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PREDICTIONS

FORECAST

Editorial

Bread And Butter... And Broadband

WE NEED FOOD. We need power. We need water. But if the year 2007 has been declared by the government as the “Year of Broadband,” we demand an uninterrupted supply of broadband as well.

The mayor of San Francisco once said Wi-Fi was a fundamental human right. I’m going along those lines—not quite, but close.

When our former IT minister Dayanidhi Maran led the DoT (Dept of Telecom) and conceived of an ambitious plan to offer free broadband through BSNL and MTNL at 2 Mbps by 2009, it sent newswires across the nation buzzing. Consumers like myself blessed him and sent him sincere, heartfelt thanks before going to bed. A fortnight later, though, the minister had to quit. The best laid plans of mice and men...

The figure for broadband connections in India stands close to 3 million, while the government plans to take it up to 9 million by year’s end. How? Your guess could well be better than mine. I’m clueless.

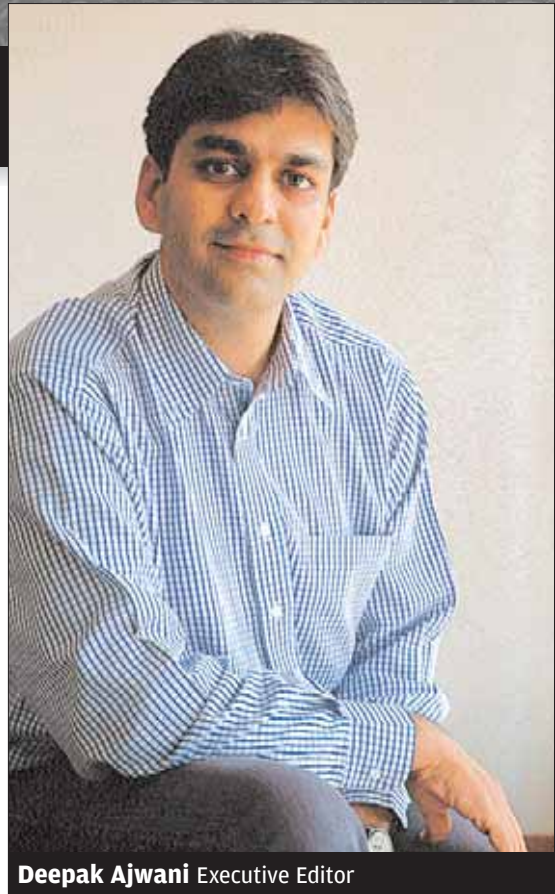
Post the exit of Maran (I must admit he has done much, much more than his earlier counterparts), another nail-in-the-coffin for broadband dreams came from the Telecom Regulatory Authority of India (TRAI), when it recommended an entry fee for issuing new ISP licences, and a reduction in the foreign direct investment (FDI) limit to 74 per cent from the existing 100 per cent.

In its recommendations, the TRAI said the current free entry of ISPs should be terminated, and that there should be an entry fee of Rs 20 lakh for national-level ISPs and Rs 10 lakh for state-level ISPs.

The TRAI has also recommended charging an annual licence fee of six per cent of gross revenue to all operational ISPs. If these recommendations are implemented, broadband access is slated to become more expensive, leave alone becoming free. So how does this pare up with the earlier plans? Or does the plan now change because of the musical chairs being played out amongst the figureheads at our IT ministry?

Will the incumbent IT minister announce another populist scheme, giving us another dream—only to pull it down later?

I’d always thought the principal role of the TRAI was to uphold the consumer’s interest and protect him from monopolistic pricing and cartelisation. Now, it not only strikes down at the hopes of new



Deepak Ajwani Executive Editor

**“Is free broadband sustainable?
When you make something free, it
runs into the problems of low-quality
service and upgrade costs”**

ISP aspirants, it also eliminates competition.

In any case, is free broadband sustainable? What we’ve seen is, when you make something free, it runs into the problems of low-quality service and upgrade costs. How concerned have you been while using public utilities and transport? Ever cared enough to wipe your seat on a bus, or clean a public toilet? Free broadband also means we consumers will use as it much as possible. Every house will set pirated movies to download. The pipes will choke. This will again lead to abysmal quality of service.

Charging a fixed fee no matter how much bandwidth a customer uses is as good as giving the service away for free. So if anyone’s listening, charge us—but give us consistent and quality broadband, please!

editor@thinkdigit.com

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

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Iomega ... Portable Hard Drive
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164 Pocket Jockeys

We've hand-picked over 30 portable media players for any size pocket—literally and monetarily!



200 Tabloid Tech

Guy Kawasaki says, “It’s true that it could have no purpose. I don’t want to be known as a Web 2.0 company, but we’re a Web 2.0 company.” All this and more priceless stuff in the zone where normal things don’t happen. Ever.

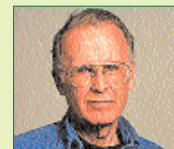
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It's strange what people search for these days. Really, really strange.

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By Demand

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



Webaroo Wikipedia Pack

Size: 5.4 GB

Ubuntu 7.04

Size: 698 MB



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Digit 6th Anniversary Issue



Digit Reader Poll

This Month's Question

Which of the following predictions will be a reality in the next five years?

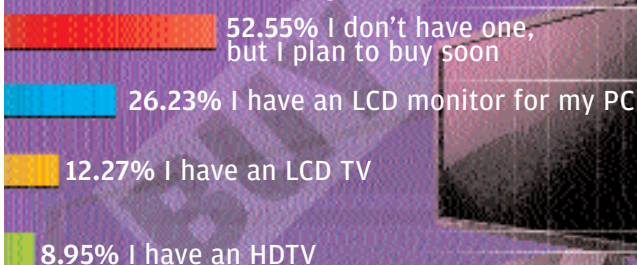
- ☐ Free Broadband ☐ India moving on to 4G
- ☐ Universal Operating System ☐ Audio enabled Search



To vote Log on to www.thinkdigit.com

Last Month's Question

Have you bought an LCD yet?



Total: 2078

taste technology at www.thinkdigit.com

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

This month, we feature a member review from the forum here.

Click here to go back to

thinkdigit.com

Norton 360

After Listening some Great News about Symnatec's latest Product Norton 360,I decided to check how true it was and how good was it in its Functionality...Here are some of my observations:

Good:

1. Its Really Not Memory/Resource Hoggin like other Norton Products such as Norton AV or Norton Internet Security
2. Most of the Process such as PC-Tuneup,File Backup,Live update, etc happens in the Background and Does not Trouble the user to take some action on it.
The Previous Products of Norton gave lots of Trouble by alerting the user to update their AV each and everytime the machine was ON.This was for a Good Reason but this was very buggy and gave a lot of annoyance
3. Along with Auto-Protect Feature ,There

is also another option in Settings Panel to "Hide Auto-Protect Popups" which is very useful in case any user is annoyed about Alerts and Prompts

4. There are various Tools for different options such as Internet History cleaner,PC Defragmentation,and PC Tuneup.

BAD:

1. It does not Alert if Virus,Trojan is Present in Archived Files...Though it doesnt allow extraction of such Files..I Just tested this myself and was bewildered to find why the file was not Getting extracted and gave me errors when Auto-Protect Feature was ON..I just disabled and then Enabled it to find that the Archived File contained a Trojan.
2. Fraud Monitoring Toolbar which detects Fraud,phishing website works with Internet Explorer only and doesnt sup-

port any other browser such as Firefox or Opera

Though this feature supports Internet Explorer only ...Its functionality and Detection Rate is Very weak..I myself tested this with certain Websites where the Toolbar gave me a msg stating-"No indication that this webpage is fraudulent" or "Unable to find that this webpage is fraudulent"

3. In case u Need Features such as Ad-Blocking,Parental Control,Anti-spam..U need to install a Norton Addon-pack..I wonder why though this softie been so huge is not bundled with this feature by Default?

For the rest of this, and more reviews, visit:

<http://www.thinkdigit.com/forum/showthread.php?t=58195>

Microsoft Releases Mash-up Tool

Popfly is a mash-up tool released by Microsoft—an online visual tool-set for building Web pages, widgets and mash-ups. In the “Popfly Space” community, content creators can host, share, remix, and comment on their Web pages or mash-ups with other members



CISCO Into Social Networking

CISCO is going to develop technology for social networking sites. They recently bought Five Across, a software company specialising in social networking, and are now buying resources worth \$2.9 billion from videoconferencing major WebEx Communications



Enter

Shawar Ali Actor

Ali started off his career as a model, but didn't quite make it to limelight until *Hawas* was out. Other recent movies in which he has starred include *Amar Hoshi Shahib*, *Ho Gaya* and *Yahan Ke Hum Sikander*.

Technology to you is....

...Very important. You cannot live without it. A couple of hours ago I was in Delhi and am now in Mumbai. I was connected during the transit, all thanks to technology.

What gadgets do you use?

I have a laptop, a PlayStation, a Nokia mobile phone, a digital camera, an iPod... the iPod is the latest addition to my collection.

What would be your dream gadget be?

I would like to have a video conferencing phone so that I can see the caller at the other end. I would like to see my girlfriend when she calls me...you know!

What do you do online?

I e-mail, send my photos to studios, I have my own Web site, and I don't chat. Also, Internet banking is really so much more convenient than going to the bank.

Any instance where technology has helped you?

There was a day when my family was in dire need of money. Thanks to technology, I could transfer the funds to their accounts in minutes.

ABOUT TIME

Puma To Stalk Santa Rosa

The silicon market is all heated up right now, with new chips and platforms lined up for release. May 9, Intel launched their Santa Rosa mobile platform, and rivals AMD gave out details of their Puma mobile platform, expected in the market by mid-2008. It seems AMD's primary reason for announcing Puma was to take on Intel's Santa Rosa and the upcoming Montevina platform. AMD has finally started developments specifically for the mobile platform from the ground up.

Since the first-generation Centrino, Intel has placed an emphasis on adding new technologies such as cool running, Turbo Memory, and other features including power savings and longer battery life. Santa Rosa will sport an Intel Core 2 Duo 64-bit Merom-based 65nm processor, later to be replaced with 45nm chips. Opposed to that, AMD is gearing towards enhancing performance without compromising on battery life. Puma will have their first-ever microprocessor, codenamed Griffin, specifically designed for mobile platforms, with two Turion 64 X2 cores on a 65nm chip, a revamped Northbridge with a HyperTransport 3

controller, and a reworked onboard DDR2 memory controller.

Griffin's cores are located on separate planes, and any one of eleven independent power states (eight frequency

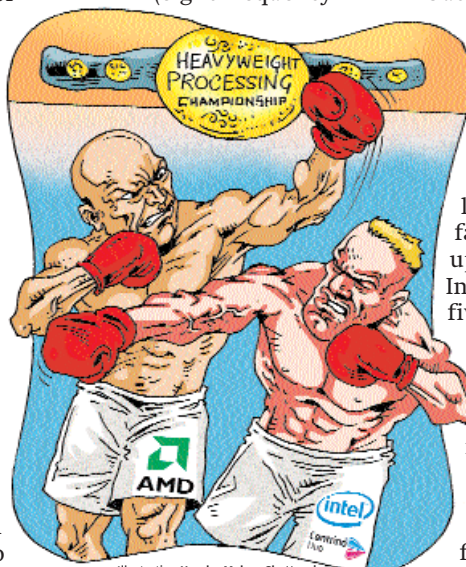


Illustration Harsho Mohan Chatteraj

settings, halt, “deep sleep,” and “deeper sleep” states) are functional for either of the cores, made possible through the memory controller. Santa Rosa includes Turbo Memory (code-named Robson) technology offering 20 per cent time reduction in booting, half the time for loading most-used programs, and more. Switching off of cores when not required can be achieved even with the memory manager working at low voltage. This feature is not that very different from what is offered with

Intel's Core 2 Duos. However, without our having tested them, it's too early to talk performance.

In Santa Rosa, Intel's Mobile 965 chipset supports DX10 graphics, but drivers won't be

available till the end of Q2 2007. R Sivakumar, managing director, Intel (South Asia) stated that the Centrino Duo platform powering consumer laptops will allow for faster digital content uploads from the Internet, delivering up to five times the performance needed for such tasks as downloads, and twice the wireless access range.

In India, Wi-Fi networks at offices and home are set up only for those who need them. On the other hand, WiMAX implementation, initiated in Pune earlier this year, will go on to six more cities. The next-gen Wireless-N card, code-named “Kedron,” provides 802.11n capability in addition to 802.11a/b/g in Santa Rosa. But 802.11n is yet to be ratified by the IEEE; in June, the Wi-Fi alliance will start certifying products using the 802.11n standard. The implementation of this standard will therefore take some time.

With the fourth generation Santa Rosa platform, Intel has always



Security Watch

Windows Woes—Again!

The Problem

Two serious vulnerabilities have been reported, one in Internet Explorer and the other in Microsoft Office. Microsoft has rated both of them as critical.

In the first one, Internet Explorer is targeted by a remote attacker through a specially-designed Web site. When a user views the page through links from Web pages, e-mails, or IM, an arbitrary pre-existing file can be rewritten. This can then lead to remote code execution and allow full control of the system by the attacker.

The second threat—to Microsoft Office—could allow Remote Code Execution. When using vulnerable versions of Office, if a user is logged on with administrative user rights, an attacker who has successfully exploited the vulnerability could take control of the system. The attacker can create new user accounts with the same user rights as the logged-on user.

The Solution

Microsoft has released patches for these vulnerabilities; the patch for Windows XP SP2 running Internet Explorer 7 is at <http://tinyurl.com/2domm9>. The full list of patches for other versions of Internet Explorer on different Microsoft operating systems can be found at <http://tinyurl.com/2866as>. The full list of patches for the second (Office) threat can be found at <http://tinyurl.com/24rv8k>.

come up with new mobile platforms regularly since its Caramel platform in 2003. As a result, they've held a market share of about 80 per cent today over AMD's share that recently fell below 20 per cent, and AMD is also a year late with Puma vis-à-vis Intel's Santa Rosa.

At the Santa Rosa launch, some found no significant appeal to Centrino Pro as compared to its predecessor. India is yet to make available WiMAX infrastructure and operator services. Kedron's features can only be enjoyed after WiMAX is available extensively in India. Except for the upgrade in the chipset and the other new technologies, no strong point to upgrade right now is evident.

Both giants are pacing into the mobile computing space. But until Puma is launched and used, it would be baseless to compare it with Santa Rosa. But it should get interesting then.

IT'S PAYBACK TIME

Patent Infringement?

Back in November, Microsoft signed a deal with Novell for collaborative work in three technical areas, which shocked the open-source community—to see an unusual partnership between a proprietary software

development company and a Linux distribution and development company. Steve Ballmer, Microsoft CEO, on that occasion, said the agreements would help bridge the divide between proprietary software and open source applications. MS and Novell will collaborate in virtualisation, document compatibility, and management.

The key factor in this deal was the legal framework that protected Novell from patent attacks. Microsoft also promised not to assert its patents against individual, non-commercial, open-source developers and pro-Novell code developers. But that got the open-source community thinking: why should Novell be singled out for "protection," and why the move at all? According to one open source developer, if Microsoft succeeded in getting at least one Linux distro to pay royalties on free software distribution, the others would have to pay too. What they feared came to pass.


When the US Supreme Court implemented the latest copyright law for software, there were signals that software patents in terms of innovations in the programs would follow. Microsoft lagged way behind the others in terms of stocking up on software patents, yet they managed to score and now have over 5,000 software patents. Microsoft then took up the cross-licensing strategy and began licensing its patents to other companies (by asking

HOT **Immersive Gaming**



What could be better than a game that sucks you in and never lets you go? Why, the fact that you don't have to shell out millions on the hardware! The Wii does it, and we all know how well that went...

Attempted Realism **NOT**



Pretty graphics just don't cut it anymore. Sure, the visuals are a treat, but when the concept is tired...Add to that the fact that you have to break the bank to get even mid-range hardware, Solitaire or Minesweeper seem so much better.

them to pay royalties or getting access to that company's patents). Microsoft signed cross-licensing pacts with Sun, Toshiba, Siemens, and SAP.

Microsoft alleged that free open source software infringed over 235 Microsoft patents. For those infringements, Microsoft wanted free and open source software users to pay royalties.

If Microsoft were to pursue the issue of royalties, Linux and FOSS stand to be undermined, of course. Ballmer countered it as a matter of principle. In an interview later in April 2007 after the Supreme Court eased patent standards, he said, "We live in a world where we honour Intellectual Property and



One Silly Question "What technology component is most like your significant other—and why?"



"Mouse: you cannot do anything without it."
Karan Gawdi



"A Palmtop—she is always in my hand."
Prerit Singh



"Monitor—always in my eyes; he never escapes me!"
Anuragha Rao



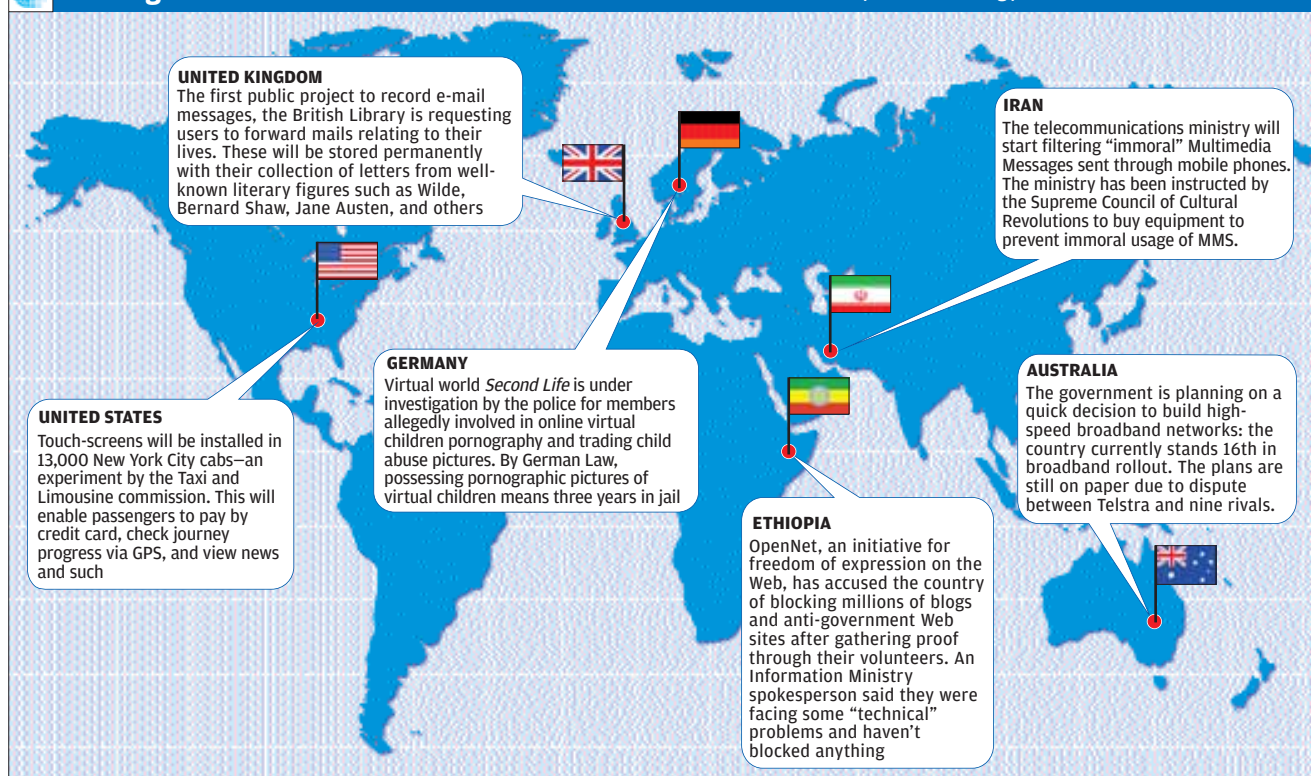
"CPU: she is the heart of my system!"
Souravh Shegaonkar



"RAM—He is always short of it"
Sudha Gupta

The Digital World

A Round-up Of Technology News From Across The Globe



support its honouring. FOSS patrons will have to adhere to the rules of the business as for the rest.”

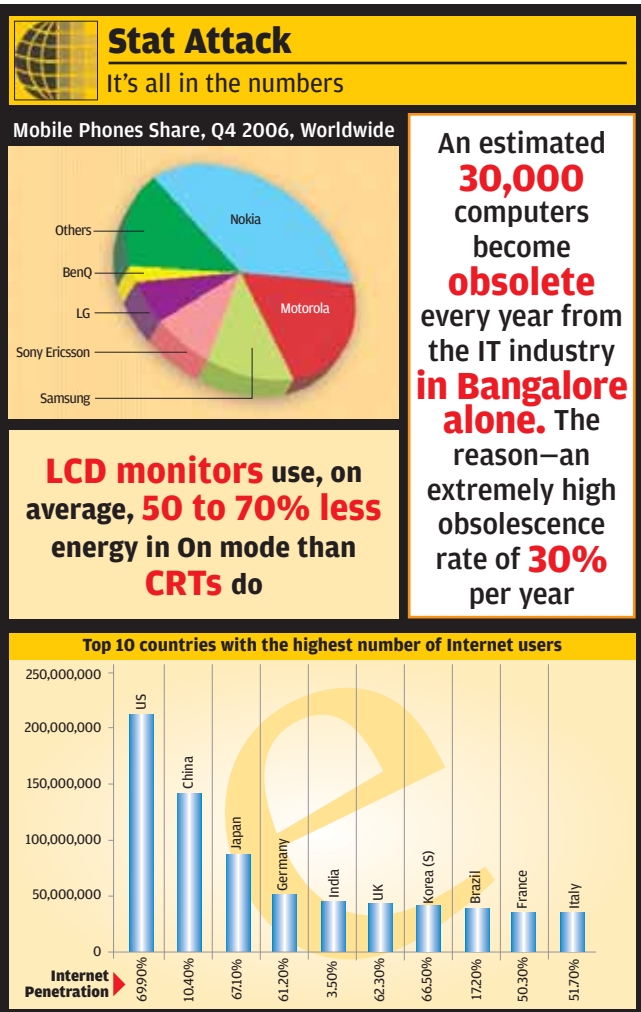
Many multi-national companies and corporates from different sectors use Linux at their Data Centres, since the operating system can be customised in accordance with their requirements. Microsoft claims that the Linux kernel itself violates 42 patents, that Linux graphical user interfaces violate 65 other patents, OpenOffice programs violate 45 patents, and that a number of free or open source programs violate an additional 68 patents.

So first, Microsoft signs a deal with Novell for collaborative development of their products in November 2006. Microsoft then announces they’ll support the Open Document Format for businesses to provide them with better interoperability with the systems they choose to deploy. And then, they demanded royalties for infringement of 235 patents from free and open source software users.

Then, in a surprise move, Microsoft e-mailed an

official statement to ZDNetUK that they would not litigate. “If we wanted to go down that road we could have done that three years ago,” said a Microsoft spokesperson. “Rather than litigate, Microsoft has spent the last three years building an intellectual property bridge that works for all parties—including open source—and the customer response has been tremendously positive. Our focus is on continuing to build bridges.”

According to John McCreesh, OpenOffice.org marketing project lead, while Microsoft may not have plans to sue, it could be using the threat of litigation to encourage corporatesto move to those open source vendors with whom they had signed licensing agreements (such as Novell, as we’ve mentioned). “Microsoft has spent time and money accumulating patents. Maybe it has started using that armoury to move corporate customers to open-source software that Microsoft approves of,” McCreesh told ZDNet UK.





Photograph Krishna Managoli

Each month *Digit* will carry a caption for a photo. Come up with something funnier, and beat the *Digit* team at their own game! Entries accepted by the 20th of this month.

Beat That!

Digit Caption

"Multi-booting Windows"

Last Month's Winner!

Ramesh Nair,
Varadharajapuram, Coimbatore-15
"Mobi Xerox"



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

Professional Rootkits

by Ric Vieler
Published by



WILEY-INDIA

BREAKTHROUGH NANOTECH

Next-gen Chips From IBM

IBM is right back into spotlight. IBM Research Lab scientists have been inspired by the *self-assembling* process pattern found in the formation of tooth enamel, seashells, and snowflakes. Applying the principles behind these, scientists there have built a next-generation computer chip using a special polymer.

IBM might not be in the microchip war but it has a legacy of its own. They have always been show-stoppers with their breakthroughs. IBM has made at least 10 significant breakthroughs in the past few years. Recall the Cell processor, integrating IBM's Power architecture. The industry-wide problem of transistor leakage in chips was solved by IBM in January 2007: a special material with superior

electrical qualities was used in the primary on/off switching portion of the transistors, which made them more power-efficient. IBM worked with AMD, Sony, and Toshiba in partnership for this development.

In February, they replaced SRAM with the speedy eDRAM (Embedded DRAM) on the 65nm (Silicon on Insulator) microchip to be able to increase the on-processor memory using about 33 per cent lesser space on the chip. In April, IBM, with their 3D chip stacking technique, showed that stacking semiconductor components vertically instead of horizontally gave performance boosts and energy efficiency.

Last month, IBM announced the breakthrough of self-assembling nanotechnology to deliver electric signals up to 33 per cent faster on microchips; 15 per cent lesser power would be drawn by the chips. This is achieved by using a special self-assembling material on the microchip.

When the silicon wafer is baked, a layer of special polymer is coated to form trillions of uniform holes to create vacuum gaps as insulators for the copper wirings on top of the chips. In this new technique, the vacuum gaps act as the insulators between the nano-scale copper wires around the chips. These gaps enable smoother flow of electric signals at lesser power consumption on the microchip. Vacuum gaps will replace the less effective and earlier-used carbon silicate glass.

John Kelly, senior vice-president of technology and Intellectual Property for IBM, mentioned that vacuum is the ultimate insulator for storage and separating electrical power. The scientists at IBM Research Labs had earlier tried to make a number of vacuum gaps on chips, but the output was mechanical-integrity-lacking, "Swiss-cheese-like" chips. IBM now claims that the self-assembling technology for microchips provides the equivalent of

two generations of Moore's Law wiring performance improvements in a single step.

Prototypes of microchips with self-assembling materials have been already made based on current designs, and IBM plans to implement this technology on its chips in 2009.

MICROHOO? YAHSOFT?

First IM Interoperability, Now What?

Microsoft and Yahoo! entered into a historic partnership when they made their IM services interoperable. With over 275 million users combined, together they formed the world's largest IM community.

Following the beta testing, the final announcement was made in mid-2006. The object of gluing their offerings

GENDER

Anashree Vs. Krish



Unless you're an incorrigible Virgo, you'll see a mess of files when you open folders on your computer. So that was our set task: sorting documents from the loads of them we had. We wanted to look at how Anashree and Krish approached the sorting "problem." Are women's computers better organised? Like a kitchen? That's where we got this idea...

BENDERS

One look at all the mess, and she sank bank in her seat. Resolve took over, and Anashree took but a couple of seconds to run through all the files in the horribly-organised folder. First folder: Songs. All songs moved into there. Looking for file types, she dumped all the music files into the aforementioned Songs folder. She went on to create folders called Applications, Games, and Video, and performed the boring but requisite task. "Documents" now contained PDF, Word, and text formats; but within them were recipes, computer-related files, and jokes, which Anashree didn't seem to have noticed. Documents were still somewhat of a mess.



Both Krish and Anashree neglected to sort files beyond the file formats: video files contained movies, trailers, and small video clips, which could have been categorised better. Also, it's easy to sort files using Arrange Icons By > Type. They hadn't even got that part. Dismal in the end.



Unlike Anashree, Krish didn't bother with reading the filenames. Glancing through file types, he created folders called Pictures, Sounds, Word Documents, Appz, and Video. This done, he started searching for the appropriate icons, and dumped them into the categories.

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and small video clips, which could have been categorised better. Also, it's easy to sort files using Arrange Icons By > Type. They hadn't even got that part. Dismal in the end.



together was "to offer their users privacy from unknown users and security from IM viruses." The interoperability would benefit users, the industry, and the business of the behemoths. No-one smelt anything else brewing back then.

Back then, preliminary talks took place between them for a merger, but resulted in nothing. At that time, Microsoft was using Yahoo!'s search and advertising system, then they started their own. This year, in the first week of May, the news was all over on the Web, first posted at

the *New York Post*: Microsoft's willingness to buy Yahoo! and Goldman Sachs' helping Microsoft with the deal.

Within a few hours, the closing trade figures for Yahoo! indicated a rise by 9.9 per cent at the end of the day after reports about the possible tie-up were published. The amount quoted by Microsoft to buy Yahoo! was roughly \$50 billion. *The Wall Street Journal* reported that the companies weren't merging, but that talks were in the early stages, and that both were looking at a strategic partnership. The talks began and stopped a few times, but

neither shared any details. Many said the news was highly speculative and a mere rumour blown out of proportion. Yet firm theories are now being formulated about the reasons for Microsoft being eager to merge with Yahoo!.

One of the reasons is the DoubleClick buyout by Google, which Microsoft wanted to include under their umbrella. Then, Google earns more from advertising than Microsoft does, and to catch up with them, Microsoft recently bought aQuantive, an online advertising and marketing firm. In terms of search engine advertising, Yahoo! scores over Microsoft, though below Google. Yahoo! released its new search advertising system, "Panama," in December 2006.

At one end, Google is aggressively beating Microsoft not only in advertising but also with their upcoming online office applications. Google is working on an online software service to compete with Microsoft Office. Yahoo!, though smaller, is also a better brand compared to MSN in terms of advertising networks.

It's crystal-clear that Microsoft needs Yahoo! more than Yahoo! needs Microsoft. If they merge, they would be an advertising behemoth. Also, Yahoo! can have the technical expertise of the software giant. Interestingly, in the nascent years of Google, Yahoo! offered to buy them at \$3 billion, but Google had other plans. Today, Google's market

value (\$147 billion) is almost four times Yahoo's market value (\$38 billion), whereas Microsoft (\$296 billion) outweighs both of them.

The details of the closed-door talks have not been available to the media thus far—neither Yahoo! nor Microsoft personnel are willing to say anything. Ballmer is definitely not pleased with Microsoft's Web presence. Yet, whether Microsoft or Yahoo! will tie-up in any way is uncertain—naturally. What's gotten us all alert is the very fact that the talks happened, even if behind closed doors.

IT'S NOW REAL-TIME

Trends And Zeitgeist Merge

For most, Google is the ultimate search destination. According to a recent study by Nielsen/NetRatings, Google accounted for 55.2 per cent of Web searches; Google remains Search King, and probably will for some time to come.

In a recent *Fast Track*, we've told you about Google Trends, which is a good analysis tool to help you find out the latest, well, trends in search terms. For example, to find out—in accordance with the trends—which is the more popular between the iPod and the Zune, enter both terms in www.google.com/trends, and you get a search volume graph for analysis. Now, if you want

Microsoft Silverlight

Microsoft's Silverlight, the alleged "Adobe Flash killer," is the new plugin platform for delivery of rich interactive media applications on the Web. It is currently available on Windows (Vista and XP) and Mac OS X (10.4.8 and later), supported by three browsers—Internet Explorer, Firefox, and Safari.

High Definition (720p) content will also get better delivery support with WMV, and Silverlight brings the SMPTE (Society of Motion Picture and Television

Engineers) VC-1 standard to the Web. Silverlight Streaming Services has also been announced, wherein users and developers can host Silverlight content. A Linux version will be developed by Mono, an open-source development platform for the .NET Framework.

Whether Silverlight will gain ground over Adobe's Flash and other solutions for delivery of rich media experience will be known only after the release of the final version.

Buzzword
of the MONTH



Lua

What is Lua?

Pronounced “loo-ah”, Lua is a new, free scripting language that’s gaining popularity with application and game developers alike.

Why is it so special?

Lua is a simple language to learn and write code in, but is still quick and efficient—a combination you rarely find with programming languages. It integrates well with C, C++ and Java, among others, so it’s very convenient for developers to use Lua to extend the features of their existing programs.

How does it work?

Much like Java, Lua code is interpreted when needed, rather than compiled like a C or C++ program. The code is translated into byte-code, which runs on Lua’s own virtual machine. It takes a load off programmers’ minds with automatic memory management, so they can focus on more important things like features. Lua code is also capable of modifying itself, making for some very flexible applications.

Who developed it?

Lua was developed at the Pontifical Catholic University of Rio de Janeiro in Brazil, and has been under the care of Tecgraf—the Computer Graphics Technology Group at the university.

When did it come on to the scene?

Lua was developed way back in 1993, and has been undergoing major improvements since.

Where can I see it in action?

An integral part of Adobe Photoshop Lightroom was written in Lua; game developers love it, too. *World of Warcraft*, for instance, uses Lua to allow users to customise the interface; a lot of the AI for *Company of Heroes* written in Lua.

to know about the most searched-for stuff on the Web, there’s the Google Zeitgeist, which gives you an account of the most searched-for terms in the weekly, monthly, and annual formats.

Now Google’s gone and done it again: come up with something we’d all appreciate. So here’s yet another search-based analysis tool for users—Google has combined Zeitgeist and Trends and named it “Hot Trends” to give you retrospective data about the search habits of Googlers.

Hot Trends will list the top 100 search trends rapidly rising, which gets refreshed based on the data of millions of search queries up to an hour before each update.

Amit Patel, a Hot Trends software engineer, said in a recent interview, “Google will help you find an explanation about what trends are interesting and why are they important enough to be listed.” Besides knowing the trends of an interesting term, one might want to try to find out the reasons behind the changes in its trends. For that, Hot Trends provides links to related sites, Google News stories, and blog searches for the trend you’re searching for. Hot Trends helps in knowing how a particular term or terms evolved over a period of time. By using Hot Trends, you can keep track of the 100 fastest-rising search trends and broader search patterns on the Web. Hot Trends is, as Google puts it, “a reflection of what people are searching for on Google today.” The all-new Hot Trends will leave out explicit language and terms, and will also have a focus on *change*—for example, even though “sex”

is still the most-searched for term, you won’t find a mention of it.

Interesting move, this—it is, as Google intended, better than the Zeitgeist, and more fun than Trends!

DOES IT HAPPEN HERE?

Sex Offenders On The Web

Social Networking is the cool thing amongst young people today, in America and elsewhere. But in the recent past, people have gotten duped, harassed, verbally assaulted, and even sexually abused by chatting through IMs in chatrooms and also via webcams. Individuals chat kinky with underage children.

Thanks to the social networking sites’ policy of not seeking any



Illustration Harsho Mohan Chatteraj

real-life identification while registering, it becomes difficult to trace the accused after a case of sexual abuse is filed. Today, sex offenders have taken to popular social networking sites like MySpace, Orkut, Xanga, Bebo, Facebook, and others. A recently-reported case was that of Judy Cajuste (14 years old) who met a 20-year-old male through MySpace, and who was later murdered.

MySpace has been facing a number of problems like identity theft, information revelation by kids below 14,

inappropriate material posting, and more. In the US, eight attorney generals of various states sent a letter to MySpace demanding the details of a “few thousand” registered sex offenders. MySpace recently agreed to release their database of sex offenders’ profiles.

In the virtual world called *Second Life*, there have been cases of child pornography: people have trading images. A user having child porn images will post a deal and sell them to anyone who seeks them.

Can such a situation be faced in India too? You’d think not, but it could well be. Be it cyber cafe, school, college, or home, young people are increasingly taking to social networking sites.

A case was reported about a Delhi girl wherein a spurned lover posted obscene messages on Orkut terming her a “Sex Teacher” along with her contact details. In Mumbai, a rejected lover in real life made a fake profile of the girl who spurned him, and posted messages on Orkut using pictures of the girl.

As more people are joining the online space, the potential of them being abused have increased. India-based networking sites like Yaari, Minglebox, Fropper, Rediff Connexions, and others have cropped up recently. Many have posted personal details in their public profiles on such sites. What the kids, teens, and even adults are doing is providing an open invitation to crank calls and obscene demands by offenders.

Spurned lovers find a place to vent at such sites, while predators look for sexual innuendos at such networking sites. Many have forgotten that their “scraps” are accessible by anyone. It’s not a pretty picture—and it’s not something we’d have foreseen even five years ago. ☒

THE SIXTH SENSE

Here, in Six categories, Digit uses its Sixth Sense and plays soothsayer. We extrapolate from the current state of things and predict what will happen in tech in the years to come.

To put things in authoritative perspective, we also have columns from "high-up" people at AMD, Google, Intel, Samsung, and Yahoo!—our guest columnists give more than two cents' worth of what they think the future holds in their respective fields.

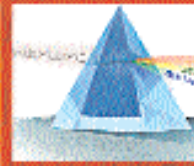
Predictions are sometimes bang on, and they sometimes flop. You will, sometime, remember what we told you here—sometimes you'll praise us for our foresight, and you'll sometimes go, "That's not quite how it's turned out." It's an occupational hazard... but we expect that more often than not, we'll hit the spot!

BROADBAND COMMUNICATION

The all-important human need—here's about where we see it headed



DIGITAL
DIVIDE



TRANSLATION



PROTOCOLS



India Unplugged

Let's hack the definitions

Ram Mohan Rao

Some of us don't read the newspapers, and for such folks, here's breaking news: our former telecom and IT minister Dayanidhi Maran recently said free broadband in India could happen in just two years' time. This year (2007) happens to have been declared the year of broadband (when and by whom we don't know), so this is an apt time for the announcement.

So who's going to fund this? Well, there happens to be something called the Universal Service Obligation Fund (USOF), to which all telecom operators contribute 5 per cent of their revenues every year. The government plans to use what's unused in that bank of money. In addition, traffic

Ventures Ltd. He said Fibre To The Home (FTTH) holds the most potential as the technology for broadband services. Which means we'll probably jump straight to it, bypassing ADSL2, ADSL2+, and all those other, slow technologies. (FTTH means no copper anywhere, and fibre all the way.) A fully-fibre-connected India by, oh, 2012? It's only the minor matter of an announcement.

Non-Scandinavian Europe wants Sweden-type connections. Now, in these countries, we see a strange convention: broadband definitions, instead of starting with a "K", start with "M" and "G". Something has been lost in translation: in music, the Germans use "H" for "B", for example. All those foreign-language speakers are a confused lot.

Why do we need more bandwidth than we already have? HD streaming, for one. All it needs is some reshuffling of definitions: "HD" can stand for "Hard to Define." So soon, we'll have HD content streamed over our 28.8 Kbps pipes—it'll be grainy, so you won't be able to define it.

"Economic development" is often cited as the reason for the need for broadband, like Mr Maran did regarding free broadband in India. Now, since India is a *developing* country, just add 2 and 2, and you'll realise what he means: that we're developing broadband. Soon, we'll see 14.4 Kbps connections fuelling our economic growth.

Continuing on the everything-on-the-Internet theme of another section in this issue, an interesting insight comes from Tauber: "Future bandwidth demand will be driven by more specialised, personalised content. Multi-channel TV has

offered a glimpse of this... This specialisation also drives users' aspirations to interact with, or even create, content. The natural evolution of TV-type services in the ultrahigh-speed broadband world will eventually see subscribers managing and developing their own content, with all users able to distribute high-quality video."

It's easy to see how misguided Mr Tauber is: what will happen is that home-made pornography will proliferate! Immoral Westerners corrupting our culture! No Internet scandals please, we're Indian! Keep your M and G away—we're content with our 2.2 Kbps connections!

If you think we're kidding about broadband definitions, allow us to inform you that this writer once had a conversation with customer service—when the Net connection seemed a bit iffy—at a leading Indian ISP, which calls Family Packs "up to 256 Kbps" broadband: "My download speeds are low. It doesn't cross 130 Kbps. Is that broadband, for God's sake?" "Yes." "But sometimes it comes to 50 Kbps! Is that broadband?" "Yes." "Are you saying anything is broadband?" "Sir, I wish to inform you that..." Slam.

Let's cut to the chase. Call 0.0 Kbps broadband, make an announcement, and one large, happy family we'll be of wireless broadband customers. (Just unplug the wire) ☒

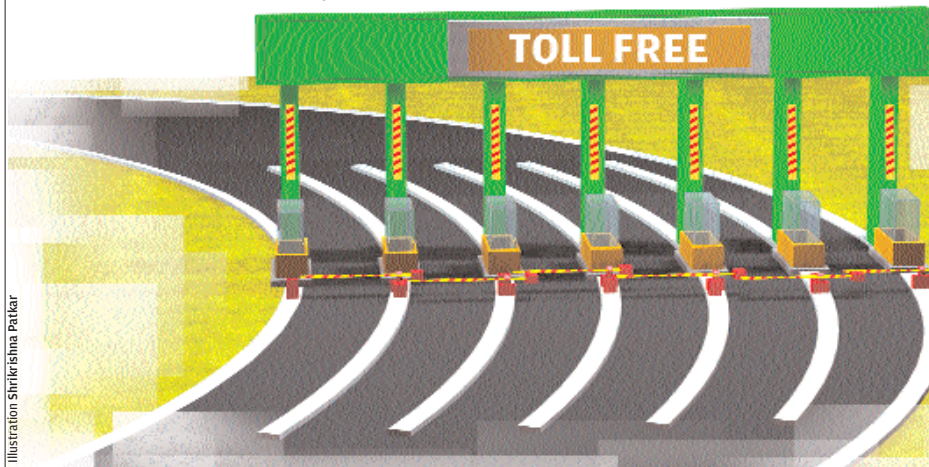


Illustration: Shrikishna Patkar

within the country will be routed within the country, courtesy the National Internet eXchange of India (www.nixi.in).

