination machine’s IP address and port. As an example, if your computer is a Web server, remote computers can connect to your computer using the port 80, which is for http. The firewall will inspect every incoming packet and allow connections only via port 80 and deny connections on all other ports.

Thus, even if a Trojan horse gets installed on the computer and opens a listening port, the Trojan scanner at the other end will not be able to communicate with the Trojan horse since all the attempts to contact it will be blocked by the firewall.

Some Important Rules For Security

- ❑ Update Windows before installing new security software. Install the latest patches and service packs for your version of Windows, using Microsoft’s Windows Update Web site.
- ❑ To avoid conflict, do not use two firewalls at the same time. Before installing a new firewall, completely uninstall the first. The Windows firewall offers only basic protection, and it is recommended

that you install a third-party firewall—disable the Windows firewall before you do so, of course.

- ❑ After installing any security software, immediately check for updates at the vendor’s Web site.
- ❑ Do not install Windows and then get online to download anti-virus software or definitions. Before you get online even for the first time, you should have installed an anti-virus with updated definitions off a CD.
- ❑ Use an online testing service such as Microsoft’s Windows Live Safety Center at <http://safety.live.com/> or Kaspersky’s Free Online Virus Scanner at <http://www.kaspersky.com/virusscanner> if you can’t afford or procure anti-virus software. During an online virus scan, an ActiveX component is downloaded to your computer, which does the actual scanning. You need to stay online for the length of the scan.

What Are The Types Of Viruses?

Virus

A piece of code that is loaded onto your computer without your knowledge and that can run against your will. Most viruses can replicate themselves. All computer viruses are manmade. A simple virus that can make a copy of itself over and over again is relatively easy to produce, and even such a

simple virus is dangerous because it will quickly use all available memory and bring the system to a halt. More dangerous viruses are capable of transmitting themselves across networks and bypassing security systems.

Boot Sector Virus

A virus that infects the boot sector of a disk. An attempt to boot from a disk infected with a boot sector virus will cause the virus to become active in memory. Every time you boot your system from that point on, the virus will be active in memory. The boot sector is a sector at the beginning of a disk that identifies the disk’s architecture. For startup disks, bootable CDs and bootable hard disks, the boot sector also contains a program that loads the operating system.

Macro Virus

These are small programs written in the macro language of an application, which can normally only spread within files of that application.

In order to infect you, they need the corresponding applications to be activated and at least one of the infected macros should have been executed.

What Should I Do When A Virus Is Detected?

When a virus is found, you have the option to disinfect the file, and if this fails, you can delete the file. If the file refuses to delete, or if the infected file is important, you can opt to back it up safely to the “virus chest,” or “quarantine” it, so it can’t cause any further infection and also so that it may be repaired in the future when a solution becomes available for that particular infection. ■

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Why Are Virus Removal Tools Needed?

Virus removal tools are free executables designed to eliminate specific viruses. Using a virus removal tool does not require you to install any anti-virus software. Examples of free virus removal tools are the Stinger remover from McAfee at <http://vil.nai.com/vil/stinger>, a host of tools from Symantec at www.symantec.com/avcenter/tools.list.html and from BitDefender at www.bitdefender.com/site/Download/browseFreeRemovalTool.



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Calibrate That CRT

Here's how to get your CRT to display the best picture it's capable of



Photograph Jiten Gandhi



For application s like Games and Movies, the CRT still represents the best Visual Quality you can get

Michael Browne

The choice of most home users, 90 per cent of gamers, and movie buffs is still the bulky old CRT.

CRTs need to be set up properly. It's time to calibrate it when you have a dark-looking image on your screen, or if you feel your CRT isn't displaying colours as well as it should.

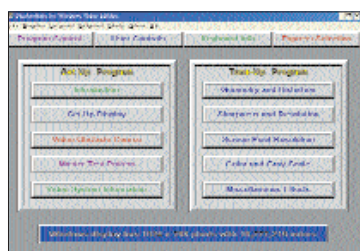
We jump into the fray and help you setup your display!

The Software

We will use DisplayMate to calibrate our test CRT. This software is precise, and gives you a step-by-step explanation window, which explains what the next display window will achieve by means of tuning, and what you need to watch out for. This help window alternates with the actual calibration pane, where you can tune the settings. It is available for download at www.displaymate.com. The registered download with the manual costs \$69 (Rs 3,300).

The Procedure

1. Install Display Mate. We ran the program with the "Novice" option disabled. After running Display Mate, the startup screen should look as below. Click on the "Set Up Display" button. We have refrained from explaining in depth what exactly each step does, as there is a very intuitive help window, so you will not have any problems.



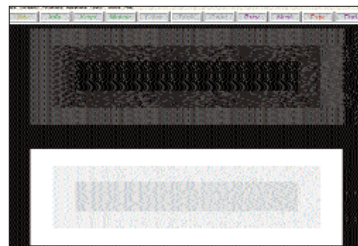
The DisplayMate main window

2. The next window will give you a brief intro. Click as directed onscreen. You are taken to a window that shows you exactly what the next test will accomplish, what you should look out for, and what problems you may face, along with possible solutions. Read the page carefully.

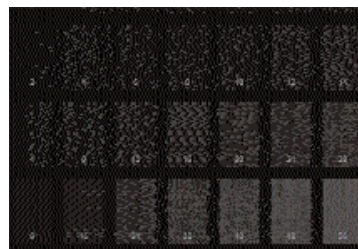
3. The first test is all about getting the Brightness and Contrast settings right. Follow the instructions on-screen. It's a good idea to jot down what you have to do, because you might have to refer back to the process explained in the previous page, which can get a bit irritating!

4. The next step ensures that the lightest and darkest shades of white and grey are properly reproduced and faithfully represented by what you see. As with step 3, read carefully and then tune!

5. Ensuring the monitor's blackness level is perfect (or close to that) is the next part of the calibration process. This test shows you a number of blocks on the screen with varying shades of grey. You need to tune your brightness settings so as to ensure that



Checking colour gradation levels



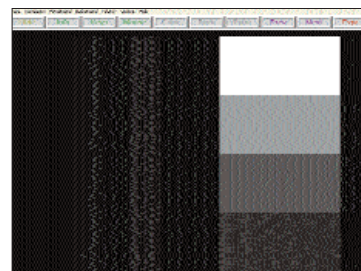
Get as many dark grey boxes as possible when calibrating

the maximum number of blocks appear dark grey while ensuring the background remains black.

6. The next tweak is the well known ANSI greyscale pattern test. This is to ensure that the extremes of the greyscale are properly reproduced. Two boxes are shown, with colours ranging from Black represented by 0, to White, represented by 100. You need to adjust the brightness/contrast settings so that the two middle boxes—5 and 95—are distinct from the others.

7. The next step deals with setting a black level and playing around with the whiteness level. This step actually has two screens, (the left half of the screen will remain constant displaying two dark grey strips. The first screen will, (on the right-hand side), have four varying levels of grey, ranging from dark grey to white; the second screen will have a full-intensity white bar that takes up half the screen. You need to adjust the monitor brightness until you can just see both the vertical strips, (ones on the left). The background should remain black. The White bar should not appear distorted, and the dark (vertical) strips should look identical on both the greyscale and the white pages.

8. The test in this step involves ensuring that the brightest image detail remains as sharp as possible. As all high-intensity beams tend to defocus, leading to what is called the "Bloom" effect (the halo



Logarithmic greyscale test fine-tuning

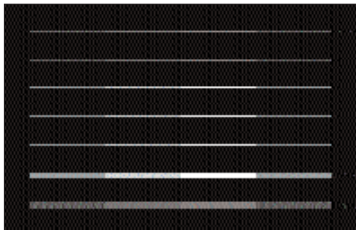
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The Lines and Dots test

effect that generally surrounds white and light-coloured pixels in a scene). This test tries to minimise this. The relative sharpness of the grey and white patterns should be studied. Look for the size of the dots inside the "O"s, and the gaps between the lines. You can fiddle with the contrast setting to achieve something of a compromise, since the Bloom effect cannot be completely done away with; causing it to disappear completely will result in the display becoming too dark.

9. Now you're presented with a screen consisting of a set of black strips separated by white lines, and white strips separated by black lines. The Contrast control has to be adjusted here. Increasing it will result in the white strips gradually encroaching on the black lines. This loss in sharpness occurs because as the beam current is increased, the width also increases. You will have to settle for a look that feels



Fine-tuning the contrast levels

right to you, because anomalies are present at all contrast levels; it is just what is noticeable and what's not.

10. Colour contrast is what we check in this test. Black and coloured text is placed on dark-grey, grey and white backgrounds. Basically, the black text should have sharp edges on all backgrounds and appear uniformly black. The coloured text should not have any bright or dark ridges around it.

Your display is now calibrated. Note that calibration doesn't follow a formula; it's simply what looks best to you. Then there's colour temperature to be considered; each colour temperature relates to the type of lighting where the monitor is being used, but on average, 6500 K is arguably the ideal colour temperature to select. A higher colour temperature (measured in Kelvin or K) causes a bluish tinge, while a lower value causes a reddish tinge. Though we've said 6500 is ideal, you'll need to experiment.

Your graphics card settings also affect what you view. Ideally, set your graphics card to its default settings, and turn off special effects such as dynamic colour and high-contrast settings. But a few points are in order:

1. Experiment with the settings. If you actually want an artificially bright screen, go ahead!
2. Some monitors are too dark even after proper calibration, in which case you might want to pump up the brightness and/or contrast on your graphics card through the software.
3. Some movies may be too dark for you, in which case you'll need to use the software.
4. If you want a special look—say an overly red or a cool blue look—you can also tweak the gamma settings of your graphics card. ■

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Advantages of a CRT Monitor

CRT technology has been around for a long while now. With the coming of LCDs, our good old bulky boys have been referred to as "eye strainers," and despite the amount of radiation they emit, not to mention their inherently higher power-consuming capabilities (not a good thing), they are still around! There are three distinct reasons for this.

First, an LCD simply cannot match the sheer image quality, contrast and sharpness that a CRT can provide. Watching a movie on a CRT gives you a much richer viewing experience than an LCD can, and we're talking about a normal CRT as compared to even a relatively high-end LCD. This is largely due to the fact that CRT technology has gone through numerous refinements over the years, whereas LCDs are still sort of a "work in progress," with refinements still being made as regards features, production process, etc.

A serious shortcoming with all LCDs is noticeable by any gamer—their response time. Unlike a CRT, which has a virtually negligible response time—the time gap between the on and off of an individual pixel—LCDs have much larger response times, resulting in the ghosting effect

one sees when gaming (or even watching movies) on them.

Flat panels also have much lower contrast ratios (the ratio or difference between the lightest and darkest areas of a screen) than CRTs. For example, a man sitting near a campfire at night: a CRT will easily capture the finer nuances, while an LCD will have problems, especially with depicting the areas around the campfire edges, where light meet darkness.

Besides these technical flaws that LCDs haven't ironed out as yet, there remains the price issue. LCDs cost nearly three times more than a CRT of the same size. While a 19-inch CRT may cost you around Rs 12,000, a decent LCD of the same size would set you back by around Rs 25,000 if not more! This is because while manufacturing LCDs, there is a high product discard rate—close to 40 per cent (this figure is constantly on the decline) of all LCDs made fail the testing standards, and the products that are cleared for sale have to bear the production costs of the rejected pieces.

In short—if you want movies and games, make some room on that table—a good ol' CRT is still the way to go!

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If your laptop has Wi-Fi, here's how to connect it to a hotspot



Photograph Jiten Gandhi

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Jayesh Limaye

Almost all laptops these days come equipped with Wi-Fi connectivity. And places such as airports have Wi-Fi hotspots where you can connect your laptop to go online. But not everyone knows how to set up Wi-Fi on a laptop! Here, we explain the process of setting up your laptop to be able to connect to a Wi-Fi hotspot.

We assume you have Windows XP Professional installed on your laptop, and that your laptop has inbuilt Wi-Fi. If your laptop does not have Wi-Fi capability, you can always purchase a PCMCIA Wi-Fi card and make it Wi-Fi capable (PCMCIA slots are fairly common in laptops). Some Wi-Fi cards can set themselves up automatically to detect and connect to a wireless network, but we will see how to manually set up a Wi-Fi card to connect to a wireless network.

You'll need to know a few terms, and we explain here:

■ **SSID** is an acronym for Service Set Identifier. The SSID is a sequence of up to 32 letters or numbers that is the ID, or name, of a wireless local area network.

■ **WEP** is short for Wired Equivalency Privacy. It is a security protocol for Wi-Fi networks.

■ **Wi-Fi Channel:** The Wi-Fi

signal range is divided into a number of smaller bands or "channels," similar to TV channels. Thus, all Wi-Fi devices on a particular network must use the same channel.

1. Before proceeding further, you need to find out the SSID, Channel, Mode and WEP key of the Wi-Fi network you're planning to connect to. Some Wi-Fi locations do not require a WEP key. The above information can be accessed from the Wi-Fi network provider's Web site, or when you purchase the access rights to the Wi-Fi network. A list of Wi-Fi hotspots in India is available at the following sites:

www.wi-fihotspotlist.com/browse/intl/2000044/

www.jiwire.com/browse-hotspot-india-in.htm

www.wi-fihotspotsdirectory.com/Wi-Fi-Hotspots-In-India-100.html

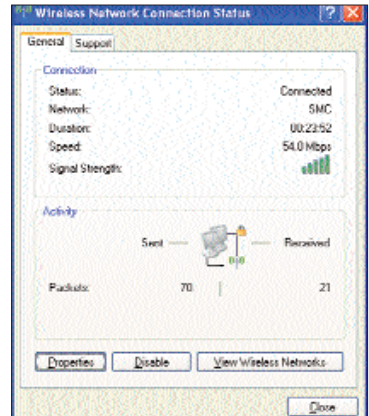
You can find contact details here to be able to access hotspots.

2. You should make sure you have a firewall and a good anti-virus program installed. This is necessary to protect your data.

3. We assume that your laptop came with the Wi-Fi card drivers installed. If it did not come with drivers for the Wi-Fi card, you may need to go to the manufacturer's Web site and download the appropriate drivers according to the model number of your Wi-Fi card or your laptop. Power on the laptop and after Windows is up and

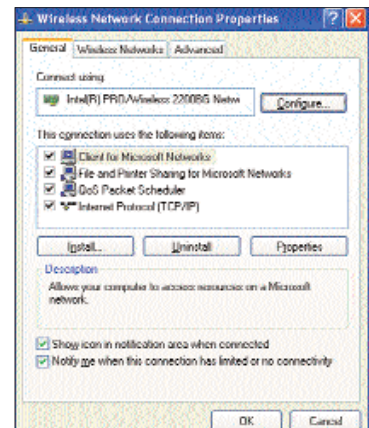
running, look for the Wi-Fi network icon in the System Tray.

4. Click on the Wi-Fi network icon, and a window showing the connection strength and session duration will appear. Click on the Properties button in this window.



The Wireless Network Connection Status

5. The Wireless Network Connection Properties window showing the name and type of network card installed will show up. Click on the Wireless Networks tab in this window.




Information about the wireless adapter

6. In the Wireless Network Connection Properties window, you will be able to view the available Wi-Fi networks in your area.

Core Duo

Intel's Core Duo mobile technology is the successor to Centrino. The key components of a Core Duo laptop are an Intel Core Duo Processor, Mobile Intel 945 Express chipset and an Intel PRO/Wireless 3945ABG network connection. The benefits of Intel Core Duo technology are excellent

performance due to the dual-core processor, higher battery life due to low power consuming components, a smaller form factor, and expanded wireless connectivity due to the newer Wi-Fi adapter, which supports a higher throughput under adverse conditions.



All in your own handwriting

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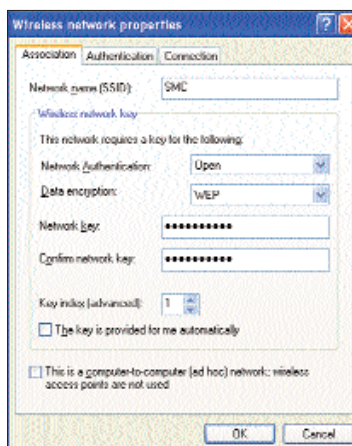
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Available wireless networks

Click in the SSID of the network that you wish to connect to and click on Configure button to enter the WEP key.

7. If you do not see any networks listed in Preferred or Available networks, you will have to manually add the SSID. To do this, click Add and enter the SSID and WEP key, if necessary. Click OK, and you should be able to see the network you just added, in



Enter the WEP key for your SSID

the Available Networks box. If you see the correct SSID in the Available Networks box, you're required to click on Configure in order to enter the WEP key, if that is required.

8. In the next window that appears, enter the SSID. If a network key is required, click on 'Data Encryption (WEP enabled)' and then enter the Network Key you've been provided with. If you

enter the key incorrectly, a pop-up message will appear stating 'Incorrect WEP key', and you will have to re-enter the key. While you do this, make sure that the Caps Lock and Num Lock are off all the while. Click OK to close this window. Click OK again to return to the Desktop.