Then came the news about a week later of license fees for ISPs going up, and Internet Service Providers Association of India President, Rajesh Chharia has said that the licence fees will affect the end-user, that the cost of broadband services will increase by 6 to 24 per cent.

That, then, is the future of broadband in India: announcement will follow announcement, and soon, we'll see novel ways and means of getting around the problem. Want broadband penetration to increase? Call 56 Kbps broadband. So, soon, we'll all have broadband connections.

In lands where announcements aren't taken very seriously, and things just get done without all the fun fanfare and partying, the future lies in FTTH (Fibre To The Home), as underlined by Hartwig Tauber, president of the FTTH Council Europe. All fibre deployments will migrate towards and eventually arrive at FTTH. "It is the end-game reference technology for broadband, owing to its near unlimited capacity and non-degrading reliability..." FTTH? Believe it! Recall that when talking about VDSL (Very high-bandwidth DSL) in a past issue of *Digit*, we interviewed Jagbir Singh, then group CTO, Infotel, Bharti Tele-

Rags And Riches

Is there, now, a real definition for “Digital Divide”?

So here's the boring, sad part, about the haves and the have-nots, about those in need, those you don't care about... but wait; we can make it more interesting than that. Let's look at what “The Digital Divide” means, leaving ourselves open to fair interpretation.

Here's a definition from an Australian government Web site: it is “the lack of access to information and communications technologies by segments of the community. The digital divide is a generic term used to describe this lack of access due to linguistic, economic, educational, social and geographic reasons.”

The Divide itself knows no barriers. From the Web site of San Diego State University: “You don't have to look far from SDSU, where everything from dorms to dining halls have high-speed Web access, to see the proximity and depth of the Digital Divide. In nearby City Heights, barely two miles from campus, only 20 per cent of residents are connected to the Internet.”

Let's actually ask: does something we can call the Divide exist? We're supposed to be on the good side of it, those creating and reading this magazine. But install certain P2P clients and they'll ask you to select your speed: “Slow (below 1 Mbps) or Fast (above 1 Mbps).” There it hits you in the face: you're not that well off after all.

We're pushing at the point of gradation. We're saying there's no strict this-side-and-that-side. It's all around us—like poverty, and all those things like envy and philanthropy that poverty touches at. Some are richer, some are poorer, but there is a sweet spot somewhere, which we can define thus: if Information and Communication Technology has not touched someone's life sufficiently—the way it has touched us and insofar as we are the better for it—that someone is on the other side of the Divide.

Adopting the poverty metaphor, the Divide is like poverty in some ways, and is not in some other ways. How is it like poverty? Well, for one, philanthropists and NGOs are called upon to bridge it. Governments are urged to work in that direction. Also think local agencies and governments, public/private partnerships, and worldwide initiatives (like Microsoft's \$3 software-for-students). Then, people on the happy side just don't care enough. Fourth, there's the direct connection with poverty: some people still cannot afford a cell phone. And then, money cannot be blindly thrown at the problem—which doesn't happen to be well-defined in the first place—you can't donate Rs 100 to “bridge the Digital Divide in India,” on any Web site.

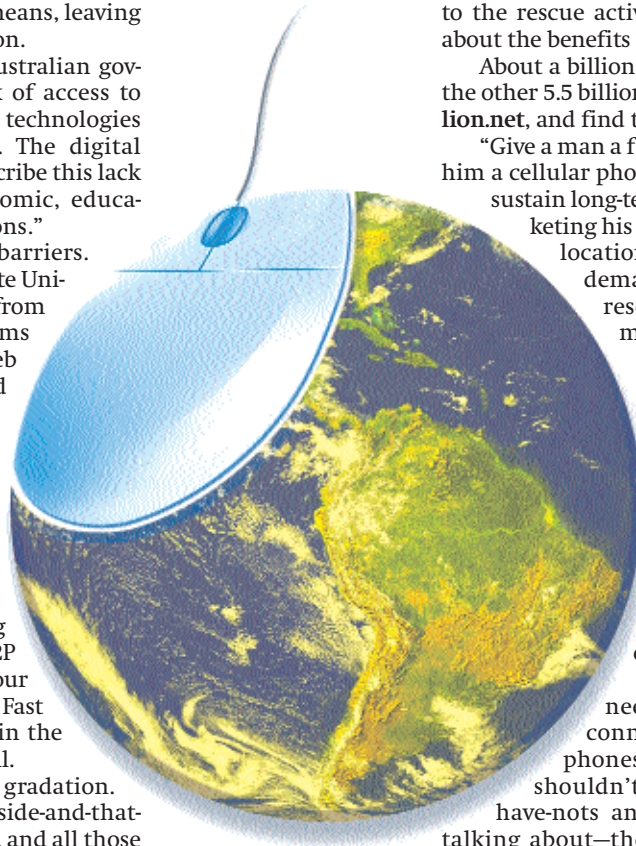


Illustration Chaitanya Surpur

Amongst the departures from the poverty metaphor: there's no vicious cycle, as in poor-beget-poor-who'll-remain-poor. Second, in the spirit of the network itself, connectivity can spread once the push is given. Third, education can come to the rescue actively and quickly: teach them about the benefits of ICT, and they'll do the rest.

About a billion are connected to the Net, and the other 5.5 billion aren't. So we head to nextbillion.net, and find this:

“Give a man a fish and feed him for a day. Sell him a cellular phone and give him the ability to sustain long-term income by efficiently marketing his fish at the highest price in the location where they are in greatest demand, simultaneously saving resources by ensuring no fish markets get oversaturated.”

This is literal: in a real-world case study, when cell phones came to some Kerala fishermen, they were “able to call associates while at sea to determine which market they should head to, bringing local consumer prices for fish to a lower equilibrium over time... and bringing waste down to virtually zero.”

Those fishermen don't need a desktop with a 2 Mbps connection. For them, those cell phones have done it, and they shouldn't be counted amongst the have-nots any more. This is what we're talking about—the need is to ICT-enable each person to the extent that he is sufficiently benefited. Seen this way, the Divide doesn't exist in the manner it's been defined.

Such steps are being taken as you read, in places as diverse as rural America and urban Nigeria. The good thing is, “wiredness” spreads quickly: you wire up one village, and ten others see how nice it is to be wired. That's quite the future: local initiatives like the above, and global ones like the OLPC (one laptop per child) programme, working towards universal connectivity that can only be asymptotically approached.

No, is that quite it? We'll contradict ourselves just that wee bit: Africans accounted for 1 per cent of the Internet population in 2001. Looking at trends—such as Chinese folks getting online more and more—Africans will probably account for, oh, 3 per cent in 2010. And worse, if in 2010 you're talking about real broadband access, Africans will still account for 1 per cent of world broadband connections. The status quo will be maintained—at least for a good while to come.

In the end, it is indeed like money. Some will have, some will not. Some will boast, some will envy. Some will bask, some will hanker. ☐

Tongue-Tied

How long before all the world communicates like there were just one language?

Man proposed, and God didn't like it: ever since the Tower of Babel, we've been divided by language. Naturally, in the infinitely clichéd "information age," we throw technology at the problem. Computers (notably those of the Google persuasion) have developed machine translation (MT) capabilities, and before you can say a "Hola!", you hear a "Hello." MT has been around much longer than you might think; it's gotten a bit better with time, but note the "bit." Primitive translators would try the word-by-word approach, which didn't go down too well with most people; we now have MT systems that look at grammar and context. Formerly only valued by officious UN officials, the average online person—there's one for five who aren't online—has come to expect Google's "translate this page" link to just work. As you know, it doesn't—at least, not too well.

Who waits any more in these days of instant tech? Online translators' MT engines are expected to do their job on-the-fly, and that they do. (Your mileage will vary.) There's now a WordPress translator plugin you can embed in your Web page to, well, translate. Find out more at <http://tinyurl.com/26pf2a>. "WordPress Translator Plugin of The Future: Translation in 32 languages," it says. Looks to us like an ambitious project—we'll track it. Already extant are mobile applications such as Mobile Translator (EC Edition)—a Symbian application that translates a set number of phrases, and Pocket PROMT 5.0 for Pocket PC and Windows Mobile 5.0. This one costs just \$60, so it can't be too good, we think...

The future as we see it now—with imperfect use of imperfect tools—is of blogs and sites having "language-select" bars embedded; these could become ubiquitous. Take a look at <http://tinyurl.com/23afr3>. It features Applied Language Solutions' translation solution: a translation bar for your Web site.

Translation accuracy depends on the number of words and phrases in the dictionary. Google (yet again!) has a vast quantity of translated information they've collated for analysis, and the dic-

tionary is being added to every day. Again, we'd hedge our bets on Google for coming up with something that'll help us make sense of all those Chinese pages. Think of all the information people on beyond the language divide are missing out on!

Speech-to-speech on-the-fly translation is, naturally, the holy grail. IBM has a project

called MASTOR, for bi-directional English to Mandarin speech-to-speech. "The tight coupling of speech recognition and understanding effectively mitigates the effects of speech recognition errors and non-grammatical inputs...", they claim.

Then there's the International Center for Advanced Communication Technologies (interACT). InterACT director Alex Waibel demonstrated in 2006 "domain-independent, speech-to-speech translation in a lecture, which was simultaneously translated from English to Spanish to German." Quoting Waibel: "In the future, such transducers could be implanted, enabling a speaker to produce any language at will." We think it wouldn't be far-fetched to expect such systems on phones—when it's perfected, that is. (Read: "a long time into the future").

Integrated Wave Technologies has developed a handheld device for US Marines in Iraq, into which a soldier can speak in English—and the device translates it into Iraqi speech or 15 other languages. This one, too, is bi-directional.

It's important to note that translation is a difficult proposition. Like we've mentioned in a different space in this issue, we need better neural networks for better AI, and where is better AI to come from? The NLP (Natural Language Processing) problem is *hard*. It could well be that as applications develop, we might learn to live with their idiosyncrasies. On the Web, people might change their own usage of language—reducing the use of idioms, for example.

We don't see anything like a universal Web language emerging—something like Esperanto. We'll also tell you that, insofar as we're looking into the future, there's not going to be a breakthrough soon. But the language toolbars will be there, for sure, as we see it—and they'll get better and better, slowly, little steps at a time. It's going to be quite a wait, but it'll be worth it. ☒



Illustration: Shrikrishna Patkar



When you put your customer's call on hold,
he can put your **order on hold.**



AVAYA
GLOBAL CONNECT
India's Leading Telecommunication Company

We Want Wire-free

What will deliver?

Jayesh Limaye

Sometimes, it just happens that staying behind the technology of the times allows one to skip intermediate technologies and move on to newer ones—at least, that seems to be the case with India. On the cellular communication front, India has not yet moved to 3G from its current 2.5G, and will probably skip it altogether to embrace the emerging 4G. This is seen to be more feasible and 1.5 times more cost-effective, according to Motorola CTO Padmasree Warrior. Though no plans have been announced thus far, we can expect this to happen within the next four years.

The Wireless World Research Forum defines 4G as an Internet technology that combines technologies such as Wi-Fi and WiMAX to enable the lowest-cost wireless network possible. This fourth generation mobile communication protocol aims at delivering wireless broadband access, Multimedia Messaging Service, video chat, mobile TV, high-definition TV content, and DVB (the Digital Video Broadcast standard), in addition to the usual voice services on mobile phones.

Meanwhile, 3G doesn't seem to be as dead as it's been made out to be. Universal Mobile Telecommunications System (UMTS) is a 3G technology that combines 3G and Wi-Fi: it is a high-bandwidth technology that enables CDMA mobile users to experience applications such as videoconferencing, live TV, and Internet connectivity at theoretical speeds of up to 14 Mbps. Practical speeds are found to be up to 3.6 Mbps on compatible handsets, though. Our government is evaluating the process of spectrum allocation for this service, and commercial launch is expected in 2008. This will usher in the era of video phones—read: video chat over your phone. Interesting enough?

4G will use a technology called Ultra Mobile Broadband (UMB), which will use larger bandwidth (greater than that offered by 3G) to deliver a host of Internet and high-bandwidth applications in addition to delivering higher-quality voice services. UMB will help eliminate the disadvantages of CDMA: it will support different and mixed cell sizes (thus allowing more flexibility to operators, who will now be able to create cells according to the number of mobile subscribers) and variable bandwidth sizes that will eliminate the limits of the total bandwidth available to handsets.

In the Internet segment, WiMAX (the 802.16 wireless standard) could well be the next big thing on the wireless communications scene. It offers a considerably longer

range compared to Wi-Fi, and is suitable for wireless broadband. The advantages over traditional wired connections are clear—no wired infrastructure required, low cost of maintenance, and low downtimes—though the initial investment is steeper than that of wired networks. WiMAX will have a wider reach and is well-suited to cover semi-urban and rural India.

WiMAX has had its problems in this country, because the globally-used band of 2.5 GHz–2.7 GHz for WiMAX has been pre-allocated to satellite-based mobile and broadcast transmissions for when national emergencies and natural disasters happen. The government has therefore allocated the remaining bands of 2.3–2.4 GHz to ISPs, and they have to tune their 2.5 GHz certified equipment to this lower bandwidth. This means loss of efficiency. The government has been reluctant to give the higher bands to the ISPs, as these are in use for military purposes. The current government, however, has acted favourably, and slowly but surely, India's highly-regulated wireless spectrum will be opened up.

Intel has spearheaded the “Unwire Pune” programme, which will utilise WiMAX and Wi-Fi to provide high-speed wireless Internet on laptops and PDAs. The chip giant has taken the responsibility of deploying the infrastructure, project management, and the economic management of the entire project, which is still in the pilot phase. The rest of the country might well follow suit—as it was in the case of cable internet—and WiMAX could well become the de facto broadband protocol in India.

Motorola has put forth the concept of Seamless Mobility. This will help extend your connectivity through a host of standards such as Wi-Fi, WiMAX, wireless broadband, and more. One may be attending a video-teleconference at the local WLAN at office, and then move to the traditional cellular environment while driving home—and switch to the fixed network at his home; this will happen seamlessly without any intervention on one's part and without a break in the connection. A prototype has already been demonstrated, but what's required is co-operation between the different agencies such as ISPs and cellular companies, not to mention clearance from the government.

Motorola has already made corporate commitments worldwide and invests a whopping \$3.1 billion annually in this project. No time-frame has been defined for Seamless Mobility, but we're hoping it will happen sooner than later.

So we've told you about what's to come, but you knew it all along—better connectivity, higher speeds, and what-not! What else can possibly happen? ☒

THE SIXTH SENSE

THE WEB

Ever-changing,
never dull:
the Web is our
window to the world.
Here's about the
next few years

FUTURE OF
SEARCH



SOCIAL
NETWORKING



WEB2.0



SHIFT OF
COMPUTING

PERSONALIZATION



All-Empowering Search

We live and breathe search—the Internet would be pretty much useless without it. Whither headed?

Ram Mohan Rao

“**O**ur two primal urges—to know the world and have the world know us—will flower as never before.” That’s Quentin Hardy, Silicon Valley bureau chief of *Forbes* magazine. As a prediction for the coming state of the Web, we must agree.

Information is increasing at a pace we as a race just cannot handle. The search engines are here to help. They will be there, in better avatars, as the nature of content changes—witness how non-textual information is burgeoning. Think of image search, audio search, video search: our current text-box-entry interface is quite like the DOS prompt. So visualise, with all the imagination you can muster, what would happen if a Windows or Mac-like evolution were to happen—hum a tune and get your song. Upload an image and get similar ones, Riya-style. (www.riya.com; “Find an item you like and **Like.com** will show you results that are visually similar.”) Speak out a video description and get your results...

Picking up on that last, few know about Google Voice Search—it’s been here for a year or so! You dial a number, speak out your search terms, wait a while, click a link, and there you go—your search results. Since there’s only one number to call, the system’s capacity is very limited—but this underlines the idea that in the future, we won’t necessarily be sitting at our Desktops and typing out queries. On the train, someone says, “So who won that match?” Out comes the handset, you say out “Australia England match,” and—the default might be “I’m feeling lucky”—you just see the headline you need to.

Jeremy Zawodny, “Technical Yahoo!”, said a while ago about the future of search: “Our local search is really just the beginning. (We need to) discern intent. When you search for a particular set of keywords, what’s your goal? Are you doing research? Looking to buy something? Trying to find a long lost friend? As search engines begin to understand our goals and motivations, they’ll be able to custom tailor the results...”

Yahoo!’s mysearch.yahoo.com is something like Google Personalized Search (more on that later), and the select-countries-only local.yahoo.com and its variants are indeed beginnings in the direction of more relevant results. As for intent, it gets closer to the core of the issue, and is quite an Artificial Intelligence (AI) problem; a stop-gap solution could be to explicitly ask the searcher, “What are you searching for?” followed by a list of possibilities as above. Well, not “long-lost friend,” but something like “people,” “places,” “research,” “Web entertainment,” and so on.

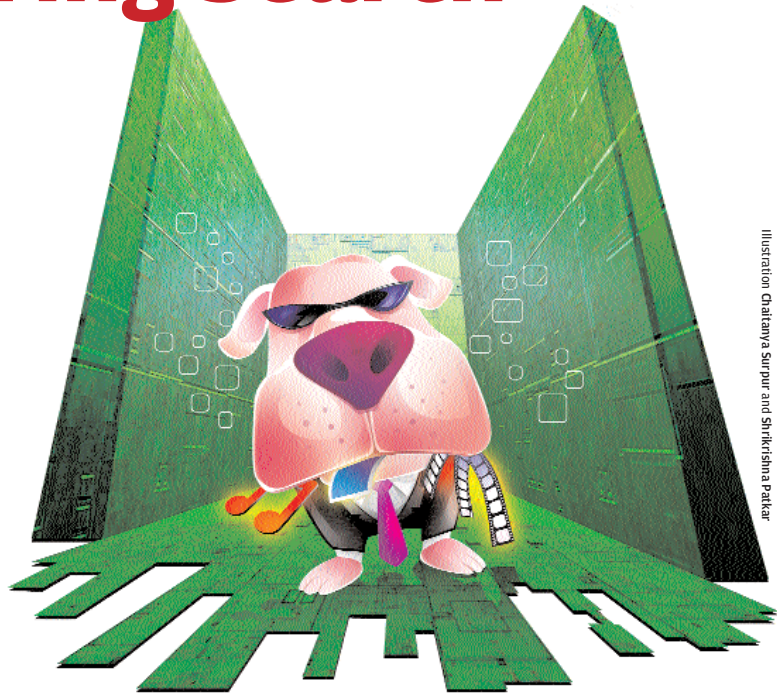


Illustration: Chaitanya Surpur and Shrikishna Patkar

Dial a number, speak out your search terms, wait a while, click a link, and there you go—your search results

Disambiguation is as close to “intent” as we’ve gotten. We recall that about a year ago, Google began its—what’s it called now—“Refine results for:” thing. So you type in a drug name, and you get a list of more specific searches to choose from: “Drug uses,” “Side effects,” and many more. The kind of searches this is done for is only a few—like for drugs, like for city names. But we see this number increasing. Think of Wikipedia: when you type in a search word that is used in two or more contexts—like “Opera”—you come to a disambiguation page. How long before MSN, Yahoo!, and Google start off with their versions of context disambiguation?

As far as the raw algorithms go, they’re getting better in small, important steps. Note the “NEAR” operator we used in AltaVista: “NEAR” is the default in Google, as you’ve doubtless noticed. But the urgent need is better Machine Learning, better AI. We don’t see that happening anytime in the near future. But a lot can be done with what’s already been developed: Riya (though still abysmal in terms of volume of results) doesn’t depend on tags. That’s one of the mantras for search of the future: *don’t depend on tags*. Auto-tag instead. Use pattern recognition, face recognition.

From AI to Natural Intelligence: Yahoo! bought up <http://delicio.us/> in part to include bookmarked sites as a ranking criterion in search results. And then, what about Digg? Will more Diggings mean higher rankings? In short, search engines actively using already-done *human activity* could very well happen.

Talking about human activity, people just don’t tag things: how many times have you provided a proper summary for your just-done Word document? How long ago did you give a picture

“As Google’s Desktop applications land on more and more hard drives, I wouldn’t be surprised if we saw Google get into the P2P space”

—Stephen Bryant,
Ziff-Davis

a meaningful name? We’re predicting that the awareness of the need for proper tagging—as in a collective awareness of the Internet community—will increase, which will, in turn, increase search relevancy.

Which brings us to Google Base: did you know there’s base.google.com? At that page, you sign in, and just upload content. Any content. You need to tag it first. People will then be able to find your stuff. Yes, content itself is getting more user-driven, but that’s a topic for another tale...

Thinking about Google Base, it struck us: what about a P2P Google? A Google that searched for stuff all over willing people’s computers? Imagine our dismay when we Googled “P2P Google” and discovered someone had beaten us to the idea! The culprit was Ziff-Davis’ Stephen Bryant, in December 2005: “And as Google’s Desktop applications land on more and more hard drives, I wouldn’t be surprised if we saw Google get into the P2P space. Imagine searching, not only the Web, but also the information that other people make public on their hard drives.”

No talk of search can skip out on advertising. Some of you use Adblock in Firefox. Some of us use a script that even blocks Google ads. Now, Milind Mody, CEO of eBrandz, a leading Indian SEO, has this to say: “If Google realises a lot of

people are blocking their ads, they will detect usage of such scripts and ban those IPs from getting search results.” Then, Mody says, there will likely be an increased tendency to highlight paid search results. He also sees search engine spam reducing, with Google and others now taking longer to rank a site after it’s been indexed. In sum, expect a cleaner Google.

Personalised Search is what will change the face of our favourite Internet activity the most. We don’t understand why more people don’t actually use the Personalisation feature in Google. If you use it, you’ll get more relevant results in future searches. Don’t want the Internet to know what you’ve been searching for? Why, what *really* is your concern that some server somewhere in faraway California knows what you do online? Sun’s Scott McNealy said it the way it is: “You already have zero privacy. Get over it.”

Have we been unfair in mostly talking Google all this while? Well, are you being unfair when you say you just Xeroxed a document?

Google wants to index “all the world’s information” and make it available, as you know. Now CEO Eric Schmidt has said, on record, about this: “It is important that we not be stopped.”

Yes, it’s important. We want. Please give. What else can we say? ☒

For My Eyes Only

The Web will eventually be what you want it to be—yours. You’ll see a customised version served just for you

The problem: too much information. The answer: personalisation. We’re envisioning a Web where, once you sign in to your Desktop or mobile device, you’re recognised for what you are as an online entity. And you get *only* what you need, what you want, what you like. Like for downloads: suppose you’re only looking for freeware—why should the Web show you non-freeware? You’ll stop seeing unnecessary ads like “check your credit score” (which applies only to Americans)—and those much-hated ads for \$10 broadband! Already, sites are recognising your IP, and are sending out targeted ads—and we’re talking targeted content, too.

We remember a concept of long ago, called OneName, where you put in *all* your details, and OneName-supporting sites would recognise you. That was in 1999, and it goes to show that “recognising” one all over the Web is hardly a tough proposition.

Personalised newsletters are a simple implementation of the “learning about you” concept: Findory.com, for example, will send you a news e-mail each day containing only news you’re likely to read, based on what you read in the past.



Photograph sandeep Patil
Imaging Chaitanya Surpur
Courtesy Fine Dine Restaurant, Mumbai

In the future, each time you browse, you'll be writing to the Web—without your explicit knowledge

Think sites storing your information, sharing your information, so as to display only your stuff. This already happens on sites like Amazon: you see recommendations based on past purchases, and even based on what you browsed for the last time you visited. Now what about even personal Web sites and blogs caching your preferences?

Now head to <http://tinyurl.com/244he3>, and what you'll see is iGoogle—where you personalise pages for others. Examples: "You love your pics. So will your loved ones. Share a series of your favorite photos with friends and family." "Personal List: With this gadget you can publish your own personal "Top Ten" or simply send a set of chores to your sweetie."

These things you send to your sweetie (or anyone else), and his or her Google page gets personalised. Then, consider that communities might make pages for themselves. Think "weGoogle"—your own community creating your page for you.

Now take a look at GoogleAlert (not affiliated with Google), at www.googlealert.com. The site "Tracks Your interests on the Web." "You can use Google Alert to keep track of anything, including information regarding yourself, your work, or your interests."

The idea? We realised the possibility and potential of an app that crawls the Web as you browse, picking up your interactions, and brings up a new "Default Page" for you after it's gathered enough. If it did this constantly, what you'd have is your Personalised Internet always on your browser. Think of it this way: Web 2.0 is sometimes called the read-write Web. What we're saying here is that in the future, each time you browse, you'll

be writing to the Web—without your explicit knowledge—and the next time you read it, it'll be different; it'll be closer to what you want.

We tried to see if someone was actually working in that direction. Turns out lots of people are. The idea is "Reconnaissance Agents": here's from <http://tinyurl.com/2ep5dy>. "Every click on a Web link is a leap of faith. Until you actually see what is behind the link, you don't know whether it will lead to the reward of another interesting page, or to the disappointment of a 'junk' page. But what if you had an assistant that was always looking ahead of you—clicking on the Web links and checking out the page behind the link before you got to it? An assistant that, like a good secretary, had a good idea of what you might like. The assistant could warn you if the page was irrelevant or alert you if that link or some other link particularly merited your attention. (Such agents) will soon become as common as search engines... They are called reconnaissance agents."

Henry Lieberman of MIT's Media Laboratory speaks of Letizia, "an agent that assists Web browsing." As you use a regular browser, the agent tracks your behaviour (the write-to-the-Web we were talking about) and tries to divine what you might like to look at by exploring links from the current link—looking at many links simultaneously, all by itself.

What we'll need to track is whether reconnaissance agents do become as popular as search engines, as Lieberman claims... if and when they do, and if sites exchange information about you like we said, we'll be well on our way to each of us seeing an iWeb. ☐

In It All, Together

Social networking is a phenomenon, nothing short of that. What could it possibly evolve into?



It is believed in some circles that social networking will surpass porn as the most-done activity on the Web. It has also been suggested that Yahoo! and other portals may have to eventually team with MySpace and other similar sites to retain mindshare. The numbers are important: registered Facebook users went from about 6 million in January 2006 to about 13 million in January 2007. Then make that 15 million in March! Then, MySpace membership numbers are growing by about 5 million a month. Sure, many of these accounts are inactive, but the figures are large.

We're talking perhaps the biggest online phenomenon we've seen in many years—the whole "community" thing. Communities might direct the content people access... and traditional media will be the weaker for it. A near-perfect example is Digg: it's almost reached search engine status in some areas. Need technology news? Head to Digg, and sort by Digs. Less authority, more democracy.

Content itself will be increasingly created socially—think more blogs putting up “contribute” buttons. The comments on boards and forums are significant... comments sometimes span pages, and might be even more insightful than the original article.

We’re also seeing niche communities, like those at No.1 Industries, a company that has created *targeted* social networking sites. No.1 Artist, for example, focuses on providing a social network for artists so they can interact with other artists and other such things. It’s just *better* for an artist to be in such a community than, for example, MySpace. Expect to see more of these.

So will we just keep scrapping each other on Orkut, collaborating on documents, and such?

Think about the disparity between who we are online and offline; we all have a persona we like to project online. We have our nicks, our avatars. Now we aren’t isolated in the real world, and we just needn’t be in the online world... we’ll be doing things together, but behind our online personas. Doing what together? Browsing, for one; sharing experiences, for another; sharing bookmarks, for a third. Our point is, there’s no limit. What do you do with your friends *offline*? And isn’t there something online for each thing you can do offline anyway?

A blogger called Joe Marchese had this to say in a recent post: “It’s easy to see a not-too-distant future where everyone has an account for online projection of self, a means by which to edit that projection, and a dashboard for aggregating and organising other social content.” And then: “Picture all the most useful functionality of the Web: the Diggs, the RSS feeds, video, picture and file sharing, search, etc. all blending together through social-network-like interfaces.”

But on another note, is this coming—regulations? So people won’t be able to fake their identities? Have you noticed Amazon’s “Real Name” feature? How that works is, when you want to write reviews and submit photos to Amazon, you elect to identify yourself with your real name. (This is verified by way of the credit card on file.) Could social networks go the same way—requiring you to be who you “really” are? Speculation, but not speculation gone wild. Our take on this is that *some* networks—such as business networks—could go this way, and for good reason.

In the end, what we see is nothing less than the social network becoming the interface between self and world. On a “local” social network, you might well meet more people in six months than you did in the 10 years.

“Outside’s overrated,” as Justin Frankel put it. ☒

We aren’t isolated in the real world, and we just needn’t be in the online world

The Network Is...

...the computer. Someone said that a long time ago, and that vision is inching ever closer to fruition

We like blogs, and some are worth quoting. (That’s why we have a “Blog-watch” every month.) Here’s from N F Saunders of the University of Queensland: “Six months ago, I was ‘desktop man.’ I preferred my software locally installed. I wanted complete control of my machine, my desktop applications, my files. All that has changed and the keyword here is ‘synchronisation.’ Or rather, no need for synchronisation. Like many people I use a work computer and a machine at home... If like me you’re a bit slow and don’t get it yet, here’s the soundbite: *everything is in the one place.*”

You can guess the rest; Saunders is typical of those who have moved their apps to online. You can collaborate on stuff by just sending people a URL; you don’t need to bother with synchronisation; hell, you don’t even need to buy expensive software with features you don’t need. The great thing is, these online applications—Google’s apps come to mind first—are getting better.

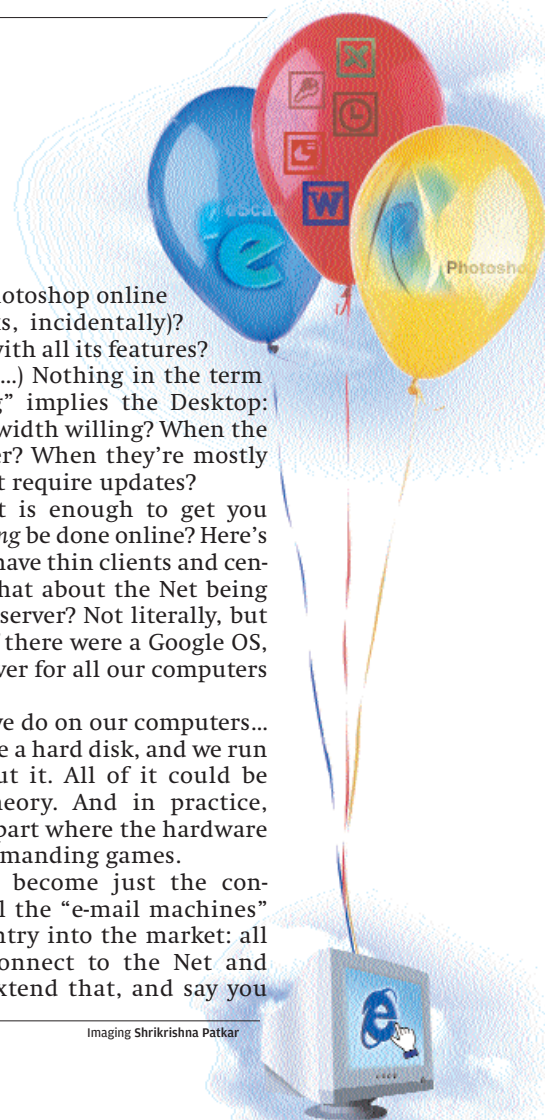
Web apps are not confined to tasks such as word processing: witness Flex, an online compiler. We’re close to the Death of the Desktop. If we can have online compilers, what is to stop

us from imagining Photoshop online (already in the works, incidentally)? The entire program, with all its features? (Well, paid, of course...) Nothing in the term “personal computing” implies the Desktop: why not online, bandwidth willing? When the UIs are actually better? When they’re mostly free? When they don’t require updates?

That one thought is enough to get you thinking—will *everything* be done online? Here’s a simple thought: we have thin clients and centralised servers—so what about the Net being one large, all-serving server? Not literally, but come to think of it, if there were a Google OS, couldn’t that be a server for all our computers as thin clients?

So let’s see what we do on our computers... we have an OS, we have a hard disk, and we run software. That’s about it. All of it could be shifted online in theory. And in practice, what’s left out is the part where the hardware is important—as in demanding games.

The desktop will become just the connecting device. Recall the “e-mail machines” that once made an entry into the market: all you could do was connect to the Net and retrieve mail. Now extend that, and say you



Imaging Shrikrishna Patkar

just carry a basic OS on a thumb drive and plug it into any of these standardised “connecting devices.” And even this is only needed assuming you don’t have an Internet OS! And data online: why not? Free for basic use, paid for heavy use.

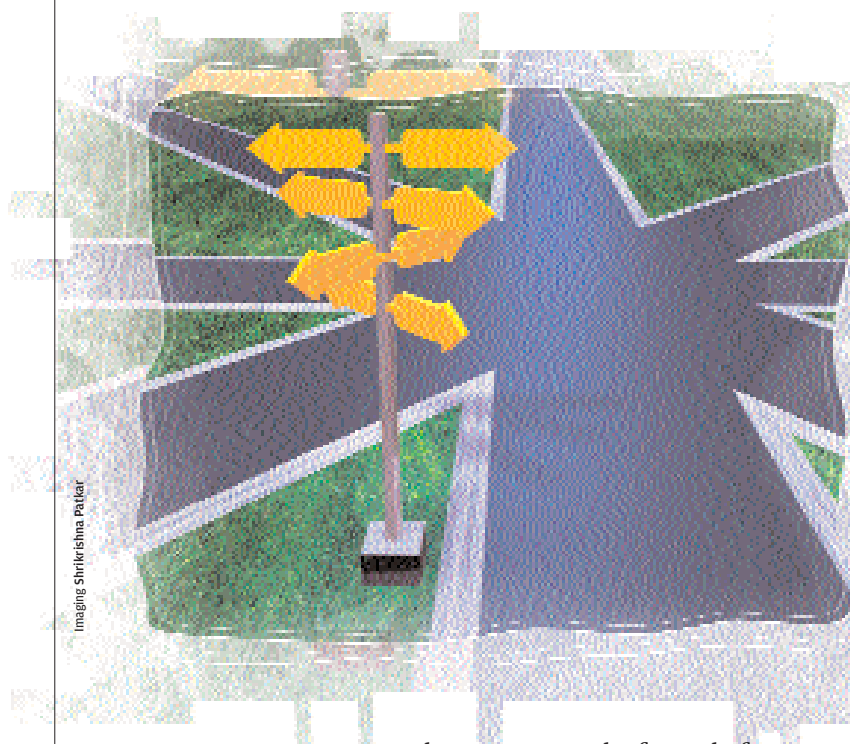
With your hard disk gone, where have your movies gone? Think YouTube. Where have your pictures gone? Think Flickr. And on, and on.

In fact, it’ll be even better, because Google’s hard disks don’t crash. They don’t have viruses either. It’s only a question of when. Google and others have already taken the baby steps. Head to <http://tinyurl.com/258km3> for more.

Sun’s “The network is the computer” comes to mind, and we now see Sun’s wisdom: they were saying this long before any of this saw the light of day. ☒

Web x.0

Don’t call a rose by any name at all!



Imaging Shrikishna Patkar

So here we are, at the fag end of our story of what the Web will be. Search, personalisation, socialising, computing, all online. A lot of what our sixth sense has told us falls under the umbrella of Web 2.0: think social networks. Some of it is still Web 1.0, as in targeted search. Some of it is, well, Web 1.4.3, as in a P2P Google.

Tell us about the future, you say. OK, the future is Web 3.0. Just kidding. Serious kidding. Fill in that “x” above with anything you like, give it a definition (complete with meme-map and all), then put it up on your blog. If you’re lucky, quite a few people will take to it. Like they’ve taken to “Web 2.0.” No, we’re not giving a dog a bad name and hanging it—we’re saying “2.0” is an unnecessary appendage, that it has no future. Allow us to be unconventional and tell you there’s going to be no Web 3.0: we’re not gazing into our crystal ball here. We’re staring into empty space for as far as we can see.

“The Emperor’s New Web,” we like to call it. Everyone’s talking about it, and no-one knows what Web 2.0 is. Yes, no-one. If crowds have wisdom, this is entirely the Emperor phenomenon—how can no-one know what it is? 68 million Google results for the term later, you’ll see no two people agreeing upon a definition. What’s worse is that all these definitions are a waste of time.

Think about a Google OS. What Web x.0 or x.3.12 would that be? Would it be a Web at all? It would be more like Sun’s The Computer... so, well, how about a Computer 1.1.0.3? Then, think about our personalised Web—where reconnaissance agents fetch you Your Page. Same question.

The sub-heads in a seminal Web 2.0-defining document—by Tim O’Reilly of O’Reilly publishing—went “The Web As Platform,” “Harnessing Collective Intelligence,” “End of the Software Release Cycle,” “Lightweight Programming Models,” “Rich User Experiences,” and more. A certain “DMBlackthorn” commented, “A lot of people on the Interweb find this Web 2.0 a bit confusing. Why can’t we just call it like it is—the Interweb?” 2.0 thumbs up for DMBlackthorn!

Now much of what O’Reilly mentioned *does* hold true for the future, such as the Web as Platform, and Harnessing Collective Intelligence. But will it hold up to 3.0, 4.0 and beyond? Stephen Baker of BusinessWeek recently said in a column that Web 3.0 will be easier, cheaper, and more pervasive; that it will be always on, everywhere; that we’ll be able to control our data better. Easier? Yes. Cheaper? Yes, if we go the Web computing way. More pervasive? Yes, if we go the Web-is-our-society way. Control our data better? Now there it goes a little fuzzy...

He invited comments upon his post, but we didn’t bother making any. These Web x.0 things are *terms*. Lots of terms. Enough already. There’s the wisdom of crowds, there’s the need for rich user experiences, and a ton of other things. Let’s take all that burden off a poor term (pun intended). ☒

An Equal Access



Sukhinder Singh Cassidy
Vice President, Google, (APAC & Latin America)

For centuries, access to information—and the ability to communicate it—has essentially been controlled by the wealthy and the well-educated. The Internet changed all that. It has broken down the barriers that exist between people and information, effectively democratising access to human knowledge. Think about it—a schoolboy in India with an Internet connection can now access almost exactly the same information as a high-school student in Oxford or California.

The Internet has also rewritten all the rules of production and distribution—bringing unprecedented freedom to millions of people worldwide: the freedom to create and communicate, to organise and influence, to speak and be heard. Shelf space, air time, room on the pages of a newspaper—these used to determine which artists got their records played, what TV shows we watched, and which elite opinions appeared in print.

Now millions of people can record songs and put them online; shoot home movies, edit them, add special effects and broadcast them to millions worldwide; or start a blog, sharing opinions and comments with readers in different countries and on different continents.

We're increasingly living in age of people-powered media. YouTube is the classic example of this. It has shown that people are no longer prepared to be passive recipients of information. They want to be active participants in the creative process. It's the first rule of the Internet—people have a lot to say.

In fact, the amounts of information we are creating are simply staggering. Most *Digit* readers know about gigabytes and megabytes, but it's estimated that in 2002, the world created five exabytes (a byte followed by eighteen noughts) of information. Let's translate that into something we can all understand: to watch five exabytes of data would mean sitting in front of a screen for 40,700 years.

The Web has taught us that if you put simple, intuitive technology in the hands of users, they will create content and share it. The fastest-growing parts of the Internet all involve direct human interaction. Think about the blogging phenomenon and social networking sites like MySpace in America, Bebo in Britain, Orkut in India, CyWorld in Korea, and Mixi in Japan. In 2007, the virtual communities so prevalent in Asia and amongst students are becoming mainstream.

Political pundits may worry that society is becoming atomised, but online communities are thriving and growing. The Internet is helping satisfy our most fundamental human

needs—our desire for knowledge, communication and a sense of belonging.

So what does the future look like? As more information becomes available, the harder it will be to find what you are looking for, and the more important search will become. Expect to see more personalised search too—with quicker, more accurate results.

Think mobile—because people are increasingly going to access the Web through their phones. Opening e-mails, checking the weather, reading the news headlines—you don't need to be at your desk to do these things.

We're going to see the development of simultaneous translation—search in English and get the results in Hindi, for example. The potential is enormous—especially for people in emerging markets.

History has proven that humankind has the ability and ingenuity to solve problems and improve the quality of people's lives if only we are given the freedom to do so. And that's exactly what the Web does. Its success is built on technological superiority: protocols and open standards that are ingenious in their simplicity. Time after time they have trounced rival telecommunications standards that made perfect commercial sense to companies but no practical sense to consumers. In the battle of the acronyms, IP (Internet Protocol) has beaten Token Ring, ATM and CATV/Co-ax—the list is endless—because it always means more choice.