9. Now, click on Start and go to Connect To. You will see some choices pop up. Click on Wireless Network Connection, and your Wi-Fi connection will be ready to work. You can also access this by clicking on Start and opening the



Start working on the wireless network

Control Panel. Open Network Connections and double-click on Wireless Network Connection.

Sometimes, the connection may not work. If this happens, disable your firewall and try to connect. If you can connect with the firewall disabled, you need to change the firewall program settings to allow it to connect to the network. If the firewall is not the problem, you'll need to check the SSID and WEP key you entered. Both these are case-sensitive. These are the problems that you are more likely to encounter. If you're still facing difficulties connecting, contact the Wi-Fi hotspot provider's helpdesk. ■

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Prolong The Life Of Lithium-Based Batteries

Li-ion batteries prefer partial discharges rather than full discharges. Frequent full discharges must therefore be avoided. Charge the battery as often as you can.

Typically, a Li-ion battery lasts for around two to three years, or around 300 to 500 charge and discharge cycles, whichever comes first. Over a period of time, the internal resistance of the battery increases due to oxidation. Eventually, the resistance level reaches a point where the battery can no longer deliver the stored energy, although the battery may still have ample charge. Although this cannot be avoided, the rate at which the battery ages can be slowed down.

Avoid exposing the batteries to high temperatures (higher than those prescribed on the battery pack). This is the case when the laptop is always run on the mains with the battery inside. The laptop's temperature rises, and the battery will not last for more than 12 to 18 months. If you use the laptop primarily in your

office, you would use the mains to power the laptop. You can charge the battery and then remove it to store it in a cool place, and continue working. Be sure to periodically charge the batteries, though.

Avoid purchasing spare Lithium-ion batteries for later use, and look at the manufacturing date while purchasing a battery. If you already have a spare battery, charge it to 40 per cent charge and store it in a cool place.

Windows XP also has Power Management features that you can put to good use to lengthen the life of the laptop's battery. Go to the Control Panel and open up Power Options. Under the Power Schemes tab, select the Portable/Laptop scheme. You can tweak this scheme by setting the 'Turn off monitor,' 'Turn off hard disks' and 'System Standby' times to different, lower values. For example, there's no reason to keep hard disks running for longer than five minutes of inactivity.



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Think Out Of The Box

Turn your spare hard disk to an external storage device, and learn how to look after your disks



Photograph Jiten Gandhi



Kailas Shastry

In this age of upgrades, let's say you have just acquired a 250+ GB hard disk and your poor old 20, 40 or 80 GB hard disk is packed and put into your cabinet. It is time now to dig it out and convert it into an external hard drive with minimal investment. You no longer need to convince your friend to open up his cabinet so you can hook up your hard disk to this machine to copy songs—just plug it into the USB port and it will get recognised as a mass storage device!

What you need

- ▣ Your old (a new one is also fine!) hard disk.
- ▣ An IDE to USB converter.

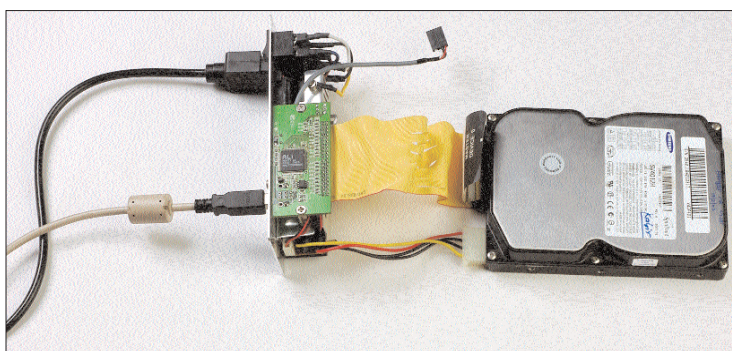
IDE to USB converters are available for the standard 3.5-inch desktop internal drive as well as the 2.5-inch laptop drives. When you are shopping for the converter, be sure to ask for a 3.5-inch form factor converter. The converter has an IDE and molex power cable that connects to the hard disk and a USB cable to connect to the USB port. There is an internal circuitry that converts the IDE interface to the USB interface. The power supply for the hard disk is drawn from a power adaptor bundled with the kit

Connect the IDE and power cable of the converter to the hard disk and secure the hard disk on the chassis by mounting it (if it is a case type, rather than open type). Plug in the USB cable to the USB port (USB 2.0 if you want the best read / write speed). Under Windows 2000 or Windows XP, the drive will be recognised as a mass storage device, just like a thumb drive. If in case the drive is not detected, unplug and plug it again. If prompted to, restart the PC.

To prevent chances of data loss, do not disconnect the hard disk while data is being written to it. For greater safety, 'stop' the device from the system tray before unplugging it.

There is more to an IDE to USB converter than making an external hard disk. If your laptop's CD ROM Drive is not working and you need to install a software from a CD urgently, you can plug in a CD-ROM drive just like a hard disk! Windows may need to restart after seeing a 'non hard disk USB device'. The best part of this setup is the price—an IDE to USB converter with casing will cost you just about Rs 500. A worthy investment for the functionality it provides!

If your PC has a USB 1.1 only interface, you can still connect your hard disk to it, but the read / write speed will be very slow.



The insides of an IDE to USB converter

Hard Disk Maintenance

We have learnt in our Physics classes that anything that moves, causes friction and hence wear and tear. The hard disk is one component that is in constant motion, with its spindle spinning at 7,200 rpm! This is why we keep talking about hard disk maintenance and cooling—here we will summarise the most important steps that you can take to ensure that the *old faithful*—your hard disk serves you for a long time!

Disk Defragmenter And Error Checking

The most basic of disk maintenance tasks still hold good. Just as a messy room makes it difficult for you to find things when want, the hard disk has to do more work to fetch data if it is scattered all across the disk. This is why you need to keep your disk defragmented. Go to **Start > Programs > Accessories > System Tools > Disk Defragmenter**; or right click on the partition (or drive) you wish to defragment and click on **Properties** and then **Tools > Defragment**.

Scandisk performs a write test on every cluster and reports an error if there is any. One must remember that disk errors cannot be cured by scandisk, but only identified and marked such that the affected areas are not used to store files. If scandisk shows bad sectors, its time to buy a new drive!

Windows XP calls the Scandisk operation 'Error Check-


Bet You Didn't Know

Centre An Object


If your BIOS supports booting from USB, you can even run an operating system from your just assembled external hard disk.


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Tips For Defragmenting

- ❑ Do not open any files when the defragmenter is running, else the process will start all over again!
- ❑ Turn off anti-virus programs during defragmenting as background scanning may come in way of the defragmenter.
- ❑ Defragmenter works best with more free space at hand for temporary storage. If you have less than 15 per cent free space, the Defragmenter will warn you. You can clear temporary internet files or move data temporarily to other partitions to free up some space.
- ❑ If you are using Windows 98 or 98SE, and find the defragmenter restarting all the time and eventually giving up, you can use the defragmenter from Windows ME. Download it from <http://www.the-old-sea-dog.net/defrag/w9x-medefrag.zip>

ing', it can be accessed by right-clicking on the desired drive (or partition), **Properties > Tools > Error Checking**. Windows 98 users can run scandisk by booting into DOS prompt and typing "scandisk <Drive>:" where <Drive> is the drive letter you want to scan. This is more reliable than running scandisk from Windows.

Data Recovery

All of us have, at some time or the other, emptied the Recycle Bin only to realise that some important files got deleted.

There's a way out: you can recover your "deleted" files using data recovery software, provided, of course, that the space the deleted file occupied hasn't been

Using S.M.A.R.T.

Some hard disks have a monitoring and error reporting technology called S.M.A.R.T. (Self Monitoring Analysis and Reporting Technology) that issues a warning during boot-up if certain things are found to be 'wrong' in the hard disk. This is not always reliable, but another step in ensuring that you know when things go wrong. This can be enabled in the BIOS in General or Advanced BIOS settings.

Using Cooling Fan

Heat is a primary cause of electronic component failure. Keeping a device cool goes a long way in extending its life. If your computer is in a hot environment, running applications that use the disk continuously (such as video editing), you can attach a fan to the hard disk. In our test, placing an ordinary case cooling fan such that it blows air onto the hard disk made noticeable difference in the amount of heat that the hard disk reported.

Secure Mounting

If you sense vibrations emanating from the hard disk, just tighten all the screws that are used to fasten it to the chassis (cabinet) in the hard disk bay. Vibrations, though small, can have adverse effects on moving parts through a phenomenon called resonance. Generally two screws on either side are used

to hold the hard disk in place. If necessary, use more screws.

❑ If you are using two or more hard disks, don't simply pile up one above the other—stack them in alternate bays, leaving space for air flow.

Handle With Care

Internal hard disks are less rugged than their external counterparts and need special care while transporting. Put the hard disk in an anti static cover to prevent static electricity from affecting it. Next, to shock proof it, cover it with bubble wrap (if you don't find bubble wrap, you can use cotton cloth, but not synthetic material). Also, make sure you don't drop it!

When you are attaching an IDE cable, ensure that the connector and pins are well aligned and none of the pins on the hard disk are bent. If you see a bent pin, gently straighten it with the help of a flat screw driver or get someone who knows his stuff to do it. Forcing the connector the wrong way or onto bent pins will only create more problems—if a pin gets broken, you will have to take it to a repair shop to fix the broken pin, if at all it can be done.

Backup

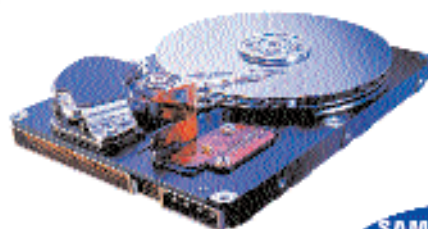
The tips we have given you here will reduce the chances of premature failure of your hard disk. However, you cannot neglect the probability of failure due to factors beyond your control. A power surge, for example can destroy the hard disk along with other components. While money can buy you a new hard disk, the same cannot be said about the data that the hard disk contains, especially in a work environment. There is only one definite solution to this risk - backup frequently! ■

kailas_shastri@thinkdigit.com

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Digitise!

Whether at home or in the office, you might want to use your MFD to OCR your documents



Photograph Jiten Gandhi

RICOH



FIFTH ANNIVERSARY

Digital Tools | Workshop

Offices are increasingly digitising their paper documents. OCR software is the tool that enables this process, and the MFD makes it convenient

Jayesh Limaye

MFDs combine a printer, scanner, and in many cases a fax machine. The printer-scanner combo gives an MFD the added functionality of a copier.

Laser MFDs are faster than their inkjet counterparts. Their cost of operation is also lower and so, even though they are priced considerably higher, they are preferred by the small and medium business segment.

Offices are increasingly digitising their paper documents. OCR (Optical Character Recognition) software is the tool that enables this process, and the MFD makes it convenient. OCR software, in conjunction with the scanner, recognises characters in the scanned image of the hard copy and converts it to a document format that a word processor can recognise. This document can then be edited if necessary.

It is sometimes necessary to convert the document to PDF, because this file format is platform-independent and does not require any fonts to be installed—a PDF looks the same on any computer that can read the format. PDF is therefore ideal for exchange and distribution of electronic documents. We shall see how to create a DOC file as well as a PDF from a hard

copy using an MFD.

The OCR software we'll be using is SimpleOCR—because it's free! SimpleOCR has many of the features of paid software—a 1,20,000-word dictionary, error correction, format and image retention, plain text extraction, batch and zone OCR, and more. It is a 9.3 MB download, available from www.charactell.com/scanstore/InstSocr.exe.

To convert a scanned document to PDF, you need a PDF converter. You can use CutePDF Writer, formerly known as CutePDF Printer. CutePDF Writer installs itself as a printer subsystem and can be used to output a PDF file as easily as printing to a printer. This way, any Windows application that can print will be able to output PDF files. CutePDF, too, is free, and is available from www.cutepdf.com/download/CuteWriter.exe. In addition to this, you may also want to install CutePDF Writer Companion, available from www.cutepdf.com/download/CuteComp.exe. This requires a PS-to-PDF converter such as GhostScript, available from www.cutepdf.com/download/converter.exe.

How To Go About It

1. Install all the above software. Place your document on the flatbed glass of the MFD. Launch SimpleOCR.

2. You will be prompted to



The SimpleOCR welcome screen

choose the type of document you want to read. The options are Machine Print and Hand Writing. When you choose Machine Print recognition, you can only scan and OCR documents that are printed, whereas when you choose Hand Writing recognition, you can even scan and OCR handwritten documents—the precision of a



Choose the type of document to scan

different and more powerful OCR engine is used in this case. While the Machine Print recognition engine is free, the Hand Writing recognition engine can be evaluated for 14 days (it costs \$60, or Rs 2,700). Choose the type of document and proceed.

3. In the next screen, you can choose the language. SimpleOCR recognises four languages, including US English and UK English. Choose between these and click Select.

4. You need to select the appropriate scanner for the software to use. Click on File, then on Select Scanner. A window will appear where you can see the list of scanners on your

Using A Laser MFD You Can...

- ☐ Send faxes directly from your computer's modem without having to print the document and feed it manually into the fax machine.
- ☐ Scan photos and e-mail them directly by just pressing a button (on models that support the scan-to-email feature).
- ☐ Use a second function while another function is being performed; this depends on the MFD model.
- ☐ Scan multiple documents in batch-processing mode, and also OCR them.
- ☐ Save received faxes on your computer and print only the required ones.
- ☐ Use it as a copier without the need to connect to a PC by just pressing the Copy button.

And,

- ☐ (Automatic fax/phone switch) If you have a single line for phone calls and faxing, some MFDs will switch to the fax function when there's an incoming fax.

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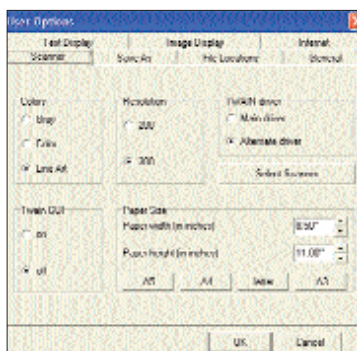
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Select the appropriate scanner

system. Choose the correct one and click OK.

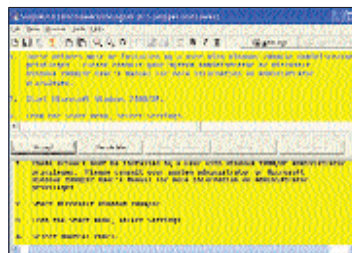
5. To scan the document, click the Add Page button. Here you can also set the scanner options by clicking Scanner Options. You can set various settings such as Colors, Resolution, and Paper size. Select your settings and click OK. Click OK again.



Choose the scanner settings

6. The document will now be scanned, and it will appear in the window. To begin the OCR process, click "Convert to text."

7. You can now click Accept to accept a word if it is correctly



Convert the scanned document to text

recognised, or you may correct it. You can also click Decide Later to, well, decide about a word later, or Keep As Image if an image was misinterpreted as text.

8. Go to File > Save as and save the file as a TXT or DOC file. If you wish to save only the text, you should choose TXT, whereas if you wish to also save the formatting and images in the original document, you should choose the DOC file format. You can also save it as an image by clicking as File > Save Image As. You can save it as a TIFF image, but doing so defeats the purpose of the OCR software!

Finally, close SimpleOCR.

We've now converted the hard copy to the electronic format; let's now convert the electronic document to PDF.

1. Using your word processor application, open the document you just scanned and created.

2. Go to File > Print, and select CutePDF Writer from the list of printers. You can change the paper size, orientation, and so on

to what you want. You can also change CutePDF Writer options according to your preferences. Click OK.



Select CutePDF as the printer device

3. Click Print. The CutePDF Writer Companion will launch; here, click Save to save the document as a PDF.



The CutePDF Writer Companion

4. Remember that you can also insert or delete pages, edit document properties, combine PDFs, and so on before creating the PDF.

While SimpleOCR can get most of the job done, it is still not as powerful and accurate as some of the better and more powerful OCR applications available. Particularly problematic areas are the retention of formatting, recognition of images as such, and stray marks on the paper throwing the software off.

But then, it's free!

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The Fax Features Of An MFD

Most MFDs come with a fax feature. They can send as well as receive faxes without the need for a PC. The number of pages that an MFD can store depends on the fax memory. Some MFDs can provide a detailed report about the number of faxes sent and received, as well as the numbers to which they are sent to and received from. This is useful for system administrators.

The "junk fax barrier" feature in some MFDs lets you specify certain fax numbers that you think are likely to send junk faxes. Faxes from these numbers are then blocked. Then there is the Broadcast feature, which lets you send faxes to a number of recipients at once.

The Delayed fax or Scheduled fax feature lets you prepare a fax to be sent at a later time.

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Photograph: Jiten Gandhi



Network Printers are on an average costlier than other laser printers as they are targeted at the corporate segment

Michael Browne

Many homes and small offices have made the transition from inkjet to laser because of the costs of consumables involved with inkjets. Laser printers are more versatile and are faster. Add to that the fact that a toner cartridge can output some 5,000 (if not more) pages of text, and the laser printer makes one sweet buy if your printing needs are heavy.

If you have more than one PC at home, or if you have a small office with just one printer, you can easily configure it to be used by multiple systems. We get down to assist you setting up your laser printer on a network.

Network And Non-Network Printers

As far as networking and printers go, there are two types of laser printers—network-enabled printers, and non-network printers. Almost all the printers manufactured in the last two years are network-enabled, meaning they can be directly plugged into a TCP/IP network. These printers can be assigned an IP address, and any machine accessing them on a network can print to them. Network-enabled printers are more expensive, but are worth it considering that no print server is required; the configuration is much easier. An ordinary laser printer (meaning non-network) needs a print server to be installed, with the printer being assigned a virtual port. Here are the steps involved.

Steps for a Network Printer

1. Connect your printer to the LAN (RJ45) cable. Power it on. Now there are two ways to set up a network printer. The first is by

using the menu on your printer. Network printers come with LCD screens, which can be used to configure all aspects of the printer. Navigate to the main menu. Note that your printer needs paper in the In tray before you can use the menu.

2. Get into the Network menu using the arrow keys, and select Yes in the Network Configuration option. Go to "Get Network Address" and select Manual. You will be using the directional keys a lot now.

3. You will get a blank screen, where you assign a unique IP address to the printer. Your IP address should look something like 128.128.135.28—this number is an example. Note that this is a Static IP—an IP that, once assigned, will not change unless manually changed.

4. The next step involves entering an SM (Subnet Mask) number, which will be something like 255.255.0.0. There are some advanced options as well—mostly Yes and No options—but there's no need to configure anything.

5. Now install the drivers on one PC on the network. Note that since the printer is not shared through one PC, you will have to individually install the drivers on each PC that needs access to the printer.

6. The drivers, when installed, will give you a Toolbox/Setup window, where you have to assign a printer port to the printer, as in the next step. Note that the software will search the network for all printers by that manufacturer: for example, HP printing software will only search for HP laser printers on the network, and list them.

7. Once the printer has been located, it's simply a matter of assigning the printer a port on

your machine, which can be done using the drivers.

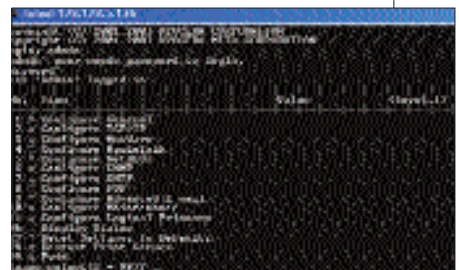
In the rare event that your network printer doesn't have an LCD display—meaning you can't set it up from the printer controls itself—the software kit accompanying it will definitely have the necessary tools to assign an IP to the printer.

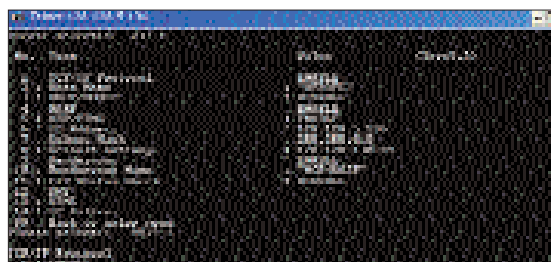
As far as operating system dependency goes, users of Windows 98/98SE will need to install LPR (Line Printer Remote), which is an optional install component available on the Windows CD, but which doesn't install by default. LPR is a spool command and not a printer command; it simply spools files to a location for print.

Under Windows 2000 and all its flavours, the TCP/IP configuration under Network Components will have to be installed. Windows XP installs these options by default, so your task is simplified.

Using Telnet

A network printer can also be configured using the "telnet" command. If you do not know your printer's IP address, set it to the factory defaults. All network laser printers have a small button that resets everything to





The TCP/IP window



Setting the IP using Telnet

In the Start Menu, select run and type in "telnet <default IP value>", where <default IP value> represents the factory, default IP address you've reverted the printer to by using the Reset switch.

You will be presented with a

disabling the IP means you won't be able to assign one.

Steps For A Non-Network Printer

If you have a laser printer that isn't network-ready, that is, if it doesn't have a LAN jack, you will

need to set up a print server. This is a device that has a LAN jack on one side, and connectivity options to one or more printers on the other side. Typically, print servers will have a combination of parallel and USB ports—usually not more than three ports. This "print server" is not to be mistaken with a PC working as a print server.

Also notice that most of the options (including setting an IP) will have an Enable and Disable option. Setting any of the options to Disable will mean that the option itself is disabled, so

1. Set up the print server, hook it up to the LAN, and connect it to the laser printer, either through the parallel or the USB port.

2. Next, you need to install the print server software on any one PC on the network. This is the software that will find the print server. Once again, in the case of a large network, all the print servers from the manufacturer bundling the software will be listed, and you will have to select the one you want to configure.

3. Now you assign an IP and then an SM to the print server, similar to the case of the network printer.

4. The next step will be to assign a virtual port to the printer connected to the print server. Virtual ports are basically multiple ports that share one physical port: the physical path to each of the printers connected to the spooler is the same. This is because a print server can connect to multiple printers, but it has only one IP address. It therefore can share this IP with multiple printers using virtual ports. Each printer will get a virtual port and therefore a virtual IP.

5. Next, a port on the computer has to be assigned to the print server (and not the printer, since it doesn't have a physical IP).

Your laser printer is ready to be used over the network! ■

michael_browne@thinkdigit.com

Usage Tips

Laser printers were earlier the prerogative of corporates and small businesses. A drastic fall in prices has made them affordable to SoHo and home users as well. The major advantages of a laser printer are low running costs, suitability for volume printing, and the fact that they are much faster than inkjets.

□ In case of heavy usage, make sure you invest in a printer that has a separate toner cartridge and drum: this reduces long-term running costs.

□ Your laser printer generates a lot of heat, especially when used non-stop for extended periods of time. Make sure to place it away from obstructions, preferably near an AC vent, so as to enable proper heat dissipation, which will increase longevity.

□ Laser printers consume much more power than inkjets; make sure the printer is in standby mode when it's not being used.

□ For mass printing, if quality is not an issue, use draft mode, since this uses a lot of toner.

□ In the case of printing brochures and other media where higher quality is required, try to print in 300 dpi or 600 dpi mode. This will result in higher-quality prints. In the case of high-quality printing (as on photo quality paper), a 1200 dpi mode is also available on some laser printers, which will consume the most toner but also produce the best-looking results.

□ If you're suffering from smudged prints, worry not. It's usually a matter of cleaning the roller, which tends to pick up some residue toner on the outside. Clean this off with a clean cloth or paper, and remember to dispose of the cloth or paper carefully. Also be careful not to come in physical contact with the toner compound—it is toxic.



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Get More From Your LCD Monitor

LCD monitors are becoming more affordable, and almost everyone wants one. Here are a few things you should know before going out and buying one



Photograph Jiten Gandhi



Kailas Shastry

The bulkiest, most power hungry component of your computer, the monitor, has undergone a change of many sorts with the coming of the LCD versions. While the LCD technology is not new in itself (remember the LCD display on watches?), it was not perfected enough for monitors until quite recently. LCD monitors are very thin in comparison to their older cousins, the CRTs. They consume just about one third the power and offer a flicker free viewing experience. This makes them ideal for office use where energy conservation, space and of course reducing employee fatigue is a prime concern.

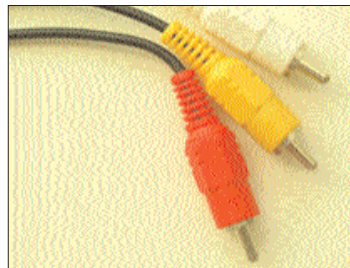
Video On Your Monitor

If you have just bought an LCD monitor for your home that has a composite or S-video input, here is how you can get to watch movies from your DVD player on it. DVD players provide an output through the composite, compo-



S-Video connector

nent or S-video ports. Get a suitable cable and connect it from the video out of the DVD / VCD player to the video in of the LCD monitor. Keep the monitor powered on with its power cable just as you normally would. If your monitor as well as the player supports S-video, it is better to use it rather than composite input for better



A composite video connector

picture clarity.

LCD monitors can offer hours of flicker free viewing that will make your eyes heave a sigh of relief. So far so good. But most LCD monitors are not suitable for viewing fast paced videos such as formula 1 racing or most music videos today. Thankfully, many manufacturers are making efforts to bring LCDs closer to CRTs in terms of viewing experience. Already there are LCD monitors with on-off time as low as 6 ms which is good enough for most movies.

INNOVATIONS! 3D On Your LCD Monitor

Using ClearType Fonts In Windows XP

By turning on ClearType in Windows XP, you can make your text look smoother and more pleasing to the eye. This is more noticeable with LCD monitors than with CRTs. To enable ClearType, just right-click on the Desktop, choose Properties > Advanced > Effects, and check "Use the following method to smooth edges...". In the drop-down menu, choose "ClearType." For more fine tuning, download the Microsoft ClearType PowerToy from www.microsoft.com/windowsxp/downloads/powertoys/xppowertoys.msp. This application shows you a bunch of screens, and you select which one appears best—thus ensuring you're seeing what you want to see!

Making a device do more than just what it was originally intended for brings out some amazing innovations. One such innovation is a plastic strip that can be clipped onto LCD monitors to render 3D viewing experience. A 3D kit for laptops and LCD monitors includes a strip of plastic that has special optical properties and software, which creates perspective views that makes normal 2D images appear as 3D.

The plastic strip that is used consists of small polarised prisms that diverts light from alternate pixels in opposite directions. For example, all even pixels would be diverted to the left eye and odd pixels to the right. This gives a feeling of being surrounded by the object from the sides, rather than simply viewing it straight on. The software that is bundled with the kit creates certain number of perspectives (viewing angles) horizontally and vertically. Accordingly the add-on plastic sheet will contain polarized areas such that each perspective is rendered in a slightly different angle.

Thus if we have 8 horizontal and 4 vertical views on a standard 1024 X 768 resolution, a 3D of 128 X 192 (1024/8 and 768/4) resolution. The software generates display such that every 8th horizontal pixel is same and similarly every 4th vertical pixel is same.

These 3D kits are not yet available commonly in India, but it is only a matter of time before you can pick one up from your neighborhood store.

Manufacturers like Sharp are making LCDs with inbuilt 3D capability. Another innovation is that of the switching viewing angle developed by Sharp. There is an on/off control by which you can narrow or broaden the viewing angle.

Samsung SyncMaster TFT-LCD PC Monitors

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Caring For Your LCD Monitor

□ LCD screens are delicate in comparison with the CRTs. Hence you need to be more careful in cleaning them. When wiping dust off, use a dry cloth first and then, if need be, wet a cloth, squeeze out excess water then use it. Do not press too hard on the screen as you may create 'stuck pixels'. Alcohol and Ammonia based cleaning agents are a strict no-no. Many monitors contain an anti glare coating which can easily get damaged when washing agents are applied on them.

□ LCDs use proprietary power supply. In case of the adaptor not functioning use the manufacturer recommended spare. If that is not available use only those adaptors which meet the voltage requirement exactly and a current ratings that is at least equal to rating of the original.

□ If you ever come across a stuck pixel (a dot whose colour does not change), try and gently rub on the spot where the pixel is stuck. Do not apply too much force as you will risk damaging adjacent pixels. If a couple of tries don't work, then just let go! Note that while stuck pixels may be corrected, dead pixels cannot be revived. A dead pixel appears black always while a stuck pixel stays on with a single colour.

A Buying Guide

In spite of the nice aesthetics, fatigue free viewing and power saving, LCD monitors have certain drawbacks and you must look out for specifications pertaining to the drawbacks before making an investment. They don't come cheap after all.

Response Time

This is the time taken by the monitor to change the colour and / or brightness of a pixel. It is measured in milliseconds and the values generally are 10, 12, 16 ms. Some LCD monitors offer a very quick response of 8 and even 6 ms. The lower this value is, the better the LCD is for viewing fast moving graphics such as games or action movies. With some entry level LCDs that offer a dismal 25ms response time, a ghosting effect becomes very noticeable. So look for LCDs with a response time of 10ms or lower.

Viewing Angle

Unlike CRTs, which can be viewed from pretty much any angle, images on LCDs will appear dull and even colour distorted when viewed from beyond a certain angle. Their best quality appears when viewed head on (perpendicular to the monitor). As you move sideways the display appears more and more distorted.

Viewing angle is the maximum angle at which you can see the display with no *noticeable* change in quality. Obviously, the greater this angle, the better the LCD is!

Native Resolution

LCDs have to be run at their native resolution which is the number of pixels that make up the display. Usually using a resolution that is lesser or greater will result in distorted display. Make sure that the native resolution of the LCD is something you are comfortable with.

Go for Goodies!

Speakers—Some CRT models of the bygone era (ok, say 8 years ago) tried bundling speakers in the monitor box. But not many of these 2-in-1 models were made owing to mutual interference between the speakers magnets and the high voltage, electromagnetic radiation of the monitor itself. With the coming of the LCD monitors there is no problem of interference, meaning it is much easier for manufacturers to bundle in speakers inside the monitor cabinet. These speakers don't need any extra power supply as they draw their power from the monitor's main DC supply.

USB Hub—How often do you have to try positions of yoga to hook up a digicam to the USB port at the back panel of your cabinet? If you are buying a LCD monitor, spend a little more and get one which has a USB hub. The monitor will have one cable that connects to the USB port on the back panel. On the monitor itself you will find USB ports (usually 4) to which you can connect USB devices. You not only get more USB ports, but also the ease of connecting the cables right at your desk. ■

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Room Lighting

Ambient lighting can make or mar the LCD experience. The best image quality on LCD monitors is attained under dim lighting. This is not practical if the room is being used by others; in such a case, it is best to have the lights to the *side* of the monitor. Bulbs meant for TV viewing are the best to use here—such bulbs have a reflective coating at the bottom so that there's no directed light, but the room appears well-illuminated. The downside is the higher power consumption of these bulbs, as they are tungsten based. In place of the bulbs,

you can use low-wattage CFL tubes, which can give you nearly as good lighting.

Lights behind the monitor (this applies even to CRTs) are to be avoided—they can distract your vision. They can also cause eye strain and mental fatigue, since you unconsciously try to avoid the more intense bulb or tube and concentrate on the monitor.

In the same way, lights behind you are also a strict no-no. They get reflected on your screen and not only spoil the viewing experience, but also cause eye strain.

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MP3 Players

Portable music players have given us the freedom to be entertained on the go. Here's how you can make the right choice



Photograph Jiten Gandhi

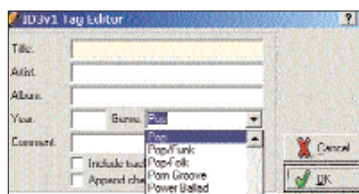
CREATIVE

Kailas Shastry

Almost every gadget available today can be used with little or no calibration. But getting your hands dirty with details and feature sets is what separates the boys from the geeks. An MP3 player is no exception. Of course you can simply drag and drop or use a syncing software to transfer your songs. But there are optimisations that you can try out to make music listening a more pleasurable experience.

Sort So You Can Search

Most players display files according to the filename—you will have files called track001.mp3 if that's how your ripping software names them. On Winamp or Windows Media Player, this is not a problem as they identify ID3 tags (bearing artist and album information) and not to mention, the easy navigation. Your MP3 player, even if it recognizes ID3 tags, will display the artist and title, but the sorting may not always be according to the tag. It gets irritating if you are looking for one particular song amongst a 100. A simple solution is to name the tracks with something more descriptive than an uninformative track001!

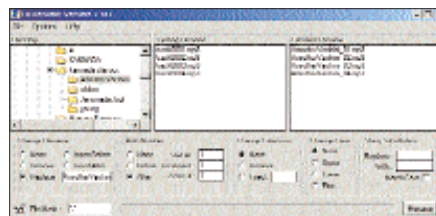


Setting ID3 tags in Audigrabber

While ripping from your CDs, set the preferences in your ripping software to name the files starting with a word that describes them, like the album or

artist name. If your ripping software does not have the option, spend a couple of minutes in renaming the MP3s manually.

Let's briefly take a look at a batch renaming software called CKRename. It gives you a variety



Batch renaming in CKRename

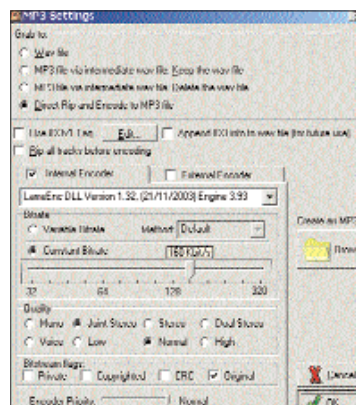
of options, like prefixing, suffixing, selective renaming etc. Download it from www.music-sucks.com/CKSoft/CKRename/

When you open CKRename you will see a Windows Explorer like interface to the left. Navigate to the folder whose files you wish to rename. You can change the filenames and extension, introduce numbering for the selected files. Files such as track001.mp3 can be changed to "artist-song name 001.mp3". You can later on rename them to "artist-song name.mp3" if you want to. You will be saved the trouble of typing in the artist's name for every song.