Change on the scale we are seeing today is bound to be disruptive to established systems—business models from the last century, traditional media, long accepted notions of national jurisdiction, even old concepts of control. Change is always challenging and some of the “disrupted” may well feel the need to push back. But rather than focus on how to control the Web, all of us should concentrate on how to get Internet access to more people in more countries. This will require greater liberalisation, additional investment in infrastructure, and increased competition. But as the mobile operators in India have proved so successfully, it is possible to hook people up to digital networks even in emerging markets.

The prize is a world in which every human being starts life with the same access to information, the same opportunities to learn, and the same power to communicate. I believe that is worth fighting for. ☒

Sukhinder Singh Cassidy is Google Vice President, Asia-Pacific & Latin America Operations. She is responsible for all of Google's sales operations in these regions. Cassidy has gone on record as saying India has “the best talent pool in the world.”



George Zacharias
Managing Director, Yahoo! India

What's exciting is that in India, we will be interacting on the Net more and more in the language of our choice!

The Future Of The Internet

The Internet has caught the fancy of the Indian population. It is the latest addition to the media offerings that is making deep inroads into our everyday lives. In its own unique way, it is changing the modes of service delivery, knowledge sharing, and even how we communicate on a day-to-day basis.

What will keep this ceaseless demand for more information, better networking, audio and video sharing satisfied? Innovation. This is the key driver that keeps companies that create products and services for the Internet in a state of high action. Screens will go smaller, and yet we will expect the highest resolution and depth of information available.

User generated content (UGC) is very big today and growing by the day. Almost everything we do on the Web constitutes UGC. Take blogs, instant messengers, photos, video—everyone has a point of view and an opinion to share on the Net! And this is only going to increase. We will have more conversations on the Net and will rely on our networks and communities for opinions and advice. What's even more exciting is that in India, we will be interacting on the Net more and more in the language of our choice!

As user engagement grows with it, the Internet will grow faster than all other media. An interesting aspect of the future of the Internet in India is that an increasing number of users will emerge from the smaller towns. Both broadband availability and increasing mobile penetration will rapidly expand the Internet user base of the future. We will also see increasing Internet usage among the less affluent sections of society, which will be due to the combined efforts of Internet stakeholders.

The Internet has been in a state of tremendous high action in the last 12 to 18 months, with new companies emerging and alliances and mergers being announced. Every major player wants a piece of the action in India as we grow to become one of the largest Internet audiences in the world.

In order to succeed in such a fluid scenario, Internet companies will have to concentrate on developing stable and scalable platforms to keep pace with this rapidly growing user base. Innovative algorithms that are intuitive and work better will ensure popularity and increased market share.

At Yahoo!, we have already recognised India as the leader in the emerging markets, and as we look to the future, we see new and innovative applications being developed to engage and entertain our online audience. Our flagship offerings like mail, IM, and chat will continue to dominate the first-time Internet user, and we will look at scaling and providing new features for these services on an ongoing basis. ☒

George Zacharias is managing director, Yahoo! India, which he joined in February 2006. Prior to that, he was president and chief operating officer of Sify Limited, where he had been for about six years. He played a key role in turning around that company, achieving profitability in many of its businesses.

THE SIXTH SENSE

PERSONAL TECHNOLOGY

Toting tech toys around is a passion. And the future of these toys isn't one bit boring

DREAM GADGET

BATTERIES

PROSUMER



Gadget Of Our Dreams?

Gadgets, gizmos and all things tech that we love... What can we expect to see in the near future, and more importantly, what do we want?



Imaging Shrikishna Patkar

Robert Sovereign-Smith

Of all the technology subjects we talk about, this one sets our senses tingling the most—our Sixth Sense, that is. Personal Technology is also the hardest area to play soothsayer for, because if the past is any indication of the future, it will change consistently, radically, and at a very brisk pace. In under a decade, we, the end-users, have gone from hunting for Public Call Offices (PCOs) to making and receiving calls while roaming the globe. A large percentage of you have only started using cameras in the last five years, and already most of you have digital cameras. Net access is also not confined to PCs anymore: today, it's accessible via your phone, laptop, or PDA. Call rates have fallen from as much as Rs 16 per minute to a pittance.

We Indians bear witness to the way personal devices have infiltrated the common man's life. But what's the future got in store for us?

Convergence

Convergence, which was quite the buzzword two years ago—our June 2005 anniversary issue talked about it—is something we take for granted today. Almost every mobile phone has a camera, can play music (FM/digital audio), does basic Personal Information Management (PIM), and a host of other functions. The big addition in recent times has been Net access. Gaming is another popular use for Indian mobiles. We're not playing *Half-Life 2* on our phones (yet), but *Snake*, *Bejeweled*... you get the idea. Faster hardware and better mobile soft-

Expect 5 Megapixel cameras to be the norm in a few years, if not less

ware platforms have added the ability to run applications from simple Java games to complex software such as Documents To Go (PDFs, Word, Excel, and more). Touch-screens and PDA-like functionality are now becoming the norm in mobile devices of note, with prices starting from as little as 14K.

As we've discussed elsewhere, India is all set to bypass 3G altogether, and jump onto the 4G bandwagon. This means blazing fast Net access for mobile devices (compared to today, at any rate), which will mean we can expect to see more online services for mobile devices. Streaming video and audio to your mobile devices will be the norm, and content providers will start cropping up. This is only a natural progression; the only thing limiting this is network bandwidth (or the lack of it). A shift to 4G, whenever that is, will end all our bandwidth woes—whether it brings all-new ones along with it remains to be seen!

As mobile phones go, the market buzz is all about Apple's iPhone. Apart from a 480 x 320 multi-touch screen, it runs OS X, has a 2MP camera, Wi-Fi, EDGE, Bluetooth 2.0, and 4 / 8 GB Flash memory. It should be out in the US by the time you read this, and will hopefully be available in India soon.

What's important about the iPhone is that it's running a lite-OS, which makes much more possible on mobile devices than making calls and basic Internet connectivity.

Nokia's latest mobile, the N95, has a 5MP camera, and can record video at 30 fps 640 x 480 (VGA). Quite some time ago, we mentioned Samsung's SCH-V770, a prototype 7MP camera with phone functionality, which was Samsung's way of telling everyone, "We did it just because we could." Expect 5MP cameras to be the norm in a few years, if not less.

Almost every phone today doubles up as an MP3 player, with maximum capacities ranging from as little as 256 MB to as much as 4 GB. And not just the MP3 format, but AAC, WAV, WMV, and more, just like any standalone MP3 player. With screens getting bigger and better on mobile devices, video playback is the order of the day. Mostly in the 3GPP/3GPP2 format, but support for .AVI, .MOV, .WMV, etc., is improving. You can get a DivX player for your Palm / Symbian / UIQ / Smartphone / PocketPC device from <http://mobile.divx.com/>.

As you can see, portable entertainment is no longer only a laptop or media device function, it's now coming to your mobiles. With 4G bandwidth, you can theoretically stream HD content to your devices; mobile audio / video looks promising.

The biggest road block for every convergent device, however, is storage. Hard drives are slow

and unreliable, while Flash drives are limited in size. But what if mobiles could have laptop-sized storage devices? Say, 100 GB? Enter nanotechnology, promising to revolutionise storage. With compact mobile devices, such as phones, what's required is tiny drives with large data densities that work on little or no power. Research underway in the UK—Imperial College London, Sheffield, and Durham universities, to be precise—has yielded prototypes of an entirely new chip design that mimics the way the

human brain stores data. At the nanoscale, they've recreated the axon-neuron pattern of the human brain—a complex mesh of nanowires that perform computing functions at the nodes where the nanowires meet. We cannot explain it in detail in this space, but you can read more at <http://tinyurl.com/2u9qxp>.

The bottom-line of all this is that we foresee mobile phones becoming very pocket-able mobile computing devices, which can also make calls—as an afterthought. ☒

Prosumerism



Illustration Shrikrishna Patkar

If you don't like what's available, make one...

There are three ways to define “Prosumer”: for the consumer, the professional consumer, and the producer / consumer. For the consumer, “the customer is always right” is the attitude a lot of companies adhere to, and that's the end of that. What interests us more in terms of future trends—and sets our Sixth Sense a-tingling—is the professional consumers and the producer / consumers.

Professional Consumers

Those of you old enough to remember things the way they were a decade or two ago should think back to the way technology was bought, the way it was advertised. Because of the use of marketing gimmicks, fights for price, useless TLAs, even the love of your country in “be Indian, buy Indian” type ads, you could tell that the brands considered the Indian consumer to be, well, dumb. Be honest: how many of you knew how TVs worked, or even used a computer more than a decade ago? There was no Net, there was no trillion-dollar IT industry, and engineers and doctors got the best marriage proposals!

Fast-forward to today, and you see features and more features. You see ads for any sort of electronic device—from a TV to the iPhone—with all the specifications that can be crammed into the space. Have you seen LCD ads? They expect you to know what HDMI stands for; ditto for HDTV, 720p, the difference between “p” and “i” and other such indecipherable jargon. Ads for speaker sets have started telling you about watts per channel in RMS, not PMPO as it was done before—well, most speaker sets anyway. The bottom-line is that manufacturers know their target audience is well-informed.

How Did This Happen?

Thanks to computers, the Net, the infiltration of technology into everyday life, and maga-



zines like *Digit*, consumers have learnt more about technology, and are generally more interested in it than ever before. Manufacturers have kept pace with the consumer, offering multiple solutions and products to please the consumers' new-found fancies. You read about a technology because you want to, then you see an advertisement, you see the falling prices, and you want to buy it. The age-old system; the twist is, you now are a much more discerning buyer. It's the same old circle of product-life; you just know more about the birds and the bees now.

Producer/Consumer

Alvin Toffler, noted futurist and author, first used the word "prosumer" in his book *The Third Wave* back in 1980. He predicted that with the burgeoning number of producers/manufacturers, markets would be inundated with options for us end users. Once this reached saturation point, the only way forward would be to give the end user exactly what he wanted. His definition of "prosumer" was the amalgamation of producer and consumer. He referred to it this way:

"...the rise of the prosumer. Third Wave civilization brings with it the re-emergence of a huge economic sector based on production for use rather than for exchange, a sector based on do-it-for-yourself rather than do-it-for-the-market. This dramatic turn-about, after 300 years of "marketization," will both demand and make possible radically fresh thinking about all our economic problems, from unemployment and welfare to leisure and the role of work."

Toffler thus predicted that the lines between consumer and producer would blur, that producers would make simple, standard products, and allow the consumer to choose what to add and what to subtract to make for ultimate personalisation. A lot of people continue to see such ideas as absurd, considering the costs that manufacturers would have to incur in order to make customised products; however, we already see working examples in our lives today.

You And Your Tech

Consider the PC market. Once upon a time, less than five years ago, if you wanted to pick and choose components to build a system, your local assembler was the only way to go—branded PCs were way too expensive. Today,

most big PC brands allow you to customise almost every component of your system. Take Dell for example; all you have to do is pick a base system, starting from a processor-motherboard combination, and then choose what else you want to add to it. You get to choose.

How come? Well, in order to break the local assembler's stranglehold on the market, big corporations had to submit to the whims and fancies of the professional consumer.

We see this happening universally, for all technology sectors: after all, why shouldn't individual customers get customised solutions? We want to be able to choose our cell phone talk plan, the amount of RAM in our systems, the texture of the seats in our cars, the toppings on our pizzas, the TV channels we don't want, the capacity of our iPods, whether or not our Xboxes should have hard drives, the strap colour on our swatches, the bezel for our phones... you get the drift.

It Doesn't End Here

More than hardware, software is being targeted at the prosumer. The entire open source movement could be considered prosumer-friendly. Don't like a feature? Just get rid of it! And it's not just open source and Linux developers that are promoting prosumerism: Microsoft released XNA Game Studio Express in the second-half of 2006. This development tool will allow novices and amateur game developers to create games for Windows as well as for the Xbox 360. Although users need to pay \$99 (Rs 4,300) per year to be able to test games on the 360s, Windows development is free. So this means that anyone who's played a game and thought, "This sucks, I'm sure I can build a better game..." will have to put their money where their mouths are and prove it.

The current trend of providing end users with heaps upon heaps of choices just to ensure that everyone's interested does seem doomed when you look at the advantages that a true prosumer industry would have. However, it's not about to happen overnight.

The desire to customise has even prompted us to provide you with various DIY (Do-It-Yourself) workshops in this issue. A few of these are alternatives to commercially available products, and built for your needs. Are we looking at a global adoption of the Nike slogan? Wait and watch, our Sixth Sense tells us. ☒

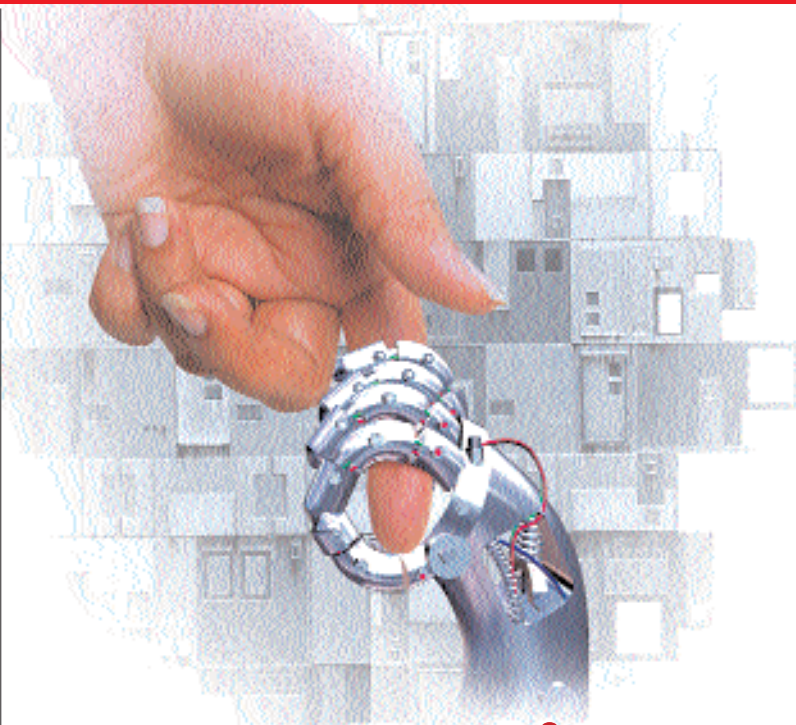
It's the same old circle of product-life; you just know more about the birds and the bees now

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Human Device Interaction (HDI)

Interface better? Better interfaces?

How long are we going to be tied to the keyboard and mouse? How long will we have to type SMSes and make phone calls using our already sore thumbs?

Over the years, we have heard of and seen a lot of technologies that promise to radically change the way we interact with technology, gadgets, and gizmos. The keyboard-and-mouse was revolutionary, then came the stylus and tablet PCs, speech recognition promised but still needs some work, eye control and brain control is being researched with prototypes already out... the future seems promising, or is it just teasing us?

In recent times, two products have caught the world's fancy: the iPhone and the Wii. The iPhone is remarkable for a lot of reasons, including the fact that it runs OS X on a phone, but it captures the limelight mainly because of its interface. It's not new technology, not by a long shot... all Apple's done is use its patented

multi-touch technology on a screen, something that MacBook users have already become used to when using the touch-pads on their laptops. A touch-pad that recognises the touch of two or more fingers isn't wild enough to have technology enthusiasts raving, but the fact that it's on a phone is good because it changes things radically. No more pressing buttons, just tap screens. Pinch to zoom in, reverse the action to zoom out. The iPod is already famous for its much-acclaimed interface, as is Mac OS X.

The Nintendo Wii, on the other hand, changed things drastically. The controllers are simple but brilliant, and get us more involved with the games we play, and Wii are loving it! Shameless puns aside, you can read more about it in the Gaming section of our Sixth Sense special. For our purpose, however, it's the way you interact with the Wii that catches our fancy. The Wiimote and the Nunchuk are cool, realistic controls, and hold a lot of promise for near-future products—even for PC gaming. We expect a lot of products that focus on actual movement to crop up in the next few years.

Operating systems today seem to have gone 3D in order to look better and help you put things in perspective when using the PC. Both hardware and software have a role to play when it comes to HDI. Vista and OS X apart, you should check out Project Looking Glass (PLG—www.sun.com/software/looking_glass/), open source software that promises to make the entire PC environment a 3D world, with the ability to see what's on the back of the regular windows you work with.

Consider a bookmark: it's just an icon in your favourites menu, but what if you could load the bookmarked site, flip the window around and write notes on the back of the browser window? With PLG, you can!

We're not here to state what is obvious to everyone though, and it's time to light the incense, sit in a circle, join hands, and gaze into the crystal ball...

Speech recognition seems to be the most promising form of input yet. Why type when you can dictate? The problem is that speech recognition systems generally fail to be of any use in noisy environments. The immediate future will definitely see more of them, and hopefully, noise reduction will bring up the accuracy of the software.

Coming back to touch screens, we've mentioned the iPhone's multi-touch screen about a gazillion times, but even that seems lame when we talk about Jeff Han, a consultant for New York



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University's computer science department. Just imagine a touch-screen that multiple people could use at once, and use all 10 digits of their hands at that. Han's Frustrated Total Internal Reflectance (FTIR) multi-touch system allows just this. Using it, he can draw anything he wants on a screen, manipulate anything, and do it much faster and better than even the most competent PC professional. Yes, we can't explain it... there are multiple videos on YouTube and on his NYC homepage as well. You really have to see this to believe it. So here are the links:

<http://cs.nyu.edu/~jhan/ftirsense/>

<http://www.ted.com/index.php/talks/view/id/65>

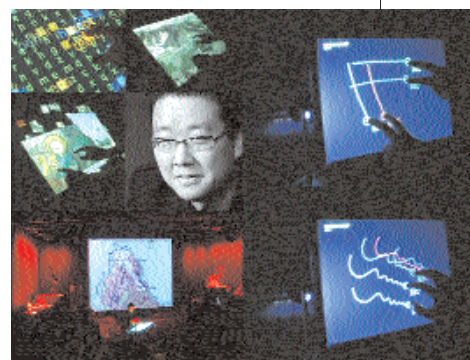
Apart from input devices, there's a lot being done in terms of displays as well. A lot of it we have spoken about in previous issues of *Digit*, including holographic displays, and paper or foldable / rollable displays. Looking into the distant future, technology seems to be headed the way of 3D displays, but it's still too early to speculate, and our Sixth

Sense doesn't really tingle much here. Apart from holographic displays, most other 3D technologies involve wearing some sort of headset, which, honestly, is something none of us want to do. 3D Autostereoscopic Displays (no headgear needed) is still in research phase, but is eventually what we want to see. There are a few products available as well:

www.dti3d.com—Dimension Technologies develops autostereoscopic displays that can display 2D/3D visuals.

www.holografika.com—Holografika also makes autostereoscopic displays, and you can actually walk around the screen seeing shadows and aspects change to give you the true feeling of viewing a 3D object.

In a sense, the computing experience is all about the interface. How long can it possibly be before our keyboard/mouse combo will be called "Jurassic"? ☒



Jeff Han recently showed off his multi-touch display of the future

Better Batteries

Alternative ways to power devices

Every family has its black sheep, every armour a chink. Batteries and hard drives have come to be the bane of technology's existence—hard drives are bottlenecks and batteries just don't last as long as they should, especially now that they are gaining in importance with everything shifting towards mobile computing, and sadly, they have been found wanting—desperately.

Enter the sugar battery. It's still a fuel cell, but in this case the fuel is anything that contains sugar—even soft drinks. If this catches on, you will be sharing your Coke with your phone and laptop. Not only do these batteries last up to four times longer than Lithium-based batteries, they're easy to recharge, are bio-degradable, and run on sugar, so you keep wondering when someone will yell "April Fool"! Such innovations are desperately required in the battery segment; the change this promises is radical, because we might soon see ourselves refilling our own batteries and never running out of charge. The developers of this technology are based at Saint Louis University, Missouri, USA, and you can read their press release at www.slu.edu/x14605.xml.

Of course, you have to understand that fuel cells are plagued with problems of their own, which is why you haven't heard much about them in recent times. For starters, they have a warm-up time, which means they cannot deliver power right away in cold conditions, which is bad for mobile devices. They also work best only at a particular rate of current pull—and this limits their use. Another major problem is longevity, which is far less than your standard Lithium-ion battery.

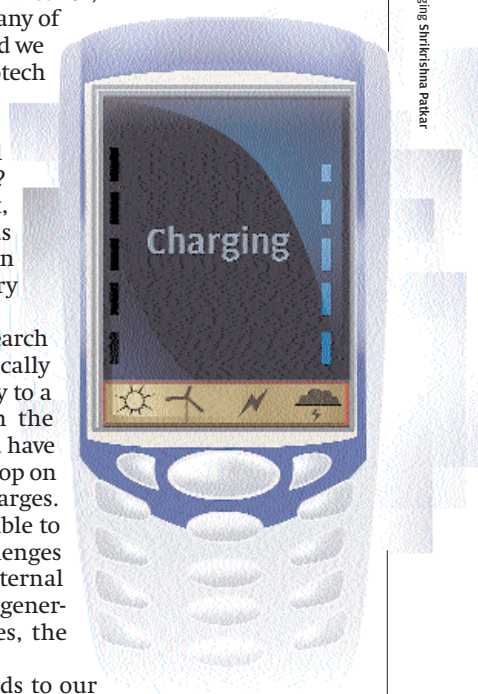
Researchers at MIT are investigating the use of capacitors as batteries! Many of you know how capacitors work—they hold charge. They can be charged in seconds. The problem with using them

as batteries has been that they can't hold quite enough charge. The answer? Cover the electrodes with carbon nanotubes, which increases their surface area, and thus their charge-holding capacity. We spoke about this in our March issue, and the researchers say the technology could become commercial in five years' time. Another nanotechnological advance is that of using nanotubes in conjunction with solar cells; this makes for, well, nano solar cells. Unfortunately, many of these "five year" predictions go awry, and we can't speak with confidence about nanotech coming to the rescue.

So is there anything other than fuel cells that promise more? A magical technology like in every other segment? Sadly, no. As the chinks get ironed out, we will see fuel cells being adopted as primary batteries, but we'll still be in search of the proverbial king of battery technologies.

An absolutely different field of research is charging by induction, which basically means that you never hook up a battery to a power source; you merely place it in the vicinity of an induction charger. All you have to do is place your mobile phone or laptop on top of this pad and the battery charges. Research is underway to see if it's possible to do this at longer distances, but challenges include not damaging the delicate internal components of devices from the heat generated because of induction, and besides, the charging happens too slowly.

All this is still just stop-gap methods to our battery woes. This is the only segment of technology in dire need of radical changes. Our Sixth Sense, sadly, tells us that battery woes are only set to multiply over the coming years... ☒



Imaging: Shririshna Patkar



Abdul Rehman Noor
Software Developer and *Digit* Reader

Last month, we invited our readers to write about their vision for the future. Here's one of the best response we got!

Up-Close And “Personal” Technology

Let's be modest. Most predictions never really come true, now, do they? After all, we've been prophesising about flying cars, household robots and the like for a long time now, and while many *have* come true in some form (like intelligent washing machines and vacuum cleaners), you'll have to admit that a majority

of them have been quite a disappointment.

Then a device popped up sometime in the last decade and changed things forever: the humble cellular phone, originally intended to allow a person to be reached anytime, anywhere—even at a ridiculous cost—turned into a necessity. Soon we were sending SMSes, listening to music, clicking pics, and browsing the Web. Eventually, the big daddy of technology arrived: GPS.

Coupled with technology currently under research and just plain technical insanity, GPS-enabled devices have enormous potential beyond just finding locations.

Happy Helpers

So here's the next generation of “Personal” gadgets—what originally started off as Personal Data Assistants now turn into full-fledged lifestyle devices that really “know” you, your schedule, where you live, and assist your lifestyle, bringing a whole new meaning to the term “smart devices.”

At first it sounds spooky—surrendering your life to a bunch of electronics, but when you think about it, we've done that already; ever since we started storing contacts, e-mail, and pictures online, we *did* take the leap into the digital abyss.

But the implications of this can be remarkable. Imagine, for instance, you're tra-la-laying on the other side of town and suddenly find yourself lost. Now that it knows your schedule, and the fact that you don't normally wander around town at 10:30 on a weeknight, the device (which we shall call PLA for Personal Lifestyle Assistant) might guess that you're lost, and offer directions back home.

Or say you're all alone at home one night, and stay up watching TV till 2 AM without realising it was so late. Since most principal locations in your house would be RFID-tagged, your PLA would realise you're still in the living room and not in bed. And tell you that you're

probably going to be late for that appointment at 8:30 tomorrow morning if you don't get to bed right away.

While a lot of us would probably scoff at the idea of being watched all the time and being told what to do (even though this is a reality at the workplace, every time you swipe your access card, you tell them where you are at what time), this may actually be a boon for elderly people staying alone, or someone with a medical condition. For instance, the PLA could alert a person's doctor if he hasn't taken his vital pills or hasn't come out from his room all morning, and inform a loved one that something might be wrong. While such health monitors may already be a bit of a reality in certain cases, this would be something that would merge with our everyday lives; for instance, it may very well suggest we take a walk since the weather report says it's a nice bright day, and RFID sensors indicate we haven't budged from the couch all day. Too much?

Big Brother World?

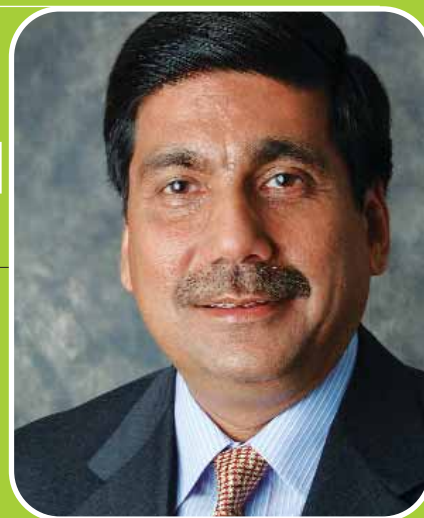
It doesn't end here. It could very well graduate into real-life extensions of social networking sites by actually allowing you to “see” which of your friends are nearby and what they're up to. Let's say you decide to go over to the nearby mall. Your PLA would, using a combination of RFID and GPS, probably stumble upon a friend of yours who happens to be there, find out if he bought that new video player the two of you've been eyeing for a while, and maybe even tell you if the store he bought it from is currently offering a discount.

Or how about if you're planning on buying a new LCD TV—a simple search on your PLA would list out stores in your city stocking various brands of LCDs and directions to get there, if you want it to. You might even want to specify your query to search only for places that are less than three kilometres away.

The best part of this is that you would still be able to “switch off” your identity once in a while when you feel the need for some space and disconnect from this instant peek-a-boo network. As with anything new, this is bound to be expensive. Not to mention the amount of research involved, especially for advertisement-oriented RFID tagging and GPS-RFID collaborations for everything to work seamlessly. But remember, when it first came, mobile calls were expensive. And if the past 10 years or so is any guide, this technology too would probably become as elemental as SMS! ☒

Abdul Rehman Noor works as a software developer. He is “an ardent reader of Digit.” This helps in his “pursuit of madness.” He also loves to write—stories, poetry and stuff—a collection of such “nonsense” (his claim) can be found at his blog (<http://rahmannoor.blogspot.com>)

Mobility, Seamless Connectivity, And Convergence is the way ahead



R Zutshi

Dy Managing Director, Samsung India Electronics P. Ltd

With the plethora of new technologies and products being introduced in the market and consumers themselves becoming more and more demanding, companies are finding ways to make their approaches more simple. The most noticeable trends in the market today are therefore mobility, connectivity, and convergence. The distinction between PC, CE, and mobile phones is blurring. Thus, today, while on the one hand you have products like the Ultra Mobile PC (UMPC) in the market, you also see Full HD LCD TVs (with 1080p resolution) coming into the marketplace, with HDMI connections for connecting HD digital devices like disc players, game consoles, as well as cameras, camcorders, and laptops.

Today, one can see and experience easier syncing between mobile devices and PCs. Multimedia mobile devices with imaging, gaming, and video functionality, as well as mobile phones with integrated VoIP functionality are being introduced in markets the world over.

Depending on the government regulations of a particular country, Mobile phones with VoIP functionality or Mobile TV broadcasting are in different stages of introduction in different markets, the world over.

In this era of digital convergence, even as storing and transferring of video content across multiple devices (PC, DVR, etc.) is gaining popularity, one is also witnessing an increasing connectivity of home appliances. With USB Video Play feature in home theatres, today a user doesn't need to burn CDs or DVDs to enjoy music, video clips, or photos on his home theatre system. One just needs to plug a portable digital device into the USB port for instant entertainment.

Online gaming communities are becoming a phenomenon the world over just as blogging communities are emerging as a new force to reckon with. So what do all these changes imply? I believe that in the future, a user will be able to watch any content, anytime, anywhere in his/her home. The device used could be TV, PC, or phone.

In the mobile space, with the convergence of services becoming a reality, we could be looking at a situation where the device chooses the transmission method by itself, for content and occasion.

One of the most obvious fallouts of the digital convergence is that "hi-tech" is being redefined even as IT is being commoditised.

Formerly professional-grade products are now accessible to the consumer market—flat panels are now accessible at a price for homes, not just offices. Today, one is experiencing an explosive increase in demand for consumer-use semiconductors, with around 50 per cent of all semiconductor consumption to be used for consumer products by 2013.

Projectors, formerly used in offices, are being used for home theatres. Smartphones have started becoming more fashionable and slim to appeal to consumers. Notebooks are growing to adopt multimedia functions.

Thus, even as formerly enterprise-oriented products are now accessible in the consumer market, similarly, products / technologies that were originally consumer-oriented like VoIP, Wi-Fi, and the Internet are now being adopted by enterprises. "Consumerisation," I expect, will be the most influential IT trend for the next 10 years. In other words, I expect technology innovation will be driven by consumers, and business technology will be part of it.

Consumers will be interested in knowing how the new technologies can benefit them rather than knowing about the new technologies per se.

High-speed Internet connectivity is contributing significantly to the growth of Internet-based social networking. Mobile phone speeds are getting faster as consumers adopt 3G. Connection speed and business innovation are driving a new wave of consumer behaviour and interactivity. Consumers are reaching out more, sharing more, and creating more content for the Internet.

Today, from text to music and videos, users contribute and share almost everything that can be digitised. The Web 2.0 transition is lifting up user participation level, by way of increasing Internet access, content creation, and information retrieval.

Going forward, in the future, I think we can expect "Real" broadband access anytime, anywhere, as well as seamless integration of application based data on local Desktop and Web-based service.

I see the beginning of an era of seamless connectivity. Complexity is out—and simplicity is here to stay. ☒

Ravinder Zutshi became Deputy Managing Director, Samsung India Electronics Ltd, in April 2005. Mr Zutshi oversees the Consumer Electronics, Home Appliances and Information Technology business, along with Corporate Functions

THE SIXTH SENSE

COMPUTING

We're hurtling into a computing future we can't entirely fathom. But we have a fair idea

HARDWARE



SOFTWARE

HARDWARE

Processors, graphics cards, and all the rest... things that change so quickly, we're out of breath just keeping abreast. In what general direction are they headed?

Michael Browne

New hardware comes first, software comes next. Then comes hardware again. It's beautiful, seeing how each drive the other.

We know a little too much about Moore's Law; in fact, in *Digit* itself, we've probably mentioned it about 1,562 times—enough to give people the general idea that *everything* hardware, not just the number of transis-

tors, gets "better" and faster every year and a half.

In all the major hardware categories, we've tried and gone beyond just things getting "better," which they will, of course. We've gone beyond the obvious. We've tried to tell you what hardware you'll be running your software on, in the time to come... in some cases a year, in some cases 10.



3D Modeling: Shrikishna Patkar

Processors

How would you like to customise your processor?

Processors! The very word brings to mind numerical crunching monsters that eat a few thousand floating points for breakfast. This is one dominion of computing that enjoys big increments in performance every year or so. Ever-shrinking fabrication processes bring the all-significant advantages of reducing costs (hence prices) and power savings.

The two giants, Intel and AMD, are locked in a struggle for top market dog. We've witnessed the fallout courtesy AMD's Athlon 64 a few years ago. More recently Intel's Core 2 Duo (code-named Merom for laptops) fuelled retaliation; it came as a shock, even to industry experts. The Gigahertz battle is a thing of the past, and parallelism (read multiple cores) is the new order of things.

Intel's Core 2 Duo desktop and notebook range will soon be replaced by a derivative of the same architecture code-named Penryn.

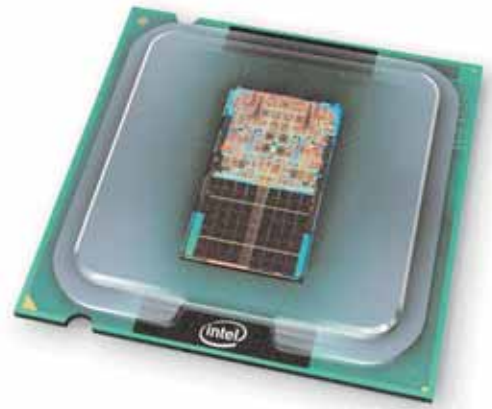
Penryn gets a die shrink from 65nm to 45nm. Code-named Wolfdale, the dual-core Penryn features 6 MB of L2 cache (opposed to the Core 2 Duo's 4 MB). The quad-core Penryn, code-named Yorkfield, adds 4 MB over the Core 2 Quad's 8 MB L2 cache.

Besides minor architectural changes like reduction in processor instruction latency, improved IPC (Instructions Per Clock), and tweaks to the cache and memory management subsystems, Penryn's improved thermal efficiency allows it to enjoy higher clocks than Core 2. Improvements have also been made in power management, but this is restricted to the notebook space, where thermal envelopes are more restrictive.

Intel's benchmarks indicate nearly 25% performance increments over Core 2. While such a large boost is exciting, there's even more... Nehalem, a radical new architecture as Intel pitches it, takes the term "multithreading" to a whole new level. With native support for eight cores on a single die (the Core 2 micro-architecture could handle four cores tops), Nehalem has the industry salivating. Although details of power management are sketchy, Intel quotes "dynamic management," which could mean independent power management for each core.

Nehalem goes the Athlon 64 way with an integrated memory controller (IMC). For those not in the know, the memory controller in Intel systems is situated on the Northbridge, while AMD had integrated it on the CPU die with their first 64-bit Desktop processors. This kind of architecture cuts down on latent clock cycles, thereby improving memory-related performance. Another leaf out of AMD's book: Nehalem uses a point-to-point serial interconnect instead of an FSB (AMD calls this HyperTransport technology).

Something new is a hybrid of CPU and GPU (GPU on the CPU die itself)! This is Intel's version of AMD's "Fusion" technology. Fusion is an inter-

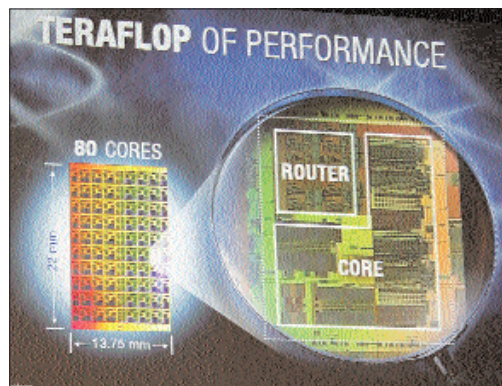


esting concept that modularises processors. Both AMD and Intel have showcased Fusion as a computing evolution. It also brings flexibility to the manufacturing process.

Imagine—manufacturers are manufacturing a processing solution based on three CPU cores and one GPU core. Suppose demand for gaming suddenly increases. Manufacturers have the option to simply plonk more 3D processing cores onto a single wafer, say three graphics cores and one general processing core, thus saving on material and manufacturing costs tremendously. Nehalem will require a new platform due to the large number of non-backward-compatible changes.

AMD's been on a bit of a rollercoaster since tweaking Intel's tail back in early 2006. Disaster control plans revolve around a successor architecture to replace K8 (Hammer) powering their Athlon 64 and AM2 processor families. Barcelona is the codename for their latest architecture (65nm), which will be tasked with swiping back the performance crown lost a year back. It is AMD's first (native) quad-core. It has a big advantage as opposed to Kentsfield, which is basically a dual, dual-core solution (therefore not native). Barcelona features an optional L3 cache, and wide execution—128-bit to be exact, so 128-bit SSE (Steaming SIMD Extension) operations are possible with a single micro-operation. SSE allows processing of

multiple data streams by a single command. This sort of execution works very well for audio and video encoding as well as image editing operations. AMD calls this SSE 128. The K8 had a 64-bit execution engine, which meant any 128-bit operations had to be decoded into two 64-bit micro-operations, resulting in wasted clock cycles.



Barcelona also has improved data fetch bandwidth and branch prediction, and AMD borrows Out of Order Execution from Intel (Core 2). All in all, in Barcelona AMD sees deliverance from the thorn that Core 2 has become. The Barcelona architecture will also make its presence felt in the notebook arena eventually replacing the current Turion X2 processors. In Desktop avatar, Barcelona has been codenamed "Phenom."

The Cell processor powering the PS3 should, we reckon, head for computers soon. Designed ground up for high-performance computing the Cell processor consists of data and program cells (software) that are the fodder for the hardware cells. The Cell architecture isn't restricted to computing on a single device, and if you have two or more Cell powered devices hooked up they can easily cooperate while processing. This is called "Distributed Computing". Scalability is the name of the game with the Cell architecture that is

Manufacturers will have the option to simply plonk different cores onto a single wafer, say three graphics cores and one general processing core—based on demand

designed for use in Desktops, Servers, Cell Phones, PDAs and even Consoles, so software cells can be distributed to each of these devices.

The performance of a single Cell processor is 256 billion floating point operations per second (256 GFLOPS). In comparison a Core 2 Duo e6600 at 2.4 GHz manages just around 4 GFLOPS!

We could well see your cell phone assist your console while gaming or your PC chipping in to share the load with your PDA. Convergence? Or parallelism unparalleled? Applications are pushing the bounds of interactivity and realism, and this bridge may only be crossed through faster processing. A small example is Windows Vista—a gorgeous bit of software that, while being sinfully delightful to use, exacts a heavy toll on hardware. And if better computing devices are available for the same (if not reduced) prices, what's the problem? "May you live in interesting times"... was that the way the Chinese proverb went? Wish granted! ☒

Graphics Cards

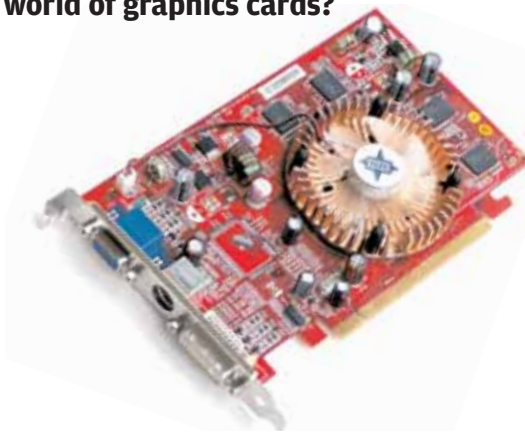
What's up next in the blink-and-miss-it world of graphics cards?

The only category of computing hardware more exciting than processors at the moment—or for that matter in an even greater state of flux—is the GPU. And it's infinitely more noticeable too. Seeing is equal to believing and GPUs are all about the visual experience.

Graphics cards have lost the stigma of being a "gamer's tool." We've seen greater acceptance of these processing marvels in many a home. The reason is the burgeoning drive for all things multimedia—movies, digital imaging, and, yes, games. And it's the entertainment industry by large that drives GPU manufacturers back to their drawing boards to come out with solutions capable of driving their products. And the entertainment industry isn't self-driven either—it's driven by us! It's in our nature to notice and applaud beauty. A simple example—anyone who has used Windows XP for a few days will find moving back to Windows 98 painful, inconvenient, and messy not to mention an eyesore! Take a wild guess as to what would happen if this new Windows XP fan were to be exposed to Windows Vista for a few days?

As with CPUs, the world of add-on desktop / notebook graphics solutions is a two brand show—NVIDIA and ATI. The phenomenon of one-up is seen at work here. NVIDIA had some success with their move to a 90 nm fabrication process with their G71 (7900 series) and G73 (7600 series) parts, which were adopted by gamers and multimedia aficionados alike. We've seen what ATI is capable of, courtesy the 48-pixel units on their X1900XTX series. These cards were DirectX 9.0c ready, and played most (then) current-generation games with a blatant absence of stuttering frames!

Then the whole DirectX 10 boom happened, and both manufacturers were back at their drawing boards trying to outwit each other at



designing a solution for an API that hasn't seen the light of day... yet. This API would obviously need a lot more processing power, and current DX 9 games were pushing the latest cards anyway.

Out came unified shaders (no more separate pixel and vertex shaders)—and NVIDIA beat ATI to the launch with 128 such shaders onboard their 8800GTX (codenamed G80). This 681-million transistor behemoth features, for the first time, a 384-bit memory interface, which in itself provides a huge theoretical advantage over the previously de facto 256 bits. Lower variants of the GTX designated "GTS" followed.