Size vs Quality

In a really nice world, we will choose the best quality for our songs while ripping, in an ideal world we will just save them in the gigantic wave formats. But when we have to only so much space and a lot of songs—we will have to compress them. This holds good not only for MP3 players but any storage media, including hard disks. Most players support playback of MP3s compressed with 32 to 320 kbps. A higher bit rate provides better sound but occupies more space. For pure voice tracks, the basic

32 Kbps is enough to retain clarity. For music files however, compressing to 32 Kbps is criminal! You need 128 Kbps to retain the varied music elements. This will give you a file size of 1 MB per minute approximately. The 'quality' will also depend on the efficiencies of the ripping (encoding) software as well as the player itself. When both of these are good, you might just be able to get away with 96 kbps. We recommend 128 Kbps as a minimum however.



Setting the bitrate

Let us now take a look at ripping CDs using a well known free software called Audigrabber. Download it from <http://audiograbber.com-us.net/download.html>.

Also download the LAME MP3 encoder from the same location and paste the lame_enc.dll in the directory where audigrabber is installed.

When Audigrabber is opened, click on the button that says MP3 and choose the LameEnc DLL encoder. Set the quality settings to 'Joint Stereo' and 'High'. Now by moving the slider, choose the bit rate you want. For an MP3 player, you can start with 192 Kbps and go

downwards till 96 Kbps and check the sound quality at every stage. As there is not single rule to choose a particular settings, use your discretion here. However, unless you are crunched for space, do not go below 96 Kbps for music files. Speech only files can be encoded at as low a bit rate of 32 Kbps.

Some ripping and editing software allow you to set a Variable Bit Rate (VBR). This essentially means that the parts of the track which contain less detail are compressed

more (meaning lesser bit rate) and the portions that contain more sound elements are compressed less (higher bit rate). The concept is no doubt an optimisation, but it places an overhead on the decoding logic. Some low-end MP3 players maybe sluggish while decoding VBR and your sound quality may actually suffer. If you are unsure of how your player responds to VBR, just choose a constant bit rate as we have explained above.

Clearer FM Radio

Do you remember the stand alone radio sets or two-in-ones which had long aerials for radio reception? Our MP3 players have only a miniature ferrite rod to act as an antenna, or in some cases, they depend on the headphone multitask as antenna. Due to this antenna issue alone, FM reception loses clarity when used indoors or while traveling. This can be solved by wrapping a wire around your MP3 player. While this may mar the aesthetic beauty, you will get clearer reception indoors. If you on the move, keep the player in a pocket such that it touches your body which itself can act as an antenna!



Wrap a wire around for better FM reception indoors

Storage Media in MP3 Players

There are three types of storage available for MP3 players - flash memory, micro hard drive and hard drive.

Of these flash memory is most commonly used in low end and mid range MP3 players. Capacities usually range from 128MB to 1GB. Some players like that iPod nano have hit the 4GB mark for flash based MP3 players. Unlike hard drive based devices, MP3 players are not mechanical devices, meaning, they do not contain any moving parts. This makes them an ideal choice for people who are on the move or for those who want to listen to music while working out in the gym. A hard drive based player may skip some parts of the song when it is subjected to movement, like when carried while jogging. Flash memory has a definite

number of read / write cycles which is less than that of a good quality hard drive.

Hard disks offer much higher storage space than flash memory, upwards of 20GB. A good quality hard disk will outlast flash memory in the number of read / write cycles that can be performed. On the down side, hard disks are heavier, consume more power and are prone to errors when subjected to movement.

Micro hard disks, as the name suggests are a smaller version of the hard disk. They combine the reliability of hard disks with a relatively light weight and capacity that is higher than flash memory. Owing to the small size, design and fabrication is more expensive than hard drives, resulting in a relatively higher cost per GB.

Buying tips

- ❑ The storage capacity often becomes a constraint especially if don't have the time to transfer fresh songs to the player. The mantra here is simple—bigger the better. 1 GB is better than 512 MB is better than 256 MB.. you get the picture.
- ❑ Headphone Comfort: Every ear is different and this makes it difficult to make earphones that are comfortable for everyone. If you are investing in a good earphone, comfort is an important factor.
- ❑ If you plan to use the player as a USB drive to carry data around, the data transfer speed is important. Opt for a player with USB 2.0 connectivity.

Better (h)earphones

Just as a chain is as strong as its weakest link, the MP3 player can only be as good as its accessories, which in many cases are the earphones. The unassuming earphones pack complex technologies to deliver the best sound to you. A good pair of earphones can easily cost half as much as your MP3 player itself. Unfortunately, due to cost cutting, the earphones that we see on most entry and even on some mid-segment players are just mediocre and simply ruin the sound experience. Buy a good pair of headphones or earphones and plug it into your player.

Bear in mind two factors while choosing an earphone—the impedance and the maximum power rating of the earphone. The impedance must of the earphone must be equal to the impedance of the player—measured in ? (ohms) most earphones have a rating of 8? The maximum power handling ability, measured in mille Watts must be greater than or equal to that of the player. ■

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DVDs To DVD!

Take a compressed backup of your DVD movies and burn several movies on to one DVD



Photograph Jiten Gandhi



Jayesh Limaye

Much as we'd like them to be, movie DVDs still aren't cheap. If you have a lot of them lying around, you probably value them dearly, and are worried about them getting scratched. Then there's the issue of friends borrowing them and not returning them! In general, it's a good idea to back up your DVDs. And no, just trying to copy the VOB files to your hard disk won't do it!

Here we tell you how to back up a DVD movie and convert it to the popular DivX formats—you can then burn them back onto DVD. And yes, it's legal—just as for CDs, it's legal to have one backup of a DVD. Once you create backups, with the movies in DivX format, you can cram three or even four of them onto a DVD! There's a whole bunch of software required to do this, but after you've done it for one movie, it will become routine. So here's the list:

1. **DVD Decrypter:** This is a very fast and free DVD ripping software. It can rip multi-angle DVDs. Find it at www.mrbass.org/dvdrip/SetupDVDDecrypter_3.5.4.0.exe. The current version is 3.5.4.0, and it's a 0.86 MB download.

2. **DVD2AVI:** You use this software to convert the ripped and decrypted VOB files to the AVI file format. DVD2AVI v1.77.4 is freeware, and is available at www.afterdawn.com/software/video_software/dvd_rippers/dvd2avi.cfm. The download is a tiny 0.16 MB.

3. **DivX Create:** This has a software codec that allows you to compress videos while maintaining almost the same quality as that of the original video. The latest version of is 6.2, and is available at www.divx.com. It is

15-day trialware (\$19.99, or Rs 950, for the registered version), and the download is 16.4 MB.

4. **LAME ACM MP3 audio codec:** This MP3 codec is required for compressing and encoding audio to a bitrate of 128 kbps, which is good enough for most purposes. Windows comes with an MP3 codec, but this doesn't allow encoding to a bitrate higher than 56 kbps, which is way too low. You can download the LAME ACM MP3 codec from www.free-codecs.com/download/LAME_ACM_Codec.htm. Just 214 KB.

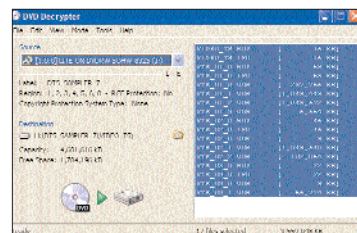
5. **VirtualDUB:** A video capture/processing utility for 32-bit Windows. Freeware. It is very fast, and is used to create DivX videos. The latest version is 1.6.14, and can be downloaded from www.virtualdub.org. It's about a 1 MB download.

Armed with this arsenal of tools, let's rip those DVDs!

A) Insert your DVD into the drive and launch DVD Decrypter. DVD Decrypter will detect the DVD, and its file contents will be displayed in the right pane. Now go to **File > Browse** and select the destination for the ripped VOB files. Keep in mind that the destination must have enough free space to store the contents of the entire DVD.

After choosing the destination, click on **File > Decrypt** to start the decryption process. DVD Decrypter removes the Macrovision protection (which is a type of copy protection in video DVDs) by default, and you can set it to remove the region code as well by going to **Tools > IFO > Region Patch > Region Free**. These are necessary for the next step. After the DVD ripping process is completed, close DVD Decrypter.

B) Next, launch DVD2AVI. Go to **File > Open**. Make sure the correct track number in the Audio menu is selected. You need to find the correct track number—



The DVD Decrypter main window

most DVDs have multiple audio tracks in different languages. This can be checked by selecting one track at a time and playing it. Also click on the Audio menu and navigate to "48 > 44.1 KHz", and select Off. Go to **Help > SIMD Technology** and select all the optimisations supported by your processor. Now go to **File > Save as AVI**.



Choose the appropriate bit rate for your movie

Decide on a file name and choose a location with enough free space. You will now be prompted to choose a video compressor. Choose "DivX 6.2.1" from the drop-down menu where you can select the video compressor.

Under the Certification Profiles, you can choose an appropriate preset profile such as High Definition, Home Theatre, Portable, Handheld, and



Unconstrained. When you choose one of the above profiles, it is virtually guaranteed that the encoded DivX file will be playable on any standalone DivX-certified player. Click on Settings. You can select a bitrate of your choice. A higher bitrate means a larger file size and better quality, while a lower bitrate means a smaller file size and lower image quality.

In the Codec tab, you can set the Encoding mode. The default setting is a good trade-off between quality and compression, but if you wish to control the file size, you can state your own mode such as High Performance, Better Quality, etc. Click on OK and then on Save to start the video demultiplexing

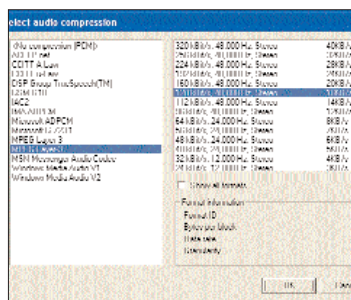


Choose the encoding mode in DivX

process. This will take some time depending on the speed of your computer. At the end of this process, you'll have an AVI file and a WAV file.

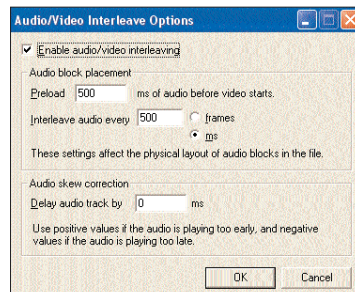
C) We now get to the creation of the DivX file—putting together the video (AVI) and audio (WAV) files that were created in the previous step. Launch VirtualDub. Under **File > Open**, browse to the folder where the AVI and the WAV files are stored. Select the AVI file and click Open.

D) Click on the Audio menu and click "Full Processing Mode". Click again on the Audio menu and select "WAV Audio". You will be prompted to open a WAV file. Select the WAV file you created earlier and click Open. Click on the Audio menu and then on Compression. Select "MPEG Layer-3" from the left pane and then select "128 kBit/s, 48,000 Hz, Stereo" in the right pane. Click OK.

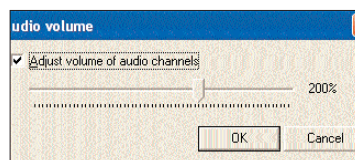


Select audio compression format

E) Select Interleaving from the Audio menu. Then, select the "ms" radio button and input "500" into the "Interleave audio every" dialog box. Click OK. Again, in the Audio menu, select Volume. Check the box and move the slider to 200 per cent. Click OK.



Set Interleave audio every 500 ms in VirtualDub



Set the Volume to 200% in VirtualDub

F) From the Video menu, select Direct Stream Copy.

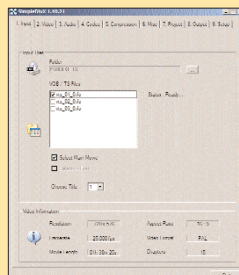
G) Go to **File > Save as**. Enter a file name of your choice at a location of your choice, and click OK. This, again, will take some time, but not as much as the video encoding using DVD2AVI. After the process is complete, you'll have a DivX backup of your DVD movie.

H) All that's left now is to burn the DivX backup to CD or DVD using your DVD-Writer. Like we mentioned, you can make backups of several movies and cram them all into one DVD. How many depends, of course, on the quality settings you chose during the backup process. Remember, though, that distributing the DVD you create to friends is illegal! ■

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SimpleDivX

SimpleDivX is, as the name suggests, a really simple, free software to convert DVD movies to formats such as DivX. In this case, too, you need to first decrypt the DVD to your hard drive. The step-by-step, tabbed approach makes it easy for a novice to understand. It is highly customisable - for example, you can even set the location of the directory where the temporary files are stored. "DivX" in the name of the software is misleading - it can convert to MPEG-4 formats of any kind, such as XviD. This is one software worth trying!



Hook 'em Up Right

Right after getting your speakers and even before you try listening to them, spend a half hour setting them up right!



Photograph Jiten Gandhi





FIFTH ANNIVERSARY

A 6 channel speaker setup is a must for an immersive DVD movie experience

Michael Browne

So you got a new set of 5.1 speakers. Great—way to go! Your next step would probably be to grab a bag of popcorn and settle down in front of your home entertainment system! Slide in that DVD and sit back. But what's this? DVD not sounding the way it should? Gunshots fired from behind being played by the front speakers? The ensuing irritation could make you want to tear out your hair, or maybe throw out your speakers, or both!

What you need is only to properly set up those sound boxes, and you'll be surprised at the mere minutes it takes to actually get it right. We throw in a helping hand, as usual, and believe it—you will hear the difference!

Why Six Channels?

A 5.1 speaker set is, of course, a six-channel system, that is, it is capable of reproducing six channels of sound, one of which is dedicated to bass (the subwoofer).

DVD audio, movies and gaming are the two areas where 5.1 speakers are in heavy demand. These are also the only two areas that fully utilise multi-channel audio, since music and movies from non-DVD sources are typically stereophonic. True 5.1 sound is positional sound, "positional" relative to the seated audience: DVD soundtracks are natively 6-channel, so positional sound is inbuilt. This means that gunfire behind and to your left will sound from exactly that channel—provided you've placed your speakers correctly, that is. With upmixing—adding virtual channels to a stereo source—the result is never good enough to compare with a true surround sound source.

Setting Them Up

Almost all motherboards today come with either 6-channel or even 8-channel audio onboard. With technologies such as Intel's High Definition—codenamed Azalia—a high definition, 8-channel audio architecture becoming more mainstream, the need to invest in a discrete multi-channel sound card is decreasing. We will use an onboard 5.1 solution for the purpose of setting up the speakers. Those with discrete sound cards can follow much the same procedure. So here's how to get the best sound from your speaker set:

1. First, ensure that your sound drivers are installed properly and up-to-date. Not only will these seriously hinder audio playback, they are notorious system resource hogs as well. Updated drivers ensure that bugs are ironed out.

2. Speaker wire plugs are generally colour-coded, and some manufacturers also mark the speakers as "front left," "rear right," and so on, which further simplifies the installation process. Most 5.1 speakers have the satellites connecting to either the subwoofer or an external box or decoder. Terminals are either of the wire clamp or plug types.

3. The front satellites are ideally placed a minimum of five feet apart. More powerful speakers can be placed further apart, barring space constraints. The satellites should be placed so that they fire in the audiences' direction. Similarly, the rear speakers

are placed behind the listener, and in general should form a rough box formation with the front speakers. The centre speaker, which handles most of the vocals in a DVD movie, is ideally placed atop the monitor, directly in front of the user.

Face the speakers towards you: if not, loss in clarity will result, since mid and high frequency sounds are direction-specific. The subwoofer can be placed anywhere in front of you, since low frequency sounds are not directional. Place the sub away from obstructions so it can fire properly, and try to maintain adequate ventilation around it. If you have an underpowered sub, place it near a wall to boost the bass.