NVIDIA has since debuted the mid-range solution of their 8-series, a.k.a. the 8600GTS and 8600GT, which also signify the move to an 80 nm manufacturing process. Featuring a much lower shader unit count and slower and less memory, these have been very favourably priced, and we've seen these cards sell on the street for below Rs 10,000 (GT), while the GTS costs around Rs 3,000-4,000 more. We expect these prices to fall further as other DX 10 cards release and the dawn of the API gets nearer.

The whole DirectX 10 boom happened, and both manufacturers were back at their drawing boards trying to outwit each other

ATI, too, has announced its DX 10 solution, codenamed the R600. The card is christened X2900XTX/XT and features 512 MB of GDDR3 memory—512 bits wide. The core itself comprises an unbelievable 320 Stream Processors as opposed to 128 on the 8800GTX. Unbelievably, the core is clocked at around 740 MHz!

The term “Stream Processor” is simply the new-fangled name for what has been known as the “Shader Unit.” The X2900XT was released very recently, and while initial performance reviews place it behind the mighty G80, we expect to see lots of performance hikes with newer driver revisions. It’s also possible that DX10 titles may see more efficient use of those extra stream processors, which they were built for anyway...

As always we’re not commenting on its capabilities till we test it ourselves. Details for mid-range and low-end DX10 from ATI are also out.

The last card released from either manufacturer before the X2900XT is the 8800 Ultra from NVIDIA which is clocked higher than the 8800GTX and faster by a hairsbreadth. After the X2900 series release, we could very well see an 8900GTX/GTS, which will probably feature GDDR4. Then there’s a strong rumour that NVIDIA will succeed the dual-PCB, dual-GPU 7950GX2 with an 8950GX2, built around two 8800GTX cores. ATI hasn’t gone dual-GPU, but we’ve seen Sapphire (an ATI-only vendor) unveil one such card—the X1950 Pro Dual, based on two 80nm Radeon X1950 Pro GPU cores.

NVIDIA’s 8-series cards have raised the bar in games with a lot more visual quality than earlier-generation cards, courtesy the immense shader horsepower and bandwidth at their disposal. Improved anti-aliasing and Anisotropic Filtering algorithms bring the latest games to life, and even breathe a touch of life into earlier-generation hits like *Far Cry*, *Doom 3*, and *F.E.A.R.*

GPUs are set to do a lot more than just accelerate games: NVIDIA is showcasing what they call CUDA technology which enables their graphics cards to be used as stream processing engines and floating point operators. The GPU has just invaded the CPU space...

For multimedia buffs, we have HDMI (High Definition Multimedia Interface) support being incorporated in the latest graphics cards. These sport improved hardware acceleration for a better video viewing experience. HDCP (High-definition Digital Content Protection) support is also something to look out for on the latest cards.

HD content (especially 1080p) on integrated solutions is an exercise in futility: a video card is mandatory. Yet another catalyst for the discrete graphics revolution is Vista, whose acclaimed Aero interface has onboard video solutions quivering in their boots. Then there are upcoming game titles like *Crysis*, *BioShock*, and *Time Shift* to name a few, that promise to take terms like realism and immersion to all-new levels.

The term “Stream Processor” is simply the new-fangled name for what has been known as the Shader Unit

Chipsets

You can’t talk about processors without talking about chipsets in the next breath. Here’s all that talk about sockets, pins and DDR3

While talking about the fastest processors, high bandwidth, low-latency memory and the newest batch of Direct X10 cards, we often forget the component that brings all these products together under a single roof. The motherboard is very little more than the sum of its chipsets (the Northbridge and Southbridge) with a hunk of silicon (PCB) thrown in to hold everything. It’s this motherboard that dictates compatibility by allowing or restricting use of certain processors, memory, and other components.

It may seem therefore that the motherboard dictates the choice of the other components. Wrong!

Motherboard chipsets have been evolving, leading to improved products, supporting newer processors primarily, as well as other allied technologies. However, make no mistake—it’s been the processor industry that has largely dictated terms to chipset vendors, even memory vendors for that matter.

Flashback: Intel moved from a 478-pin processor socket to an LGA 775 processor socket.

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You have to ask yourself... are these new chipsets merely platforms to house faster processors?



This was due to thermal issues in particular. This brought about a major change in chipsets—Intel's very own 875/865 gave way to their 925/915 series. Recently the move to Core 2 Duos saw 975/965 chipsets emerge from 955/945 chipset based boards because of their incompatibility with the Core 2 Duo.

AMD has seen its share of changes and upheavals too. The move to DDR2 initiated by Intel to complement its then latest Pentium D processors forced AMD to shift to a new platform as well—AM2, which brought DDR2 compatibility to AMD systems.

With their latest generation of processors, AMD and Intel will be leaping to yet another platform. Intel has lots of 45nm plans based around Penryn—their Core 2 Duo successor. This involves a new chipset—code-named Bearlake, a.k.a. the P35, that will support these processors. This is the mid-range offering replacing the P965. There's support for DDR2 and DDR3 memory, 1333 MHz FSB support, a spanking new Southbridge, and more.

AMD also has a new socket for Barcelona—Socket F, which is a 1207-pin LGA-based affair; details are sketchy.

You have to ask yourself... are these new chipsets merely platforms to house faster processors? To a large extent, yes. For example, Intel's Bearlake is supposed to debut with native E-SATA support, and possibly a new generation of PCI-Express to provide further bandwidth to GPUs.

The notebook space has also seen a lot of upheaval with both Intel and AMD introducing new products late last month.

Intel's Santa Rosa (dubbed the Centrino Pro) is built around a 64-bit, dual-core Merom processor which should aid multitasking no end. There's inbuilt HSPDA (High Speed Downlink Packet Access)—a new protocol for mobile data transmission (also called 3.5G). There are other noticeable improvements too. Like Intel Active Management technology that allows improved remote system access, thereby solving many problems with reduced costs. Imagine disconnecting an infected notebook from a network remotely! Wireless Draft N support is included. Also in the package is integrated DX10 graphics.

Puma is AMD's code-name for their new notebook architecture and represents the platform as a whole. HyperTransport 3 connectivity and a new power saving DDR2 memory controller are the standouts here. The graphics will be a DX10 supporting core with full support for Blu-Ray and HD-DVD playback.

The latest generation of integrated graphics chipsets will be DX10 featuring unified shaders. Eventually DDR3 will become the Desktop standard—we expect greater bandwidth from the next generation PCI-Express standard to feed the latest and emerging GPUs and even multi-GPUs, that is, CrossFire and SLI configurations. ☐

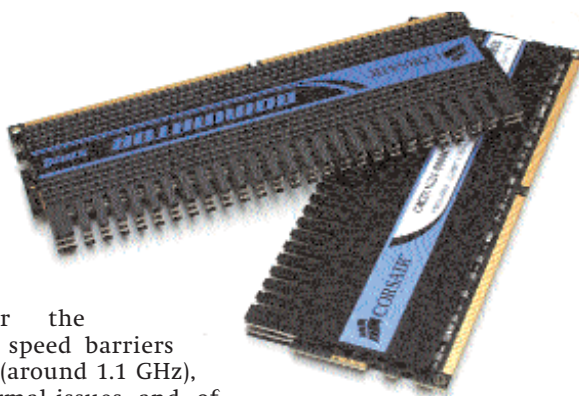
Memory

With faster processors, memory manufacturers have to step up and make sure that their components aren't the weakest link in your PC

The memory market has seen its share of trials and tribulations the past couple of years. Now DDR2 is as common as cows on a highway, while DDR memory's availability is somewhat sporadic. 667 MHz (PC 5300) memory has replaced 533 MHz (PC 4200) memory as the new entry-level solution for Desktops. PC 6400 memory (800 MHz) DDR2 from brands like Corsair, Kingston, and Transcend are readily available. A 1 GB stick of DDR2 667 MHz memory can now be had for as little as Rs 2,000—512 MB of DDR memory costs the same, incidentally!

The enthusiast memory market is still in its infancy in India, with low-latency memory costing upward of Rs 15,000. Don't expect any miracles in this segment because demand for such memory is extremely low.

Intel promises DDR3 memory as a replacement for DDR2 over the next three years. The benefits of this would be lower power consumption and much higher bandwidth. The reason for the changeover is the speed barriers that DDR2 has hit (around 1.1 GHz), mainly due to thermal issues, and, of course, material limits. Intel visualises processor performance scaling higher, and they feel memory would bottleneck their quad-core offerings. Based on global sales,



Full Page AD

HD-grade movies and life-like games will deliver nirvana to their audiences, but they're resource-hungry; memory-hungry in particular

Intel is in a strong enough position to dictate terms to memory manufacturers. Other giants including Microsoft are also in favour of this move; we already know Vista is a memory bandwidth hog.

Then there is NRAM or Nano RAM, which promises much higher densities. NRAM is non volatile unlike conventional RAM, and is based on the positions of carbon nanotubes on a chip-like substrate. However, the development is largely in conceptual stages. The benefits would be higher memory densities (and therefore cheaper) and low power consumption. Another advantage than NRAM has over Flash is the much longer life cycle of the insulators used.

Yet another technology that shows promise is MRAM (Magnetoresistive RAM) which works on the principle of magnet-induced storage rather than electric charges or current flows like in current DRAM. It's non-volatile, but doesn't degrade like Flash does. Speeds are right up there with latencies of 2ns already demonstrated. MRAM is already present in cer-

tain very niche markets, though the initial pricing has been a deterrent.

Graphics memory has got a further shot in the arm with better GDDR3 yields, allowing for memory speeds of up to 2 GHz. The major players in the GDDR3 market are Infineon, Samsung, Hynix, and Micron. Samsung is pushing their GDDR4 memory, which we've already seen in action on the ATI X1950XTX. The main benefit of GDDR4 is reduced power consumption, a smaller packaging, and, of course, greater bandwidth and higher speeds (up to 2.6 GHz).

The future of multimedia is HD-grade movies and life-like games. These applications will deliver nirvana to their audiences, but they're resource-hungry; memory-hungry in particular. Gamers in the States have already moved to high-speed, 4 GB, dual-channel solutions. In India we've resisted the urge to splurge—restrictive prices and insufficient knowledge about the benefits of more memory being the culprits. Let's hope we can play a part in changing things starting from here. ☒

Storage

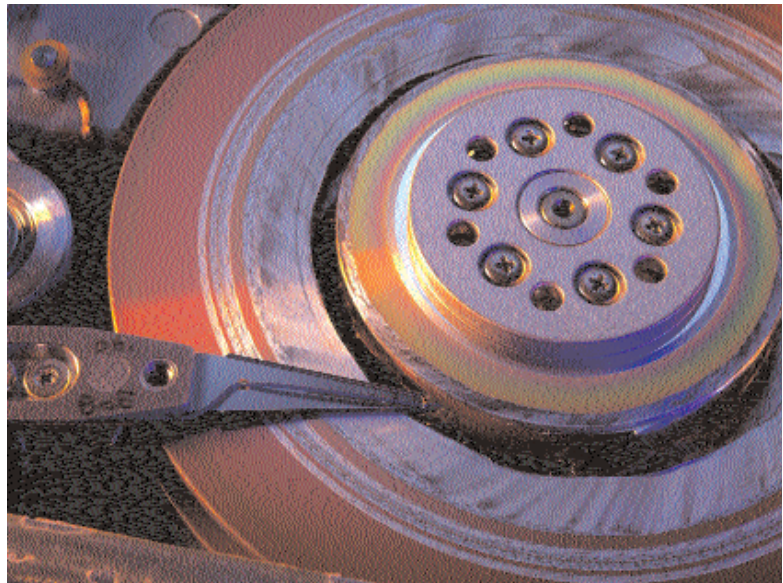
Windows Vista will demand more from your hard disks—not to mention all those HD movies and music you're downloading

History proves our species is one of incurable hoarders... from precious metals to food, from fuel to weapons. There is something else mankind has hoarded through the ages—information. The digital era has pandered to this whim, even encouraged it.

Steady advancements in drive technology have seen sharply declining prices is another significant factor. A 250 GB Desktop hard drive retails at around Rs 3,500 today, while a 160 GB drive costing in excess of Rs 4,500 a couple of years ago is available for as little as Rs 2,700 now. Price per GB is down to rupees 16.875 per GB or 0.01 paisa per MB! Larger drives have also become cheaper, a 400 GB drive costs under 5,000 rupees now, while the rupees 10,000 plus costing 500 GB drives are near the 7,000-rupee mark.

Serial ATA (SATA) has matured as an interface, quickly becoming de facto for Desktop hard drives. Perpendicular Recording technology has emerged, leading to even greater capacities due to increased areal density. The 750GB barrier was hit last year (Seagate), and this year Hitachi has hit 1 Terabyte. The 1 Terabyte Hitachi features a 32-megabyte cache, and five platters—each capable of 200 GB. Though the initial cost of cramming so much data per platter is high, acceptance in the market will cause economies of large-scale production to take over.

A new hard drive technology called Hybrid Hard Drive or HHD has emerged, featuring a



very high capacity (1 GB), high-speed, Flash-based buffer. The colossal cache means less spinning up and down of platters—power saving and higher performance. In the normal state, the platters are at rest and all data is written to the cache. The platters only spin when cache has run out, or when data needs to be read from the platters. Coupled with the fallen flash prices we could well see hard drives with 8 and 16 GB caches.

Yet another promising technology on the horizon is HAMR (Heat Assisted Magnetic Recording). A technology primarily pushed by Seagate, HAMR uses thermal lasers to heat the metal alloy-based platter to record data. The benefit is by doing so single bits of data can be stored in much smaller areas than with current HDD technology resulting in a much higher areal density. We could very well see 30 TB hard drives based on HAMR technology post 2010.

Flash drives are as portable as storage can get. They're also ultra-convenient and dirt-cheap thanks to several recent price reductions. A year or so ago, a 512 MB USB drive cost Rs 2,000. Now a 4 GB drive (4096 MB) is available for just under the same amount! Just in time for Vista's ReadyBoost. However, Flash prices aren't viable for replacing hard drives any time soon. We see Flash and HDDs go hand in hand for a few years, with Flash taking over most immediate storage and retrieval situations and hard drives kicking in for situations where more space is required.

HD-DVD is also on the horizon; featuring up

to three times the conventional storage per layer (15 GB as opposed to 4.7GB). At CES 2007, Toshiba unveiled 17-GB-per-layer HD-DVDs, and demonstrated a triple-layer (51 GB) disc. HD standards are much more rigorous for both audio and video—stereo sound at 24bit/192 KHz or eight channel sound at 24bit/96KHz. The other high-density optical format, Blu-ray, is the main competition to HD-DVD, as you probably know. Remember, the format war is still on.

Further on the horizon, we have HVD—Holographic Versatile Disc, a technology still in its infancy. Much research is being done but when HVD emerges it should make HD-DVD and BluRay seem like the floppies of old—with around 3.9 TB of data on a single disc!

This year should bring out the best in terms of pricing of current-generation storage technologies. We've also seen some interesting emergences like the use of 1.8-inch solid state drives for laptop storage (currently in 16 and 32 GB capacities). The next few years should see larger flash drives compete with existing HDD technology. May the hoarding continue! ☒

We see Flash and HDDs go hand in hand for a few years, with Flash taking over most immediate storage and retrieval situations

Printing Better

Printers have been workhorses we all love to flog, as stacks of A4 paper lying around any good office will testify to. Advancements in inks and printers don't just relate to faster prints: printers are now being developed to print on a variety of media. Epson, for example, has developed printers specifically designed to print on certain surfaces, and they've demonstrated this by printing on diverse materials like canvas, a variety of fabrics, and even Papier Maché.

Imagine famous works of art being recreated by printing on oil canvas! Equally intriguing is Epson printer's ability to print on a variety of fabrics and other materials which are then used to create unique decors—very suitable for banquet halls, board rooms, and such. The main advantage is, the look and the design theme can be changed by simple swapping rather than having a costly redesign.

Epson has also developed printers that allow capturing of live TV screens and printing them out. Imagine printing out

recipes, coupons, and other snippets as they appear on your TV channels! Perhaps the biggest innovation is the development of a metal compound containing ink that can actually be used to print directly on PCBs—no more wastage in the fabrication process!

Nearly all these B2B technology solutions are in the market's fish-pond; what's left to be seen is how many bite...

3D printing has been possible for awhile now, and industries have had access to these \$1, 00,000 printers for over a decade. IdeaLab one of the companies in the 3D printing game has plans for a sub-\$5,000 (Rs 2.25 lakh!) 3D printer for the home space very soon. 3D printers create 3D objects by melting plastic particles. IdeaLab has come up with a much cheaper and compact solution that uses a much lower intensity halogen bulb to melt nylon powder. Their vision—a 3D printer in each home...Imagine being able to print your very own toothbrush, comb, and razor!

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SOFTWARE

What software will drive the future? Will things change radically, or is it going to be a case of same old, same old...

Robert Sovereign-Smith

Nothing tech changes more frequently than software. The changes aren't usually radical, but are consistent. Most of the time it's just a few additions of features, some bug fixes, a new user interface—nothing extraordinary. Sometimes, however, changes are radical—you go from a Windows XP to a Vista. Apart from the

obvious and much-touted GUI changes, there's a lot more security and thought put into Vista. The same can be said for Microsoft's Office Suite: when Office 2007 was previewed in its beta stage, a lot of people hated it—many readers, a lot of us at *Digit*, and a considerable number online. Of course, it was just a knee-jerk reaction to the change, and barely a week later, we all loved it and couldn't live without the Ribbon.

Operating Systems

Microsoft's Vista, Apple's Leopard, what next?

For the end user, Vista is just a pretty XP, and in classic skin mode, Vista looks even more like its predecessor. This is because the way you use the computer hasn't changed much, there are no radical changes. The same applies to Apple's Leopard: there have been a lot more functions added to it, a lot more prettiness, but nothing radically different. Enter WinFS!

Windows Future Storage (WinFS) was a filesystem originally slated to be shipped with Vista (then Longhorn). Development schedules for other products pushed WinFS into the background. Currently, the status of WinFS is unknown, and despite Microsoft already announcing that they're starting development on the next Windows version, codenamed Vienna, there's no word on whether WinFS will



3D Modelling Shrikishna Patkar

Because all data in WinFS has relationships, you can theoretically forget about having to synchronise or update information ever

find its way into that. Apparently, once bitten, twice shy: Microsoft isn't making any promises it might not be able to keep for WinFS.

Enough of a history lesson—it's time to understand why we're harping on about WinFS; what radical changes does it promise?

FAT16, FAT32, and NTFS store all your files as a contiguous and continuous stream of bytes. This means an MP3 is stored as a chunk of data on some part of your hard drive. The OS is quite dumb to what that MP3 is, and basically doesn't care. All the OS needs to know is that it should use a media player to open files called "MP3."

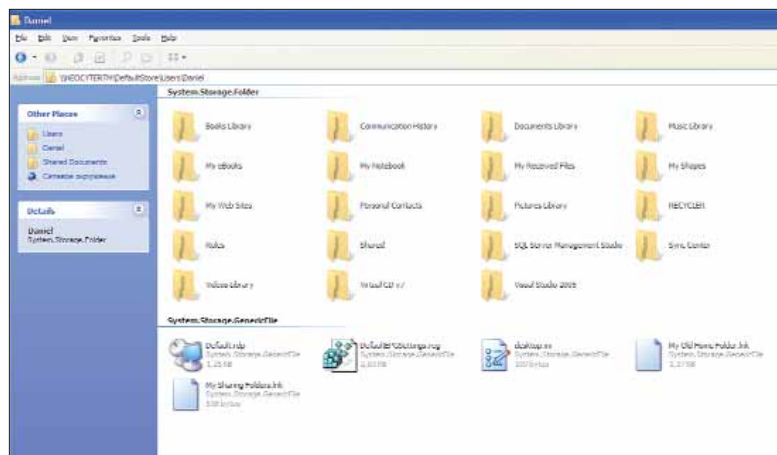
Now WinFS is less of a filesystem, and more of a relationship builder. It still sits on top of an NTFS filesystem, and stores its own data on an NTFS drive, but you cease to see your drive as files and folders. Think of how you get online and find information—you search, right? Why should items on your PC be found in any other manner?

"Now where did I store that PDF?" You remember that it's about your company's finances. Unfortunately, there's also 250 GB of files there that you're not in the mood to sift through. A regular Windows search reveals nothing, or too many PDF files, because the file is named something like 2006-07TR-SD.pdf. You can't even search for text inside the document because it was password-protected. "Was it in a folder or in my e-mail?" You waste precious minutes (even hours) looking for it. Why? Because you cannot search for "A PDF file with transactions that was sent to me between April and June this year by one of my bosses, which I last viewed sometime this month." With WinFS, you will be able to.

Another example is trying to find "contact information of that guy I met on my vacation to Nepal, clicked pictures with, and e-mailed once last year." How can this be made possible?

If only your e-mail client, picture viewer and search utility could talk to each other, they'd collaborate, eliminate false positives from your search—and give you exact results, and fast.

WinFS achieves this by understanding each type of data, each file if you will, generating a report about its contents, the type of file, and all related and relevant information. So when you store a picture, which you receive in your e-mail client from Suresh, with the subject "Pics of our vacation to Nepal," WinFS stores the file in a database as type picture (regardless of JPG, GIF, TIFF, etc.), relates it to your contact Suresh, uses the keywords "Vacation" and "Nepal", and associates it with the date it was received. It can make more associations as well, such as the content of the e-mail, if you set it to do so. Now, when you forward that mail to another friend, say Ramesh, WinFS stores his information as a relationship to that picture. It also does more, like identify a relationship



To end users, Explorer will look very similar, but what appear to be folders are actually database tables that group similar items

between Ramesh and Suresh and keywords such as "vacation", and so on. When you search now, you will find the picture, because WinFS actually had a basic understanding of that file.

The same applies to any file, even files that Windows does not natively recognise. A good example would be a Photoshop PSD file. Let's say you created a PSD file, using the same vacation pictures of Nepal, and added some text layers. Because WinFS requires software vendors to prepare a schema for the way their

“ Hey! Thanks for your Review on Digital Cameras. Before that I was so confused which camera to buy. Thanks to digit after publishing the september 06 issue I continued to buy the Sony Cyber Shot W10 which is indeed rich in performance and it is very sleek and very handy and easy to operate. Thank you Guys.

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software creates and manages data, it can natively read into those files. It also means that you get to see the PSD as a derivative of the Nepal vacation, even though it's called "Untitled-1.psd".

Another great feature is that because all data has relationships, you can theoretically forget about having to synchronise or update information. Another scenario: you have contacts in your e-mail address book. Suresh has changed his mobile number and office address, and sends you an e-mail to inform you. You make the change in your Outlook contacts. Unfortunately, you also have a third-party software that prints labels for your newsletters. You have an Excel file that contains mobile numbers of your friends, a mobile phone manager software that also stores these numbers, a computer on the network where billing addresses are stored, etc. Now you're going to have to go about finding everything with Suresh in it and update it... not! WinFS, if set to do so, will have already updated the changes everywhere, thanks to its relationship building and database storage.

There's so much more to WinFS, we cannot cover it all in this space. It's the perfect example of how the OS might be revolutionised by just adding a different method of dealing with data. Our Sixth Sense is in overdrive when we consider the possibilities, and brings us to the conclusion that WinFS, or other, similar filesystems, are our way into the future.

There once was a popular rumour circulating that Google was working on GoogleOS. This would be an OS that ran from the Net and

offered you all the functionality you needed online. Some still insist that Google is ultimately working towards this, and is still developing GoogleOS. Knowing Google, this is quite possible—they've surprised us so much in the past with innovations, we now believe anything is possible. But is the idea of an Internet OS really far-fetched?

What's to stop someone from making a Web-based OS? The Net is nothing more than a rather humungous LAN. Using a Live CD, USB drive, or even network booting, those with broadband connections could conceivably boot off the Net. Of course, broadband connections need to be omnipresent, and there has to be some way of making sure people can still use their computers when their ISP goes down. But these are not really unsolvable problems. Look out for something like a GoogleOS—it may be closer than you think.

As mobile devices go, we've already seen Apple integrate OS X into the iPhone—a lighter version, no doubt. Windows CE also brings the familiarity of the Microsoft OS to mobile devices, and enables you to do things you normally cannot on regular mobiles. As the hardware gets more powerful, we see mobile software keeping pace. In five years you might perhaps be able to load Windows XP on your mobile phone. Still speculation, but not completely improbable.

With OSes, we expect a lot to change, and radically. If the computer is ever going to be more powerful than it already is, it needs a makeover, it needs smarter software. ☐

WinFS is the perfect example of how the OS might be revolutionised by just adding a different method of dealing with data

Software That Thinks

The future is basic AI, hopefully more...

Software is what we spend most of our lives using, whether it's an office suite, an instant messenger, a browser, an image editor. Although we've seen some brilliant interfaces and UIs, software isn't as smart as we want it to be. It's still a very unidirectional flow of information—you telling the software what you want.

Manufacturers have started making more intuitive software, and laying things out better

so everything is within easy reach—Office 2007 is an example. However, while writing this piece in Office 2007, when this writer wants to highlight each header, he has to do so manually. Wouldn't it be nice if our software could think, see the writer highlight one header, then the second, and then at least ask if the writer wanted all the headers highlighted? This applies for repetitive tasks in any software.



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For now, we just have to make do with Word auto-correcting our obvious typos

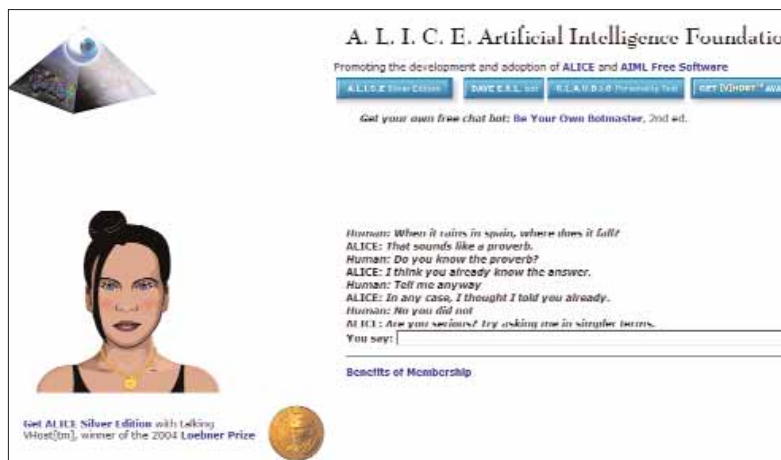
We've spoken about the need for better interfaces in this *Sixth Sense* section, and there's a dire need to move away from the keyboard and mouse system of input. But how do we achieve that without smarter software? Here lies the problem. Artificial Intelligence (AI) has been a dream for over half a century now. Researchers have been building robots and software to try and mimic the human brain for as long as they possibly could, and are nowhere near building a thinking application than they were when they started. A lot of people will disagree with that, of course, and we don't mind. A.L.I.C.E. (Artificial Linguistic Internet Computer Entity), www.alicebot.org, can simulate intelligence to an untrained observer, but doesn't *understand* the meaning of what's being said. Basically, everything to do with computers uses mathematics, and it's near-impossible to make a computer understand

understand and can translate into mathematics things like instinct, feelings, and sarcasm, it's going to be near-impossible to attain true AI.

AI Research (www.a-i.com) is one of the leading AI organisations in the world, and is taking a step backwards—instead of trying to make an adult brain, it's focussing on making an artificial child. The idea is that a child's brain is much less complex than an adult's, and like a child, we need our AI to learn. We need to teach our AI the same way we all learnt as children—how to speak, nursery rhymes,... and gradually build language. This where we get our understanding of the use of language, and hopefully AI Research's child will do so too. It's going to take a long time though, but perhaps this is the right method.

We're getting ahead of ourselves here. Sticking to better software, and AI in software, it's acceptable to have simulated intelligence, because we just want the software to help us work faster and better. Think about something as simple as AutoCorrect options in MS Word; if it can actually read and *understand* the sentences we type: perhaps someday MS Word will actually see you type "News of his father's death sent him into sock," understand that the word "death" is something bad and sorrowful, "father" is a very close relative, and no one can really "go into a sock." It will then see that the word should have been "shock" and not "sock"—or for that matter "sick", "sack", or "stock". Complicated, but it doesn't sound impossible to us. For now, we just have to make do with being auto-corrected for obvious typos.

With any single-player game, where the computer controls other entities, AI is used. The problem is that the human brain is advanced enough to figure out behavioural patterns of AI. Because it's based on mathematics, AI can get quite predictable. We humans are more chaotic, and especially when playing a game, no two humans have the same patterns or behaviours. In fact, the same person playing the same game for the second time might play it differently from the first time. With CPUs getting faster by the minute, the future will not be held back by lack of computing power—it's now up to the developers of games and AI to harness that power and make AI players in games a lot more believable.



As you can see from this chat, Alice tends to lose her way sometimes

characteristics of human speech or conversation such as wit and sarcasm. And if that's hard, imagine how impossible it is for a computer to understand the difference between someone telling the truth and someone lying!

The beauty of human intelligence springs from its complexity, but forget us superior humans. What about dogs? How do we teach a robotic dog to have instincts? Will a robotic dog ever be able to "smell fear"? Will we ever be able to make a robotic dog that knows when you're happy and wags its tail? Until we fully

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Speech recognition is another aspect that has been stuck on the 99 per cent accuracy mark for a long time. Actually, it's easy to trip up such software when you consciously try to—just throw a tongue-twister at them for fun and see what happens. The same goes for gesture recognition—whether hand or eye movements are being tracked—accuracy is nowhere near perfect. AI has a big role to play here as well...

Unfortunately, as in some other categories, when it comes to AI, our Sixth Sense is quite numb. We really don't see any revolutionary breakthroughs in the near future. Simulated AI will gradually get better, software will appear to keep getting a little smarter, but we're very, very far from software that can truly help us with our work, and help us make decisions. Not every area of technology has a rosy future, and AI is one of those that don't. ☒

Cross-Platform/Seamless Applications

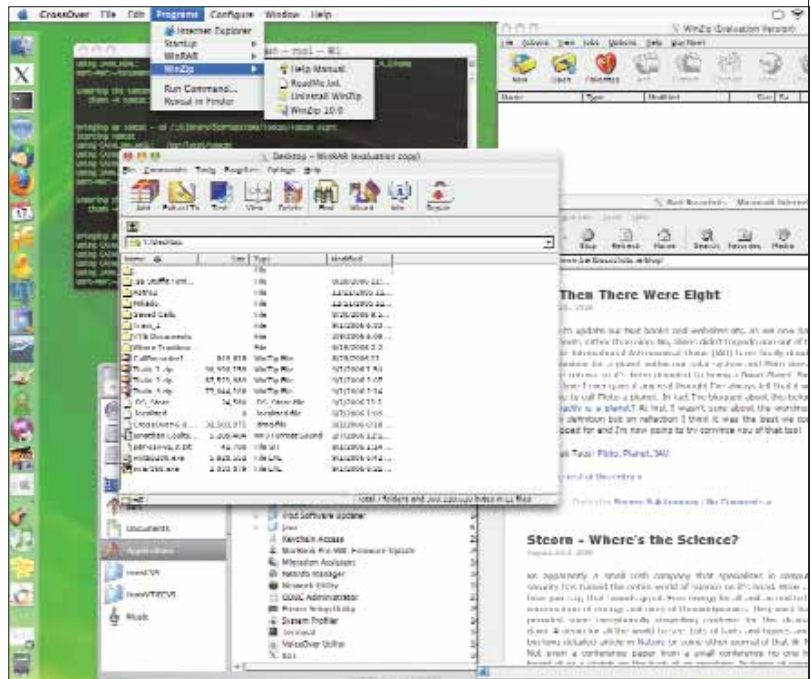
Why limit software to operating systems or platforms?

The problem with the software world today is that they're platform-dependent. Not all of them, but the majority. Applications are being made as Windows-only, or Mac-only. Linux, being open source, has a lot of applications built for it with source code available. Thus, open source applications generally are available as source, Linux binaries and Windows binaries. In a sense, open source is more cross-platform than closed source applications—a generalisation, but the numbers support it.

It's a problem that doesn't seem to be solvable—Microsoft will release application programming interfaces (APIs) to developers, but they're obviously not going to release source code. Cross-platform applications need to run on a different layer from the OS, something that is installable on any OS—something like Sun's Java, which runs anywhere, and allows Java-based applications to be run on any operating system. Java has invaded the mobile phone markets as well, and anything from games to software applications are now installable on your phone.

Another truly cross-platform way of developing applications is to develop them online. Applications such as Google's Docs and Spreadsheets, Calendar, etc., are good because they're cross-platform. It's very useful to have such applications when working across a large group of people, because you need not worry about what OS they're running. Our Sixth Sense tells us we can expect to see applications in general move a wee bit closer to offering cross-platform support. And you don't need to play soothsayer to say that applications being made into Web-based services will also increase in popularity.

We mentioned WinFS earlier in this section, and a filesystem like it could really help in turning data into seamless streams that are accessible by any platform. Application com-



Crossover running native Windows programs on a Mac

patibility on different platforms will be harder to achieve, because they have to be coded that way, but Microsoft has started the ball rolling by supporting the Open Document Format (ODF) (www.oasis-open.org) in Microsoft Office. This standardises all office suites that use this format, allowing access to office documents to any office application on any platform.

The future here is garbled, and our Sixth Sense tells us that if the big names collaborate, the difference between the platforms—in terms of usability and the ability to access data—will get minimal. ☒



Justin R. Rattner
Chief Technology Officer
Intel Corporation

Innovation, Imagination, And Emotional Computing

A future trend I see is what I call “emotional computing.” It’s not technology for technology’s sake; it’s about technology making it easier to communicate, enjoy life, and care for our loved ones. More and more of our MIPS and FLOPS and megabytes are going to be poured into touching an emotional chord within us individually. A good example is Apple’s iconic iPod. The genius of Steve Jobs is taking it from

technology to an emotional experience.

An area where this is clearly expressed is in the healthcare industry. To share an example, a pioneering platform that was built specifically for healthcare is the MCA—Mobile Clinical Assistant. The lightweight, spill-resistant, drop-tolerant, and easily disinfected MCA allows nurses to access up-to-the-minute patient records and to document a patient’s condition instantly, enhancing clinical workflow while reducing the staff’s administrative workload. Some of the features designed to ease the nurse’s daily workload include: wireless connectivity to access up-to-date secure patient information and physician’s orders; radio frequency identification (RFID) technology for easy, rapid user logon; a digital camera to enhance patient charting and progress notes, to keep track of wounds as they heal; and Bluetooth technology to help capture patient vital signs. By better connecting clinicians to comprehensive patient information on a real-time basis, this technology innovation helps usher in improvements in the fundamental areas of healthcare quality, access and cost. Nurses who use a mobile clinical assistant don’t want to give it up. We need to develop more products that create that kind of emotional tie with people.

Another technology development that will change consumers’ lives in the foreseeable future is that of “context aware technology.” It’s bringing *Minority Report* science fiction to life. In the movie, Tom Cruise walked into a Gap store and the advertisements at the entrance changed in response to his presence. That’s this notion of context awareness and being able to leverage resources accordingly. The displays adapt to his needs and his purchasing history. The futuristic vision is when we will have portable devices with context awareness. These devices would constantly adapt to their environment, knowing if they are at home, at work, in the car, and whether it’s day or night. That kind of vision is not just imagination or fiction, it is becoming a reality. In our research labs, we are working on

sensor requirements for this kind of ubiquitous computing so that devices can react appropriately to their environment and what people are doing, and be more useful to the people who own them. While these innovative technologies will provide opportunities to grow into new areas, they will have disruptive and unique demands from the hardware.

Demand For Integration

Chip integration is the future. Today’s hardware platforms will continue to be integrated into fewer and fewer chips in the next few years. The platform is moving into the processor, and what was defined as a platform just a year ago is going to be integrated onto a single chip in the next few years. Integration brings a number of benefits, including higher performance, reduced power consumption, lower cost, and reduced size. Things are changing as we move into the System on a Chip (SoC) world. Future applications for SoC devices will need increased levels of customisation and faster design cycles. Today, CPUs take about four years from inception to production, but to serve the consumer market, we must now consider significantly shortening that time.

Petition For Performance

The “Era of Tera”—with Teraflops of computing performance crunching through Terabytes of people’s data—is in the visible future. When we saw the world’s first programmable processor that delivered Teraflops performance with remarkable energy efficiency, we were peeping into the not-so-distant future. A single, 80-core chip not much larger than the size of a fingernail, delivering supercomputer-like performance, while using less electricity than most of today’s home appliances. This “Tera-scale computing” research innovation is aimed at delivering Teraflops—or trillions of calculations per second—performance for future PCs and servers. Tera-scale performance, and the ability to move terabytes of data, will play a pivotal role in future computers with ubiquitous access to the Internet by powering new applications for education and collaboration, as well as enabling the rise of high-definition entertainment on PCs, servers, and handheld devices. For example, artificial intelligence, instant video communications, photo-realistic games, multimedia data mining and real-time speech recognition—once deemed as science fiction in *Star Trek* shows—could become everyday realities.

It’s a brave new world ahead. We are accelerating the pace of innovation to transform imagination into reality and to evolve technology into an emotional experience. ■

Justin Rattner is an Intel Senior Fellow and Director of Intel’s Corporate Technology Group. He is responsible for leading Intel’s microprocessor, communications and systems technology labs and Intel Research

The IT Industry's North Star



Dr Hector de J Ruiz
Chairman & CEO, AMD

One of the universal truths of being a leader in the semiconductor industry is that you *will* be asked some variant of the question, “What do you think about the future of Moore’s Law?”

I was an electrical engineering undergraduate student when Gordon Moore famously predicted that the number of transistors on a chip would double about every two years. For a generation of engineers, Moore’s Law was the goal against which they measured success. How many transistors could you cram onto a single integrated circuit?

Times Have Changed

For many years, Moore’s Law was the best barometer to describe computing technology’s potential. More transistors translated into more computing functionality. Over time, however, in its endless pursuit of Moore’s Law, the IT industry increased transistor counts and lowered die sizes to the detriment of the chip design itself. The industry kept adding transistors, but didn’t always design technology that was more useful or beneficial. The result was people paid for technology—in the form of more transistors—that they didn’t want and didn’t need.

Today, Moore’s Law illustrates the age-old lesson that bigger is not always better. Think of it in terms of a painter who has a bigger and bigger canvas to work with each time, but keeps painting the same picture.

Moore’s Law is still an important observation in terms of what it means for the economics of the semiconductor industry. The bigger canvas still has intrinsic value, especially when it doesn’t come with a cost premium. But to treat Moore’s Law as the guiding principle for semiconductor innovation is to be blind to the needs of today’s technology consumers.

What Really Matters

While still important, raw performance is no longer the only benefit consumers look for in our products. Affordability, choice, and ease of use now play an equal, if not a greater role, in shaping technology purchase decisions.

Simple though they may sound, these new customer demands require no small change from our industry’s historical approach to innovation. Where we once began by understanding how to fit more transistors on a chip, we must now start by understanding the evolving and complex needs of our consumers. Successfully addressing the needs

of people, not stretching the limits of technology, must become our industry’s metric for successful innovation.

When inventor Bob Metcalfe needed to convince the world to adopt his Ethernet standard, he coined a maxim of his own. Metcalfe’s Law states that the value of a network is proportional to the square of the number of users of the system. Metcalfe’s Law puts people ahead of technology, and forces us to realise that technology is only as powerful as it is accessible. The network by itself is worthless. Only by having users successfully access it does it begin to hold value.

While Metcalfe’s observation originated in telecommunications, it unquestionably holds important implications for the entire IT community, especially those of us in the semiconductor industry. What good is a 3 gigahertz computer sitting in classroom if the teacher is technology illiterate? How truly mobile is a laptop if it only has two hours of battery life or if its processor burns up 90 watts of power? How affordable are our servers if the cost in energy to run them begins to outstrip the cost of purchasing the servers themselves?

New Laws

Our world is changing, and we, the IT industry, should rejoice in the role we have played in shaping a more productive and connected world. But if we are not careful, we run the risk of developing technologies that are no longer relevant to the most important needs of our consumers. While Moore’s Law was an important metric for understanding one era of technology, it is clear consumers have moved into a different era. It is time we follow suit.

Metcalfe’s Law, while not a useful forecast tool for chip design, nonetheless provides a critical and much needed North Star for the semiconductor industry to follow. It will force us to measure our value not in the number of transistors we can fit on a chip, but instead by the number of people who successfully use our technology. And it will help us express our potential not by what our processors can do in benchmark tests, but by the opportunities we create for the students, teachers, parents, patients, and doctors who are the real barometer of our future success. ■

Hector Ruiz joined AMD in January 2000. He is passionate about the role of technology in education and empowering the underprivileged. He currently serves on the American President’s Council of Advisors for Science and Technology (PCAST).

THE SIXTH SENSE

GAMING

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GAME PLAY



GAMING CONSOLES



Console Curry

From “complete home entertainment systems” to amusement devices, gaming consoles are going at it like never before



Illustration Chaitanya Surpur

Nimish Chandiramani and Michael Browne

Perhaps we're living in one of those Golden Ages they keep talking about. Over two short years, we've witnessed the launches of three high-profile consoles, each of which promises to change the world of gaming forever. The Xbox 360 has its cult online following, the PlayStation 3 has its horrifyingly advanced hardware, and the Wii has fun on its side... which one's going to outlast the rest?

Does it even matter? For our opinion on the subject, pick up last month's issue and flip to *Ultimate Gaming Champion*. The Wii will usher in a whole new era of innovation, but might take a hit with people looking for high definition graphics and sound. Overall, we should see around four or five years of the current next-gen consoles before it occurs to someone to kill the competition with the generation beyond that.

And Then...

It almost hurts the brain to try and conceive of a console beyond what we already have—both the Xbox 360 and PS3 are formidable machines that are still to show their full potential—but (now former) Sony CEO Ken Kutaragi has already cooked up plans for the PlayStations 4, 5 and 6, though he's not telling anyone what those plans are.

As early as 2004, Sony researchers had built a vision for the console of the future. Controllers and button-mashing will become a thing of the past—your console will watch your body's movements, facial expressions and even listen to your

voice to interpret special voice commands. The head-mounted display idea rears its head here, too, and games will be beamed right to our retinas. Who knows, the console itself may mobile—your own little R2D2, which will follow you around your house, and hopefully save you from jumping off your balcony when you get too lost in your display.

There will be all-pervasive wireless broadband, and maybe you'll play your game on a “virtual console” that exists only online—so you can wander around with your head-mounted display and play your game from anywhere.

Feet On The Ground

Dreams spewed by research groups are all very well, but we want more concrete information, don't we? We do know that the Xbox 360's successor is under development already—Microsoft EMEA Vice President Chris Lewis told UK games site Kiziko, “You can't sit back on your laurels in this business—the consumer won't let you, the developers certainly won't let us.” They've even formed a computer architecture group, which will be working on some heavily customised hardware, if not designing the hardware itself. Microsoft's patent application suggests that the next Xbox (the neXtBox?) will act as a single hub, which will also interact with your Zune, Windows Mobile device and any other Microsoft gadget that it finds in its vicinity.

News from the Sony camp is that we might see a PlayStation 4 as early as 2010! The new console will feature similar gaming hardware, but will be more tuned towards eliminating the

An HD-toting, movie-playing Wii successor is in the works too

need for a media centre completely. In regards to the online console idea, Kutaragi says, "The design concept of the Cell processor is the network processor. When the PS3 was introduced last year, the network environment was not ready for a net-based game console. Now it has become possible, so why not enter?"

An HD-toting, movie-playing Wii successor is in the works too (it *had* to be). It will come with a much-needed hard drive to store video and other media, and perhaps even eliminate one of the more harebrained flaws in the console—the lack of an Ethernet port!

But will you ride this console wave?

India And The Console

According to a report by the NPD Group, in April this year, the Xbox 360 sold around 174,000 units in North America, and the PS3 sold 82,000. In India, selling even 174 would probably qualify as a good month. In all honesty, none of India's gaming numbers could come even close to those for the US or Europe—gaming in general is still a very new concept to India. Our parents still can't figure out why we'd want to blow up as

much as Rs 40,000 (PS3) for something that "just plays games." Your PC plays games, they'll say—use that.

It's sad that India isn't thought of too much in the matter of consoles. Xbox Live—integral to the 360 experience—hasn't officially launched for India yet, and you won't be able to access paid content on the PlayStation Network either. We're still a growing name in the PC gaming arena; it'll be a while yet before we're taken seriously in the console department. Jesse Rapczak, Vice President, Production at the Noida-based Exigent Studios has a vision: In an interview with Flame War Advance, he says: "The real question is, what's going to happen to consoles when India and China become world powers in gaming? Because, the console market is strictly geared at U.S., Europe and Japan... The numbers say that console gaming is going to go down. And PC, online and mobile gaming is on the rise, and all this will happen in India and China over the next five years. Come 2010, some people might not be playing game consoles."

India affecting the future of the console? Powerful thought, that. ☒

Immersed In An Alternative Reality

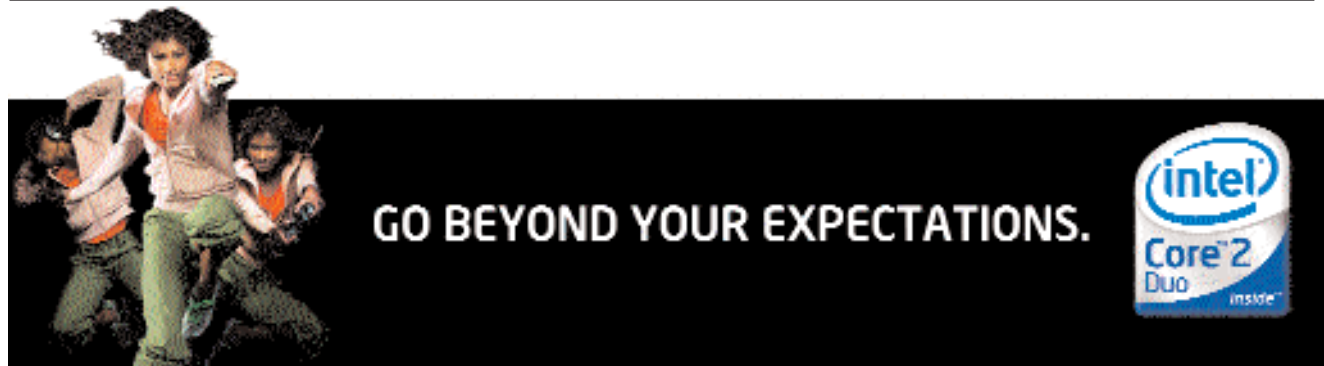
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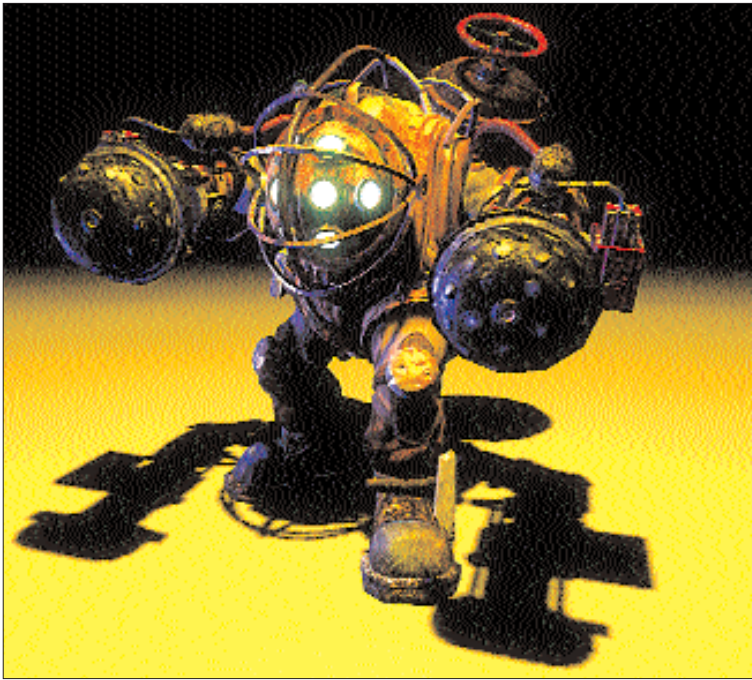
The gaming industry works very closely with the graphics card industry, in fact, drives it. The latest games strain current-generation hardware and force new products from GPU manufacturers. The same way, these manufacturers are facilitators for the gaming industry.

Computer games are getting closer and closer to the real thing, and we feel this is a good thing. People want to escape from reality, and that escapism is the number one reason for indulging in gaming. But gamers want *realism*, whether it's weather effects, facial expressions, explosions, physics, shadows, and terrain deformation. Then there's all the realism demanded by first person shooter lovers revolving around realistic weapon models and effects—flaming gun barrels, screaming ricochets, realistic body damage and gore effects etc.

A contradiction? The simple fact is that games give you a chance to live out an alternative personality without fear of consequences. You can be a warrior, a spy, a pilot, a playboy, an assassin or even a cricketer, all within the safe confines of your home. You're in control of your life—basically something every individual craves, but doesn't necessarily get.

Perhaps the best shot in the arm for realism in games is DX 10. In fact one of the biggest reasons for gamers to shift to Windows Vista is the upcoming DX 10 games. The current generation of graphics hardware is also up to the task, and we're already seeing three times the rendering power from previous generation cards, NVIDIA's 8800GTX (128 shader units) and the ATI X2900 series (320 shader processors) promise to bring lifelike realism in games.





Another aspect of realism is AI. Several titles today like *F.E.A.R.* and *S.T.A.L.K.E.R.* feature good AI models, which make for a believable gaming experience as characters in the game world react more realistically to your actions as a character. AI is not limited to games of the first person genre. A good example would be *Company of Heroes*, a gorgeous looking RTS (Real Time Strategy) game based on the World War II scenario. Enemy AI is challenging, with enemy squads actually trying to flank you, throwing grenades, calling for artillery support and so on.

Work in progress should see games featuring characters that actually populate a game world, and go about their activities independent of interaction with your character—this is one aspect of realism where most games trip up! In *S.T.A.L.K.E.R.* (a realistic first person shooter), packs of mutant dogs will roam around, not necessarily attacking you just because you're well armed. Drop your AK-74 and you're toast! Similarly, rival stalkers will back away from a firefight they're losing, only to regroup and follow you looking for an ambush opportunity.

Upcoming games like *Crysis* and *BioShock* promise even more immersive action. Non-linear storylines, lifelike realism, and ferocious

enemy AI, along with a deep storyline that promises to engross as no movie ever can. Further down the game release path there are psychological thrillers like *Alan Wake* that promise to leave the hair on your nape standing and your psyche on edge. Let's take a look at *BioShock*, the dubbed the spiritual successor to *System Shock*—one of the earlier games that brought terms like "atmospheric" and "immersive" to games.

BioShock takes you to the city of Rapture—a deserted futuristic city built on the bottom of the sea and isolated from it by a massive dome like shell—basically a scientific

experiment gone wrong. What we've seen of gameplay demos showcase extremely realistic visuals and sound—this game will involve you with sheer attention to detail. Your character will move thorough a slowly deteriorating world, where water seeps in through cracks in the outer shell as the sea tries to reclaim what was it's. This world under water world is brought to life with life-like textures, HDR and bloom, not to mention eerie sounds like a radio playing in an abandoned bar, or the creak of a rusty hinge somewhere upstairs.

A little background information... *BioShock* has these little girls (called little sisters) who harvest adam, which is priceless valuable and the only thing you use to upgrade your looks, physical and combat skills, and your 50-odd powers, including telekinesis, or something much more weird like shooting a bunch of wasps out of your hands to be used as projectiles! Now these little sisters are defenseless, but protected fiercely by big daddies, one of the toughest entities in the game.

The combat in this game will also be very realistic, not to mention absolutely open-ended... This snippet of gameplay was showcased in a recently released video—in a fight

Work in progress should see games featuring characters that actually populate a game world, and go about their activities independent of interaction with your character



MULTIPLY YOUR FUNTIME.



One attraction of multiplayer online games is the community it creates. Most communities these days are a very close-knit bunch, living and breathing the game titles that created them

with a big daddy to obtain adam from little sister, your character could use regular combat means (guns). Of course big daddies can take all you've got and then some... After taking a pounding, the character decides to use some Splicer Irritant, a foul-smelling chemical produced courtesy your genetic enhancements. As the name suggests, this substance causes Splicers to go crazy and attack it. Splicers are genetically-mutated humans that constantly alter their genetic structures, and they're hostile.

Your character throws the Splicer Irritant on Big Daddy—Splicer jumps in to attack. You happen to cross a security camera while taking potshots at Big Daddy, and a mess of security bots spill out of nowhere to take you out. You run to the nearest security console, and using adam and your genetic enhancements program, set the bots to attack Big Daddy. You then shoot a propane tank and using telekinesis and Jedi Mind Trick powers, and divert this flow of propane on to Big daddy and then use a genetically-produced fireball to incinerate him, all the while pumping lead into him. Finally the beast goes down. The best part is the totally interactive environment means the next time you could do something totally different for the same result. If you had not gotten close to Little Sister, the above events wouldn't have happened. This makes *BioShock* totally autonomous—characters in the game world don't revolve around you, they're living their own life, doing their own thing!

Time Shift, due this Christmas, is a first person shooter with one twist—it allows you to fiddle with time. Imagine yourself pinned by enemy fire from atop a roof. You shoot at the walls behind which the enemy is hiding, causing a chunk of concrete to fall off the roof (the environment's destructible). You now sprint to this fallen chunk, climb on to it, and reverse time: voila, you're atop the roof as the chunk travels back up (reverse time) with you on it. This kind of gameplay is an evolution, made possible mainly due to advancements in allied technologies.

The biggest thing these past two years has undoubtedly been MMORPGs (Massively Multiplayer Online Role Playing Games). Although this (rather large) name is synonymous with *World of Warcraft* to many, they are many other MMORPGs floating around—*Guild Wars*, *Lord of the Rings Online*, *Everquest 2*, and *Eve Online*, to name a few.

Thousands of players from all over the world control game characters that populate these

vast game worlds. These types of games are more involving for some as you play with and against other human opponents instead of an AI system. The actual attraction of such role playing games is that they allow an alternative space (the virtual online space) to develop relationships. Consider this—many online games allow players to get friendly, purchase property, manage finances, and even get married and raise children. Divorce is also a possibility! Go to office, hang out at your favourite pub, and play golf on weekends... These games are giving gamers the world over an opportunity to escape from reality and live life the way they always wanted to, but never dared.

Another attraction of multiplayer online games is the community it creates. Most communities these days are a very close-knit bunch, living and breathing the game titles that created them. For example, *World of Warcraft* has communities of players that synchronise time around the world so that they can logon to the game and play at the same time. Die-hard fans of a particular game often create their own communities which have a strong online presence (homepages, concept art, gameplay tips, scores, member information, and fan kits, among others).

There are offline games for those who don't have fast connections, and for the working class who doesn't get a regular period every day to login and play. *The Sims* would be a good example. However, offline games are a trend that seems to be on the decline, and statistics show that 62 per cent of gamers worldwide prefer to game online rather than offline. In India this number is still low mainly due to poor penetration of both games and broadband.

Whether online or offline, whether single player or multiplayer—gaming has taken off and become a favourite pastime for people of all ages. As any pastime matures, a person looks for more involvement with it, to go a level deeper so as to further hold his or her interest. If this doesn't happen, one finds a new pastime. Thankfully there's a multi-billion dollar gaming industry coupled with an even more resourceful hardware industry that are working hard to ensure that day is postponed infinitely.

Games have moved from a pastime and become a way of life to many, and a means of living to some (read professional gamers). DirectX 10 and Vista will just be one of the scenes we visit on our journey. ☐



Play Different

Will it be innovation or formula for us?

It's all been done, you might say. We've seen enough game genres, sub-genres and styles to make us dizzy. Yet so many games are just variations or corruptions of the same old successful formulae—all first-person shooters after *Half-Life* featured in-game cinematic effects, for instance. Of course, we've seen a lot of new and innovative games since, but the scenario is a little bleak today—rarely do we come across games that light our fires, so to speak.

It's a fiercely competitive industry, this. Add to that the costs—both in time and money—of making a new game, and you've got game studios struggling to make profits. Naturally, sticking to formula is the surest way to success. But there's hope.

The Quest For Newness

We've probably done a Wii overdose here, but not without reason. Even in the unlikely event that

the Wii vanishes from consciousness in a couple of years, it will have left us with a taste of what it's like to break away from the keyboard + mouse / game controller for interacting with our games—and have us yearning for different, even bizarre, game styles.

And then there's mobility. Mobile games are getting increasingly popular, especially in India and China, and while they won't find much acceptance with hardcore gamers, they will increase the number of casual gamers in the country. When you've got only tiny screens to work with, you tend to focus on making your games fun—small screens don't show off pretty graphics—and the more game developers focus on fun, the more players they'll reel in.

The Upcoming

It seems that the future belongs to the role-playing game (RPG). The genre has grown around 42 per cent in the last year, and promises to continue along those lines. Not much mystery there—we're sick of linear games that take us in a scripted direction every time, and RPGs offer us freedom to modify our characters, skills, and to some extent, even the story of the game. The trend will be towards more open-ended games that you can play over and over again, using a different approach each time.

Overlord, where you play an evil magician on a quest for power, will feature an army of your very own minions, whom you can send into battle against some pesky Halflings, sheep and other such unsuspecting, goodly creatures. The game promises to be as adaptive and engaging as *Black and White*, and may have the same refreshing impact on us.

Another ambitious title is *Splinter Cell: Conviction*. Picking up where *Double Agent* left off, *Conviction* will have you interacting with the environment like never before. You might be able to use a table to shield yourself from enemy fire, for instance, and even break off a leg to use as a club. Developer Ubisoft Montreal wants you to improvise at every step, now that Sam Fisher is a fugitive and doesn't have all his spy gear to help him out.

PCs and consoles aren't the only ones that will benefit, though.

Gaming Everywhere

With the success of the Nintendo DS and the Sony PSP, we'll be seeing a whole new generation of games for these handheld consoles. Many will evoke nostalgia—imagine playing your favourite old PlayStation games on your PSP, for example. Because the comparatively small screens aren't conducive to long hours of gaming, we'll see more games that offer bite-sized chunks of instant gratification rather than the long, expansive games that we see on PCs and consoles.

Gaming on the go is here to stay, but serious gaming won't go all the way to the mobile phone—specialised devices will always be preferable to all-in-ones, so unless the world likes the idea of a phone the size of a PSP, we'll be buying handheld consoles for our long journeys. ☐

Illustration: Chaitanya's Surpur



THE SIXTH SENSE

ENTERTAINMENT

What is technology
if it can't amuse us
when we want it to?
Here's precisely how
it will do that in
the years to come



HDTV



DRM

ON-DEMAND

CREATIVE

Hah Definition

HD is here. Well, in theory. Now what?

Nimish Chandramani

No doubt you're quite familiar with all the HD-oriented blathering we've done in the past few months. Now that you can ride the cutting edge of display technology for as little (?) as, and perhaps less than, Rs 40,000, the world of high-definition movies, gaming and television is your oyster. Just one problem, though.

Nothing's On

In a typical case of hardware overtaking software, there's a terrifying lack of content for us to watch on our shiny new HD screens. Worse, because the standard-definition content you're watching is lower than your HDTV's native resolution, it looks *awful*—much more so than on your old CRT TV. Before we even bother wondering about the future of HD, we must worry about the future of HD content. At the end of 2006, 8.5 million households in Japan were satisfying themselves with a daily dose of HD content. Together, American and Japanese households make up 91 per cent of the world's HDTV-enabled population. Meanwhile, we must fester in our jealousy—apart from the minority that subscribes to Direct-to-home (DTH) and Conditional Access System (CAS) for television, nobody experiences digital TV; HD content is but a dream. If you consider the world outside the US and Japan, it's quite clear we're not alone in our deprivation, and we can take some comfort in that fact. But whither content?

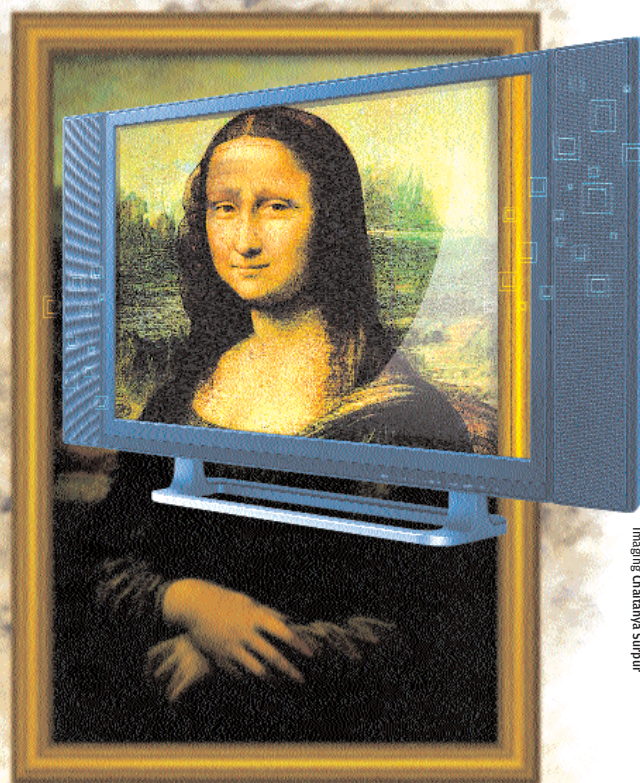
When we spoke to IOL Broadband about... er... broadband earlier this year, we were treated to claims of HDTV services that will be available in "a few days." It's been quite a few days, and HDTV is still just an item under "Services" on their Web site. Not that they are to blame—nobody's making HD content for television! It's the chicken-and-egg story all over again...

We bitch aplenty now, but the transition to HD is as inevitable as the transition from black-and-white to colour television—slow and lumbering though it might be. And then, perhaps within the decade itself, HD will become passé.

Beyond Just HD

While we gush over the gorgeous resolution of 1920 x 1080 (1080p) that true HD offers, Japan's NHK (Nippon Hoso Kyokai, or the Japan Broadcasting Corporation) has been testing a new format called Super Hi-vision, or Ultra High Definition TV (UHDTV), which offers sixteen times the pixel resolution—an eye-popping 7680 x 4320 (4320p)!

Visually, there's little here in the way of enhanced experiences, though—it's effectively the same old HD, just really, really big. What does make a difference is the audio. Where we rejoice with 7.1 channels, viewers of UHD content will be treated to glorious 22.2-channel audio—24



Imaging: Chaitanya Surpur

speakers, arranged in three layers: ten at ear level, nine above and five below.

Even NHK admits that the technology is experimental and it'll most likely be a decade, perhaps longer, before we see such resolutions in auditoriums, and much longer for living rooms. Firstly, because... well, think about it: at 2000p, movies are crisp and impeccable on large movie screens, and even that's a novelty; it'll be a long while before HD becomes "boring old standard definition." Secondly, there's the matter of storage. Each minute of uncompressed UHD video takes up a 194 GB, so a two-hour movie will occupy a gargantuan 25 terabytes! Even the best compression will result in a movie that's a couple of terabytes in size; where are we going to put it all?

That, incidentally, is the question everyone's asking.

Blu-ray vs. HD-DVD vs. EVD vs. Who?

We all know of the infinitely nauseating Blu-ray vs. HD-DVD wars—while they've haunted our consciousness for so many years, they're *still* not mainstream, leaving ample time for people to come up with alternatives that may just take the lead from behind...

Our underdog in this race is the Enhanced Versatile Disc (EVD)—developed and supported by an alliance of Chinese consumer electronics manufacturers, the EVD isn't a new disc format, per se—it's based on the same old red-laser technology used in today's DVD players. It just uses a new, proprietary compression method to squeeze two hours of high-definition video on to a 9 GB dual-layer DVD. This, however, doesn't mean that EVDs will work on your old DVD drive or player, mind you—money will need to flow out of your pockets,

With growing support, it seems that Blu-ray will haunt our living rooms in the coming years

but the amount won't be as daunting as the money you'd be shelling out for a Blu-ray or HD-DVD player. The format, however, is more of an attempt to escape paying patent royalties on DVD players, and hasn't received much support from the movie studios. Why would Sony Pictures—one of the largest movie production houses in the world—use any format but its own Blu-ray?

Such novel and low-cost disc formats are likely

to get squished into oblivion by the Big Bad Corporations, who seem to be leaning more and more towards Blu-ray. Blu-ray drives and players made it earlier to the market and the discs are capable of a greater capacity than HD-DVDs; with growing support, it seems that Blu-ray will haunt our living rooms in the coming years.

Then again, maybe it's not the big movie studios who'll invade our homes... ☒

Look Ma, I'm On TV!

Programmed entertainment is so...

In another time and another world, the sight of a Hungarian fat guy bouncing to the sound of an obscure Moldovan dance number wouldn't have elicited little more than a giggle or two. Today, Gary Brotsma, to his own surprise and occasional dismay, is one of the Internet's biggest stars, and Numa Numa (the oddly catchy Dragosta din tei by O-zone) is an online anthem. Think about it—would you rather suffer the assault of miscellaneous *saas-bahus*, or watch an average-looking old bloke play Queen's *Bohemian Rhapsody* with nothing but his palms? (www.youtube.com/watch?v=IOyEw9bT8yQ, for those interested)

The Perfect Medium

Don't you wish you'd thought of YouTube? It's just such a *simple* idea—let users upload and share videos they've created with everyone, and see what happens. Plenty happened, clearly. Your friend uploaded a video, you went and lol-ed at it, figured out you might as well check out some of the other videos, liked them, got hooked, put up your own video, told a friend. The same thing happens to around 13 million users every month, and that all-powerful beast—the community—ensures that those that deserve it become Internet icons, and the mediocre get squished under its merciless feet.

In retrospect, it's easy to see why YouTube kicks hindquarter. We've all developed what can only be described as collective Attention Deficit Disorder (ADD)—we've always got multiple application and/or browser windows open and are chatting up a friend or two while we're at it. The thought of investing an hour and a half sitting in front of the PC watching a movie and not *doing*



anything is, well, strange. YouTube-esque user videos are perfect. They're short enough so you won't get that itch to [Alt] + [Tab] away to check your mail, and they're isolated units with no preceding or succeeding episodes, so there's none of that emotional investment that comes with watching your favourite serial—no aching for the next instalment. Most content lacks depth, so your grey cells aren't taxed much; it's just pure fun. If you feel like making your own, instant gratification awaits you around the corner. And finally, there's no schedule to be followed—all

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content is at your fingertips when you want it, and can be shooed away on a whim, to be viewed later. Beautiful.

So you're going to get plenty of entertainment online, but surely you can't subsist on home movies, no matter how cool. People are being paid good money to reel you in, and many of them have been successful in doing so—you can't give them up that easily, can you? Thankfully, you might not have to subject yourself to a TV or movie schedule despite that.

Meeting Half Way

If you were in the US, you could watch episodes of *Heroes*—the ridiculously popular new series—online. Free. Last year, the Central Broadcasting System (CBS) launched their own site called Innertube, which streamed a lot of the network's content—news reports, sports, and reruns of old shows. Innertube was a disaster—even CBS executives eventually nicknamed it “www.cbs.com/nobodycomeshere”. That, however, is beside the point.

Consider this—when the VCD first came out, was your PC your first choice to watch it on? Most likely not. Programs go on computers, movies go on TV. Yet today, you have no qualms downloading the latest blockbuster (you scurvy pirating scallywag, you) and watching it on your PC, do you? Which brings us to the point we started earlier—even content providers have realised that we look at our PCs and the Internet as sources of entertainment, so they've decided to feed it to us that way.

Ultimately, with broadcasters moving online, we'll get the best of both worlds—the reeling-in, compelling content that we're used to on TV, but without being tied to a particular time or day of the week; want a show, watch it whenever you want.

The Dream

CBS's mistake with Innertube was trying to force people to come to their site for CBS content—the tactic works on classical TV, where you flip to a broadcaster's channel to view their content, but not so on the Internet. As consumers of online entertainment, we want just one single platform from whence we can watch all the movies, music videos and TV shows that we want. And it seems clear that platform is going to be Joost.

In technology terms, Joost is an online video service that uses peer-to-peer (P2P) technology to deliver content to users. In lay terms, it's perhaps

the boldest idea in online entertainment we've ever seen. If its vision comes true, Joost will be that one-stop shop you go to for all your digital entertainment. Think of it as YouTube meets Windows Media Center meets TV. Select your channel, the show, and the episode you want to watch, sit back, and watch as your request is streamed to you via your (hopefully) fast broadband connection. You'll have to endure 30 seconds of targeted advertisements (they have to make their money, after all), but it'll be worth it.

Joost is still in Beta, while they iron out technical issues as well as copyright issues with the broadcasters, and the potential is tantalising. Some content has already made it to Joost—episodes of *Fifth Gear*, a popular British auto show, short animations by Aardman Studios (the guys behind *Wallace And Gromit* and *Chicken Run*), music videos, and so on—nothing particularly remarkable at this stage, though we should see CBS's content finally make it to Joost soon. Even Viacom has agreed to let it show content from MTV and Nickelodeon, though this isn't applicable for

Even content providers have realised that we look at our PCs and the Internet as sources of entertainment



Illustration Chaitanya Surpur



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Get Indian broadcasters on board with Joost, and in two years, we'll be wondering what we ever did without it

India. More broadcasters will follow, and Joost, unlike so many good ideas, will happen. We're even going to take a leap of faith and say that Joost may eventually feature a user-submitted video channel, or even integrate with YouTube to become the ultimate entertainment platform. Joost's beta program is invitation-only, so you'll have to find a friend who's already using it and sock him/her with an unexpected complement or two.

Get Indian broadcasters on board with Joost, or create our very own Indian version, and in two years, we'll be wondering what we ever did without it.

Beyond

But we're a mobile generation, aren't we? The act of plonking a bunch of MP3s on our phones or PMPs before we set out in the morning is second nature to us. Now picture a world where we get 4G broadband on our cell phones, and combine that with a Joost-ed future. Everything that is

wonderful about Joost on your desktop will move to your laptop, to your cell phone, your Internet tablet (should you be using one at the time), everything.

Concepts like TiVO or Personal Video Recording (PVR) will cease to exist in the context that they do today (viz. pausing live TV). You won't even need to record programs for later viewing, simply because they'll always be there.

There's been lots of talk about India forgoing 3G and going 4G, but given the way we're getting on with 2.5G mobile networks, you can't be blamed for viewing the above as a pipe dream. There is considerable hope in WiMAX, working models of which have already been demonstrated by service providers such as Sify. For more, read about the future of communications elsewhere in this issue.

This vision depends not only on the availability of a good connection, but also on the availability of restriction-free content... ☒

Between Rights And Wrongs

Will we be doomed to a DRM-ed future?

We in India are still quite insulated from it, but soon enough, we'll be touched by the icy hand of Digital Rights Management (DRM) too, and 'twill be a black day for us all. For a while after its introduction, record companies strongly claimed that DRM was in the interests of the artists; now it's taken for granted, and even admitted that DRM is a way to get more money out of consumers.

Rays Of Hope

In his now famous *Thoughts On Music*, Steve Jobs started a chain of thought that no one expected him to—what if the big four record companies were to start selling DRM-free music through iTunes? Knowing that you've purchased music that doesn't impinge on your fair use rights, and will continue to work even after you've gone through seven PC upgrades, five new portable media players, and three different music management programs—it's like the wanton file-sharing we indulge in now, only



Photograph Jiten Gandhi
Imaging Shrikrishna Patkar

legal! EMI tested the waters soon after, announcing that select tracks will be available on iTunes sans DRM and at a superior encoding rate, for an additional \$0.40 (Rs 18), taking the price of a DRM-free song to \$1.29 (Rs 58). The EMI deal isn't exclusive to iTunes, either—in April, Microsoft announced that it will also begin selling DRM-free music on the Zune Marketplace as well. Amazon's also coming up with its own DRM-free music store—featuring, obviously, only EMI music. The proposed price is still pretty high for a song, but that will change if the remaining big three—Sony BMG, Universal and Warner decide to go the DRM-free way too. But will that solve the problem?

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Even in a DRM-less world, it's doubtful that music sharing over the Internet will ever cease—not because of the natural tendency to gravitate towards “free” music, not even out of the desire to “stick it to the man,” but because of the sheer variety of music you have access to. Go down to your local music store and ask them for Cockney Rebel's last album. Do write in if the salespeople don't goggle at you like you have some strange speech impediment. The shelves of music stores are stocked only with the CDs that sell, as will be the virtual shelves of all the music stores you'll visit. So if you want to get your hands on a classic, or the music of an obscure flash-in-the-pan band, your only hope is the file-sharing network, regardless of the existence of DRM. There's your excuse for the year—you pirate, simply because nobody else is giving you what you want—even when you're ready to pay for it!

Common Good

In the spirit of shunning DRM and the Digital Millennium Copyright Act (DMCA), independent bands are now choosing Creative Commons (CC) licensing system. CC allows for varying degrees of freedom with content—right from fully-exploitable public domain material to personal-use-only copyrighted material. However, unlike the record companies who assume the worst, CC uses a deeper protection system—faith. CC licenses make no restrictions on personal use, and they assume that you'll respect the terms of the license, rather than enforce it on you through clunky DRM schemes. New artists have realised that the best way to get noticed is to become a viral phenomenon on the Web, and for that, the music files need to flow freely.

And they do—the albums included in this month's DVD, for instance, are licensed under the CC-Attribution-ShareAlike or Attribution-NonCommercial-ShareAlike licences, meaning that you're free to do whatever you want with the work—remixing included—as long as you give credit to the original artist, don't try to make money off that work (only in the latter case) and share the work under a similar license. The social Web will then kick in, and stars will be born. These indie heroes don't need to work for no bread, either (the CC licenses are mostly applicable to free content)—once they've got the exposure, they can make money off commercial uses of their work: playing it on a radio station, live shows, remixing and redistribution rights, and so on. Every waiver of a license condition can come with its own monetary reward. Money will be made, and everyone will live happily ever after.

Power To The People

EMI's decision to offer DRM-free music is testament to how powerful the public voice can be. In the beginning, we perceived no chance that any of the big corporations would forego the opportunity to squeeze more money out of people every time they tried to make a fifth or sixth copy of their music, or tried to burn it to



Defective by Design is just one of the many communities supporting and even instigating the popular uprising against DRM

DRM is going to be around for a good bit longer. If anything, restrictions will only vanish up to a point where nobody's complaining any more

a CD, or wanted to listen to it one time too many; but it happened. The people expressed a desire, screamed themselves hoarse, and were finally heard. DRM-free music opens up a whole new world for you—your fair use rights are left intact, and finally, if you ever get sick of that iPod, you can invest in a different brand and not worry about your music not working any more. Bliss.

If only.

The Reluctant Crowd

Apple has been pressurising the remaining three record companies to go the way of EMI, but they don't seem to be relenting—not for Apple, and not for Amazon's upcoming DRM-free music store. It's quite apparent that even movie studios aren't too interested in letting their cash cow go that easy—what with Blu-ray and HD-DVD movies coming with DRM and copy-protection built into them. The Sony-Toshiba-IBM Cell processor, which you'll find in the PlayStation 3, also sports an architecture that will theoretically support uncrackable, hardware-level DRM. Free world indeed.

DRM is going to be around for a bit longer. If anything, restrictions will only vanish up to a point where nobody's complaining any more. Apple's FairPlay DRM, for instance, is quite... well... fair, when you think about it. You can copy your music to an infinite number of iPods, and authorise three PCs to play your iTunes movies and music. For the few who have hit these limits, even FairPlay is restrictive, but the majority isn't complaining. You don't see Apple planting rootkits on *their* customers' computers, now, do you? The only drawback is that you're stuck to your iTunes and iPod till you decide to break away from Apple and crack the DRM to play your music on your new media player. In many ways, this equilibrium seems acceptable—the record companies will finally shut up, and you won't be subjected to the million inconveniences that come with other DRM schemes.

Undesirable, yes. Get used to it. ☒



96 Anywhere Data



116 Intel Classmate PC



130 Think The Box Outside

Digital Tools

Technology For Personal And SoHo Productivity

Enhance

One Task, One Focus

It's the little things that eat away at your time, and there are little things you can do to remedy that

Asfaq Tapia

Haven't we all had days in which we can't get any work done? We just begin going beyond checking our mail, something else catches our eye, and we come back to that inbox, swearing to make the next 10 minutes more productive...

A report by News.com reveals that the average office worker is interrupted every three minutes by a phone call, e-mail, IM, or other computer related event, and says that it takes eight uninterrupted minutes for the brain to get into creative mode! In short, What is a man to do?

There are productivity methodologies; there are little things you can do to optimise your computing experience; little things like learning to pri-

oritise, interesting software approaches to maximise productivity. Here, we explore what you, as one-who-works-in-front-of-a-computer, can do to squeeze nine or more hours out of eight.

The Usual Suspects

In what follows, we'll talk about a lot of things, but we'll start off with the obvious stuff—stuff you already know. Yes, we'll talk about stuff *you* could tell us if you wanted to. Why we're doing this is in the hope that you'll finally start thinking about it seriously!

As you start working every day, there are these “things” that keep bouncing in your head, little ideas or assignments that need to be completed sooner or later (paying the electricity bill or re-arranging the bedroom furniture). These things are normally put off for a later date “because there's no time.” As days go by, they accumulate, and you end up spending more time thinking about the irrelevant tasks than doing the relevant ones....



So prioritise your day. Run a quick check of what needs to be completed first, then get down to doing it. Run this check-sweep three times a day to make sure you're on track. Do not procrastinate.

In order to help you prioritise your tasks, learn to slot them into compartments based on importance. Keep the toughest things for the beginning. Avoid doing any unnecessary (and possibly distracting) work—any task not important or related to the goal at hand. An example: you keep going to the water-cooler so as to put off that tough little bit of work, don't you? Don't! Kill the thought by keeping a water bottle with you—an extra-large one, the “2 litres plus 250 ml free” variety—it will save you precious minutes and a lot of distraction.

Many suppose multi-tasking improves productivity, but there's a limit. Joshua Rubinstein, David Meyer and Jeffrey Evans, in *Human Perception and Performance*, in the prestigious *Journal of Experimental Psychology*, showed that as tasks get more complex, our productivity while multi-tasking comes down. See www.livingeffectively.com/public/goals.htm for more.

Our drift all through this has been: focus, focus, focus. Just that.

The Devil Of Small Things

Most time-wasters at the workplace are generated by The Computer: you spend most of your time there. Optimise it so you'll get distracted as little as possible.

First turn off all unnecessary pop-up and balloon notifications. (So what if gh_ij just signed in? You're doing your work, right?) If your computer has loads of pop-ups springing up from time to time, run an anti-spyware and anti-adware program to cleanse your computer. Another way to free yourself off the distractions is to get offline! Yes, this is one of the best ways to stay focused on the job at hand. Close down all unnecessary inboxes, IM clients, and close your network connection. If your office environment requires you to be on a messenger client the whole day, learn to leave polite away messages to indicate that you are busy and can't be disturbed unless absolutely necessary. (Yes, go ahead and actually make a customised Away message—you've been putting that off, right?)

Next, it's time to blame the way you use your software. We just don't use some of the nifty features that come with them, so here are some pointers.

- ❑ Keep shortcuts to your most frequently-used programs in the Windows Quick Launch bar.
- ❑ Don't mail things that you can just shout out to the guy sitting next to you.
- ❑ If you have those extra “Internet” or “e-mail” buttons on your keyboard, use them!
- ❑ Use the Help menu in software when you get stuck somewhere. These sections are normally well-documented by software authors. Trying to solve the problem yourself will only get you more distracted.
- ❑ If you are still using Internet Explorer 6 or below, use an alternative browser; Opera has by far the fastest page rendering engine out there.
- ❑ If a particular software keeps trying to open



Educate people around you to keep their mobile phones on vibrator mode!”

Trupthi Indulkar
Infosys Employee

certain filetypes, and that's causing you distractions because you keep doing **File > Open With**, correct the situation by using the File Associations option. Right-clicking on a file, select “Open with”, and select the correct program. Check the “Always use this...” box.

- ❑ Use the tabbed browsing feature in your Web browser; updated versions of all browsers support this feature these days. This way you don't have to wait for a site to load; switch over to the next-most important tab in the meanwhile.
- ❑ If the sites you regularly visit support RSS, use RSS readers instead of going to each site individually.
- ❑ Use the “sessions” feature in browsers like Firefox and Opera. Configure the browser to open up all the sites you visit daily every time you start your browser.
- ❑ Put your frequently accessed folders in the “Favorites” menu. That's what its there for, isn't it?
- ❑ Stop using Windows' inbuilt search; using Google Desktop Search (or a similar piece of software) is much faster. Similarly, install the Google toolbar rather than going to Google.com every time.
- ❑ Whenever you find yourself straining to read what you are seeing on the screen, increase the font size. Keeping the [Ctrl] key pressed and scrolling the mouse wheel up or down will help you increase or decrease the font size in most software.

Software Solutions

There are software that allow you to focus on productivity, a new breed that does away with all the bells and whistles and focuses only on utility and ease of use—by providing you with the bare minimum of tools needed to do the job. If you spend long hours getting your fingertips numb at the keyboard, try out DarkRoom. This is a software that gives you a full-screen text editor. So what's special? Well, it blanks out the entire screen when it is in full-screen mode, and suppresses pop-ups and other notifications, thus ensuring it gets your undivided attention. The Mac variation of this tool is called WriteRoom, and there's a Java-based editor called JdarkRoom if you're working in Linux.

For those of you who like to use personal information management tools, there's TiddlyWiki (which we wrote about in September 2006), which acts as a personal notebook to sort these little tasks into various parts of your day. It is actually a single HTML file that has CSS and JavaScript code incorporated into it. When you download it and start using the file, it overwrites itself based on your preferences when you save any information to it. Every new entry is known as a “Tiddler”—a log of the things waiting to be done on your to-do list. This is saved in the local copy of the TiddlyWiki HTML file for future reference. Existing Tiddlers can be modified or deleted, thus allowing you to sort, tag, and categorise your tasks based on your needs.