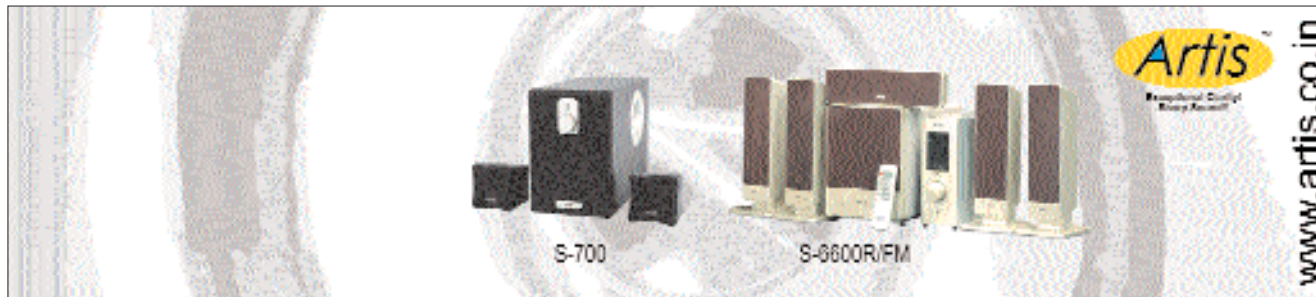
4. If the speakers' connect plugs are colour-coded, attach the corresponding wires to the satellites. Some speakers come with wired satellites, making this step unnecessary. Move on and attach the other end of the wires to the rear of the subwoofer or decoder box, as the case may be. There should typically be six connectors at the back, with front, left and right, centre, etc. marked. It's good practice to coil up and tie the wires if they're too long, rather than let them hang around, as they tend to get knotted up, particularly at the point of connection with the sub/amp.

5. Now you need to connect the speakers to the sound card or motherboard. Sound card/onboard outputs are usually colour-coded. Light green is for the front two channels, black typically denotes the rear speakers, while the centre and subwoofer are represented by an orange-coloured connector. If there's no colour coding, your sound drivers can help—use the troubleshooting feature.

6. You should have "5.1" sound selected in the speaker settings, which you can access via the



Typical Subwoofer back panel

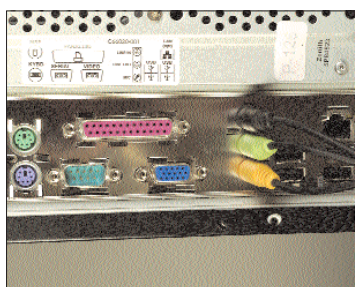




Final Subwoofer assembly

control panel or the sound card drivers. All sound cards come with a setup Wizard or calibration Wizard—click on it. Here, too, select “5.1”: some software will intelligently detect the speaker connects and show 5.1. These utilities usually play sounds from each speaker while indicating which speaker is playing by highlighting them on the screen. This is to ensure that the channels are right. If the speakers are playing when they should, breathe a sigh of relief—you’re nearly through!

If a sound channel has got mixed up, you may have either



The soundcard all hooked up

connected the speakers to the back of the woofer/amp incorrectly, or the outputs at the sound card end have been plugged in wrong. The most common problem is of left and right or front and rear being inverted; simply swap the connectors. If the cables and the sound card sockets aren’t colour coded, and if there’s no sound from, for example, the centre speaker, you can use trial and error to get it right.

7. Another important tweak is the subwoofer crossover. In your sound card drivers, this will be shown as a slider bar. Generally, if

set at a value like 120 Hz (typically, the crossover allows a range from 0 to 200 Hz), it means that any sound intercepted by the decoder unit below 120 Hz will be redirected to the woofer unit. The typical crossover frequency should be between 80 Hz and 120 Hz; anything higher than this can be handled by the mid range (squawker) drivers. Experiment and see what sounds best for you. The best sound may even vary from song to song, but there generally is an optimal setting.



Changing the Speaker Options in your soundcard panel

8. Slip a DVD movie into your drive. Start her up! You now need to calibrate the volume of the speakers. A good way to start is to set the overall (or “master”) volume to between 50 and 75 per cent, while playing around with the individual speaker volumes. The woofer volume should be kept at about 60 per cent; this is a comfortable volume that doesn’t distort, and at the same time, doesn’t intrude on the other sounds. Usually, the centre speaker is a bit more powerful than the other satellites, so it can be set at a slightly higher volume level than them without distortion. The centre speaker should, as a rule always be more powerful, because this is the channel that produces the vocals in a 5.1 movie.

9. Sit back on your settee, grab the popcorn (which you dropped in frustration earlier), and chill out! ■

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Jargon Buster

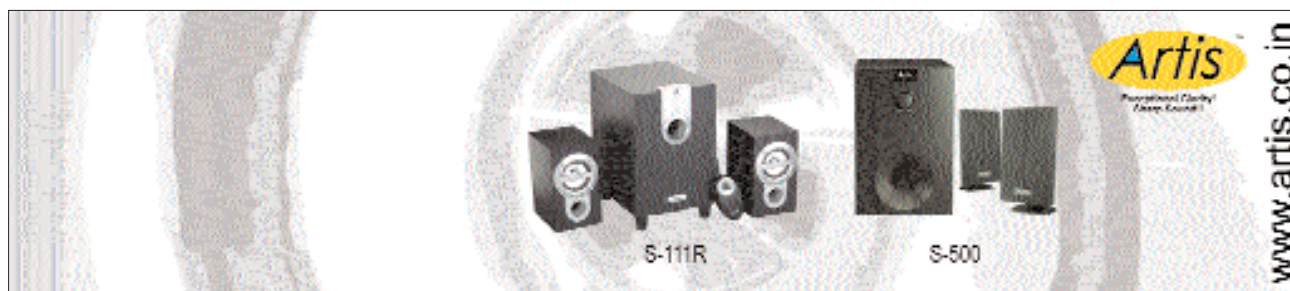
LFE: An acronym for “Low Frequency Effects”. The very term “sub” in the term “subwoofer”, means meaning sound below 50 Hz. A sub is typically capable of producing sound in the range of 35 Hz to 100 Hz. Some subs can go higher, though this is not really needed. A sub that can go lower than 35 Hz is good indeed, and the lower a sub can go, the more ideal it is for producing deep rumbles. Subs that go really low are also costlier.

Drivers: The driver is what produces the sound from your speakers. It consists of the enclosure (typically metal), a permanent magnet, and the diaphragm (often of paper). Speaker drivers are of three types, distinguished largely on the frequency spectrum they are built to reproduce. Tweeters are the smallest of the speaker drivers and can produce the highest-frequency sounds, like the tinkling of breaking glass. A good-quality tweeter can reproduce sounds up to 25,000 Hz. Squawkers are the mid-range

drivers. They are typically 3- to 5-inch drivers with the ability to produce a wide spectrum of sound between the sub and the tweeters.

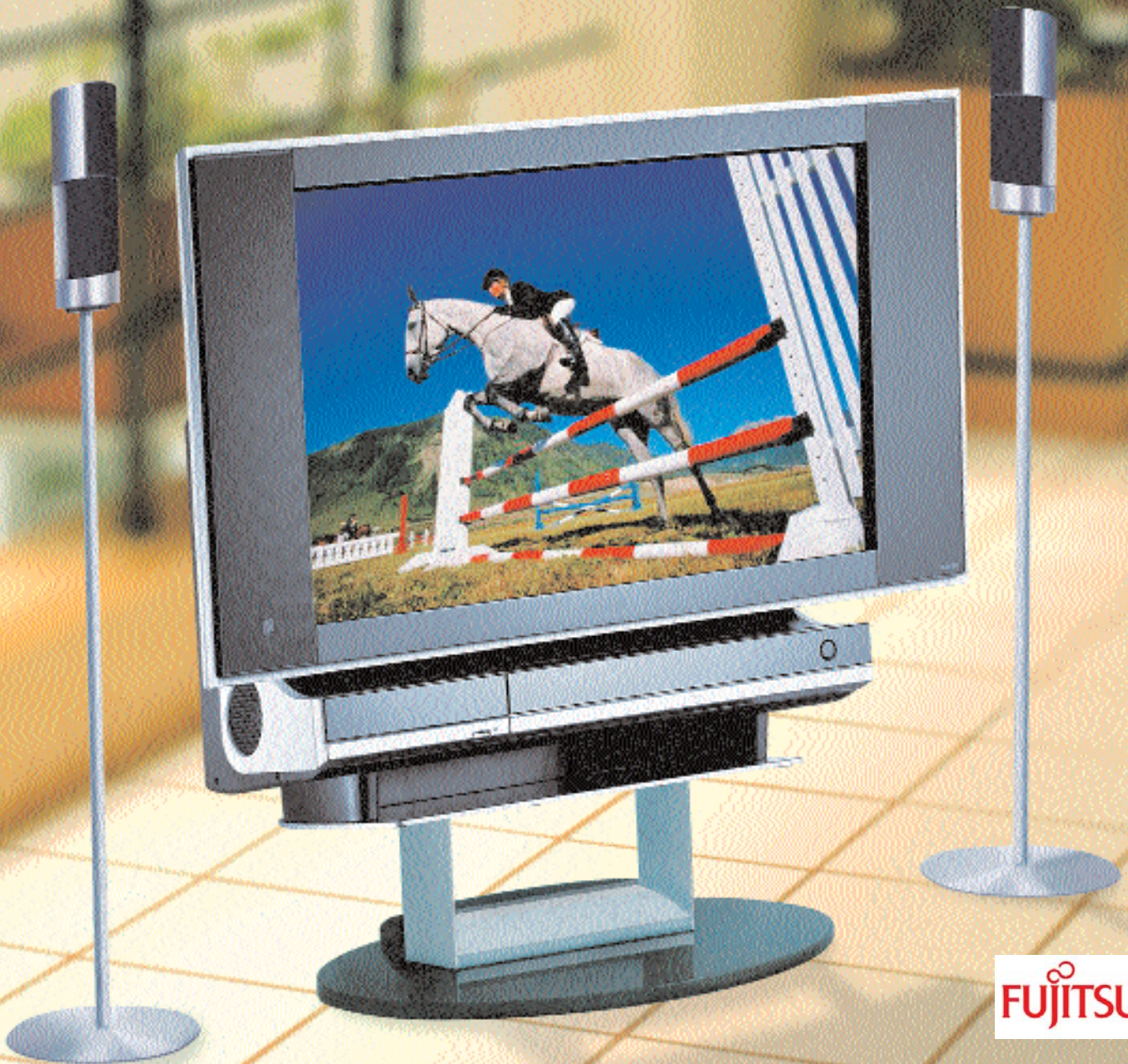
The subwoofer is the low-frequency sound producer, and is responsible for all the thuds and thumps. They are capable of playing sounds below 150 Hz. A sub also has the biggest driver, sizes range from 6.5 inches to 12 inches in diameter.

SNR: The Signal to Noise Ratio is a very important consideration for audiophiles and the discerning user. Very simply put, every sound channel carries, along with the actual audio content, a certain amount of “signal interference” or stray noise. This causes distortion in sound, and it is particularly noticeable at higher volumes, mainly because of the unit design imperfections. SNR is measured as a ratio. A typical good value for a speaker is 85 dB, with some higher end 5.1 sets having an SNR as high as 110dB. Speakers with an SNR of below 65 dB should be avoided at all costs!



Cinema At Home

If you're thinking of buying a Media Center PC, you should also invest in Digital Media Converter to minimise the disk space used when capturing video



Photograph Jiten Gandhi

FUJITSU

Jayesh Limaye

Windows XP Media Center PCs are already gracing the shelves of PC stores all over India. It is finally being realised that the Windows XP Media Center PC, which comprises the OS along with the compatible hardware, is the ultimate convergence of personal computing and entertainment. The ability to capture live TV or to be able to view TV at your own pace, so to speak, makes it an attractive replacement for the TV as well as the regular PC.

Windows XP Media Center PCs use a new format known as DVR-MS (which derives its name from Digital Video Recorder). Video of this type is encoded in the MPEG-2 format. DVR-MS files can also be copy-protected by the author, thus allowing them to be run only on the Media Center PC that was used to record the content.

The DVR-MS file format captures live telecasts at excellent quality levels, but there is a drawback. The size of the captured file is huge. A two-hour capture at the best quality settings would take up a whopping 5.5 GB of hard disk space! And DVR-MS files cannot be easily edited. This is why you might want to convert files from this format into a format such as WMV, which not only occupies only a fraction of the space for almost the same quality, but can also be edited.

Thankfully, there is software known as Digital Media Converter from www.deskshare.com which does this job for you. Not only is it capable of converting unprotected DVR-MS files to the WMV format, it can also convert them to the VCD, DVD, AVI (DivX, MS MPEG4, uncompressed, etc), MPEG-1, MPEG-2 (PAL, NTSC), MOV,

WMA, and WAV formats, and also batch-convert them.

Before you proceed, you must make sure your system meets the minimum system requirements. For a Windows XP Media Center PC, you need to download and install an MPEG-2 encoder such as the freeware from www.deskshare.com/download/mpeg2decoder.exe. For Windows XP Home and Professional, you require Service Pack 2, Windows Media Player 9, DirectX 9c and the above MPEG-2 decoder. Let's get started!

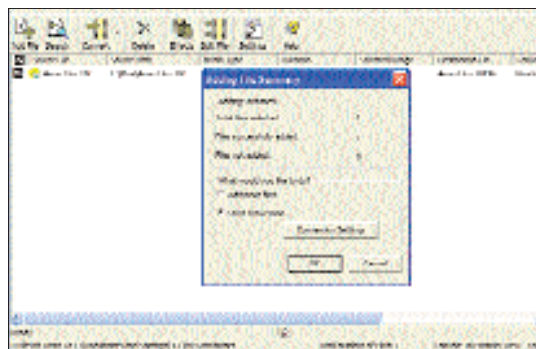
1. Launch the program. Go to **File > Add Files**, or click on the toolbar button labelled Add Files.

2. Browse to the folder where the files you want to convert are stored. Select one or more files you'd like to convert.

3. Select the "Convert to" format and click Open.

At this point, the Digital Media Converter will start adding the files one by one, and will display an error message if it is not able to add any of the files, and will also display the reason for it not being able to add the file. This converter is intelligent: instead of just displaying the error, it will also instruct you about what you may need to install in order to be able to convert the file.

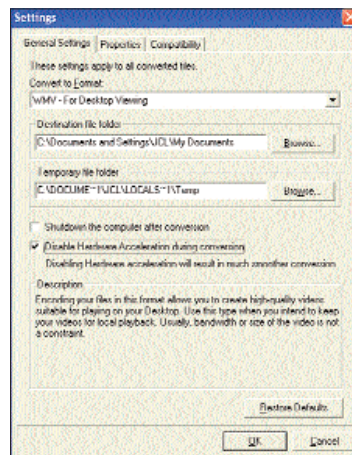
4. If you need to remove a file from the list, just select that file and click Delete in the Edit menu.



Add video files to Digital Media Converter

5. You may wish to change the conversion settings before you convert the files to your preferred format. To choose the format of the converted file, go to **Tools > Settings**. Select a format from the "Convert To" box. Click on the Properties tab to change the settings of the selected "Convert To" format. Click OK.

6. To configure an automatic shutdown after batch conversion, go to **Tools > Settings**, and check the "Shut down the computer after conversion" option. Click OK.



Disable Hardware Acceleration during conversion

7. You can disable hardware acceleration—this will result in smoother conversion, as fewer system resources are used. To disable hardware acceleration, click on **Tools > Settings**, check the box next to 'Disable Hardware Acceleration during conversion' and click on OK.



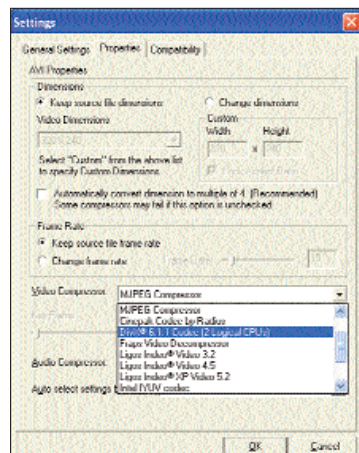
The future of Home Entertainment
is now in India

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8. If you selected AVI as the conversion format, you can select from amongst the Best Quality, Best Compression or Most Compatible presets. In addition, you can also choose the video dimension, frame rate, video and audio compression codecs.

9. In a similar way, if you selected MPEG as the format,



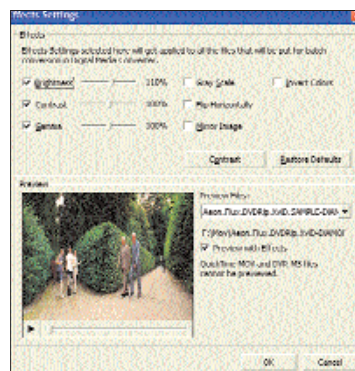
Select the AVI file codec as required

you can configure the properties. You can choose from amongst a myriad of MPEG-1 and MPEG-2 formats here such as VCD, SVCD, DVD, etc. You can also choose the aspect ratio, bitrate and frame rate. There are

options such as these for each format that you can choose, such as QuickTime.

10. To convert to the WMV format, point to the Tools menu and click on Settings. From the "Convert To" box, select WMV—For Desktop Viewing for Video, or WMA—For Desktop Viewing for audio. Select the Properties tab. From the Profile box, select a profile you feel is appropriate. From the list of available bitrates, select the ones you want to include in the conversion. When more than one bitrate is selected, the converted video is an MBR (Multiple bit rate) video. Click OK.

11. You can apply effects to the videos you convert. Select



Change the Effects Settings

the file to which you wish to apply a video effect. On the Tools menu, click Video Effects. Specify the effects that you want to apply in the Effect Settings window. Click OK.