Tools like Backpack (backpackit.com) and Thinking Rock are meant to be used online, while those like TurboNote (www.turbonote.com)

Portrait portfolio

Share of pictures, photos, and more. Photos transfer to nearby media or can be mailed as an email. Also, you can share your photos with others.



Want to know off your laptop? Backpack makes it incredibly easy to get some pictures up online quickly. It's a browser-based tool that lets you upload photos from your laptop. The thumbnail of each image will appear in a row at the bottom.

(Mark H. Long)

Recommended hotels in Chicago

Based on the ratings from the

Hotels.com website

Hotels.com recommendations

Help you out of town guests by making a page of recommended hotels for their stay. Or, if a hotel is recommended, you can also see why they're recommended.

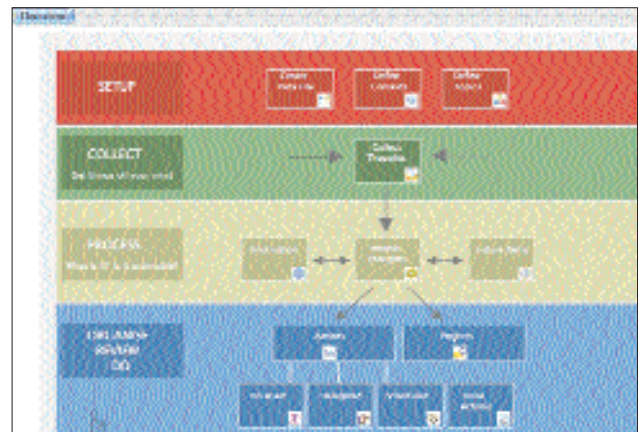
Backpack goes way beyond to-do, including allowing you to put up photos online

com) can be used offline to efficiently manage your daily tasks. Tweakto (www.tweakto.com) is primarily online.

Of Backpack, it has been said by a user: "It's perhaps the most convincing Web answer yet to the power, flexibility and simplicity of a spiral-bound notebook." TurboNote lets you put post-it notes on your Desktop, and more—set reminders, send messages and notes to others on your network, and so on. Tweakto is a task manager / to-do list that works inside your

"Backpack perhaps the most convincing Web answer yet to the power, flexibility and simplicity of a spiral-bound notebook"

browser—it works even when you're offline—and allows you to quickly and easily plan your tasks. Thinking Rock is a little more complex, a piece of freeware which we'll let speak for itself: it is for "collecting and processing your thoughts following the GTD (Getting Things Done) methodology. A lot of our mental energy is directed towards trying to remember and manage all the things that we want or need to do. Thinking Rock will allow you to clear your mind so that you can become more proactive and concentrate on what is important to you." All these apps are pretty cool, if you ask us!



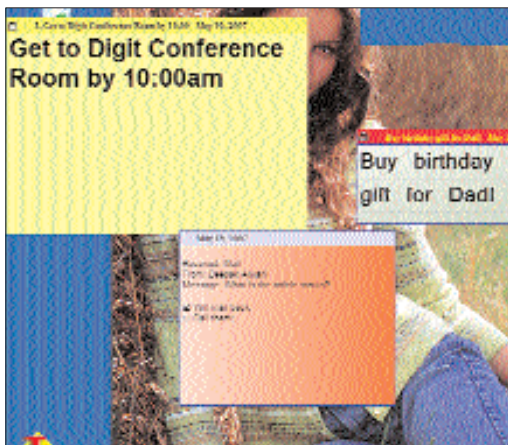
Thinking Rock is something like mind-mapping software, only goal-oriented



Every time you use your computer, sweat deposits collect in your keyboard. Microscopic dust monsters (also known as dust mites) thrive in these conditions. There are 19,000 of them in every gram of dust. They are responsible for your persisting cough, allergies and asthma. No, ordinary cleaning is not enough. You need Euroclean Vacuum Cleaner with Deep Cleaning+. Equipped with special nozzles that suck out dirt from even the hardest to reach corners. To stay allergy free, call us today. And live healthy.

Euroclean
Vacuum Cleaner
with **DEEP**
CLEANING+

Call 3988 3333



TurboNote lets you create post-it notes for your Desktop, but it goes way beyond just that much

Then, we've all had our moments when we've entered the same birthdays and anniversary dates in multiple calendars, or had to manually enter every number on the two phones you use regularly so their address books match. Here comes to our rescue the Synchronise function—a great way to save time. Use it liberally: sync your address books, e-mail clients, and sync your online calendars with Outlook (for example). If you use Firefox across multiple computers, use the Google Browser Sync extension to synchronise your browser settings like bookmarks, history, cookies, and saved passwords across your computers. Get it from www.google.com/tools/firefox/browsersync.

Methodologies

Speaking of GTD, propelling you towards getting more out of your time and not getting distracted is the Getting Things Done ideology, which was devised by David Allen, a productivity trainer and consultant. Allen devises a system of working for 10 minutes straight without any interruptions, and then rewarding yourself with a two-minute break at the end of it. Doing that five times straight will make for a very productive hour. Get yourself a timer software to clock yourself; we recommend MultiTrack Stopwatch 2.3 (<http://tinyurl.com/yud664>), a free, no-frills, Windows-based stop-watch. The idea here is not to complete every task in 10 minutes, but to make sure that you have made *some* progress in the 10 minutes. The drive that the reward causes can propel you to become more and more productive. Eventually, you'll actually *want* to work more and rest less...

At which time, you follow the 30-10 formula, wherein you work for 30 minutes straight after which you take a 10 minute break to do something you would normally do in your free time—like checking your RSS feeds or e-mail. Again, the idea here is to make progress on the goal at hand and not to try to necessarily complete the task in 30 minutes.

First-Hand Advice

Here are a few suggestions for office workers from Dr Rajendra Barve, President of the

With the (10+2)*5 formula, you'll eventually want to do more work

Bombay Psychiatric Society and a visiting faculty at IIT Bombay.

- ☑ Use artificial tears (saline water) for dry eyes. You could substitute saline water with cold water too.
- ☑ Take Vitamin A supplements, but consult your family doctor first.
- ☑ Another method recommended for tired eyes is “palming,” which involves rubbing the palms together to make them slightly warm, then, holding them as cups, place them over your eyelids for a while till you feel a sense of calm.

Dr Barve recommends creating the right ambience to work in. Listening to light music creates a barrier between you and your distractions. Another technique is to use the “accommodation reflex” technique, which requires you to focus on objects randomly that are far away for a minute. This enables the eye muscles to relax. (The glare on the screen could also be reduced by decreasing the brightness level of the monitor.) He goes on to say that when we have work to do, it is important to let people know that we must not be disturbed. Learning the art of saying “no” or “not now, later” is very important: it lets you focus on the job at hand. You could also give people “time-slots”, within which they're allowed to disturb you—no other time.

Opinions

We asked a couple of techies about their biggest distractions and how they worked around them.

Trupthi Indulkar, who works for Infosys, says, “Annoying ring tones are the bane of every workplace. Most people might not share your opinion of the ring tone being ‘cool.’ Educate people around you to keep their mobile phones on vibrator mode, and don't forget to follow the rule yourself! Also, if you are targeted by the telemarketers trying to sell you time-shares and bank loans, accept calls only from known numbers.”

Vikrant Agarwal, who works for Oracle, has this to say: “The biggest distraction is when I am in the middle of an important analysis and trying hard to concentrate, and then all of a sudden this group of caffeine addicts come along saying, ‘Let's go for coffee.’ They surround you and won't leave without you! Solution: take your coffee breaks when there is work to be done. This will ensure that you return to your desk sooner.”

In Parting

This writer has more important stuff on his hands than writing an unnecessarily long sign-off note, so here goes: your mileage with what we've advised will vary. Go ahead and devise your own methods of staying focused. But remember, always think of all the options you have in terms of what you can do next. It should then be obvious what your priorities are based on your circumstances, how much time you have, how much energy you have! ☑

asfaq_tapia@thinkdigit.com

Anywhere Data

From the smallest to the biggest, slowest to the fastest, inside and outside, we've got all the hard disks for you to choose from

Jayesh Limaye and Sumedh Phalak

We'll repeat ourselves just this once: your hard disk is the most important component of your computer because it holds your data and is therefore, in a sense, irreplaceable. With that out of the way, we're sure you won't mind yet another hard drive shootout—with all the data you've been hoarding, you probably need one!

We don't need to introduce you to internal drives—everyone knows they're the *de facto* storage component, and everyone has one (or two, or three). External hard drives are designed primarily to be backup devices. But the smaller ones are also useful for carrying around and exchanging data with friends. Many of the prominent internal drive manufacturers are into the external drive market as well—an indicator of the increasing popularity of such devices.

This shootout is a comparison test of internal as well as external hard drive solutions.

We scoured the markets to bring you most of the available models of both these worlds, from the smallest (74 GB) to the biggest (1 TB). We've brought you 21 internal SATA hard drives and 13 external hard drives. We passed them through our all-new, rigorous battery of tests, and an analysis of their performance and features follows.

INTERNAL SATA HARD DRIVES

We have only included SATA hard drives this time, sidelining IDE completely. IDE will live on for at least a couple of years more, but we want to present you the ground reality: SATA is in,

and IDE is on its way to a speedy exit. One of the things helping the SATA cause is the fact that even entry-level motherboards ship with SATA controllers today. Granted, IDE drives are still being sold, but the fact remains that there are very few of them, and future development prospects are too dim to warrant a shootout.

Of the 21 SATA drives we pitted against each other, two were from Hitachi, two from Maxtor, four from Samsung, three from Seagate, and there was a large contingent of 10 from Western Digital. All the brands were thus represented adequately to give you as wide a perspective as we possibly can about the drives available in the market today.

Features Capacity

The Hitachi Deskstar 7K1000 with a huge 1 TB capacity was the largest internal SATA drive we've ever laid our hands on. This drive, featuring perpendicular recording technology, featured a platter density of 250 MB—the highest we have seen so far, shattering the previous record of 188 set by the Seagate Barracuda 7200.9 ST3750640AS.

SATA I or SATA II?

While most of the drives were SATA II compliant, a few of the older drives, such as the Maxtor DiamondMax 10 250 GB, Seagate Barracuda 7200.8 ST3400832AS, and the two Western Digital Raptors were SATA I. Naturally, you would expect these to lag behind in the performance tests, but this was not entirely the case; the Raptors are blistering fast even when compared with the latest SATA II drives.

Though the SATA standard is forward-as well as backward-compatible, there are still some known issues plaguing certain older controllers. Some manufacturers such as Seagate, Samsung, and Western Digital remedy this situation by providing pins that can be jumpered to set the mode of the drive, while some such as Hitachi follow a different method. To set a Hitachi drive to SATA/150 mode, you first need to go to their Web site and download the Feature Tool, which is a bootable ISO image containing the tool. Once created and booted through, it guides you through the process. This is obviously tedious compared to the jumper approach.



How We Tested The Drives

On our test rig, the latest versions of the hardware drivers were installed along with DirectX 9.0c. The internal drives to be tested were connected to the third SATA connector of the motherboard, and the external drives were connected to the first USB port.

Test Rig

Processor	Intel Core 2 Extreme X6800 @ 2133 MHz
Motherboard	Gigabyte GA-965G-DS3
Chipset	Intel 965G
RAM	1 GB Kingston HyperX DDR2 @ 533 MHz
Host hard drive	Seagate Barracuda 750 GB SATA II
OS	Windows XP with SP2

The Test Procedure

The performance tests of the hard drives consisted of synthetic tests using benchmarking software and real-world tests where application performance and file transfer speeds were tested.

The synthetic tests were conducted using two types of benchmarks: the low-level benchmarks HD Tach RW 3.0.1.0 and H2Bench, and standard benchmarks PCMark05 and SiSoft Sandra Pro Business 2007, all of which are popular benchmarking software for storage devices.

Features

We noted features of the drives such as capacity, dimensions, weight, bundled software, interface type, cables and accessories, ruggedness, and more.

Performance

We gauged performance based on eight tests, as follows.

Low-level Synthetic Benchmarks: HD Tach RW 3.0.1.0

The hard drive to be tested was connected to the test machine, and was not formatted. It was allowed to remain raw (unpartitioned). HD Tach RW 3.0.1.0 was then run and used to evaluate the drive. The scores we noted were as follows:

CPU Utilisation: This benchmark determines how much load the device puts on the CPU. Lower CPU utilisation is better. High CPU utilisation (above 15 per cent) generally indicates that a poor controller is being used, that DMA needs to be enabled, or that a driver update is required.

Random Access Time Benchmark: This determines the random access speed of the device. Random access is the average time it takes to retrieve data from a randomly located sector on the device. Lower random access speeds mean better application and database performance. Random access times can also give an insight into the efficiency of the interface a device is attached to.

Sequential Read and Sequential Write: The maximum sustained speed is an important metric for real-time sequential access applications. This maximum speed may be important to a power user who would like to partition the drive into a high-speed partition and a low-speed partition.

Burst speed: This represents the limits of the throughput that a drive is capable of delivering.

Low-level Synthetic Benchmarks: H2Bench (Internal Drives Only)

This is a new benchmark developed by Heise Zeitschriften Verlag GmbH & Co. KG, which we used for the first time in a hard drive test; it provides very accurate results. This is a Win32 program that needs to be run from the command line. The interface speed at 50 per cent of the drive capacity was noted. The "Core Test" or repetitive sequential read test was then performed, and this gave the maximum transfer rate the drive can achieve after repeated sequential reads. The read and write seek times were also noted.

Standard Synthetic Tests

A 32 GB NTFS partition was created where possible with compression turned off on the test hard drive. A second partition was created, utilising the remaining capacity.

PCMark05 (Internal Drives only)

FutureMark's PCMark05 is a very popular tool to benchmark the entire system. This benchmarking software has different modules that can be chosen to benchmark a particular PC component. We installed Windows XP SP2 on the test hard drive with the latest drivers, as on the test rig, and installed and ran this benchmark application. We noted the scores of the following components from the hard drive benchmark module.

a. XP Startup: This simulates activity of Windows XP startup and tests the performance of the hard drive at that time.

b. Application Loading: This simulates opening and closing of several applications such as Adobe Acrobat Reader, Windows Media Player, and more.

c. Virus Scan: This tests drive performance during a simulated virus scan of approximately 600 MB of files of different types.



RPMs And Buffers

The Western Digital Raptors whirled away at rpms as high as 10,000, which was the highest amongst all the drives. This contributed to the performance of these drives during the actual tests. The rest of the drives had a stated rpm of 7,200.

Buffer sizes ranged from 8 to 32 MB. Hitachi's 1 TB behemoth was the only drive with a huge 32 MB buffer, which should theo-

retically help it when big file transfers occur, but in the tests we conducted, there wasn't a significant gain. All the Western Digitals and Maxtors featured 16 MB buffers, as also the Hitachi Deskstar 7K500, Seagate Barracuda 7200.9 ST3500641AS, and the Barracuda 7200.9 ST3750640AS. The lowest buffer was 8 MB, and drives with this amount were nearly all from Samsung. However, in everyday operations, even this amount of buffer is sufficient.

4.SiSoft Sandra Pro Business 2007

SiSoft Sandra Pro Business 2007 was launched and the File System benchmark module was run. The 32 GB partition we had created was benchmarked using this module. The Sequential Read, Random Read, Sequential Write, Random Write, and Access Time scores were reported at the end of this benchmark, which we noted.

Real World Tests: File Copy

This consisted of copying a 4 GB (1 GB for external drives) file (for sequential data transfer speed) and 4 GB (1 GB for external drives) of assorted files (for random data transfer speed). The time taken for this data transfer was noted. The sequential file transfer time will give you a fair idea about how the hard drive will perform when large files such as movies are transferred. The assorted files consisted of multiple filetypes that included applications, Word documents, Excel files, MP3s, small video clips, etc., thus simulating a real world situation. The tests we carried out were

a. Time taken to copy the file(s) *to* the first partition of the test drive *from* a non-OS partition of the test rig, giving a measure of the drive's interface performance as well as the write performance.

b. Time taken to copy the file(s) *from* the first partition of the test drive *to* a non-OS partition of the test rig, giving a measure of the drive's interface performance as well as the read performance.

c. Time taken to copy the file(s) from the first partition of the test drive to its second partition, giving a measure of the drive's internal mechanics as well as its overall performance.

Real World Tests: Multitasking Copy (External Drives Only)

We copied 1 GB of assorted data *from* the external hard drive and *to* it simultaneously. This tests the drive's multitasking capability, and also gives a measure of its interface performance by taking the USB interface to the limits of data throughput.

Real World Tests: Photoshop CS2 (Internal Drives Only)

We installed Adobe Photoshop CS2 and configured the scratch file to occupy the first partition of the test drive. We then fired up the application and noted the time taken for it to open. We then copied two PSD files, one of them 550 MB and the other 1 GB, to the first partition of the test drive and clocked the times taken to open each of these.

Real World Tests: Far Cry (Internal Drives Only)

We installed the game *Far Cry* on the first partition of the test drive. We started the game and noted the time taken to load the first level completely. We chose this particular game because of a peculiar feature of the "CryENGINE"—*Far Cry*'s game engine, with its rather large level loading times. The peculiarity is that when a level is loaded, the complete map and models are loaded to avoid hiccups during gameplay. It therefore takes a considerable amount of time and serves as a good measure of the hard drive's speed.


Performance

1. The Synthetic Tests

Synthetic tests aim to give you the absolute limit of performance of a drive. They need not reflect real-world performance, and are a measure of the peak performance the drive is capable of delivering.

HD Tach RW

We used the 32 MB test in HD Tach with write-test enabled on each of the drives. Compared to last year, the scores were

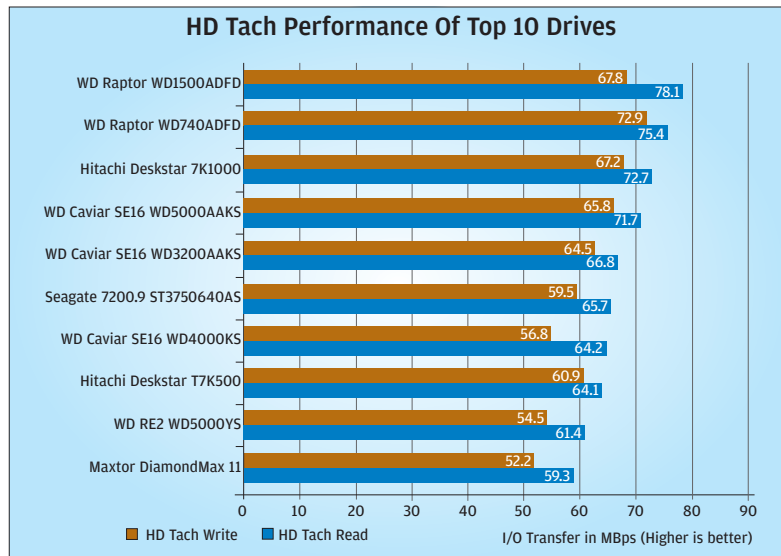


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HD Tach Performance Of Top 10 Drives



found to have increased tremendously, and the credit goes to the superior SATA controller on the Intel 965G chipset-based motherboard which we used this time round. The Raptors boasted the fastest speeds, thanks to their 10K rpm. The Raptor WD1500ADFD topped the charts with average read of 78.1 MB/s in the average write test; the other Raptor, the WD740ADFD, top-scored with 72.9. Next in line were the Hitachi Deskstar 7K1000 and the WD Caviar SE16 WD5000AAKS with very good performance.

CPU utilisation and burst speed do not have much importance these days: CPU utilisation does not matter much because we have very powerful processors even in entry-level PCs these days, and burst speed has little significance as it only indicates the absolute maximum level of data throughput, which is almost never encountered in real-life scenarios. CPU utilisation of most of the drives hovered between 2 and 4 per cent, which is not much. The burst rate of the Seagate 750 GB drive was the highest at 248.7 MBps, again a step higher than what it did last year, probably due to the better SATA controller.

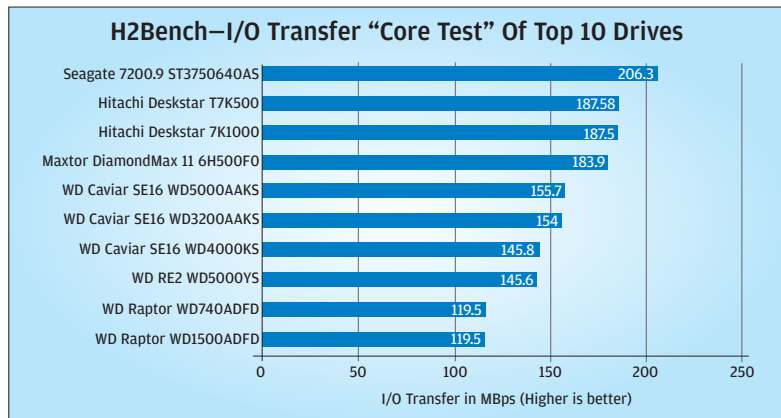
H2Bench

This is a new benchmark. It measures drive performance at a low level and returns a very



Western Digital
Caviar SE16 WD3200AAKS
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H2Bench—I/O Transfer "Core Test" Of Top 10 Drives



precise measure of the performance. Like with HD Tach, in H2 Bench too, the Seagate 750 GB trounced the rest and posted the highest scores in the repetitive sequential read or "Core Test," which we conducted at 50 per cent of the drive capacity. It posted an impressive 206.3 MB/s, followed by the two Hitachis with almost identical scores of around 187.5 MBps. But when it came to read and write random access times, the WD Raptors once again came forth with the highest scores—quicksilver response times. Lower read and write access times means the drive should be able to speedily handle assorted data.

PCMark05

We saw mixed results in the PCMark05 test. While the WD Raptors scored very well in the XP Startup as well as the Application Loading tests, the SATA II drives finally started proving their prowess by emerging with the highest scores in the Virus Scan part of the test. The Maxtor DiamondMax 11 was the top scorer here, while the two Hitachis followed it closely. For some unknown reason, the Samsung HD160JJ 160 GB failed to complete this test, while the Seagate Barracuda 7200.9 ST3500641AS could not complete the Virus

Scan part. We tried to repeat the test several times, but to no avail.

SiSoft Sandra Pro Business 2007

We saw four top contenders after conducting the SiSoft Sandra benchmarks. The usual suspects,

the WD Raptors, were

at the top, but very close to them this time were the Hitachi

Deskstar 7K1000 and the WD Caviar SE16 WD5000AAKS, all with respectable scores breaching the 70 MBps barrier in the drive index. The scene was similar when we took a look at the sequential and assorted read and write indices.

The drive index is derived from the combination of the random and sequential read and write indices. It is therefore a measure of the drive's transfer rate, independent of the interface.

SiSoft Sandra also measures the access time of the drives, and the results yielded were not surprising. Both the Raptors were yet again the top scorers, along with both the Hitachis and the WD RE2 WD5000YS, with each drive exhibiting an access time of 6 ms.

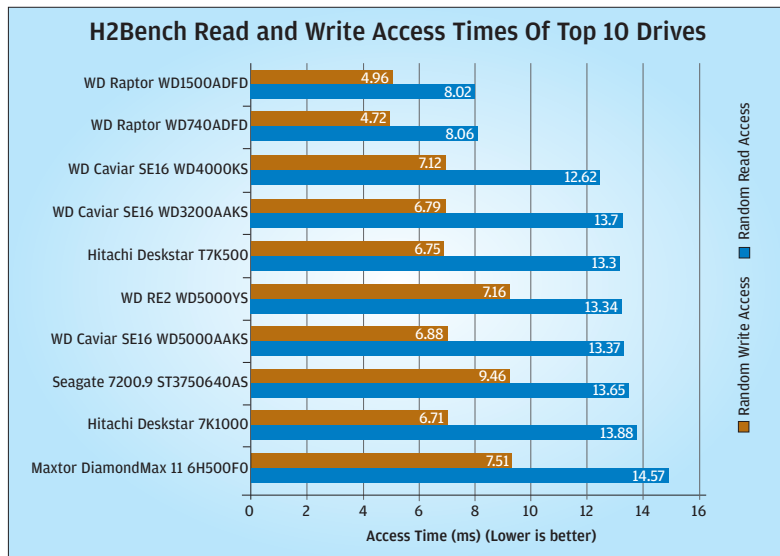
2. The Real-world Tests

To find out whether the drives match up to the synthetic performance when they are put to work in the real world, we conducted a battery of real-world tests.

File Transfer

We transferred 4 GB of data, sequential and assorted, to and from the drive and also with-

H2Bench Read and Write Access Times Of Top 10 Drives



in the drive, and clocked the scores. This test simulated a real-world file transfer. We transfer files such as songs, movies, documents, and programs every day from one hard drive to another or from one partition to another. This test brings out exactly how well these drives perform in these routine activities.

To a large extent, the drives did match up to their synthetic test performance results. The WD Raptors scored well in almost every file transfer test, but there were others such as the Seagate

750 GB and the Maxtor DiamondMax 11 that did not disappoint either.

Internal transfer is the most stressful of all the file transfer tests, so a drive that excels in these is a real performer. As we'd expected, the WD Raptors, owing to their faster rpm and lower access times were the clear winners in the internal assorted file transfer test, taking just around two and a quarter minutes to complete. In the internal sequential file transfer test, the Seagate 750 GB took just over two minutes, followed by the both the Raptors and the Maxtor DiamondMax 11, each lagging by just a few seconds.

Application Loading: Photoshop CS2 And Far Cry

Here we noted the time required to open Adobe Photoshop CS2 with the scratch disk configured to be on the test drive, and we were completely taken by surprise. Two Samsung drives (300 GB and 400 GB) loaded Photoshop faster than the rest, even though the difference was just around a second. We then opened the 550 GB and 1 GB PSD files that were present on the test hard drive. The Western Digital Caviar SE16 drives as well as the WD RE2 WD5000YS were found to be the top three performers here. The slowest drives were the 400 GB drives from Seagate and Samsung, trailing by at least 15 seconds.

We then opened the 1 GB file, and the 74 GB Raptor returned to top position—to which

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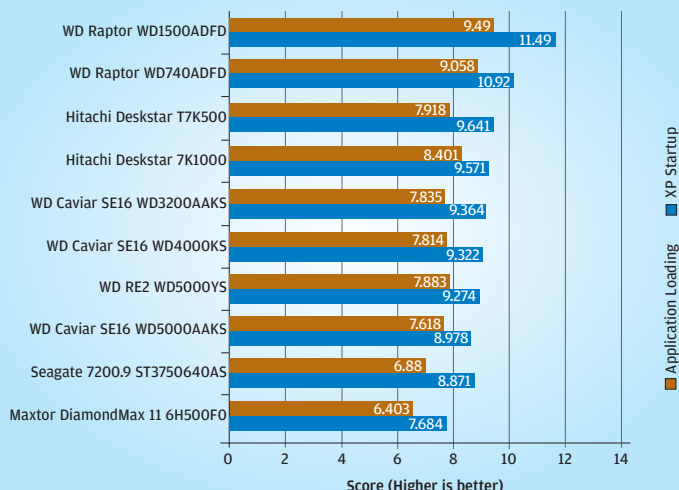


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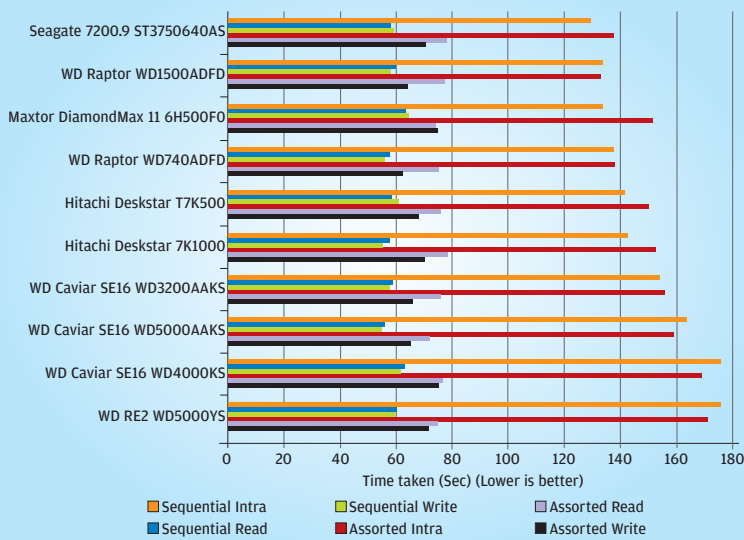
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PC Mark 05 Performance Of Top 10 Drives



Real World 4 GB File Transfer Speeds Of Top 10 Drives



it has gotten accustomed—taking just 68.5 seconds. The slowest to open the file was the Samsung HD300LJ, at 1 minute and 47 seconds.

Far Cry level loading times did not reflect too much variation. We probably need bigger levels to load to find a well-defined variation in the game loading times, or a newer game that can take the hard drives of today to their performance limits.

A Few More Things...

For those particular about their PCs being noiseless, we recommend the Seagate and Samsung hard drives. They generated the least amount of noise. When it comes to heating, the Maxtor drives and the WD Raptors would qualify as room-heaters during the winters. While it is understandable that such heat is bound to be produced at 10,000 rpm by the Raptors—they have also been provided heat dissipation fins on the sides—the Maxtor produces an equally large amount of heat for

unknown reasons. These hard drives will therefore require a really well-ventilated cabinet, and the possible addition of active cooling would be helpful.

The Seagate hard drives came with the jumpers set to limit their performance to SATA I. This has been done by Seagate to do away with incompatibilities you would experience if the drive is connected to a SATA I controller. But if you have a motherboard with a SATA II controller, you must remove the jumper to unleash the full potential of the drives.

The Winners

Performance is given the highest importance when it comes to a hard drive buying decision, but price also has to be a factor.

There is no doubt that the Western Digital Raptor drives delivered the best performance, zooming past the others. But these drives are, incidentally, the most expensive, when you consider paise per MB, which is 7.69 for the 150 GB and as high as 10.58 for the 74 GB drive. A regular home user would not spend that much for this amount of storage. Therefore, these drives are only suitable for scenarios such as video capturing, where performance cannot be compromised upon, and when price is not a criterion.

The Hitachi 1 TB provides the ultimate in performance and capacity combined, and is a drive for the mainstream market. But consider this: at Rs 21,000, its price tag is even fatter than its capacity, and we'd advise you to get three 500 GB hard drives, for the same price (assuming your cabinet can take in so many). But as has been the trend, the price will drop steeply.

The Western Digital Caviar SE16 WD3200AAKS is 320 GB, and exhibited excellent performance. The paise per MB is just 1.47. Thus, priced at Rs 4,500, this one means very good value for money and therefore gets the *Digit Best Buy Gold*.

With equally impressive performance scores and a huge 500 GB of space, the Western Digital Caviar SE16 WD5000AAKS has a price per MB of 1.57 paise. Rs 7,500 is not too high for this kind of performance. We decided to award this drive the *Digit Best Buy Silver*.



Western Digital Caviar
SE16 WD5000AAKS
Space, speed and value!

EXTERNAL HARD DRIVES

When it comes to sharing your data or simply synchronising data between your office and home, external hard drives play a vital role. The best thing is that you do not need to open your cabinet to transfer data—just plug it into the USB port and play!

We selected 13 drives for this test. Of these, two were from Iomega, five from WD, three from Maxtor, one from Philips, and two were from Seagate.

Backup External Hard Drives

These drives are meant for large and frequent backups. Capacities start from 250 GB, and the prices are considerably higher, too. Most of them come with backup software of some kind and special features such as backup buttons. FireWire ports are common too. These drives are bulkier than those in the portable drive category (read on) as they seldom need to be carried around. System administrators, rather than home users, are the consumers for this category of external hard drives.

There was a 250 GB Iomega, a 500 GB and a 1 TB drive from Maxtor, three 500 GB and one 1 TB drive from WD, a 250 GB drive from Philips, and a 750 GB drive from Seagate in this category.

Features

Capacities and RPM

Capacities in this category ranged from 250 GB to 1 TB. The 1 TB drives were the Western Digital My Book Pro Edition II and the Maxtor OneTouch III Turbo Edition, containing two hard drives each. Being backup drives, a higher



Western Digital My Book Essential
Great value backup!

capacity is always preferred, considering the fact that even entry-level PCs come with over 100 GB drives today. All the drives had an rpm of 7200, and most featured a healthy 16 MB buffer, which is adequate for just about any purpose.

Interfaces

All the drives except the Iomega, Philips, and WD My Book Essential featured the USB 2.0 as well as the FireWire interfaces. The above-mentioned drives featured only USB 2.0. The other drives came with two FireWire ports, which lets you connect more drives in a daisy-chain, and does not require the computer to have more FireWire ports to add compatible devices. This can be used to either connect other FireWire devices such as DV cams, or to augment drive space by connecting more such drives. Some drives such as the Maxtor drives and the WD My Book Pro Edition and Pro Edition II even had FireWire 800, which supports a data throughput of 800 Mbps—twice of that offered by FireWire 400.

Bundled Software

EMC Retrospect was the software of choice of most brands. It came with the Maxtor drives, the Iomega, as well as the Western Digital My Book Pro Edition and Pro Edition II. This is a premium software that allows you to back up as well as synchronise your data with your laptop or PC. The WD My Book Premium Edition came with WD Backup, a proprietary backup software, while the WD My Book Essential came with no backup software at all.

Advantage SATA

SATA is the de facto standard of hard disk storage today; the older IDE or PATA is *passé*. So what's different? Does it deliver what it promises? Is it really worth it or is it hype?

To start with, SATA drives support a faster data throughput than IDE drives. While IDE drives cap at 133 MBps (1.04 Gbps), SATA drives begin at 1.5 Gbps, while SATA II (actually, a misnomer—it should be called SATA 3.0 Gbps) can go up to, well, 3 Gbps. When benchmarked against IDE drives, it does show an appreciable improvement in the throughputs; these numbers are therefore not just on paper—you can see the performance improvement in real-life scenarios such as file copying and application loading.

SATA drives feature a four-conductor data cable that does not just make it slimmer, remain tangle-free, and enable better ventilation in the cabinet, but also a lot easier to attach.

Hot-plug is yet another advantage offered by SATA drives. This feature lets you plug or remove a SATA drive without switching off the PC. The SATA controller on the motherboard must support this feature, though.

Another important feature of SATA drives is Native Command Queuing (NCQ), which it borrows from SCSI drives. NCQ improves efficiency and performance. During normal reads or writes, commands arrive at the disk and are executed on a first-come-first-served basis. This creates a mechanical overhead when the read/write head has to be constantly repositioned. SATA drives make use of an algorithm to

determine the most efficient way to execute this queue of commands to create the least possible mechanical overhead. This results in a general performance increase. This feature was initially only found on SATA II drives, but has since been incorporated in many SATA I drives too.

The Port Multiplier spec on SATA II allows you to connect up to 15 such drives to a single SATA controller via a port multiplier. Though this still compares unfavourably when you consider the number of drives that can be connected to Fibre Channel or Serial Attached SCSI (SAS), it will make it easier to build disk enclosures for SATA drives.

Port Selectors allows two hosts to be connected to a drive, thus creating a redundant connection to the drive. Thus, if one of the hosts fails, the other can take over and the PC will not go down. A home user will not be much interested in this feature, but the enterprise segment would find this very useful.









As you can see in this shootout, which featured a few SATA I (1.5 Gbps) drives as well, there is not too much of a performance gain with SATA II. Do not, therefore, expect miracles from these drives; they are just a tad bit faster in real-world tests.

The prices of both versions are the same, and further, most drives are backward-compatible with SATA I controllers. In case of any compatibility issues, you can even manually set the SATA II drive to function as a SATA I drive. It therefore makes sense to go with these drives rather than SATA I.

<div>  Scoreboard </div> <div>Internal SATA Hard Drives</div>							
BRAND MODEL	Western Digital RaptorWD740ADFD	Samsung HD080HJ	Western Digital RaptorWD1500ADFD	Samsung HD160JJ	Western Digital Caviar RE16 WD1600YS	Maxtor DiamondMax 10	Western Digital Caviar RE16 WD2500YS
							
Price (Rs)	7,500	1,900	11,000	2,425	3,200	3,500	4,500
+	+ Ultimate performance	+ Lowest-priced	+ Ultimate performance	+ None in particular	+ Good performance	+ Value for money	+ Good performance
-	- Too expensive	- High cost per GB	- Too expensive	- Relatively slow	- Less value for money	- SATA/150	- Less value for money
Final Score (Out of 100)	61.62	61.44	62.71	64.11	67.84	72.83	69.79
Performance (Out of 70)	58.04	46.21	57.77	40.24	49.22	46.89	49.62
Cost/Capacity Index (Out of 30)	3.59	15.24	4.93	23.87	18.62	25.94	20.18
Features							
Formatted Capacity (GB)	74	80	150	160	160	250	250
Actual Capacity (GB)	69.24	74.53	139.73	149.05	153.38	233.76	233.76
Interface Type	SATA	SATA II	SATA	SATA II	SATA II	SATA	SATA II
Number of Platters	1	1	2	2	2	NA	3
Number of Recording Surfaces	2	2	4	4	4	NA	6
Rotational Speed (RPM)	10000	7200	10000	7200	7200	7200	7200
Buffer Memory (MB)	16	8	16	8	16	16	16
Performance							
Synthetic Tests							
HD Tach RW 3.0.1.0							
Average Read (MB/s)	75.4	51	78.1	52.7	55.9	56.8	55.6
Average Write (MB/s)	72.9	48.8	67.8	51	53.7	54.8	53.1
CPU Utilisation (%)	4	2	3	3	3	4	2
Random Access Time (ms)	8	13.2	7.9	13.5	12.9	14.8	12.9
Read Burst Speed (MB/s)	133.3	204.8	132.5	205.4	194.4	135.3	198.5
H2Bench							
Interface Speed (50%):	114	111.7	112.9	108.9	123.4	124.3	124
Sequential Transfer (MB/s)							
Repetitive Sequential Read "Core Test" (MB/s)	119.5	169.6	119.5	168.6	153.3	121.5	153.6
Random Access Read (ms)	8.06	13.16	8.02	13.43	12.94	13.37	13.39
Random Access Write (ms)	4.72	7.03	4.96	7.44	6.53	7.25	6.7
PCMark05							
HDD XP Startup (MB/s)	10.92	7.683	11.495	Fail	9.053	7.963	8.963
HDD Application Loading (MB/s)	9.058	6.02	9.49	Fail	7.622	6.415	7.518
HDD Virus Scan (MB/s)	96.787	77.447	95.903	Fail	92.835	87.904	91.424
SiSoft Sandra Pro Business 2007							
Drive Index (MB/s)	72	52	73	52	55	52	55
Sequential Read (MB/s)	83	59	85	61	62	62	62
Random Read (MB/s)	55	41	56	42	44	35	44
Sequential Write (MB/s)	81	59	82	50	62	63	63
Random Write (MB/s)	58	44	59	40	43	48	44
Access Time (ms)	6	8	6	8	7	13	7
Real-World Tests							
Assorted 4 GB File Write (sec)	64.6	83.1	64.5	80	78.1	75.4	68.3
Assorted 4 GB File Read (sec)	74.3	88.1	77.2	83.9	82.4	81.2	82.4
Assorted 4 GB Internal Copy (sec)	137.3	187	132.2	161.8	170.8	155.8	170
Sequential 4 GB File Write (sec)	56	75.6	56.2	80.3	68.1	66.5	68.1
Sequential 4 GB File Read (sec)	57.5	79.6	59.5	86.3	67.9	66.4	67.7
Sequential 4 GB Internal Copy (sec)	136.7	180	132.5	191	163	142	161.2
Photoshop CS2 Startup Time (sec)	11.7	9.8	12.2	12.1	10.5	10.6	11.4
Image Load (550 MB file) (sec)	39.6	39.5	39.3	43.3	42.1	42.9	45.8
Image Load (1 GB file) (sec)	68.5	94.5	95.8	97.6	84.1	91.8	84.8
FarCry Level Load Time (sec)	26.9	29.6	26	30	27.6	29.8	27.4
Price Per MB (Paise)	10.58	2.49	7.69	1.59	2.04	1.46	1.88



Internal SATA Hard Drives

Western Digital Caviar SE16 WD2500KS	Samsung HD300LJ	Western Digital Caviar RE16 WD3200YS	Western Digital Caviar SE16 WD3200AAKS	Samsung HD400LJ	Seagate Barracuda 7200.8 ST3400832AS	Western Digital Caviar SE16 WD4000KS	Hitachi Deskstar T7K500
							
3,700	4,400	5,300	4,500	5,600	5,500	5,500	8,100
+ Value for money - None in particular	+ Value for money - Average performance	+ Good performance - Cost per GB a bit high	+ Speedy performance - None in particular	+ Value for money - None in particular	+ Value for money - SATA/150	+ Value for money - None in particular	+ Fast transfer speeds - Cost per GB a bit high
72.90	69.75	71.28	79.87	75.24	71.25	77.27	76.11
48.45	45.08	49.43	54.15	49.40	44.94	50.96	53.77
24.45	24.67	21.84	25.73	25.84	26.31	26.31	22.33
250	300	320	320	400	400	400	500
232.88	279.46	298.09	298.09	372.61	372.61	372.61	465.76
SATA II	SATA II	SATA II	SATA II	SATA II	SATA	SATA II	SATA II
3	3	3	3	3	3	3	3
6	6	6	6	6	6	6	6
7200	7200	7200	7200	7200	7200	7200	7200
16	8	16	16	8	8	16	16
55.6	50.1	57.1	66.8	63.7	59.9	64.2	64.1
53.4	39.4	55.4	64.5	60.7	54.3	56.8	60.9
2	2	2	2	4	2	4	4
13.4	15.8	13.2	12.7	15	24.4	12.9	12.8
200.7	205.2	195.9	197.5	175.6	128.3	187.5	213.3
124.5	115.4	143.6	122.7	107.8	98.7	118.3	157.9
167.5	166.5	162	154	147.7	117.7	145.8	187.58
13.43	15.09	13.41	13.07	15.45	23.27	12.62	13.3
8.42	7.8	7.58	6.79	7.76	17.61	7.12	6.75
8.76	7.558	9.017	9.364	7.784	8.213	9.322	9.641
7.355	5.998	7.361	7.835	6.053	6.555	7.814	7.918
91.003	79.429	84.801	93.461	72.539	80.472	93.231	126.806
55	49	56	66	64	58	62	64
62	58	64	77	75	67	71	74
42	39	45	50	46	46	47	50
62	53	63	77	76	65	70	70
47	37	47	51	54	44	55	54
8	8	7	7	9	7	7	6
78	80.9	87.5	66.8	66.3	79.9	73.5	73.5
86.3	82.7	80	75.6	76.7	82	76.8	77.9
177	186.4	166	155.4	154.3	208.7	166.9	150.7
70.6	72	66.8	57.6	58.2	65.7	61.3	61
68.3	71.2	66.8	58.3	57.5	64.9	62.2	58.1
162.5	171.2	164.7	151.4	150.9	218	171.7	141.2
10.1	8.4	10.8	10.1	8.9	9.2	9.4	11.4
47.5	47.3	45.5	37.7	48.5	50.8	42.5	39.4
85.6	107.1	82.2	74.2	98.7	96.8	81.9	92.7
28	29.4	28.4	27.3	28.5	29	28.1	28
1.55	1.54	1.74	1.47	1.47	1.44	1.44	1.70


Scoreboard
Internal SATA Hard Drives

BRAND MODEL	Maxtor DiamondMax 116H500F0	Seagate Barracuda 7200.9 ST3500641AS	Western Digital Caviar SE16 WD5000AAKS	Western Digital RE2 WD5000YS	Seagate Barracuda 7200.9 ST3750640AS	Hitachi Deskstar 7K1000
						
Price (Rs)	6,700	7,200	7,500	9,800	13,200	21,000
+	+ Value for money	+ Value for money	+ Fast transfer speeds	+ Good performance	+ Good performance	+ Great performance
-	- None in particular	- Average performance	- None in particular	- Expensive	- A bit expensive	- Very expensive
Final Score (Out of 100)	77.55	69.81	78.31	64.11	73.60	72.70
Performance (Out of 70)	50.55	44.68	54.19	52.12	53.04	55.47
Cost/Capacity Index (Out of 30)	27.00	25.13	24.12	18.46	20.56	17.23
Features						
Formatted Capacity (GB)	500	500	500	500	750	1000
Actual Capacity (GB)	465.76	465.76	465.76	465.76	698.64	931.51
Interface Type	SATA II	SATA II	SATA II	SATA II	SATA II	SATA II
Number of Platters	4	4	4	4	4	4
Number of Recording Surfaces	8	8	8	8	8	8
Rotational Speed (RPM)	7200	7200	7200	7200	7200	7200
Buffer Memory (MB)	16	16	16	16	16	32
Performance						
Synthetic Tests						
HD Tach RW 3.0.1.0						
Average Read (MB/s)	59.3	52	71.7	61.4	65.7	72.7
Average Write (MB/s)	52.2	47.7	65.8	54.5	59.5	67.2
CPU Utilisation (%)	2	4	4	2	3	3
Random Access Time (ms)	13.9	13.6	13.7	13.1	14.3	14
Read Burst Speed (MB/s)	235.9	237.7	199.5	191	248.7	197.8
H2Bench						
Interface Speed (50%): Sequential Transfer (MB/s)	161.2	157.5	137.7	117.2	189.3	134.4
Repetitive Sequential Read "Core Test" (MB/s)	183.9	183.4	155.7	145.6	206.3	187.5
Random Access Read (ms)	14.57	13.84	13.37	13.34	13.65	13.88
Random Access Write (ms)	7.51	9.29	6.88	7.16	9.46	6.71
PCMark05						
HDD XP Startup (MB/s)	7.684	5.894	8.978	9.274	8.871	9.571
HDD Application Loading (MB/s)	6.403	6.669	7.618	7.883	6.88	8.401
HDD Virus Scan (MB/s)	127.535	Fail	93.781	90.58	109.786	126.387
SiSoft Sandra Pro Business 2007						
Drive Index (MB/s)	56	53	71	62	64	71
Sequential Read (MB/s)	66	61	82	70	75	83
Random Read (MB/s)	41	42	53	49	46	55
Sequential Write (MB/s)	64	60	80	69	74	77
Random Write (MB/s)	46	42	60	56	49	54
Access Time (ms)	9	7	7	6	8	6
Real-World Tests						
Assorted 4 GB File Write (sec)	73.4	84.4	65.6	71	71	68.2
Assorted 4 GB File Read (sec)	72.4	84.9	73	73	77.2	77.9
Assorted 4 GB Internal Copy (sec)	148.7	164.7	159.2	166.1	137.7	152.7
Sequential 4 GB File Write (sec)	64.1	72.3	56.7	59.5	58.5	55.3
Sequential 4 GB File Read (sec)	63	69.3	57	60.3	57.5	57.7
Sequential 4 GB Internal Copy (sec)	133.4	157.8	164.3	171.9	128.5	143.4
Photoshop CS2 Startup Time (sec)	11.2	12.7	13.2	11.4	11.3	9.5
Image Load (550 MB file) (sec)	44.8	46.6	34.5	37.5	41	38.9
Image Load (1 GB file) (sec)	100	99.1	81.8	84.2	97.2	94.3
Farcry Level Load Time (sec)	30	29.1	26.1	27.8	28.7	26.9
Price Per MB (Paise)	1.40	1.51	1.57	2.05	1.85	2.20

The Seagate Pushbutton 750 GB came bundled with Bounceback Express which, in conjunction with the push-button on the drive, easily and conveniently backs up data.

The Philips SPD5110CC managed its backup using Nero BackTup, and as a bonus, also Nero PhotoShow Express to help you organise and view your image collection.

The WD My Book Pro Edition II and Maxtor OneTouch III Turbo Edition came with software that allows you to configure the twin drives inside in RAID. Therefore, these drives can be configured either as RAID mirroring for extra data protection (using data redundancy), or RAID striping for speed and performance.

Cables And Accessories

All the necessary cables were provided with the drives. This means you won't need to spend extra on cables after buying any of these drives.

Other Features

Volume-wise, the Iomega Desktop Hard Drive was the smallest, but the lightest drive was the WD My Book Pro Edition, weighing just 1.2 kg. These drives are comparatively easier to carry around than the bulkier drives; the Maxtor OneTouch III Turbo Edition, in particular, weighs in at 2.6 kg!

The Maxtor drives are ruggedly built with rubberised jackets that increase their ability



Maxtor OneTouch III Turbo Edition
Space, more space!

to withstand mechanical shock. The WD drives, too, are very ruggedly constructed, and had rubberised edges. The Seagate drive has been designed in such a way that more such can be stacked one over the other, in case you wish to augment storage capacity by means of a daisy chain.

All the drives except for the WD My Book Essential came with backup buttons which, in conjunction with the backup software, let you create backups at the touch of the button. The backup button on the WD My Book Premium, Pro Edition, and Pro Edition II glows an eerie blue while data is being transferred, and serves as a capacity gauge that provides a rough idea of how much space is available on the drive.

The WD My Book Pro Edition II is user-serviceable, meaning you can open it and send the individual hard drives for an RMA in case of a disaster. Some drives such as the WD My Book Pro Edition II and the Maxtor OneTouch III Turbo Edition also feature a cooling fan that blows out heat generated within the unit.

The Iomega, Philips, and Seagate drives come with stands that let you place them in an upright position, thus saving on desktop real estate.

All the drives in the WD My Book series resemble extra-large reference books, and can be easily kept in either the horizontal or upright position without the need for a stand.

Enjay SlimPC

1 Year Warranty

**Small PC
Huge Saving**

Enjay MiniPC

Specifications

CPU	200 MHz (Specially for Thin Client)
Memory	128 MB SDRAM onboard
Graphic	15 pin D type female VGA connector
Ethernet Interface	10/100 Mbps onboard
IO	IDE, 1 Parallel port, 3 USB, Ps2 Keyboard & Mouse con.
Audio	Ac97 CODEC
Power	+5V @ 3A (15 watts only)
Dimensions	5.5" x 4.5" x 2.5"
Weight	150g
Operating Temp.	0, 160°C

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Performance

HD Tach RW

The drives performed almost on par with each other when we measured the random access times. The Seagate Pushbutton drive was one of the slower ones with 21.7 ms, while the others hovered around the 16 ms mark. However, the CPU utilisation was found to have a wide variation, with the Philips scoring 1%, and the WD My Book Pro Edition and Pro Edition II eating up 8%. The read and write speed tests did not show much variation across the segment.

SiSoft Sandra Pro Business 2007

Once again, as was the case with HD Tach, none of the drives emerged as a clear winner in SiSoft Sandra filesystem speed tests. It seemed the drives were more or less similar in terms of speed in both the assorted and sequential read as well as write tests. The Western Digital My Book Pro Edition and Pro Edition II drives were the slower performers, but we must state that we can by no measure term them as slow; the drive indices they scored were 28 and 26 respectively, while the best drive index was 30.

The access times of most of the drives were found to be somewhere in the range of 9 ms, and the slowest one in this case was the Iomega with 17 ms, which is twice as slow as that of the drives with the fastest access times.

Real-world Tests: File copy

In the 1 GB assorted data write test, the WD My Book Pro Edition II was the slowest at 58.67 seconds, while the Maxtor OneTouch III Turbo Edition exhibited, well, turbo performance, taking just 43.39 seconds. Lesser variance was seen when data was copied from the drive, that is, in the read performance. The



Western Digital
Passport Black 80GB
The black puma!

fastest was the Maxtor OneTouch III, and slowest was yet again the WD My Book Pro Edition II.

The Maxtor OneTouch III Turbo Edition was the fastest, while the Iomega was the slowest when 1 GB assorted files were copied from one partition to another, and there was a lot of variation this time. This test pushes the drive mechanics to the limits. The Maxtor OneTouch III Turbo Edition took just a minute and 13 seconds, while the Iomega took too long—a minute and 43 seconds.

We then transferred the assorted files simultaneously to and from the drive to push the interface to its performance limits. Once again, the Maxtor

OneTouch III Turbo Edition exhibited excellent performance, while the Iomega was the slowest. We can deduce from this that while synchronising or

backing up data, the Maxtor OneTouch III will definitely do a better job.

Portable External Hard Drives

People who need to occasionally back up their data or swap data with friends and colleagues prefer lower-capacity drives—those in this category. These are typically lighter and hence more mobile. Internally, these have laptop hard drives instead of Desktop drives.

This category consisted of just four entrants; one each from Iomega, Maxtor, Seagate, and Western Digital.

Features

Capacities And RPM

The WD Passport has the highest capacity with 160 GB, while the lowest capacity was that of the Iomega at 80 GB. The Seagate and Maxtor drives have capacities of 100 GB each. Even the lowest of these capacities is good enough for most of your backups and data transfers.

Barring the Iomega, which has a 4200 rpm hard drive, the others all sported a faster 5400. This was expected to be reflected in the tests, but as you'll see, that was not to be.

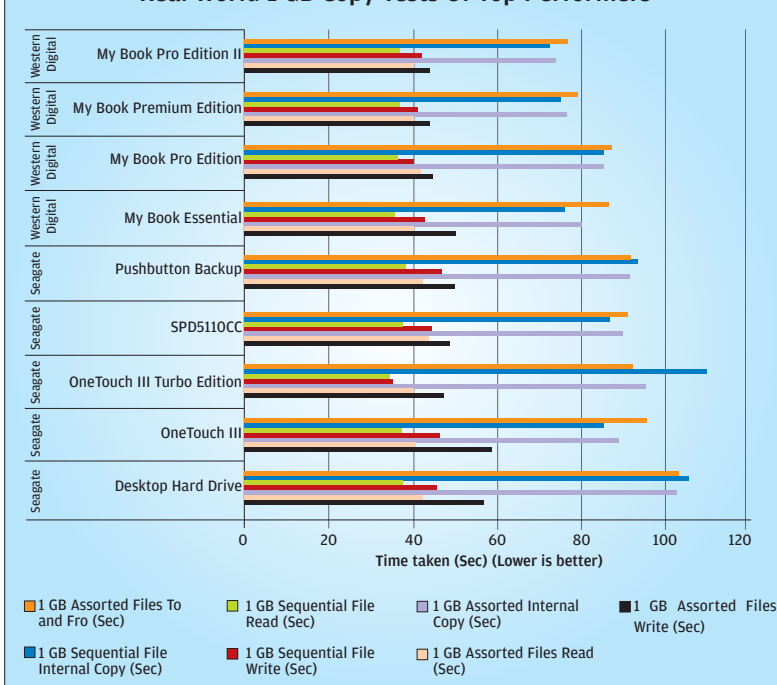
Interfaces

These drives featured only the USB 2.0 interface. The peak throughput supported by USB is 480 Mbps; you can transfer a 700 MB DivX movie in 12 seconds flat, at least theoretically, though the practical speeds are over twice as slow.

Bundled Software

We had not anticipated much with these drives (these being priced a lot lower than the Desktop External Drives) on the software front, but the Iomega Portable Hard Drive came with EMC Retrospect, a good backup software. The Maxtor OneTouch III Mini Edition came with Maxtor OneTouch Manager, which is equally good at backing up data. The WD Passport came with WD Sync. Seagate did not provide any backup software.

Real World 1 GB Copy Tests Of Top Performers



Cables and Accessories

USB cables were supplied with all the drives. In some systems, the power that the USB port supplies is insufficient to drive an external hard drive.

To remedy this, the Maxtor OneTouch III Mini Edition and Seagate ST9100801U2RK have a cable with two USB connectors to connect to two USB ports—one that carries data and the other that exclusively carries power.

Other Features

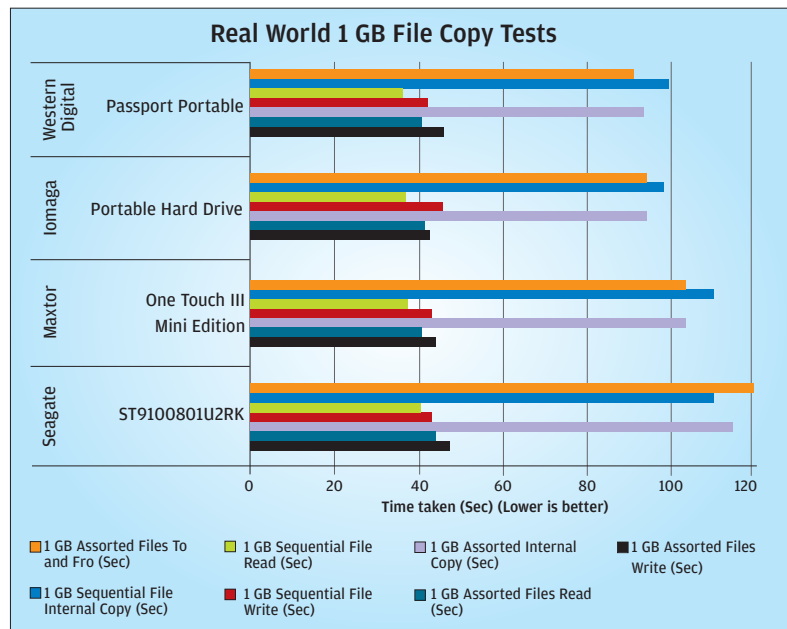
To solve the USB power problem in a way other than providing a two-port USB cable, all the drives except the WD Passport came with a power connector to which you can connect a power adapter.

When it comes to ruggedness, nothing beats the Seagate, which has a hard casing with an aluminium mesh on the side, which helps in ventilation.

The Maxtor OneTouch III also seemed to be durable. Thanks to the rubber jacket, it may even endure a “drop test.” We didn’t test this of course, not sure of what drive was inside, but it’s reassuring to the touch. The Iomega had a simple casing, which seemed the weakest.

The lightest of all the drives was the Iomega, which also has the smallest dimensions. The WD Passport is also sleek, and has a rubberised base.


The Maxtor OneTouch III Mini Edition has a backup button, meaning backups at just the touch of one button.



Performance

HD Tach RW

While there was not much variation in the random access time, the CPU utilisation of the Seagate drive was the lowest at just 3 per cent. The Iomega and Maxtor drives took up 8 per cent of CPU time. These CPU utilisation levels are considered normal, but anything above 15 per cent means something isn’t right.





I am my own network manager

Technology is not your profession. Yet, as a small business owner you have to deal with it everyday. From your workstations, printers and all those pieces of hardware to managing your intranet, the accounting software and keeping those viruses away, your business depends on technology.

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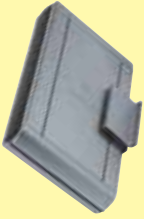


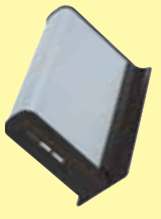


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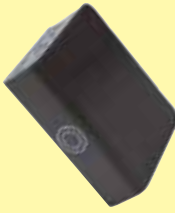


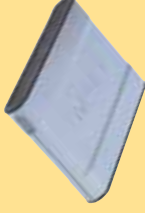







Scoreboard

Backup External Hard Drives

BRAND MODEL	Iomega Desktop Hard Drive	Maxtor OneTouch III	Maxtor OneTouch III Turbo Edition	Philips SPD5110CC	Seagate Push- but- ton Backup	Western Digital My Book Essential
						
Price (Rs)	5,450	19,000	36,200	6,990	20,200	8,300
At a Glance	+Inexpensive -Slow performance	+Good performance -Expensive	+Excellent performance -Too expensive	+Inexpensive -No FireWire	+Good performance -Expensive	+Value for money -No FireWire, backup software
Final Score (Out of 100)	67.25	67.46	69.29	66.47	67.05	69.40
Features (Out of 35)	16.87	20.82	24.08	14.66	21.57	18.32
Performance (Out of 50)	36.88	42.76	43.18	41.28	41.85	42.22
Price Index (Out of 15)	13.50	3.87	2.03	10.53	3.64	8.86
Features						
Formatted Capacity (GB)	250	500	1000	250	750	500
Actual Capacity (GB)	232.88	465.76	931.52	232.88	698.64	465.75
Rotational Speed (RPM)	7200	7200	7200	7200	7200	7200
Buffer Size (MB)	8	16	16	8	16	16
USB (✓/✗)	✓	✓	✓	✓	✓	✓
FireWire 400 (✓/✗/Numbers)	✗	✓	✓	✗	✓	✗
FireWire 800 (✓/✗/Numbers)	✗	2	2	✗	✗	✗
Bundled Software	EMC Restrospect	EMC Retrospect, Maxtor OneTouch Manager	EMC Retrospect	Nero BackItUp, Nero PhotoShow Express	BounceBack Express, DiskWizard	Google Picassa, WD Diagnostics
Dimensions (W x D x H) (mm)	121x222x34.9	136x65x217	136x65x217	145x304x242	76.4x181x171.5	52.7x141x170.5
Weight (Kg)	1.26	1.64	2.60	1.40	1.82	1.32
Cables and Accessories Provided	USB cable, Power adapter	USB cable, Power adapter, Firewire 800 cable	Power adapter, Firewire 800 cable	USB cable, Power adapter	USB cable, Power adapter, Firewire 400 cable	USB cable, Power adapter
Misc	Backup button, Power switch, Stand	Backup button, Power switch	Backup Button, Power switch	Backup button, Power switch, Stand	Backup button/Power but- ton, Stand	Power switch
Ruggedness (So10)	5.5	7.5	7.5	5	6	6.5
Performance						
Synthetic Tests						
HD Tach RW						
Random Access (ms)	13.6	18.7	16.9	17.9	21.7	13.6
CPU Utilisation (%)	5	2	3	1	4	5
Average Read (MB/s)	31.4	34.7	34.6	33.9	34.9	34.2
Average Write (MB/s)	25.6	26.1	26.2	26.9	27.3	23.9
SiSoft Sandra Pro Business 2007						
Drive Index (MB/sec)	26	30	29	30	29	29
Sequential Read (MB/sec)	31	33	33	33	33	33
Random Read (MB/sec)	20	26	25	27	26	26
Sequential Write (MB/sec)	25	27	26	26	26	28
Random Write (MB/sec)	23	27	26	26	26	23
Access Time (ms)	17	9	9	8	9	8
Real World Tests						
1 GB Assorted Files Write (sec)	55.93	44.71	43.39	47.33	50.76	44.74
1 GB Assorted Files Read (sec)	41.74	39.64	39.87	39.89	39.98	41.91
1 GB Assorted Internal Copy (sec)	103.2	76.05	73.36	95.82	80.1	84.92
1 GB Sequential File Write (sec)	44.52	40.9	41.21	36.18	42.84	40.11
1 GB Sequential File Read (sec)	37.09	35.5	35.62	35.35	35.86	35.37
1 GB Sequential File Copy (sec)	106.27	74.87	71	110.87	76.11	84.72
Multitasking Test						
1 GB Assorted Files To and Fro (sec)	103.64	78.79	75.3	93.14	86.26	86.17
Price Per MB (Paise)	2.13	3.71	3.54	2.73	2.63	1.62

			<div> <div>BEST BUY</div> <div>digit</div> <div>JUNE 2007</div> </div> <div> <div>BEST BUY</div> <div>digit</div> <div>JUNE 2007</div> </div>			
Western Digital My Book Pro Edition	Western Digital My Book Premium Edition	Western Digital My Book Pro Edition II	Iomega Portable Hard Drive	Maxtor OneTouch III Mini Edition	Seagate ST9100801U2RK	Western Digital Passport Portable (Black)
						
16,000	9,400	27,450	4,950	5,500	5,500	6,500
+Good bundle -A bit expensive	+Rugged, good value -Mediocre backup soft	+RAID -Very Expensive	+Good performance -Mediocre build	+Backup button -Slower performance	+Excellent build -No backup soft.	+Excellent performance -None in particular
66.47	68.23	66.36	75.63	74.13	69.97	77.09
21.89	20.55	25.12	19.60	21.20	18.78	24.34
39.99	39.85	38.56	38.03	36.73	34.99	39.05
4.60	7.83	2.68	18.00	16.20	16.20	13.71
500	500	1000	80	100	100	160
465.76	465.76	931.53	74.53	93.16	93.16	149.05
7200	7200	7200	4200	5400	5400	5400
16	16	16	8	8	8	8
✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✗	✗	✗	✗
2	✗	2	✗	✗	✗	✗
EMC Retrospect Express, WD Diagnostics	WD Diagnostics, WD Backup	EMC Retrospect Express, WD Diagnostics	EMC Restrospect software	Maxtor OneTouch Manager Software	Sea Tools Online	WD Sync, Google Software
56.7x143x172.2	56.7x143x172.2	104x159.31x174.61	74.4x128.9x12.7	133X20x89	127x94x25	79.78x129.78x15
1.20	1.32	1.93	0.1725	0.21	0.29	0.2310
USB cable, Firewire 400 and 800 cable, Power adapter	USB cable, Firewire 400 cable, Power adapter	USB cable, Firewire 400 and 800 cable, Power adapter	USB cable	USB Y cable	USB Y cable	USB cable
Backup button/Power switch	Backup button/Power switch	Backup button/Power switch	Extra power socket	Backup button, Extra power socket	Extra power socket	None
6.5	6.5	6.5	6	7.5	7	6.5
13.6	13.7	13.7	16.9	18.3	17.5	17.2
8	5	8	8	8	3	4
32.6	32.4	29.4	31	28.4	25	33.3
23.4	23.3	22.2	27.1	25.2	23.5	23.3
28	28	26	27	27	25	29
32	32	31	32	31	28	33
25	24	22	21	22	20	25
25	25	24	26	25	26	26
21	23	21	26	25	25	20
8	9	13	16	14	16	9
49.70	50.23	58.67	43	45.43	49.19	46.65
44.13	43.13	40.74	41.81	41.09	46.01	40.71
91.32	92.3	89.24	95.02	104.98	116.41	95.82
44.89	46.13	45.53	46.41	42.5	44.25	42.2
37.34	37.19	37.57	36.56	37.1	40.96	35.84
88.23	93.92	85.99	97.59	110.75	110.76	99.15
92.71	92.26	97.2	94.2	104.32	120.43	92.89
3.13	1.84	2.68	6.04	5.37	5.37	3.97

The WD Passport was the best performer in the read test with 33.3 MBps, and the Iomega drive top scored with 27.1 in the write test.

SiSoft Sandra Pro Business 2007

For this synthetic test, we created a 32 GB NTFS partition on the drive. Very little variation was seen here: the drive index varied from the maximum of 29 for the WD Passport, to the minimum of 25 for the Seagate. Access times varied more, with the WD having the lowest (9 ms), while the Iomega and Seagate drives had 16 ms—these were the slowest.

Real-World Tests: File copy

Since there was not a pronounced difference in the scores of the drives in the read and write tests in the assorted as well as the sequential file transfer tests, we move on to the intra-drive transfer tests. The Iomega was the quickest here, clocking just 1 minute and 35 seconds for 1 GB; the slowest was the Seagate with a distant 1 minute and 56 seconds. In the sequential file intra-drive test, the Iomega and the WD were the fastest, taking just over a minute and a half, while the Seagate and Maxtor were neck and neck, with the slowest timings of around a minute and 51 seconds.

In the multitasking file transfer test, the WD was the fastest, and took just 92.89 seconds to complete the copying of 1 GB of assorted data. The Seagate took over two minutes for the same task, and its weakness in a multitasking scenario is thus apparent.

The Winners

The Western Digital My Book Essential packs in good value by providing a ruggedly-built 500 GB external drive at just Rs 8,300. The cost per MB works to the lowest of all the drives—just 1.62 paise. Even though it did not come with backup software, you can get one for just a little extra, and so this drive is worth every penny. It's therefore been adjudged the *Digit Best Buy Gold* winner in the Backup External Hard Drive segment.

The Maxtor OneTouch III Turbo Edition is large, at 1 TB; it provides you the option to configure its twin drives in RAID configuration—you can either opt for better speed and capacity or for data security via redundancy. The backup button makes it very convenient for you to take backups using the excellent EMC Retrospect software. This was the performance king in this category and that is the most important parameter here. This drive



Iomega Portable Hard Drive 80 GB
Sleek portability

has got a wealth of features and performance and therefore bags the *Digit Best Buy Silver*. We chose this one over the others for the Silver award because even though it's expensive, at Rs 36,200, it's great if you're looking for sheer performance.

The Western Digital Passport Portable costs a tad bit higher (at Rs 6,500) than the others, but with 160 GB, boasted of the largest capacity. This gives it a very good cost per MB of just 3.97 paise—the best in this category. With excellent performance and coming with the WD Sync backup and synchronising software, this drive won the *Digit Best Buy Gold* award in the Portable External Hard Drive category.

The Iomega Portable Hard Drive was the lowest-priced drive in the portable segment. Its sleekness and lightness made it the most portable of all the drives. The EMC Retrospect backup software fetched it brownie points. With good performance in addition to all this, the Iomega Portable Hard Drive secures the *Digit Best Buy Silver*.

Closing Thoughts

The future is SATA all the way. With optical drives featuring SATA making a presence in the Indian market, the only reason for IDE to be still around is beginning to disappear. SATA 3.0 Gbps is already commonplace, and hot on its heels is SATA 6.0 Gbps. Not only will this new incarnation of SATA boast of superior bandwidth, it will also support connecting multiple drives to a single SATA port in conjunction with port multipliers.

SATA is already making its presence felt even in the external hard drive segment, thanks to External SATA or eSATA. Most external drives currently use the USB or FireWire interfaces that make use of PATA or SATA drives and bridges to translate between the drive's interface and the external ports. This bridging brings in some inefficiency. To get over this and increase data throughput, eSATA seems a viable solution.

This lets external hard drives achieve throughputs as high as their internal counterparts. eSATA requires motherboards with eSATA ports, and this is still fairly uncommon. But if a motherboard does not come with an eSATA port, it can still be upgraded by installing an eSATA Host Adapter Bus (HBA). Though this is definitely the next big thing in external storage, it is likely that it will remain alongside USB and FireWire.

We've tried hard to present all the possible purchase options available today, and we hope you're now in a position to make a better purchase decision. Though prices will always fall, you can't keep putting off a purchase just for that reason, can you? ☒

jayesh_limaye@thinkdigit.com
sumedh_phalak@thinkdigit.com

Contact Sheet		Hard Drives	
Brand	Company	Phone	E-mail / Web site
Hitachi	Cyberstar Infocom Ltd	09341057327	hitachihdd@cyberstarindia.com
Iomega	Neoteric Infomatique Pvt Ltd	022-39828600	sales@neoteric.co.in
Maxtor	Fortune Marketing Pvt Ltd	022-32976788	mumbai@fortune-it.com
Philips	Philips Electronics India Ltd	022-66912325	vishal.d.jamdar@philips.com
Samsung	Samsung Electronics	011-51511234	c.serrao@samsung.com
Seagate	Fortune Marketing Pvt Ltd	022-32976788	mumbai@fortune-it.com
Western Digital	Champion Computers Pvt Ltd	011-26214751	www.championindia.com



Intel Classmate PC

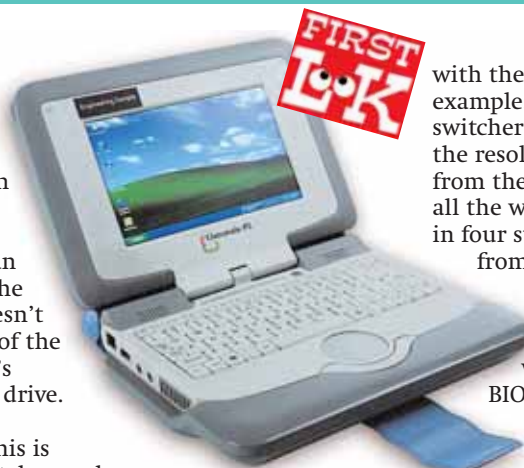
No Child's Play This

PCs have ushered in innovative ways of learning—self-paced, interactive, and fun. However, given the cost, using a PC in day-to-day educational activities is limited to degree students. Schools have their computer labs, but really, one does need access to one's own work and content at will—so Intel has come up with a novel solution, the Classmate PC, designed for school-goers. It looks like a toy—small buttons, round touchpad, dual-tone finish, etc. Open the lid and you are greeted with a little 800 x 480, 7-inch display, and a dinky little keyboard—probably good enough for a child. Switch on the machine and you are in for

a surprise—a full-blown Windows XP Pro!

Under the hood, running at 900 MHz, an Intel Celeron M does the duty. The machine doesn't feel sluggish, because of the 2 GB NAND Flash that's used instead of a hard drive. 2 GB space may seem laughable, but then, this is a concept machine; Intel has a definite plan to introduce higher-capacity NAND and eventually a hard drive. But for now, with Windows XP, the machine is left with just 700 MB of space for applications—too little.

The PC has one Ethernet and two USB ports, Wi-Fi, and earphone and mic jacks, but lacks an optical drive—understandable,



because the machine will be part of a network that includes a server from where content and applications will be pushed down. Security and content filtering is the objective here—schools can implement policies that, for example, restrict what the PC will be used for.

There is some Intel exclusive/enhanced software bundled along

with the machine. For example, the display switcher allows changing the resolution of the screen from the native 800 x 480 all the way up to 1280 x 786 in four steps—special drivers from Intel. In addition, there's Intel's Trusted Platform Module (TPM), which works at the BIOS level, locking the PC out if it fails to update its digital certificate from the school server. This makes the hardware useless if stolen.

Though a nice concept, acceptability will largely depend on the kind of e-learning content that can be delivered, how it will be made available, and the final barrier, cost. We expect that niggles like the storage will be ironed out in future iterations.

Kodak EasyShare V803

Average, We Say

Compact, sleek, and stylish best describe the V803. It is available in a range of eight eye-soothing colours from red to blue to pink; we received the matte-black one.

The clean layout of the keys along with a menu that is easy to navigate are plus points of the V803; the tiny zoom keys, along with the joystick, make navigation tough, though. Twenty-two different scene modes including panoramic stitching make this point-and-shoot camera novice-friendly. The range of ISO

speeds is from 80 to 1600; the large 2.4-inch LCD has clear and legible icons.

The inbuilt 32 MB of internal memory is not enough—just eight-odd photographs! Memory expansion is available, though, via SD/MMC cards. Surprisingly, the AV cable, a standard bundle with most digital cameras, is missing.

The panorama mode can be used for stitching three photos side by side, discarding the originals. The red auto-focus assist lamp is precise over a short range; accuracy degrades in dim lighting. The auto-focus is time consuming; it's buggy, focusing wrong areas in the viewfinder.

The snaps we took were well-exposed, with the right amount of colour. The sharpness was pleasing as



Rs 15K
it might
look
attractive

for an 8 MP camera, but there are better cameras available at that price point.

well. There was some amount of purple fringing, though. Kodak's inbuilt Perfect Touch technology auto-enhances the snaps with dynamic colours and contrast, while also adding up some noise, unfortunately.

Video mode allows taking 640 x 480 MPEG-4 clips at 30 fps. You can switch to a lower 320 x 480 to save space.

Overall, the Kodak EasyShare V803 is an average performer; priced at about

Specifications

Dimensions (W x H x D): 103 x 54.5 x 25 mm; weight: 141.5 gm; 8MP; zoom: 3x optical, 4x digital; battery: 1050 mAh; direct printing: ImageLink, PictBridge

Contact: Kodak India Pvt Ltd
Phone: 022-66416300
E-mail: contactindia@kodak.com
Web site: www.kodak.co.in
Price: Rs 14,999

RATINGS

Features	★★★★●
Build Quality	★★★★●
Image Quality	★★★★●
Value for Money	★★★★●
Overall	★★★★●



Bose Intra-Ear Headphones

The Comfortable Way To Aural Bliss!

In-ear headphones have always been the choice for those on the move. Two reasons—they're small, and they're small! Where they lose out is comfort. It's just not comfortable to have something stuck in your ear canal, no matter how soft they are... here's where Bose's Intra-Ear Headphones score. They've designed these earphones to mimic the contours of the ear canal.

The plugs consist of the actual sound unit, to which

silicone is attached. This silicone tapers to a thin, twisted, tube-like structure that exactly fits your ear canal, and delivers sound as close to your eardrum as possible. The plugs block out external sound rather effectively—good passive noise cancellation.

While the build quality is exemplary Bose, we'd have liked a black cable—the white/black audio cable just doesn't feel right.

A few minutes of Bose's test tracks saw them ditched

in favour of some of our favourite tunes. In a word, these earphones *rock!* There's good tone isolation, and the vocals are spot on. A few sessions of Whitney Houston and Sade among others convinced us that these were not only producing the highs and mids (including vocals) well, but they were pretty good with low frequencies too.

There's a very clear edge to the sound—no muting of frequencies whatsoever. Audiophiles will be satisfied with both fidelity and frequency reproduction. U2's *With or Without You* sounded great, good clean bass...

however, if big, booming bass is what you want, these aren't for you. We suggest Creative's EP630, which has bone-crunching bass but whose high-range frequencies are somewhat muddy.

At Rs 5,000, the Bose Intra-Ear Headphones aren't for everybody. It's for those who want a really good sound experience sans disturbance, while sacrificing zero on the comfort front.



RATINGS

Performance	★★★★★
Build Quality	★★★★★
Comfort	★★★★★
Value for Money	★★★★★
Overall	★★★★★

Contact: Bose Corporation India P Ltd
Phone: 011-23073825
E-mail: nandita_sood@boseindia.com
Web site: www.boseindia.com
Price: Rs 5,000

Microsoft LifeCam NX-6000

Just A Compact Laptop Webcam

The LifeCam NX-6000 is a compact 2MP webcam with an inbuilt microphone, made for laptops, and it will easily fit into your pocket. The cam lens can be rotated vertically and also pushed into the body of the device when not in use. The LifeCam comes with a carry pouch.

The camera attaches to the laptop using a clip-on-like mechanism. A little indicator with "Microsoft" on it flashes when the camera is in use. Although not hot enough to cause any real damage, it still does get pretty warm. Pressing the sole button on the camera starts Windows Live Messenger.

Like all USB devices these days, installation is very simple. Plug it in and Windows XP (Service Pack 2) detects the camera and the microphone without your having to install any drivers.

A Vista-styled software called LifeCam is provided. It lets you record photos, audio, and movies. Visual effects can be added as well to make things a little more fun. Panning and zooming can be done, but only at lower

480 and 800 x 600 as expected from most webcams, but still image clarity is pretty good (but can be a little blurry at higher

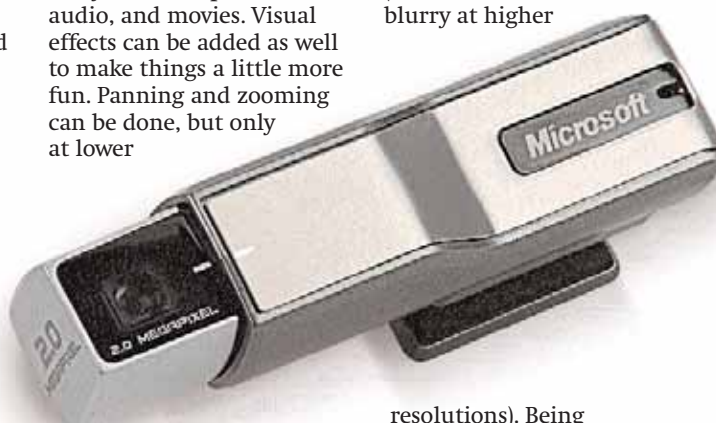
Video resolution ranges from 160 x 120 all the way up to 2MP—1600 x 1190. Video recording performance drops considerably the moment the resolution crosses 800 x 600. Recorded audio quality is all right, but the mic picks up ambient noise easily.

The Microsoft LifeCam NX-6000 retails at Rs 5,730—costlier than most desktop webcams, but for its small form factor and good image and video quality, it's worth the money for anyone who demands quality in videoconferencing while on the field.

resolutions). Being interpolated, the 7.6 MP image quality is quite poor.

The software lacks face-tracking features.

The LifeCam software can send images and clips through e-mail or upload it to Windows Live Spaces at the click of a button. Video is a little grainy at lower resolutions such as 640 x



RATINGS

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

Specifications

2MP; 3x digital zoom; inbuilt microphone; Vista Certified

Contact: SES Technologies Pvt Ltd.
Phone: 0124-4158000
E-mail: geethakb@microsoft.com
Web site: www.microsoft.com/india
Price: Rs 5,730

Nokia N95

Convergence Has A New Name

All it takes is a look to conclude this is a flagship product, a high-end multimedia cell phone, with a hell of a lot of features crammed into one tiny shell. And what a shell that is—the colour combinations are classy (we received a silver-dull metallic green), as is the matte finish. Quality of plastic is top-notch.

We were surprised at the compactness of the thing, especially when you consider the functionality: the 5MP camera, and the absolutely gorgeous 2.6-inch, 24-bit screen (nearly all phones still use 18-bit screens).

The number keypad is well laid out—an achievement for a slider phone—but the hard touch keys combined with the slightly raised surface makes finger-pad touch-typing a pain. Thankfully the keys are suitably laid out for nail-touch typing.

The double slider is a first—slide down and your number pad is accessible, slide up and four (blue backlit) media player keys pop into view. Another first—a 3.5 mm jack inbuilt on a Nokia phone! While grooving to MP3s, all calls are automatically diverted to the loudspeaker.

The music player's very functional. Sound quality is decent on the supplied earplugs, but the N95 really comes into its own on a set of good plugs—this phone is an MP3 killer!

The 5MP camera is another first—great image quality and a good flash unit. However, like with all phone cameras, the zoom is useless. A boon is the lens protector.

2 GB of MicroSD comes bundled; its hot-swap. There's a fully-functional GPS application inbuilt. This works well in conjunction with a GPRS connection. Wi-



be enough for such a feature-rich phone.

An excellent piece of hardware—loads of features, stunning looks, and an amazing screen—in short performance to match the looks. It's pricey at Rs 40,249 we'd suggest waiting for a price cut, but keep in mind, at this price point, there's nothing close to matching the N95!

Fi (g protocol) is inbuilt, as is the mandatory Bluetooth (version 2.0, now with A2DP), and the Jurassic IR. The N95 also incorporates FM radio.