12. The Brightness can be used to change the brightness level of the video. Up to a 200 per cent adjustment in brightness is available.

13. The Contrast allows you to adjust the contrast of the video to up to 200 per cent, allowing you to define the difference between the dark and light areas in case they do not appear in the video as they should.

14. The Gamma slider lets you adjust the gamma of the video by up to 200 per cent.

15. Videos can also be manipulated before they are converted. The Gray Scale effect transforms all the colours in the image into shades of grey, in effect converting colour videos to black and white.

16. "Flip Horizontally" turns the image ~upside down~. This can be useful in cases such as when the videos have been converted from the YUV colour space to the RGB colour space, which can sometimes result in the converted video turning upside down.

17. "Mirror Image" produces a mirror image of the video. This is also called the "Flip Vertically" effect, because it flips it about the vertical axis.

18. "Invert Colors" transforms the colours in the video to their negatives.

Digital Media Converter v2.65 is available from www.deskshare.com, and the download is about 9.4 MB. It is shareware and can be converted to the full version for \$39.95 (Rs 1,900). It can be picked up easily even if you are a novice. Start emptying out your hard drive! ■

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India's First-Ever EPG

EPG, or Electronic Programming Guide, has just been launched by Microsoft in India. This will allow users of Windows XP Media Center Edition PCs easy access to program schedules for over 80 cable TV channels available in India.

An EPG is an on-screen interactive guide to TV programs that lets the user navigate, select, search for and record TV shows. Until now, this was only available in areas such as Europe and the US.

The EPG has a list of all the programs on your cable channels, and it will be integrated into all Windows XP

Media Center PCs from now on. Due to its interactive nature, you can look for your favourite shows just by typing in keywords such as the name of the program or movie, actor, time, day and date. You can also view the program start time, duration, censorship classification and genre. The EPG combined with the DVR (Digital Video Recording) capabilities of Windows XP Media Center transforms your PC into a PVR (Personal Video Recorder), allowing you to schedule recordings. The great thing is that this does not need a subscription—it's free!



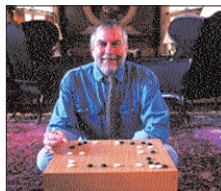
80cm wide screen LCD TV, Media Centre PC,
High-end Gaming console,
450 hours of recording time
- All in One -

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Technology Beyond Work

The Elder Scrolls IV OBLIVION

From Morrowind to Oblivion A long journey

The Elder Scrolls 3 a.k.a. Morrowind will always be remembered for its stunning visuals, excellent first person perspective (somewhat rare for the RPG genre), and it's hours of completely open-ended gameplay. That game was released in 2002.

It's been four long years, and Bethesda Software had a tough task ahead of them: making a game as visually splendid for today's computers as *Morrowind* was for PCs back then, at the same time re-attaining the award-winning gameplay. After all, gamers everywhere were waiting anxiously for the next game in the series. Would the sequel deliver?

Enter *The Elder Scrolls 4: Oblivion*, which was finally released in March of this year.

The Graphics

Put simply, *Oblivion* is the best-looking RPG to date, and cannot be compared to anything in the genre, eye-candy wise. We'd go as far as to say that visually, *Oblivion* is to RPG what *F.E.A.R.* was to FPS. This game has the ability to bring even X1900XT and 7900GTX cards down to the vicinity of their knees. Parallax Mapping, Shader Model 3.0, complex and soft shadows, Bloom and HDR effects, *Oblivion* has it all!

One look at the amount of detail in a single scene will be enough to convince you; the complex movements of grass and foliage, water effects, volumetric and particle effects like smoke, fire effects—all very appealing. The unfortunate thing is that the game is very resource hungry, and

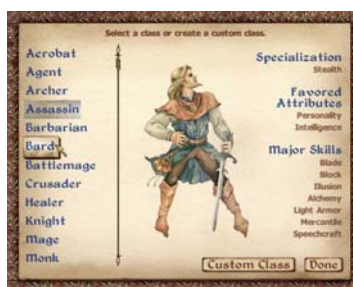
needs a real powerhouse rig to play it at 1024 x 768 with all the eye-candy turned on. And believe me when I say this: you won't want to play *Oblivion* without all the effects cranked up and with AF and AA disabled, because this game is *meant* to be played with all its bells and whistles.

Another problem with *Oblivion* (although there are third-party patches to fix it) is the LOD draw detail—it's simply horrible. You'll frequently see people suddenly appearing in front of you as you move close to their location. Similarly, a tree will appear, then its leaves will appear as you get closer, and finally, visual effects will be apparent upon getting closer. This

is because the game tries to compensate for slower cards by rendering such textures on demand. The problem is that it does this even on the most powerful systems with the latest graphics cards—very irritating.

Gameplay—Awesome As Always!

Oblivion delivers big on this front. You start off in prison, and are freed to partake on a quest for the emperor, who also gets killed early in the game. Now armed with a relic and the knowledge that the gates of *Oblivion* have been opened, pouring forth a wave of nasty creatures into the world of Tamriel, you set forth on what should be



Choose to play as one of many characters



The game looks *gorgeous*!



A treat for the eyes



My journey ends here, yours begins...

the stuff legends speak of! Character customisation is good, and there are many classes to choose from. Once again, you cannot increase stats like in a regular RPG, but only by actually performing actions that utilise those stats repeatedly—thereby improving them over time. For example, as a fighter, if you use a lot of swords in a melee, your blade skill will keep on increasing the more baddies you slash up. Also, the more you block attacks, the more your block skill will improve. This is a unique experience and actually works quite well in the game. Combat—whether melee, or ranged or magical—works well, and the spell effects are particularly spectacular. Even the in-game physics is superb—you can actually shoot an arrow at an unsuspecting enemy and watch his body being plucked by the impact, turned around and thrown in a heap: very realistic. It's so pleasurable to see one of your flame spells incinerating someone while he runs around in panic! *Oblivion's* combat system rewards you every time you score a hit by actually making you feel like it. Likewise, when you're getting thrashed, your vision will blur and sway with the impact—thereby throwing off your aim.

The open-endedness of this game is sheer genius; there's no hurry to complete quests. In fact, you can take as long as you like, exploring the world around you—the fields, the sprawling meadows, the underground caverns, the

towns, and the like. If you're in a hurry, though, you can rush around and complete quests. Then there are guilds to join, bounties to collect, people to interact with, weapons to maintain—all vying for some of your time. *Oblivion* also allows you to buy a horse to speed up your excursions, and you can gallop off to quests, instead of plodding along! All in all, while *Oblivion* plays slowly for the first hour or so, once you get a few completed quests under your belt and a couple of level-ups.

What gets slightly repetitive, though, is the constant need to travel around from quest to quest, although you can use the map travel system that instantly teleports you to your destination. The actual time spent simply moving around exploring does tend to add up though, and you find yourself actually waiting for some action. We're not sure whether the waiting is bad, or if the anticipation it creates is good—you decide!

My Verdict

Oblivion is an excellent game if you're a fan of the genre—and perhaps even if you aren't. Definitely one of the most anticipated games of 2006, it has delivered with aplomb: I was completely hooked. The only caveat is that *Oblivion* requires CPU and rendering power, and makes no bones about this. A lot of the gameplay is in its visual element, and if you have a more-than-decent rig, this game is an absolute must-have. ■

michael_browne@thinkdigit.com



I shoot, I score



Giddy up!



The Imperial City walkway

Rating: 8/10 Price: Rs 2,999
Developer: Bethesda Game Studios
Publisher: 2K Games
Web site: www.bethsoft.com
Distributor: e-XPRESS Interactive
Minimum System Requirements:
512 MB system RAM, 2 GHz P4 or equivalent, 4.6 GB HDD space, DirectX 9.0c (included), 128 MB Direct3D Compatible video card and DirectX 9.0 compatible driver, DirectX 8.1 compatible sound card





LARA CROFT TOMB RAIDER LEGEND

Lara's in Good Hands now

After the terrifying downturn that Lara Croft's career took post-*Tomb Raider 3* (some would even say 2), it hardly seemed likely that the lady would rise from the grave that developer Core Studios had been so diligently digging for her. Now in the seemingly able hands of new developers Crystal Dynamics (the guys behind the *Legacy of Kain* series), the *Tomb Raider* franchise has been revamped and reintroduced to the masses.

To Thine Own Self Be True

The heart of any *Tomb Raider* game lies in exploring large environments, solving puzzles, leaping wantonly from ledge to rope to who-knows-what and a little shooting up of the bad guys. And, of course, watching Lara Croft carry out aforementioned activities. Lara's latest adventure will take her from the jungles of South America to the

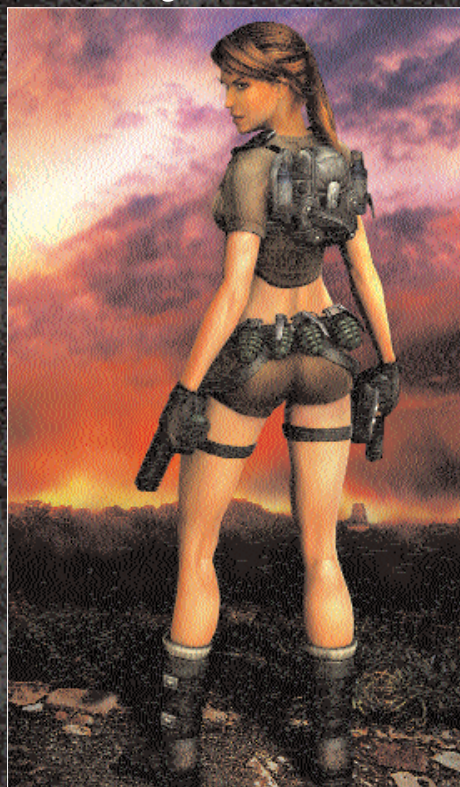
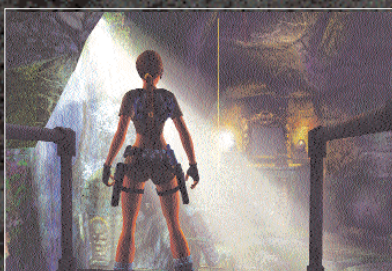
icy corners of the Himalayas and the streets of England, among other locations, on a quest to find out the truth about King Arthur's Excalibur, an ex-colleague who didn't really die and what really caused her mother's death. She's not alone, though, and will constantly find herself in the middle of skirmishes with the enemy.

The game's environments—open spaces and dungeons alike—are mind-bogglingly large at times, and nearly always breathtaking. We often left Lara hanging on to a cliff while we took a look-see at the entire set before proceeding. You will also encounter puzzles ranging in difficulty and complexity from the simple push-this-do-that type to the insanely elaborate push-this-pull-that-shimmy-down-wall-DON'T-DIE-shoot-this-and-then-s-wiiiiing kind—you get the drift.

Throughout the game, you'll also be treated to some interactive cutscenes—press the arrows that the game tells you to in time. Miss a cue, and Lara will



Rating: 8/10
Minimum System Requirements: Pentium 3 1.0Ghz or Athlon XP Equivalent, 256MB RAM, 64MB 3D Accelerated Card with T&L
Developer: Crystal Dynamics
Publisher: Eidos Interactive
Distributor: Milestone Interactive
Contact: sales@milestoneinteractive.com



meet a very painful end.
The Goods

In addition to her signature dual pistols, Lara can also pick up weapons that enemies leave behind. She also has a new Personal Light Source (PLS), which, while a good substitute to her older flare, is quite useless given the well lit scenes—the only time I used it was when the on-screen tutorial told me to. She also has a new magnetic grapple, which adds to the Indy Jones part of her character, letting her latch on to metal objects and swing. This very entertaining addition is tragically under-used, though. Another interesting but useless addition is the PDA which gives you a gist of your mission and what's happened so far.

The controls are quite fluid and quick leaps and moves (quite essential sometimes) can be made with minimal hair-pulling—you can even execute combinations of moves with tremendous ease. They do fall flat on their face in some of the boss fights—

most notably one where you have to holster the guns and whip out the grapple in quick succession.

Combat action is a little disappointing. While enemies gather round aplenty and keep you quite busy, it's still insultingly easy. It's a tad hard to digest that even fifteen bullets from a high-powered machine gun fail to deplete half of Lara's health.

Pretty as a picture

In the display settings, you will find an option called "Next Generation Content", which when turned on kicks up the levels of detail beyond the capabilities of most graphics cards. Our 6600 was reduced to a proud 3 fps thanks to the ultra high-resolution textures and water effects. On higher end cards like the GeForce 7 series, turning this on is definitely worth it—the game looks incredible.

That's not to say that the game doesn't look good without the next generation content—it's still quite impressive. Most noteworthy is the

attention to detail in texturing. When Lara comes out of an encounter with water, her skin is actually shiny wet and her clothes take on a slightly darker shade. She also progressively "dries" as time goes on.

Finally, Lara. Crystal Dynamics have given her a complete makeover, basing her new avatar on British model Karima Adebibe. She's prettier, curvier and is generally a more powerful stimulant for the hormones than ever before. She's also brilliantly voice-acted by actress Keely Hawes.

Endnote

For a game that generously spreads itself over 7.5 GB of hard disk space, *TRL* is horribly short. Even if you waste your time looking for all the secrets to unlock new concept art and costumes for Lara, you can't help finishing the game in a day. Overall though, the smooth gameplay, gorgeous settings and of course, Lara, make this game worth a go ■



Wipeout Pure

The PSP version of the hugely popular *Wipeout* series, *Wipeout Pure* is all about racing your hover-ship on a narrow, futuristic racetrack without blowing up. It's a lot tougher than it sounds—you will invariably find yourself bonking your ship coming out of a corner, and to make matters worse, your racing opponents are constantly firing weird and wonderful weapons at you (and vice versa).

The description doesn't sound like much, but the execution of the concept is where this game stands out. Firstly, for a game that will be played on the PSP's small screen, the game looks beautiful—no doubt the best looking of the four reviewed here. Track design is brilliant and delivers the very futuristic feel it's meant to. The hover-ships are based on two basic designs, but look good nonetheless. Controlling your craft is quite difficult initially, till you realise that the key is to use the analogue stick in conjunction with the L and R buttons.

There's also a Zone mode in the game, which puts you alone on a track, progressively increasing your speed—the goal is to last as long as possible without becoming one with the wall. Surviving long will unlock new tracks for the zone. Surprisingly, I found that the Zone mode was more exciting than the single race—especially beyond zone 20.

Wipeout Pure is a really good title to own, though nothing groundbreaking in terms of its adrenaline-pumping value. It is, no doubt, a gorgeous looking title and sounds really good even on the PSP's speakers—so you know it's going to sound excellent on a respectable pair of headphones too. The review copy we got kept crashing the PSP, but we're being optimistic and hoping that commercial copies aren't that nasty. ■



**WORLD TOUR
SOCCER**
CHALLENGE EDITION

If there's any game genre that gaming console controllers are beautifully suited for, it's sports! Playing *World Tour Soccer* on the PSP is a treat; this from someone who couldn't really care less about sports games. *World Tour Soccer* offers you the option to play quick matches, exhibition matches, cup competitions and multiplayer matches. There's also the challenge mode—seven matches for you to beat and showcase some smart moves and stunts—classy steals will be rewarded, and sloppy passing will earn you negative scores. Honestly, if there were more challenge matches, the game could have stood on their shoulders alone—coupled with the amazing soundtrack, it's no doubt the most appealing part of the game.

Controlling your players is straightforward and intuitive for the most part. Special moves and sprints are easily executed and don't really require you to read the help—the controls are exactly what they should be. Friendly AI is not as smart as you would hope for, but with you on their side they seem to survive well enough.

There are plenty of unlockables here, and as you progress through the game, you will unlock new stadiums, clubs and challenges. If you're the kind that loves unlocking bonuses, this should be heaven for you. ■



PURSUIT FORCE

Pursuit Force is a cheeky nod to the campy action movies of the 80s—you're a cop in Capital City and it's your job to keep the streets clean. A crazy combination of racer and action generously dabbed with some third-person-shooter elements here and there, this is one title that will keep you entertained all the time.

In your numerous pursuits of vile gangs, you will jump from vehicle to vehicle, shooting at gang members from mid-air, landing on their cars' hoods and subsequently ousting them from their vehicles. There will also be times when you will find yourself on a helicopter, armed with a trusty machine gun to blow up errant cars.

The game is mission based, and you will face off against one of six gangs each time. Each gang has their own special style and story—the Warlords are ex-army renegades, the Vixens are stuntwomen-turned-criminals and so on. Each mission starts racer-style on a track, with you in your cruiser and your chief barking orders at you. As you approach the bad guys, you will engage in a gun battle with them, either finishing them off from your car itself or by climbing onto theirs. This aspect of the game is the most fun—there's nothing like delivering justice when in transit from one car to another. The controls also work beautifully and though it sounds difficult, this leaping from here to there is really easy to do. The missions do get quite punishing, though—even the first novice missions aren't as easy as one would think.

The game is full of many subtle, self-mocking hilarious moments—old hostages crying “I don't want to die a virgin!” and the like. If you're the type that takes long journeys in public transport, keep this one handy ■



Digital Leisure | Game On

GRAND PRIX

F1 Grand Prix puts you in the official cars, on the official tracks and in the official shoes of the drivers of the Formula One Championship. The game has been made with undoubted finesse—the graphics and sound are amazing, as is the soundtrack. You can also import songs from your own music collection to play while you race! You can choose to play random quick races, an entire F1 championship, or enter the Scenario Mode where you're presented with different scenarios with varying difficulty—from something as easy as “reach 15th place by the first split” to “win the race in the rain without changing to rain tyres”.

The cars' realistic controls can get quite frustrating at times—simulations and the PSP don't really mix well. Thankfully, you can turn on the brake assist for a more arcade-ish feel. If you're expecting a game with all-out adrenaline, you might be disappointed with this one, though. The only way to tell how fast you're going is the speedometer—beyond 100 kmph, everything just looks the same; it's just that your car suddenly seems to be a little more touchy with the steering. For a game with such a tried-and-tested formula and so stylishly made, this title doesn't really light our fire ■



All Games Distributed
by Milestone Interactive
e-mail: sales@milestoneinteractive.com
Price: Rs 2,999

nimish_chandiramani@thinkdigit.com

A God-Fearing Virus!

An absolutely crazy Trojan now spreading over P2P deletes smut! Eraser-A scours the "share" folder the P2P application is using—for AVI, MPEG, WMV, GIF, and other potentially dirty files. It then erases the porn, warez, and music in those folders! Now *that's* a virus parents would approve of!



Too Much Of A Good Thing

There's a trend on in the US of banning laptops in class. In the news now is Paul Engelking of the University of Oregon, who found his students *gambling online* while they were supposed to be diligently working on an assignment!



Escape

IF ELEPHANT DUNG CAN BE...

Pixel Paintings

The week-long E3—the world's largest video game convention—happened in May this year at the Los Angeles Convention Center. It wasn't just games being played: there was an art exhibit called *Into the Pixel*, now in its third year, which showcased video game art—and which made people ask the question, "Are video games art?"

Into the Pixel was an exhibit that showcased 16 works of video game art chosen from amongst 150 submissions worldwide. The

panel of judges included people from the interactive, fine art and contemporary art worlds.

"Call it life influencing art, or games influencing art, or games influencing life, or art influencing games. Or better yet, why not just call it art?" said Salatino, a former curator of graphic arts at the Getty Research Institute in L.A.

So, well, are video games art? In what many consider the definitive essay on the topic, Henry Jenkins, head of the comparative media



studies program at MIT, wrote that games are indeed art. He titled his essay *Games, the New Lively Art*, in reference to Gilbert Seldes' 1924 book *The Seven Lively Arts*, which lists jazz, films, musicals and comic strips, amongst others, as some of America's greatest contributions to art. (Umm... comic strips are art?)

It's an idle question, really, and the best response probably came from Louis Marchesano, one of the jurors of *Into the Pixel* and an art historian whose expertise is 17th- and 18th-century art. "Are video games art? I'm not going to answer that



Whatever Happened To...

The AMD PIC

In 2004, AMD debuted the Personal Internet Communicator—the PIC. The idea was to create a simple, affordable solution for the masses, which had all the necessary goodies to connect to the Internet. It would sell in developing nations such as India, Brazil, Mexico, and others of the league. Sound familiar? Like so many other devices that promised to bring computing to the masses, the PIC seems to have taken the long walk into oblivion. And with so much going for it, too. It runs on a 333-400MHz AMD Geode GX processor, has 128 MB of RAM, a 10 GB hard disk, a LAN interface and four USB ports. Connect a keyboard, monitor, mouse and a modem or LAN connection to it, and the Web is yours! Of course, you have to get past what a silly device this is first. For one thing, it runs Windows CE—whatever heard of licensed software on an affordable device? Still, the claim is that Windows CE is only \$3 out of its not entirely affordable price of \$249 (just over Rs 10,000, including a keyboard, mouse and CRT monitor). Then there's the fact that you can't install new software. The BIOS prevents you from installing Linux, too! And the final push—visit AMD's site to look up where you can buy this product in India, and surprise, surprise: for a product launched for nations like India, this one isn't even available on the site!

Win!

My Desktop

This month's winner is Tarun Brari. Please mail us your address, Tarun!

How he did it:

Object bar 1.2
Yahoo widget engine
iTunes remote widget, weather widget, calendar and digital clock
Any suitable Macintosh wallpaper

Participate in this contest and win

Introducing Maya 7 3D for Beginners

by Dariush Derakhshani

Published by

WILEY-INDIA



Send your desktop with description of how you made it to mydesktop@thinkdigit.com with the subject "My Desktop", and tell us your postal address, too.

DigiPick of the month

Piracy Is Going
Legal!



This month's
winner is

Dr S P Singh
Patiala
drspaulsingh@yahoo.
co.in

Participate in this
DigiPick contest and
win

**Visual Basic
Database
Programming**



by Roger Jennings
Published by

WILEY-INDIA

WIN!

Send in your entry and you could win an exciting gift just by sharing an amusing picture with a tech angle to it. The picture should have been shot by you, and should not have been published anywhere earlier. E-mail your picture with the subject **"DigiPick"** and your postal address **on or before the 15th of this month** to **digipick@thinkdigit.com**. One prize-winning picture will be published each month.

question. I don't know. But, frankly, I don't care," said Marchesano, who is not a gamer. "You can't look at these pieces and not be moved by them, intrigued by them."

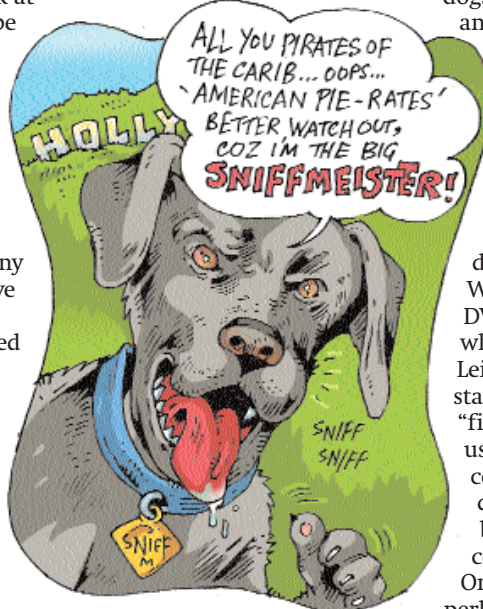
Take a look at the pictures on the previous page, which are quite like what was exhibited at *Into The Pixel*. We think they're stunning. In any case, remember we live in a world where elephant dung smeared on walls and garbage cans overflowing with garbage are considered art!

THE WAR AGAINST PIRATES

Sniff Out The DVDs!

We gave it away in the headline above, but otherwise,

you'd never guess what Hollywood's latest weapon is in its war against movie



piracy. It's Labrador Retrievers. Yes, authorities in the UK are using Labs to sniff out counterfeit DVDs.

Looks like the Motion

Picture Association of America (MPAA) didn't know how much money they were losing to piracy. Because the Association said two black Labradors had been trained by British customs to do the DVD-sniffing job just a few days after a leaked report revealed that \$6.1 billion (Rs 29,000 crore) had been lost to piracy in 2005. The Association did not comment on where they got the idea from.

The two dogs, named Lucky and Flo, have their work cut out at FedEx's British hub at Stansted Airport near London. They can identify DVDs located in envelopes, boxes, or almost any packaging. Naturally, they can also sniff out discs concealed amongst other goods. "This is the first time dogs have been used

anywhere in the world to search for counterfeit DVDs and the results were amazing," said Raymond Leinster, director general of the Federation Against Copyright Theft.

Now it beats us how dogs can sniff out DVDs. We didn't even know DVDs had a smell! Besides, what about CDs? Mr Leinster has qualified his statement very precisely: "first time dogs have been used... to search for counterfeit DVDs." So does he mean they've been used to search for counterfeit CDs before? Or bootlegged VHS tapes, perhaps?

OK, let's assume DVDs smell different from CDs. Next is the question of how the dogs know the DVDs are counterfeit. As far as we know, copies of DVDs are legal,

People Who Changed Computing

The God Of Gaming

Atari founder Nolan Bushnell



Nolan Bushnell

is widely considered the father of the video gaming industry. Bushnell was into games

right from his childhood; he played in chess tournaments in college and loved puzzles and problems. He was one of the many computer science students of the 1960s who played the famous *Spacewar!* game on a DEC mainframe.

While he was learning basic computer graphics at university, he also worked as manager of an amusement park. During this period, he also created a game named *Computer Space*. The game didn't take off because the gameplay was too complex.

It was in 1972 that Bushnell went on to establish the company named Atari. In the first year of his entrepreneurial career, he invented a coin-operated video game, *Pong*, which was a big hit in the gaming console market. *Pong*—essentially a console game based on ping-pong—was simple; the ball would go back and forth between two pads that moved up and down, controlled by players using control knobs. At this time, coin-based video games were in vogue, and PC games were almost non-existent.

Atari soon introduced the Atari 2600 Video Console System, which revolutionised the home video game market and started a new era in game consoles. While at Atari, Bushnell invented 20 games. He sold the company in 1976 to Warner Communications, and in the following year opened Chuck E Cheese's pizza restaurant, which offered both fast food and electronic games. To date, Bushnell has founded 18 companies, one of them a home robotics company.



Bluff

YOUR WAY THROUGH

Computers Through The Ages

Not much hair on your chin? Do people poke fun at you for never having braved the times of Windows 3.1? Here's how to show them that even though you haven't been there *or* done that, you still know more.

The Baby: On June 21, 1948, the University of Manchester made its first successful run of a computer program on the Small Scale Experimental Machine, affectionately called the Baby. It was the first machine that had the same basic set-up as the modern computer and could store both data *and* programs in memory. **The IBM 604:** This was an electron-tube based computer that could read and process punch-cards. Its 2x2x1 m frame and a petite 640 kilo weight made it the first commercially available miniature electronic calculator. It ran at 50 KHz and was built out of 1600 vacuum triodes.

The ENIAC: Following the success of The Baby and its successor, the Mark I, researchers developed the ENIAC—the Electrical Numerical Integrator and Computer, which shattered the 2000-tube barrier with its 18,000 vacuum tubes in its 1800 square-foot cabinet. It could add, multiply and calculate square roots, though some claim its real agenda was to take over the world. **The Altair:** In 1975, Popular Electronics magazine began selling the Altair as a kit. Based on the revolutionary Intel 8080A microprocessor, this monster could be picked up for \$397 and required dedicated geek-time to be assembled and finally used. It had 256 bytes of memory, and was programmed in 0s and 1s by flipping switches on its front panel.

So the next time anyone mocks at you for not knowing computers, shoot a few classics at them.

FIVE is a nice number...

OK, we're patting ourselves on the back, but three cheers to the *Digit* team's spirit! We battled two of our worst enemies to have this bonanza issue out. First, the Friday load-shedding; we've also been working weekends as well, and no sir, no AC on weekends! Then, of course, the deadlines—which of course no one met, but the universe unfolds as it should, and things worked out all fine. Except for Ed Deepak's hair having greyed a bit.

It's been raining trips to Singapore: Michael made a mid-month trip for a training program, and the end of the month saw Nimish follow suit for a training program on Vista. They brought back cigarettes for Raaabo and Ram. One pack each. ("Just because I went to Singapore doesn't mean I had money!")

Raaabo, Nimish and Prakash spotted

the deprived-of-the-comfort-of-my-home look while they battled slow Net speeds and late nights to prepare our dual-layer DVD. We arrived at work one morning to find them sprawled senseless under their tables. We had to use an intravenous caffeine drip to wake Raaabo up.

Anup has taken a sabbatical to study for a while, whereas Jyotsna is moving on for good. What had us all in splits was the quick entry and quickest ever exit of an indecisive wannabe *Digit*-ian, a certain Mr Singh. A Thursday morning saw him striding into office and taking up his appointed seat; Friday afternoon saw him gone without a word to anyone! Was it the no-AC-on-Friday thing that scared him off?

And finally, as we turn five, we're already wondering what the next five and more years will see. *Digit* on paper displays perhaps?

DIGIT DIARY

provided you don't share them, and they're for your personal backup purposes. So do backup and pirated DVDs smell different, too?

Another pressing question is, why broadcast the news that sniffer dogs are being used? DVD pirates will now probably coat their wares in pepper to throw the dogs off. So now if your next off-the-street DVD smells of pepper, you know it's been through Stansted Airport!

LEGAL P2P USE

BitTorrent To Deliver Movies

Warner Bros will use BitTorrent's technology to deliver movie downloads, the studio's home entertainment division announced mid-May. Early May, it was alleged that Apple will use the same system to power its upcoming movie download service. Warner will soon make available for download, via BitTorrent, around 200 titles. The content will be available for computer playback only, and will, naturally, be DRM-protected. The DRM technology the service in use will have to

work alongside the BitTorrent system, which splits content into numerous chunks to accelerate delivery. See *How BitTorrent Works*, *Digit* April 2006.

BitTorrent co-founder Ashwin Navin said the company is in talks with other studios, but there was no word on how much the downloads will cost.

In November 2005, BitTorrent had struck a deal with the MPAA to remove links to pirated movie files from its search engine. Was that just to look good? What's the point of one search engine removing links when there are a hundred others that will provide the same links?

We're not attempting an analysis of this move on BitTorrent's part, but there's potential for a comical situation here. If BitTorrent's main site will have a music purchase section and also the free torrent search bar, we could soon be seeing two large buttons on BitTorrent.com's main page:

1. "I'm a regular P2Per. Get on with it—take me to the free movies!"

2. "I'm a God-fearing, law-abiding citizen. Take me to your credit card processing system so I can pay for the movies!"

MARS AND VENUS

Gender Differences Online@Work

Folks always find surveys that reveal gender differences interesting, hence the following: Websense, a Web security and Web filtering productivity software company, recently conducted the 2006 Web@Work Employee survey. Some of the findings are predictable; some are interesting.

First, men are more likely than women to engage in personal Web surfing at work. Now that's probably because women are in general more law-abiding and God-fearing than men, but it's just a thought—please don't write in to tell us otherwise!

As far as the types of sites they visit while at the workplace is concerned, there's a significant difference. Men are 2.3 times more likely to visit sports sites. They're twice as likely to visit investment or stock purchasing sites (naturally, MCPs would say: women don't know how to invest). But here's a surprise: men are 2.5 times more likely

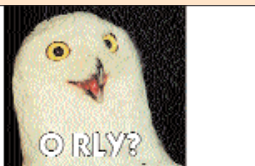


whatweretheythinking.com

www.oryowl.com

It's getting to be a sort of record here. Every time we pick a site for this space, we feel there can't be another more tear-provoking. Orlyowl.com had us whipping out our handkerchiefs.

An Internet meme that became popular mid-2003, O-RLY is a well-known-on-the-Web term for "Oh Really." Used to convey sarcasm on Net forums, it appeared along with the image of a snowy owl, thus bestowing cult status upon the bird.



Two hoots for the O-RLY owl site

The site, clearly designed to be a spoof of the original owl, claims it is "The home of the infamous O RLY! owl. This site hopes to catalogue all of the spin-offs from the original." A set of links on the left largely contain only two sets of

images—pictures of real owls and pictures of the original Snowy owl, coupled with images of popular American icons—actors and shows included.

If you do spend a few minutes at the site, the image of the snowy owl will have been imprinted upon your optical cortex. Owl, owl, OWL! The aim of the site seems to be to get you to upload your own version of owl—there's a helpful "blank owl template." What actually made us gasp is the number of images that have actually been uploaded by visitors—no less than four thousand!

A spoof's a fine idea if it can actually make you laugh, but clicking on a couple of images (of owls, of course!) is all it takes to end your curiosity. Yawns guaranteed!

Even if you absolutely love Owls, would we recommend that you take a look at the site? NT-RLY...

than women to visit blogs! Why? A possible explanation is the following: women are slow to catch on. (Please direct all hate mail to readersletters@thinkdigit.com with the subject line "ALL MEN ARE MCPs" in caps.) In the early days of the Net, Web surfers were all men—well, more than 90 per cent, as we remember it. When there was talk about Web sites, women would go, "Oh, you're talking about the Internets! Yes, I've heard of those! They're special computers!" (Hate mail to the address above, please) And now, in the relatively early days of blogs, women are catching on more slowly.

Back to the survey: it found that 16 per cent of men had visited a porn site while at work; 8 per cent of women had done so. Now on the one hand, it's a no-brainer—porn is primarily targeted at men anyway. But *eight per cent* of women view porn while at work? What is the world coming to? Where have values gone?

More fun findings: women tend to visit travel-related sites more than men do. Of course—isn't your wife always clamouring for that next vacation? Then, women who encounter spyware are more likely than men to complain—they are *more than twice as likely* as men to call their help desk or IT department if their computer got infected with spyware! Talk about damsels in distress!

Then, men use IMs at work more than women do, which comes as a surprise. (Women are more chatty.) Men are also more likely to listen to MP3s on their work PCs. (This is something we've seen first-hand right here at Digit, and we just don't know why!)

Finally, men are also more likely than women to have heard of the term "phishing." Ostensibly, therefore, women get phished on a more regular basis, but that's just a wild guess. Still, just to be on the safe side, don't give out your bank details to your wife!

Blog WATCH

Does blogging provide an advantage over traditional media? What makes a blog stand apart? With our hard disks and what not, what's the best way to prevent data from vanishing into the void in the case of an apocalypse? Some serious musings.

Lorelle

<http://snipurl.com/blogjun1>
(<http://lorelle.wordpress.com/2006/05/02/blogs-that-stand-out/>)

Blogs That Stand Out

What is it about a blog that makes it stand out from the blogging crowd for you? Is it the pretty? The interesting web page design that makes it enjoyable to look at as well as read?

Is it the content, the words, the ideas, the point of view that captures your attention and keeps you returning for more? Do you have to agree with their opinion or perspective or do you make return visits because they are the opposite of your point of view? Or because you find it entertaining? ...

Mark Cuban

<http://snipurl.com/blogjun2>
(www.blogmaverick.com/entry/1234000500073690/)

Blog Vs Traditional media

A blog is media. It's a platform to communicate that can reach anyone within reach of an Internet connection. I've been writing this blog for more than 2 years and that time has allowed me to recognize the difference between a blog and traditional media and why the two will never successfully meet.

In traditional media, you are first defined by your medium. There is some constraint to the physical or digital definition of the medium the content is delivered on or by, that for the most part determines how you are perceived.

Seth Godin

<http://snipurl.com/blogjun3>
(http://sethgodin.typepad.com/seths_blog/2006/05/the_problem_wit.html)

The problem with mobile

Why hasn't the whole cell phone industry exploded?

I don't mean the "use a portable phone to call people" market. That market is doing great, because everyone knows how to use a phone and a cell phone is just a better solution to that problem for a lot of uses.

I mean the entire "data in my pocket" or "fundamentally different kind of interaction" business. For years, everyone has been talking about the coming goldmine in mobile.

ClickRich

<http://snipurl.com/blogjun4>
(<http://clickrich.blogspot.com/2006/05/best-long-term-storage-format.html>)

Best long-term storage format?

Ok, so let's take everything we read in the papers at face value and, between the celeb worshipping and reality TV, assume we take some time out to plan for the demise of humanity. Think of a disastrous event which wipes out, say, 99% of the human population on earth. Now think about you being one of those 'lucky' enough to come out blinking into the light. Let's say you reinstate the basic needs of warmth, food, shelter etc. Now, what would be the best way to access the thousands of years of civilisation's knowledge to start to develop society and technology as fast as possible?



May 2006

Glad To Be Reaching You

I'm a student from a small town in Uttar Pradesh. I'm not rich, so I couldn't purchase *Digit* earlier—but now I save my pocket money, and have been reading *Digit* since June 2005.

There's no real computer infrastructure in my area, and no broadband—so I either have to travel to Lucknow or make do with BSNL's 30 Kbps at my place. I give credit to *Digit* for my being able to solve computer-related problems amongst my circle of friends.

There is a lack of books on 3D game design and programming here. Since it's becoming a great career option, it would be great if you could provide some material on it. Anyway, I just want to thank you for your good work. The *Fast Track* is great and is worth it.

Abhishek Dwivedi
Uttar Pradesh

Dear Abhishek,
Thanks for giving us credit—we work hard, and are delighted when we receive feedback like yours. Upcoming issues of *Fast Track* might very well cover areas such as 3D design. In addition, we're trying to include more articles in the magazine on career options—and the areas you've mentioned will likely be featured.

—Associate Editor

The Unrepentant Pirate!

I am regular reader of *Digit*. I want to know why PC games cost so much! Here in my college, I conducted a poll how many boys buy original game CDs. Of 462 boys who play games, 454 buy pirated copies. We can get games for Rs 25 to

Rs 150 whereas an original game costs more like Rs 1,000 to Rs 3,000 or more.

Most game buyers are from middle class families. It's not possible for us to buy such expensive games. I'm happy with pirated games, and till now I have not faced any problems while playing them. Instead of spending so much on games, I'd rather use the money to upgrade my PC or buy a new mobile! We are gadget freaks, and I don't think the companies can fight piracy. Yes, they can fight if they sell their games for as low as Rs 25. We are Indians and want *sasta*, *sundar* and *tikau*...

Baskey
Bhubaneswar

Dear Baskey,

We have reasons for being proud to be Indian, and wanting *sasta*, *sundar* and *tikau* is not one of them. There's a lot I'd like to tell you, but I'll keep this response short.

First off, you've said that only eight out of 462 buy original games—and you seem to have been encouraged by this fact. Just because everyone does it doesn't make it right; you're doing something wrong. "Everyone" throws garbage onto the street: does that make it right? If "every policeman" collected *hafta*; would that make it right?

Second, game companies spend money developing their games. If you don't pay, they stand to lose money. Think about a scenario where everyone bought only pirated versions—how would the companies survive, improve, innovate?

As for fighting piracy, there's a trend towards gaming companies using uncrackable protection for their discs. CDs can be easily replicated these days, but this won't be the case a couple of years from now—you'll have to pay up! We suggest you start practising...

To sum it up, please refrain from promoting piracy, and prepare yourself for the time when games will no longer be "free"!

— Associate Editor

Good Mag, Great Service

Digit has always been the best! I'd heard about the magazine earlier, but only now have I seen what a good magazine it is. You've helped me get a very good PC.

I purchased the December 2005 issue and the DVD was faulty. I wasn't able to mail you earlier, complained only in March. I had no hope that I would get a new one. But thanks to your great customer service, I got the disc replaced immediately! Thanks for keeping my trust!

Here's a suggestion—how about including a Tips & Tricks corner dedicated to Linux in every issue?

Sachin
Via E-mail

Dear Sachin,

We do try to keep our readers satisfied—thanks for writing in about this incident! Regarding Linux, unfortunately, there simply aren't enough *Digit* readers who are Linux users to warrant Linux Tips & Tricks in every issue. Just take a look at the Q&A section of any of our issues, and you'll see what I mean—most of our readers use Windows. Of course, this might change over the next couple of years.

—Associate Editor

Pack In The Bytes!

I'm a great fan of your magazine. I was reading *Digit* in the past, I'm reading *Digit* in the present, and I will be reading it in the future too! Your articles are informative and broaden our knowledge. Tips & Tricks and the game cheats on the CDs and DVDs are helpful for students like us. The brilliant presentation of the *Fast Track* books has solved many of my problems. The software, games and other information available on the CDs and DVDs are superb! I would like to suggest that you increase the number of software on the CDs and DVDs, and give us articles and Tips & Tricks relating to the software available on the discs. If possible, please publish a *Fast Track* on graphic design or Web page designing in the coming issues.

Riwaj Acharya
Via E-mail

Dear Riway,

We can't really increase the number of software we provide on our discs. We have a certain amount of space, and we try as hard as we can to include only the best software. Besides, it's not the number of software that counts, but the quality!

We choose topics for our *Fast Track* series based on what is feasible and what readers want. Several readers, including you, have mentioned graphic and Web design, and we are indeed contemplating the idea.

—Associate Editor

Games All The Way

My life is incomplete without computers, and without you my knowledge about computers is incomplete. I started reading your magazine when I was in class II. It's been a long journey. It is due to you that I was the best at computers in the entire

Write to the Editor

E-mail: editor@thinkdigit.com

Snail Mail: The Editor, Digit, D-222/2, Om Sagar Building, MIDC, TTC Industrial Estate, Nerul, Navi Mumbai 400 706

Digit will publish the best letters on these pages. Letters may be edited for clarity. You must include your complete address in all communication.

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Inbox

LETTER
OF THE
MONTH

school, and till now, you're making me more rocking! I still miss your magazine *Computer Gaming World* very much. Your *Fast Track* series is stupendous—I can't find any other word to describe it. The gaming title was very good, but a bit disappointing on the game reviews.

If you could just send me some information about computer games such as what developments changed the face of gaming, in which year, how one game is different from the other, a tree showing the release of different games in the years up until now and their corresponding year of release, I would be very grateful.

Avinash Singh

Via E-mail

Dear Avinash,
You can find a lot of the information you're looking for at SKOAR.com—SKOAR! is a gamer's magazine and our sister publication. Other sites that can be helpful are Gamershell.com, Gamespy.com and 3dgamers.com.

— Associate Editor

We Made A Boo-Boo

I had sent in the solution of the April 2006 crossword after having struggled with it. I was therefore very curious to see who the winner was. But there was no winner declared! I could have consoled myself if you had declared at least one winner. It is very negligent on your part to not acknowledge the correct solutions sent; I had sent you two mails hoping they wouldn't bounce. As a regular subscriber and reader of your magazine, I would like to know why you commit such silly mistakes? Please send me an appropriate reply!

Krishna

Via E-mail

Dear Krishna,
This was indeed a slip-up. The incorrect file inadvertently went to our printers, and the name of the April crossword winner never got printed in our issue of last month. We're very sorry for the frustration you've had to go through. Last month's crossword winner was Chitra Bharathi.

— Associate Editor

To Case Or Not To Case

I subscribed to *Digit* in February 2006. I received my issues as well as the digicam gift, but I found my magazine copy torn in two. I did not complain because the CDs were all right, but I request you to please send them with protection. If

possible, send the CDs in plastic cases.

Also, you told us in February about a lucky draw called *Fulltoo Dhamaal*—what happened to that? I also read a reader's request regarding a calendar. I was really impressed by the idea. Some of my friends have subscribed to competing magazines, but I've never let *Digit* down! Please consider my request.

Rahul Ktiyar

Jaipur

Dear Rahul,
We're always open to readers' suggestions. The problem is sometimes that they are not practical; sometimes it's about costs, and so on.

With regards to discs in plastic cases, couriers do not allow containers in our packaging. A plastic case would therefore force us to pay the courier extra, which in turn would raise the price of a subscriber's issue. We want to offer *Digit* at the lowest possible price, and the majority of the subscribers we've polled want a lower price rather than features such as a plastic case. So here, it's a cost issue. Please bear with us, and keep your suggestions coming—and yes, thank you for your continued patronage!

— Associate Editor

Mind Readers?

This is my fourth letter to *Digit*. I have one question: how do you guys get the software and games that we gamers think of asking you to provide? I was thinking of downloading *Tomb Raider Legends* and Adobe Photoshop, and since I'm on dial-up... Then I saw the May issue, I was so excited I was jumping with joy seeing the game list and developer software list! Without *Digit* I wouldn't have been able to host my own Web site. I earn Rs 6,000 to Rs 7,000 from my site, and you get all the credit! Please include the *Onimusha* demo and the upcoming *Devil May Cry* and *Residential Evil 4* when released.

M Avinash

Rajahmundry,
Andhra Pradesh

Dear Avinash,
It's just our job to bring our readers tech knowledge and fun, and if someone really benefits, we're happy—thanks for writing in!

We will try and include the demos you've mentioned as soon as possible.

— Associate Editor

It's MY Digit!

Perhaps you'll find me a unique kind of reader of your magazine - I'm jealous of all *Digit* readers! It is a precious part of my life, and I deal with it like one would with the things one loves most. Though I'm not a subscriber, I try not to miss an issue. I mention that I get my copy wrapped in a newspaper or in a black bag so that nobody gets to know that I buy *Digit*! I hardly tell anybody that I read your magazine. I keep my collection of CD/DVDs in a secret place. And, of course, I feel very jealous when I find others in my vicinity also reading *Digit*!

All the credit goes to a friend who, some four years ago, told me about your magazine. With my first copy itself, I was impressed, and now I think my friend was a fool to have told me about the treasure that is called *Digit*! I haven't even told him in all these years that I've started buying *Digit*!

Let me tell you that your great magazine keeps me overflowing with the latest tech knowledge.

I feel proud to be the most tech-savvy among my friends and relatives. I recently assembled a rocking AMD 64 rig for myself—solely on the basis of ideas in *Digit*. And right now, it helps me tweak my PC to the limits.

Finally, thanks a million for building my career as a student of BCA, by providing a magazine which I think should exist only for me.

Sarfraz Ali

Aligarh

Dear Sarfraz,
Your mail is one of the most intriguing ones we've received in a long time! It's heartening to know that we actually have such an impact on peoples' lives.

We think we're doing our bit to spread the IT word around the country—the computer starts off as a casual interest, develops into a serious hobby, and so on—eventually, careers are built upon the exposure one has had as a youngster. We're glad to be a part of this.

We also think you should share your knowledge, and spread the word among your friends. *Digit* will always be special to you no matter how many people read it!

— Associate Editor

Tabloid TECH

People And Events That Grabbed Headlines—For Better Or For Worse

“Booth Babes”

Ever wonder how many women there are at gaming conferences? There are quite a few, and

What's more interesting is that there's actually a site for them—e3girls.com! Naturally, it's image-heavy.



Look—they're even wearing “booth babe” T-shirts!

they don't play the games: they're referred to as the “booth babes.” Essentially, they're under-dressed women who entice the geeks to come and play their game.

Last year, the babe thing at E3—the world's largest annual video game conference, held in Los Angeles—went over the top, it's reported. Girls were ambling about in bikinis. The industry decided to tone it down this year, ostensibly to make the game industry seem a bit more family-friendly. But then, sex games are taking off, and what can we expect at next year's E3?

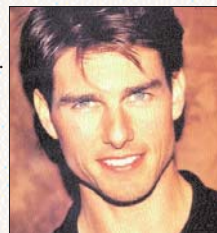
Looking at the site, you get the feeling that men *really* love the booth babes. There's a picture archive of the women at E3 booths for all the years that the conference happened. You get the feeling that they're as much of an attraction as the games!

From the site: “The best collection of E3 booth babes!! Upload and share your E3 babe pictures... we all know: you didn't only play the games!” Then, “Do you have e3 girl photos, if you attended the conferences you probably do.”

So how does this reflect on the role of Woman in society?

That's My Name!

Tom Cruise doesn't own TomCruise.com. The owner happens to be the world's most famous cybersquatter, Jeff Burgar. Cruise has taken Burgar to a domain name arbitrator so as to get “his” domain back.



While the legal proceedings are on, fans can head to the sad-sounding tomcruise.com. Actually, the legalities are fascinating: since this site already has a fan site up, do they have a

right to TomCruise.com? Anyway, here's a word of advice: register your name dot com today to avoid having to confront the Burgars of the world—just in case you become a celebrity some day. It's a bit late in the day, though, for Rajeshes and Deepaks, but the Tathagathas and the Chittaswarups of the world have it easy.

Burgar knows at least some of the loopholes. He's won against Kevin Spacey for exactly the same kind of thing, and also against Bruce Springsteen. He lost against Pierce Brosnan, Celine Dion, and Michael Crichton. It sounds a little like a game...

He Bluffed His Way Through

A London cabbie has probably been reading *Digit*—each month, we tell folks how to bluff their way through various things tech, and this man did exactly that!

The cabbie was mistaken for IT expert Guy Kewney, in the following fashion: he was holding a badge for Kewney at the BBC studio reception. A producer called out for “Guy Kewney,” and the cabbie was ushered on to a studio set.

Now, instead of doing the square thing by telling people he was not actually Kewney, he decided to field the planned interview, which was about a

court battle between Apple iTunes and Apple Corps!

Even as the real Mr Kewney watched the interview in disbelief, the cabbie answered several questions, possibly including a few gems and some generic answers—as in “I'm very surprised to see this verdict... because I was not expecting that.”

His interviewer did catch on after some such answers, but it goes to show that bluffing one's way through IT isn't all that difficult! Get some news tidbits from here and there, develop a know-it-all attitude, and rattle off buzzwords!

Pretty Please...

Red Hot Chili Peppers released their new album *Stadium Arcadium* on 9 May. Naturally, it was on P2P networks, and fans were downloading it. Not good for RHCP. So they resorted to begging, pleading, and emotional blackmail (“Please don't download the album! Give us your money instead!”). It really did involve emotion: Flea, the bassist, told fans in a letter posted on the Web site of the Red

Hot Chili Peppers Fan Club that it would “break his heart” if they downloaded the new album!

Fans should, Flea said, appeal to their consciences before deciding whether to download the album or buy it. There's no news on how many folks appealed to their consciences before double-clicking the album icon in their P2P clients. It's sad, really.

Or is it a sham to boost album sales just a little bit?

3-Easy-Steps to Freebies!

- 1 Log on to www.thinkdigit.com/digitpatron to register.
- 2 Enter this 16-digit code and score points (you will find your code at this place every issue)
- 3 Your points get added every month and can be redeemed for exciting gifts!



For any queries regarding the Digit Patron programme, e-mail us at digitpatron@jasubhai.com