One gripe is the battery—950 mAh just isn't going to

Specifications

Tri-band GSM; Symbian OS Series 60 version 3.1; weight: 120 gm; screen: 240 x 320 (2.6 inches); 160 MB internal memory; EDGE/3G support; 5MP camera; inbuilt GPS

RATINGS

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

Contact: Nokia India

Phone: 0124-41990000

E-mail: NA

Web site: www.nokia.co.in

Price: Rs 40,249

Antec 900

Cool!

Antec's not been in the enthusiast league for a while, and their homage to that fraternity has been long due. Enter the Antec 900.

A Plexiglas side window ensures that monster gets all the looks in and the drool out! There's a very rugged, industrial look to the front, with an aggressively forward-sloping top. Although the body is made of cold rolled sheet steel, the Antec 900 feels very light, especially for its size.

The 120mm fan that served the P180 topside has been ditched in favour of a colossal 200mm fan that serves as an exhaust. There are two blue LED-lit 120mm fans in the front, and draw in a lot of air (courtesy the perforated

front). Antec adds another 120mm fan to the rear of the cabinet to aid removal of hot air; excellent thermal management all round. All fans have been provided with a 3-speed controller switch.

The PSU is floor-mounted, reminiscent of the P180, but not thermally isolated. This is good since cable management in the P180 was a royal pain.

To generate heat we ran a few 3D 2006 Marks, and played F.E.A.R. for around half an hour, on a Core 2 Duo X6800 and 8800GTX



based rig. Then we monitored temperatures.

Pretty impressive, isn't it... though not without the odd fault, it does cater to its default audience rather well. You get decent build quality for the most part, very good cooling, plenty of expansion, and a body that will attract

glances at any LAN party. What you don't get is drive rails, a large bay to work in, and the sound of silence. At Rs 8,400 plus tax, cheap it's not. But then you wouldn't want to house a Porsche in a barn, now, would you?

Specifications

Dimensions: 493 x 206 x 468 mm (L x W x H); weight: 8.4 kg; 4x fans (3 x 120 mm, 1 x 200 mm)

RATINGS

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

Contact: Cyber Space Abacus P. Ltd

Phone: 044-24362681

E-mail: info@antecindia.com

Web site: www.antecindia.com

Price: Rs. 8700/-

Canon EOS 400D

In A League Of Its Own

After setting the market on fire and creating a new category of affordable D-SLRs, Canon ups the ante by launching the successor to the hugely popular 350D. The new EOS 400D—also known as the 400D Rebel XTi in other parts of the world—is a 10 MP compact digital SLR. For an amateur, the plethora of settings available might overwhelm, but then that's what should be expected of an SLR.

Light and compact it surely is; however, manual controls and performance are pretty much there despite the camera being an entry level D-SLR. New features include a nine-point AF sensor, a dust cleaning system via an anti-static coating on the sensor, and software-based dust



pattern removal. There's a large 2.5-inch LCD, but the status LCD has been shown its way out. An eye proximity sensor makes the LCD switch off while the frame is being composed.

Ergonomically, the Canon 400D is near-perfect: nice large buttons, solid-looking command dials, and a massive grip.

The new nine-point AF offers a significant advantage in terms of

focusing sharply on the subject. "Nine-point" means the viewfinder has nine spots that light up green when the shutter is half depressed, indicating the selected area.

ISO speeds are available from 100 all the way up to 1600—good for taking low-light photographs. Twelve shooting modes and eight white balance settings are available for instant shooting. Monochrome pictures can also be shot, apart from other available presets.

On the performance front, the 400D gives excellent results; colours are typical Canon—natural and soothing. Noise is pretty well restricted till ISO 400, after which you do

get to see significant noise (chroma noise; colour speckles that happen when photos are taken in poorly-lit areas or when the ISO is cranked up). The sharpness, however, remains intact.

White balance isn't the camera's strong point, and in our studio test, a yellow cast was prominent.

The 400D is pricey at Rs 56,995 for the body and the 18-55 kit lens. However, a good starting camera for amateur photographers, we think, would be Nikon's D40. It makes for an excellent buy because of its aggressive pricing.

Specifications

10.1 Megapixel APS-C CMOS sensor, Digic II Imaging processor, Nine-point AF Sensor, 3 FPS continuous shooting, 1/4000 to 1/200 sec maximum shutter speed and ISO 100-1600

Contact: Canon India Pvt Ltd
Phone: 1800-345-3366
Email: info@canon.co.in
Web site: www.canon.co.in
Price: 56,995

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

Acer PD527D

Feature-heavy, Light Performer

After Acer's victory in our projector comparison in March, we wanted to test another model in their "PD" series: the PD527D looks diminutive compared to the massive-looking PD726W. Built well, the PD527D has a silver and dark grey tone to it, which may or may not appeal. What did attract was the cosmetic blue/red LED embedded on the power button—very cool.

With S-Video, Component, DVI, and D-Sub connectivity, the PD527D is quite well connected. The cheat is the secondary VGA, which connects to a Component connector which is provided (Component connectivity isn't native). There's a USB type B port too, though we didn't receive a wired controller. The sleek remote looks like a miniature replica of the PD726Ws

unit. The mandatory audio-in (3.5-mm) and RS-232 interface are also present. Wi-Fi connectivity is absent.

With a lower brightness and contrast ratio than its larger sibling, we weren't expecting performance to be in the same league. True to our expectations, the PD527D wasn't up to the mark in the horizontal and vertical resolution tests, where there was noticeable banding. Performance was good in the colour tests—no streaking or ghosting of any sort. However, we noticed some changes in shade intensity in the black level shift test; the white level shift test was, however, aced. Colour purity is good, and the great sharpness makes it good for working with Web pages, presentations and documents.

So it's good for your office, but what about at

home? To be honest, this isn't for the gamer, who'll be looking for a high contrast ratio to begin with. F.E.A.R. didn't look as good as we're used to seeing it—limited greyscale intensity. Thankfully, movies are more forgiving, and the PD527D is a good addition to a home-entertainment system.

For just over a lakh, it's well priced compared to its better-performing sibling (the PD726W), but hard to

recommend simply because NEC's NP40 handles every task better, while occupying less space, and costing a good ten per cent less.

Specifications

Specifications: 3000 ANSI, 2000:1 contrast ratio, 2.9-8.0 Throw distance, digital zoom, keystone correction, 720p and 1080i HDTV compatible, DVI (HDCP) digital input and 2000 Hrs lamp life.

Contact: Acer India Pvt Ltd
Phone: 080-25219520-23
E-mail: alankar_s@acer.co.in
Web site: www.acer.co.in
Price: Rs 1,00,000



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

ASUS Lamborghini VX1

The Poser's Accessory

If you're looking to burn virtual slick rubber, the ASUS Lamborghini VX1 promises to be a treat. The sharply-contoured lid—and its exotic finish—is reminiscent of its namesake's bonnet. Distancing itself from the AMD Turion 64 X2-based Acer Ferrari, the Lamborghini uses an Intel Core 2 Duo T7400 (2.166 GHz).

DisplayMate tests revealed a clear, crisp 15.4-inch LCD screen, as expected from such a product; unfortunately, it's not widescreen. The 1680 x 1050 resolution means plenty of space for applications. The 140/100 degree viewing angles seem about right.

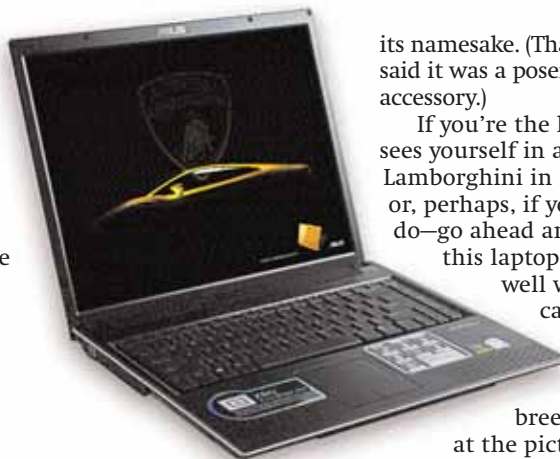
The NVIDIA GeForce Go7400 VX Turbo powers the graphics—enough muscle for most games. Two GB of 667 MHz DDR2 RAM ensures the Lamborghini doesn't run out of torque. The 160 GB hard drive provides ample boot-space, something its

namesake lacks!

The well-laid-out keys are soft and silent; response is quick. The touch-pad is small enough to be comfortable. LEDs illuminate the two buttons of the tracker pad, but unfortunately, not the pad itself. The brushed metal finish around the keyboard and mouse adds a distinct, sporty flavour.

Leaving aside the aesthetics and ergonomics, the Lamborghini is a decent performer; it encoded our test 100 MB video file in 1:36 minutes. An overall score of 6855 in PC Mark 04 indicates the power of this laptop, which is based on Intel's Centrino platform. It runs for around 1:40 hours on a single charge.

As you'd naturally expect, the Lamborghini is lightweight and slim—no problems carrying it around. (You'd probably want to.) The provided bag is an assorted



its namesake. (That's why we said it was a poser's accessory.)

If you're the kind who sees yourself in a Lamborghini in real life—or, perhaps, if you actually do—go ahead and pick up this laptop. It'll go well with the car, believe us. If you're a lesser breed, just look at the picture alongside and drool.

combination of suede leather and nylon.

Right from the start, ASUS imbues the Lamborghini with looks, performance, and an attitude a mile wide... the attitude extends to the pricing, unfortunately. Like

RATINGS

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

Specifications

Core 2 duo T7400 2.166GHz; Intel 945PM Express chipset; NVIDIA GeForce Go7400 VX 512MB; 2GB DDR2 667 MHz; 15" SXGA; 160 GB HDD; 4x DVD-RW; dimensions: 331 x 272 x 25.4; weight: 2.43 kg; integrated 802.11a/b/g; Bluetooth v2.0

Contact: ASUSTeK Computer Inc
Phone: 022-40058888
E-mail: media_india@asus.com
Web site: <http://in.asus.com/>
Price : Rs 1,77,000 / 1,96,000 (Black/Yellow)

A-DATA PD7 4GB

A High-performance Drive

The A-DATA PD7 4GB USB drive landed up in our test labs; we expected it to perform well, based on our experience with the last A-DATA USB drive we tested (a 512 MB).

The drive is pretty compact; it has a brushed metal look to it. It is made of plastic, but is still pretty solid. LEDs are placed towards the rear that shows any drive activity. The LED region has a small bridge where you can attach a strap. We're not sure if it's strong enough though. The cap has some smooth sliding mechanism but it seems pretty loose and looks like it'll fall off after some use.

Performance: it's good! It impressed us throughout all the tests we ran on it. Read speeds for 50 MB of data - a single file or separate files - hovered around the lovely 2-

second mark. Write speeds for files of the same size were a fraction more.

We then copied the maximum amount of data that we could on the drive, which is 3.86 GB. A single file took 3:19 minutes to write; reading took 2:07 minutes. Writing assorted files of 3.86GB took around 5:01 minutes and reading the same size took 2:20 minutes.

In HD Tach, the average data read speed was recorded at 32.2MB/s and the average write speeds at 21.8MB/s. Random access times were a miniscule 0.8ms which was similar some of the best USB drives we've seen. HD Tach also reported the CPU Utilization was 0%.



The drive happens to have security features built into it, but only after you install their software - which isn't provided with the drive. You can download it for free, though, from A-DATA's site. The program lets you create a partition that can be accessed by using the software and a password.

The package mentioned a USB extension cable, but

we found none. The software and the manual could have been provided along with the drive. There's a label that says it's enhanced for Windows ReadyBoost, which suggests it would go well with Vista - and it has the good performance to defend that. At \$70, it is a bit costlier than most drives in its range, but definitely worth the money - if you value speed.

Specifications

Size: 66 x 19 x 10 mm; weight: 15 gm; USB 2.0 and 1.1 compliant

RATINGS

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

Contact: Ingram Micro India (P) Ltd
Phone: 022-67960101
E-mail: NA
Web site: www.adata.com.tw
Price: \$70 (Rs 3,200)

Adobe Lightroom 1.0

The Darkroom For Your Digicam

Adobe's Lightroom is made for professional photographers as the darkroom alternative for new-age digital-camera-armed photographers. Lightroom falls into a new category—image post-production software, with its only and closest rival being Apple's Aperture. Lightroom does not come with most of Photoshop's features like layers, tools, and effects. In fact, though it is an image editing tool, Lightroom looks nothing like Photoshop.

Quick Develop in the Library module lets you make basic changes to an image in a matter of seconds. We used some photos of some wildlife taken in broad daylight to see how well the software's results would be. An auto-tune feature sets the best parameters for a photo, which should be suitable for new users, but we found the results rather appalling. Manual altering of colour

levels worked perfectly well, and is the best way to go.

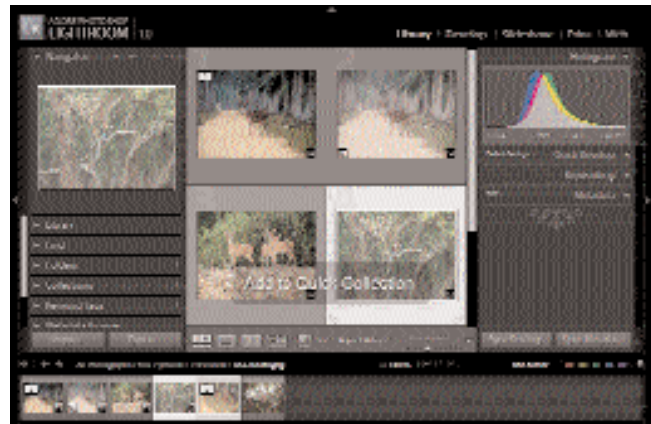
A metadata browser in Lightroom makes sorting and categorising large numbers of images effortlessly by EXIF parameters such as camera, lens, date, etc. Keyword stamping lets users easily set keywords to images.

The Develop mode—the core of the entire program—has plenty of filters and colour alteration features. The Before and After view is a good added feature; it helps users keep track of their progress.

Exporting of galleries to a Web format using HTML or Flash is done using the Web module.

A program called Adobe Photo Downloader acts as a monitor, looking for new media on external storage devices and cameras.

Documentation is good in terms of explanation, but has few screenshots. Memory consumption spiked from 3



MB when minimised to 54 MB with the program active, which is pretty good.

The Image Viewer features such as full-screen view mode are missing in Lightroom. Other than that, there is no shortage of features. Similar results can be achieved using Photoshop, but Lightroom's

interface and workflow are best suited for post-processing work for photographs. Those who would like to have Adobe Photoshop will have to shell out a minimum of \$649. Lightroom's \$199 (Rs 9,000) price tag is still pretty hefty for casual home users, but professional photographers would find the money well spent.

Contact: Adobe India
Phone: 0120-2444711
E-mail: sandeepm@adobe.com
Web site: www.adobe.com
Price: \$199 (Rs 9,000)

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

Site Studio 6 Pro

Template-based Web Designing

Site Studio 6 from Effective Studios is a Web designing tool that comes into an arena dominated by Adobe's Dreamweaver. It therefore has a lot to prove.

During installation, a video tutorial along with a voiceover is provided to explain some of the features. The interface of the program is pretty decent, with big icons on the toolbar.

You can create a Web page using one of the ready-made templates. The previews and the templates are hosted on the Net, so

there is some waiting time involved. The problem, of course, comes in when there's no Internet connection available.

Text styles can be altered, and new ones can be created from scratch. You can add external images into the library of Site Studio 6. Images can be resized for the Web before importing. Multiple colour schemes for projects are available to choose from. If you aren't pleased with the results, you can manually select colours for the various elements of your site.

There is no way to view the source for your Web pages; modifying the source has to be done using an external editor.

The documentation has plenty of images and steps.



You can choose to upload created pages or sites to an FTP server or to a local disk with a click of a button.

The entire program is set around templates, so you don't have to do the

dirty work of coding. It's therefore very simple software in terms of features, and that's what makes it easy to use—even those who just use word processing software will feel right at home. The price, however, isn't very simple: Site Studio 6 Pro is priced at \$389 (Rs 17,500). In comparison, Dreamweaver retails at \$399, for which you get a lot more, but with a lot of added complexity as well. Site Studio 6 Pro would then be best suited for when what's needed is software that is quick, hassle-free, and requires no knowledge of—or experience with—Web designing.

Contact: Effective Studios
Phone: NA
E-mail: john.houssels@effectivestudios.com
Web site: www.effectivestudios.com
Price: \$389 (Rs 17,500)

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

External Portable Hard Drives

WD Passport Portable (Black)

- ⊠ Excellent performance, good value
- ⊠ None in particular

Contact Champion Computers Pvt Ltd

Phone 011-26214751
Web site www.championindia.com
Price Rs 6,500



Internal DVD-Writers

Lite-On LH-20A1P

- ⊠ Fast performance, 20x writing to DVD+R and DVD-R
- ⊠ None in particular

Contact Mediatech India Distribution Pvt Ltd

Phone 022-26361111
E-mail digit@mediatechindia.com
Price Rs 2,095



Digital Cameras (High-End)

Sony Cyber-shot W50

- ⊠ Excellent image quality, vibrant colours
 - ⊠ Trouble focusing in low light
- Contact Macro Photo
Phone 022-22618639
E-mail macro.photo@gmail.com
Price Rs 15,000



Graphics Cards (High-End)

NVIDIA GeForce 8800 GTX

- ⊠ Blistering-fast
- ⊠ Runs slightly hot

Contact Rashi Peripherals Pvt Ltd

Phone 022-67090810
E-mail navinderc@rptechindia.com

Price Rs 41,000 + taxes



Internal SATA Hard Drives

WD Caviar SE16 WD3200AAKS

- ⊠ Value for money, performance
- ⊠ None in particular

Contact Champion Computers Pvt Ltd

Phone 011-26214751
Web site www.championindia.com
Price Rs 4,500

Internal SATA Hard Drives

WD Caviar SE16 WD5000AAKS

- ⊠ Fast transfer speeds
- ⊠ None in particular

Contact Champion Computers Pvt Ltd

Phone 011-26214751
Web site www.championindia.com
Price Rs 7,500

Linux

SuSE Linux Enterprise Desktop 10.1

- ⊠ Good software bundle
- ⊠ A little resource-heavy

Contact Novell India
Phone 022-28342244
E-mail apanjwani@novell.com
Price Rs 2,650

Graphics Cards (Mid-range)

XF8600GTS

- ⊠ Best of the mid-range cards
- ⊠ Could do with more memory

Contact Rashi Peripherals

Phone 022-67090909
E-mail navinderc@rptechindia.com

Price Rs 16,000



The A-List



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

Wi-Fi Access Points

Linksys WAP54G

- ⊠ Great performance
- ⊠ None in particular

Contact Ingram Micro India Pvt Ltd
Phone 9323112279
E-mail sunil.z@ingrammicro.co.in
Price Rs 3,816

MP3 Players up to Rs 4,000

MobiBlu DAH-2100

- ⊠ Good performer
- ⊠ Tiny screen for video

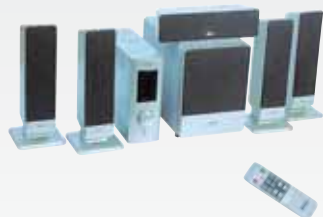
Contact J.J.Mehta & Sons
Phone 022-24306356
E-mail info@jjmehta.com
Price Rs 4,000

5.1 Speaker Sets

Artis S6600R/FM

- ⊠ Good performance, radio
- ⊠ None in particular

Contact Kunhar Peripherals Pvt Ltd
Phone 022-66345758
E-mail mail@kunhar.com
Price Rs 8,500



MP3 Players up to Rs 10,000

Sandisk Sansa e250

- ⊠ Good performance, feature-rich
- ⊠ Tacky scroll wheel

Contact Rashi Peripherals Pvt Ltd
Phone 022-67090909
E-mail navinderc@rptechindia.com
Price Rs 8,150



Processors

Intel QX6700 Core 2 Extreme

- ⊠ Extreme performance
- ⊠ Expensive

Contact Intel Corporation
Phone 080-25075000
E-mail saranya.rustagi@intel.com
Price Rs 52,000

Projectors

Acer PD726W

- ⊠ Great overall performance
- ⊠ No remote sensor at rear

Contact Acer India Pvt Ltd
Phone 9880544226
E-mail alankar_s@acer.co.in
Price Rs 1,50,000



LCD Monitors (19-inch)

AOC 1975

- ⊠ Good looks and performance
- ⊠ Gloss finish catches smudges

Contact AOC India
Phone 1800-425-4318
E-mail info@in.aocmonitor.com
Price Rs 12,000



LCD Monitors (17-inch)

AOC 177V

- ⊠ Good performance
- ⊠ None in particular

Contact AOC India
Phone 1800 425 4318
E-mail info@in.aocmonitor.com
Price Rs 9,800

AMD AM2 Motherboards ASUS Crosshair AM2

- ⊞ Great bundle and performance; accessories for the enthusiast
- ⊞ None in particular

Contact ASUSTeK Computer Inc
Phone 022-40058888
E-mail media_india@asus.com
Price Rs 15,400



AMD 939 Motherboards ASUS A8R MVP

- ⊞ Good performance
- ⊞ Skimpy bundle

Contact ASUSTeK Computer Inc
Phone 022-40058888
E-mail media_india@asus.com
Price Rs 8,700

Intel High-end Motherboards Foxconn 975X7AB-8EKR52H

- ⊞ Inexpensive, good performer
- ⊞ None in particular

Contact Mediatech India
Distribution Pvt Ltd
Phone 022-26361111
E-mail info@mediatechindia.com
Price Rs 10,750



Intel Mid-range Motherboards Gigabyte GA-965P-DQ6

- ⊞ Good build quality and performance
- ⊞ Expensive

Contact GIGABYTE Technology
India Ltd
Phone 022-26526696
E-mail sales@gigabyte.in
Price Rs 16,000

Home Inkjet Printers

HP Deskjet 2360

- ⊞ Excellent value; decent results
- ⊞ None in particular

Contact HP India Pvt. Ltd.
Phone 0124-2566111
E-mail vibhor.bansal@hp.com
Price Rs 2,999

HP Deskjet 4168

- ⊞ Excellent value; very good results
- ⊞ None in particular

Contact HP India Pvt. Ltd.
Phone 0124-2566111
E-mail vibhor.bansal@hp.com
Price Rs 3,999



PCI TV-Tuners

Leadtek Winfast PVR2000

- ⊞ Excellent video quality and software
- ⊞ Expensive

Contact Topnotch Infotronics (India)
Pvt Ltd
Phone 044-42042565
E-mail naqui@zebronics.net
Price Rs 5,500



Mono Laser Printers

HP LaserJet 1020

- ⊞ Good combination of speed, print quality, and warranty
- ⊞ A bit slow in comparison to others

Contact Hewlett-Packard India
Sales Pvt Ltd
Phone 0124-2566111
E-mail kakuni.mahto@hp.com
Price Rs 6,999

Premium Cell Phones

Sony Ericsson CyberShot K550i

- ⊞ Excellent camera and UI
- ⊞ Sub-par reception

Contact Sony Ericsson Mobile
Comm. Int. AB
Phone 022-39011111
E-mail questions.in@support.sonyericsson.com
Price Rs 11,995



Basic Camera Phones bleu 651X

- ⊞ 2 MP camera, webcam
- ⊞ No Bluetooth

Contact Pratham Telecom
Phone 022-28769381
E-mail avinash@sagemindia.com
Price Rs 8,299

Flash Drives

Transcend JetFlash 150 1 GB

- ⊞ Fast
- ⊞ Poor package bundle

Contact Mediaman Infotech Pvt
Ltd
Phone 022-23828100
E-mail santosh@mediamangroup.com
Price Rs 1,500

Mice

Logitech MX Revolution

- ⊞ Has a flywheel
- ⊞ Expensive

Contact Logitech Electronic
India Pvt Ltd
Phone 022-26571160
E-mail response@logitech.com
Price Rs 8,000



Mono Laser MFDs

Samsung SCX-4521F

- ⊞ Good performance and quality
- ⊞ Low input tray capacity

Contact Samsung India
Electronics Pvt Ltd
Phone 011-26431313
E-mail vikram.negi@samsung.com
Price Rs 21,990



PC Webcams

Tech-Com SSD-641-MP

- ⊞ Good image quality; inexpensive
- ⊞ No software bundle; poor build quality

Contact Shree Sagarmatha Dist
India Pvt Ltd
Phone 011-26428541
E-mail contact@techcomin-india.com
Price Rs 549

Thin And Light Laptops

Dell Inspiron 6400

- ⊞ Amazing performance
- ⊞ Looks gaudy

Contact Dell India Pvt. Ltd.
Phone 080-25068026
E-mail belgundi_indrajit@dell.com
Price Rs 64,000

Performance Laptops

Sony VAIO AR18GP

- ⊞ Mind-boggling performance
- ⊞ Very expensive

Contact Sony India
Phone 022-28231558
E-mail sonyindia.care@ap.sony.com
Price Rs 1,99,900



Q&A

Your Questions, Our Answers

Slow burns, no burns and missing help! Digit to the rescue again!

At Sixes And Sevens

Q Internet Explorer 6 does not open on my computer, even after my trying to reinstall it. I have Windows XP SP2.

Monitesh Thakur

A You can install Internet Explorer 7 from our December 2006 CD; IE7 is better than IE6, with features such as tabbed browsing, a phishing filter, and more. But if you must use IE6 for some reason, there are two ways you can repair it. We're mentioning both methods because the first may work while the second may not, or vice-versa.

First, keep your Windows XP CD ready. Then,

Method #1:

Go to **Start > Run**, type in "sfc /scannow" in the Run dialog box, and click OK. Note that there is a space between "sfc" and "/scannow". Follow the prompts throughout the System File Checker process that ensues. Reboot the computer when it is complete.

Method #2:

Go to **Start > Search**, and select "All Files and Folders". Select "More Advanced Options" and place a checkmark next to the "Search Hidden Files and Folders" option. Ensure that "Search System Folders" and "Search Subfolders" are also checked. In the "All or Part of the File Name" box, type in "ie.inf ". In the "Look In" drop-down, select C: (or the letter of the drive that contains the Windows folder). Click Search. In the search results pane, look at the ie.inf file located in the Windows\Inf folder. Right-click on this file and select Install from the context menu. Reboot when the file copy process is complete.

Partitions Going Poof!

Q I have a P IV 3 GHz on an Intel original 915GAV motherboard with Windows XP Pro SP2. I also have an 80 GB SATA hard drive and a DVD-ROM drive. I recently installed a 40 GB IDE hard drive as a primary slave, because there is only one IDE slot. The problem is that the partitions on this drive suddenly disappear from My Computer, and are visible only after I restart the computer.

Vivek Dembla

A It seems that the power connector of the IDE drive is faulty and needs to be replaced. This is a serious issue and needs to be remedied as soon as possible; it can cause permanent damage to your hard drive.

Of Insomnia And Amnesia

Q I have a P IV 2.66 GHz on an Intel original motherboard (D101GGC), with 512 MB of RAM and Windows XP Pro SP2. When I open the Power Options in the Control Panel, I see the Hibernate option greyed out. Also, when I run *Grand Theft Auto: Vice City*, I get an error message: "Grand Theft Auto VC: not enough memory."

Harpreet Singh

A It is clear that the drive where your Windows paging file and hibernate file exists does not have enough free space, and that you are therefore low on virtual memory, which is required by most applications to run properly. Free up space on this drive by deleting unnecessary files and/or moving data to another partition.

We recommend you remove the paging file completely from the drive where Windows is installed—place it on a different drive. Since you have 512 MB of RAM, we recommend a page file of 768 MB (both initial and maximum values).

On The Back-Burner

Q I have an Intel 915GAV motherboard with an Intel P IV 3.0 GHz processor, NVIDIA GeForce 6200, 1 GB RAM, and a 160 GB SATA hard drive. Is it possible to run Windows Vista on my computer? Also, I have a Sony DRU-820 DVD-Writer and an HP DVD 635 DVD-Writer. Burning a 4 GB DVD at 8x takes more than 20 minutes—why? I am running Windows XP SP2 and using Nero.

Amit Mukim

A As for your first question, it is indeed possible to install Vista on your computer; your system configuration meets the requirements.

There could be several reasons for the DVD-Writer taking this long to write. Check if your drive is operating using DMA mode. Open the Device Manager by running "devmgmt.msc". Under "IDE ATA/ATAPI Controllers", check the properties of all the channels, and in each case, check in the Advanced Tab whether the Transfer Mode is set to DMA or PIO. Set it to DMA if it is PIO. Then restart your PC. The next thing you should do is to check whether your C: drive has at least 5 GB of free space. If it doesn't, make some. If freeing up more than 5 GB is not possible, open Nero, select **File > Options**, and click on the Cache tab. Set the Cache location to a drive with at least 5 GB of free space.

When you burn a DVD, you should disable programs that run in the background, especially the anti-virus. You should also defragment your C: drive. If your problem persists, try using a different brand of recordable media. Update your drive's firmware as a last resort.

Am I Unwelcome?

Q I use Windows XP Professional. For the past few days, I have not been able to see the Welcome screen, and have to use the classic login. I want to enable Welcome screen so I can use Fast User Switching. I have tried changing the settings in User Accounts ("change the way users log in") in the Control Panel, but it didn't help.

Sunny Jha

Get Help Now!

E-mail us your computing problems along with your contact details and complete system configuration to sos@jasubhai.com, and we might answer them here! Since we get many more mails per day than we can handle, it may take some time for your query to be answered. Rest assured, we are listening!

Act Now!

Q My Windows XP installation got corrupted, and I had to clean-format my hard drive and install Windows afresh. Now, when I try to activate Windows, the activation window is blank and I don't know how to proceed. Please help—I only have a few days left to activate Windows!

Praful Mehta

A There are three known reasons for this problem: either your Registry has been damaged or modified, your files have gotten damaged during the Windows installation, or some files may be missing. Follow these steps to rectify your problem:

1. Restart your computer, press [F8], select the Windows Advanced Options menu, and choose "Enable VGA Mode". Try and complete the WPA process now. If you cannot start the WPA Wizard, continue to the next step.

2. Open the Device Manager by running "devmgmt.msc". Right-click on your video adapter, and click Disable. Restart the computer, which will now start using the Standard VGA video driver. Try and start the WPA Wizard; if it doesn't, continue to the next step.

3. Open the Registry Editor and locate the following key and its associated values:

Key: HKEY_CLASSES_ROOT\.htm

Values: "PerceivedType"="text"; (Default) = "MozillaHTML"; "Content Type"="image/x-xbitmap"

If the key does not exist, go to the next step. If the key does exist, modify the values as so:

"PerceivedType"="text"

(Default) = "htmlfile"

"Content Type"="text/html"

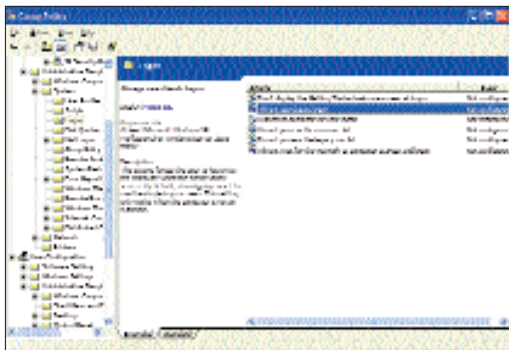
Restart your computer, and try and start the WPA Wizard. If you can't, continue to the next step.

4. Reinstall the Oobe.inf file. To do this, run "inf", and in the Inf folder that opens, right-click oobe.inf and click Install. Insert the XP CD when prompted. Manually register the Jscript.dll and Vbscript.dll files. To do this, at a command prompt, type in the following, pressing [Enter] after each command:

```
regsvr32 jscript.dll
regsvr32 vbscript.dll
```

Try launching the Wizard now; it should run correctly.

A Open the Group Policy Editor by running "GPEDIT.MSC". Now go to **Computer Configuration > Administrative Templates > System > Logon**. Double-click on "Always use classic logon" in the right pane. Select the "Disabled" radio button and click OK. Close the Group Policy Editor.



Use the Group Policy Editor to restore the Welcome Screen

command prompt, type in the following (where "X" is your CD-ROM drive letter) and allow the new files to overwrite the old ones.

COPY X:\i386\NTLDR C:

COPY X:\i386\NTDETECT.COM C:

Like we said, it could even be a damaged Boot Sector. In that case, what you need to do is, at the command prompt, type in "FIXBOOT" and press [Enter]. Then answer "Y". Remember that this won't cause any harm even if the boot sector is not damaged.

Deep Sleep

Q I have Windows XP Pro installed with 1 GB of RAM. I recently noticed a 1 GB file called hiberfil.sys in the root of the C: drive. What is this file, and is it safe to delete it? It occupies so much disk space!

Pragat Mukesh

The Boot Bane

Q I have two operating systems—my C: drive has Windows 98 SE, and the F: drive has XP SP2. Recently, some files in Windows 98 got corrupted, and I had to re-install it. I did so (back on the C: drive) successfully, but when I started my system, I found that the boot loader was missing. I don't want to reinstall XP. How can I bring the boot loader back?

Vipin Varghese

A If XP won't start, it may be due to a damaged boot sector, or missing (or corrupt) ntldr and/or ntdelect.com files.

To replace the damaged ntldr and ntdelect.com, you can copy fresh files from the XP CD using the COPY command. Boot with the XP CD and enter the Recovery Console. At the



Illustrations Harsho Mohan Chatteraj

Create Your Own Vector Design

Become a print design artist using Inkscape—the free, open-source vector editor

Rossi Fernandes

Vector imaging is synonymous with Adobe Illustrator. Unlike regular, lossy images like those in the JPEG format, vector images have the advantage that they preserve the same quality no matter how much you zoom into them. We're going to learn how to create a vector image using an alternative to Illustrator—Inkscape—which is free.

Print media benefits the most from the use of vector imaging due to its lossless nature. You can also create logos using vector images. Let's get started, and what better image to create than the logo of *Quake 3*?

1 The Reference Image

It's advisable to use reference images—if available—to create your vector image. (If you're good at design, you can probably do it freehand.) We first create a layer in which we will place our reference image—the *Quake 3* logo—under the default working layer: in a new document, select **Layer > Add Layer**, and from the position drop-down, choose "Below current". At the bottom of the screen in the status bar, select the Reference layer we just created from the drop-down menu. Select **File > Import**, and point to the file you want to use as the reference. Move the reference image in place, then lock the reference layer so we don't alter anything in it by mistake.

Keep in mind that you need to add layers and groups for various areas of the image, the same way you would in Photoshop. This gives you the flexibility to access and make changes to selected items only when things get complex.

2 Adding Paths

With the reference image in place, we can dive right into the outlining process. Switch back to Layer 1, our default layer. You have quite a few tools to choose from. You can choose one of the basic shapes depending upon the design you're creating. Paths are the outlines of shapes that you create. The freehand tool lets you create paths freely, but unless you have a really stable and accurate hand, you'd want to avoid it except for when you absolutely need it.

The Bezier curves tool is the most accurate way to create paths, so click on the Bezier tool button. We start off by creating outlines for the three frames in



Getting started with the first path

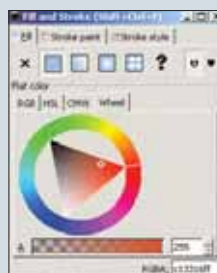
the *Quake 3* logo. Click on a suitable starting point to start the path, and keep clicking on suitable points whenever you require them to create a smooth path. Using Bezier lines means you won't have sharp edges. To create Bezier curves, hold the left click and move the mouse to create the curve.

Once you're done creating the path, you can alter it by clicking on the "Edit path nodes or control handles" button. You can also add new nodes and remove existing ones if needed using the tools in the Tool Controls Bar.

3 Filling In Colours And Outlines

Once all the paths have been created, it's time to fill them with colours. Select the path you want to fill and right-click on it. Choose **Fill and Stroke**, and choose the fill colours and style you want for the path. You can alter the size of the outline of the path using the **Stroke Style** and the colours from **Stroke Paint**.

Fill colours don't always have to be flat; they can be smooth-flowing gradients. Colour gradients should help bring out realism better than flat-filled colours. In the **Fill and Stroke** window, you can choose from a linear or radial gradient for the fill colour. You can also use the "Create and Edit Gradients" tool to create custom gradients. First select the path you created, then press the **Gradient** button in the toolbar, and draw a line in the direction you want the gradient to be filled. You can change the



Fill your paths with gradients, if you want

behaviour of the gradient by clicking on **Edit** in the Tool Controls Bar.

4 Choosing Accurate Colours

You can choose colours for the paths by yourself, or you can choose a tool—"Pick averaged colours from image". Click and drag on the image to get a sample of an area. This colour will be applied on the path that was selected.

5 Auto-trace

Inkscape has an auto-trace feature, which automatically traces outlines in an image and creates paths for you. This isn't very accurate and requires some cleaning up, but it does save a lot of time.

Open the layer with the reference image and click on it. Select **Path > Trace Bitmap**. Choose one of the scanning methods and alter the settings accordingly. Click **Update** to see the results.



The result of an auto-trace

When you are pleased with them, click **OK**. Your image should now have paths drawn all over it. Use the "Edit path nodes or control handles" tool to select and delete unnecessary paths.

6 The final product

When you're done with the designing, you can export your work to a suitable format such as SVG, PDF, PS, and more by selecting **File > Save As**.

Vector art creation can take lots of time, especially with high-detail objects and scenes when large numbers of paths have to be created for detailing of objects. Putting your paths in groups and layers is good practice for better organisation. For good results, you're going to need a lot of patience for creating high-detail designs, which requires tremendous accuracy. ■

rossi_fernandes@thinkdigit.com

A This is Windows' "hibernate" file. It stores the contents of your RAM when you put your computer into hibernate mode, so its size is equal to that of the RAM installed. You cannot just delete this file; it is locked by Windows.

Your computer is currently configured to be able to hibernate. If you want to remove the hiberfil.sys file, you'll need to disable hibernation: open the Control Panel. Double-click Power Options. Click the Hibernate tab, de-select the "Enable hibernation" checkbox, and click Apply. Restart your computer, and the hiberfil.sys file will be automatically deleted. Note that you now won't be able to hibernate your PC.

Driving Me Crazy

Q I recently bought a Nokia 6600. I am unable to use it as a modem to access the Internet on my PC. The modem is detected, but when I dial, it gives an error: "Error 777: modem on the remote computer is out of order." Is the modem in the phone faulty, or am I doing something wrong?

Karan Lodhi

A In all probability, you have installed your modem with an incorrect driver. Install the drivers either from the driver CD that came with your Nokia 6600, or download and install the latest drivers from www.nokia.com.

Help Needed—Literally!

Q I installed Windows Vista RTM and it runs very well. I have several old WinHelp files (files with the .hlp extension). When I double-click to open these files, I see a message that I can download a Vista version of WinHelp from Microsoft. When I follow the link, I find that no such download exists. Where can I find them?

Bikram Ramani

A Open Windows Explorer. Go to your Windows folder (C:\Windows), and locate the existing winhlp32.exe. Right-click on the file, select Properties, and choose the Security tab. Click on Advanced, go to the Owner tab, and click Edit. Select your user name in the list, and then click OK four times to close all the Properties and Security windows. Right-click on the winhlp32.exe file again, select Properties, and then go to the Security tab again. Click Edit, then on Administrators in the list, and place a checkmark next to "Full control" in the Allow column. Click Yes, and then on OK in each of the two open Properties and Security windows.

Next, get the Windows XP SP2 version of winhlp32.exe. The size should be 283,648 bytes, and the version number should be 5.1.2600.2180. You can get it from any PC running Windows XP SP2, or from a Windows XP disc.



Drag and drop the XP SP2 version of winhlp32.exe into your Windows folder, replacing the Vista version that's there.

If you're not the Administrator of your PC, you won't be able to replace the Vista version of the winhlp32.exe file that came with XP SP2. Just leave the XP version of winhlp32.exe on your Desktop, and then just drag and drop .hlp files onto it to view them.

When DLLs Go Bad

Q I have Windows XP Professional, and have recently installed Windows Media Player 11 from the *Digit* CD. An error message pops up when I try to start WMP 11: "An internal application error has occurred."

Ajit Mankad

A The first possible reason for this happening is that the component registration for the Jscript.dll file or for the VBScript.dll file is corrupt; the second is that one or both of these files have become unregistered. The solution is to re-register the Jscript.dll and Vbscript.dll files. To do this, start the command prompt (Start > Run > cmd > [Enter]) and run the commands "regsvr32 jscript.dll" and "regsvr32 vbscript.dll".

A Burning Question

Q I have a P IV with 1 GB of RAM and Windows XP Pro SP2. I have a Sony CD-RW which has performed very well thus far. But for the past few days, I have not been able to burn any data using the drive. It shows up as a CD-ROM drive in Windows Explorer, and the Recording tab is not displayed in its Properties dialog box.

Mahesh Kumar

A A recordable drive is sometimes recognised by Windows as a non-recordable device, and this can be easily solved. Follow these steps after opening the Registry Editor:

1. Navigate to the sub-key `HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Explorer\CD Burning\Drives`
 2. Go to File > Export, type in "Drive key backup" in the dialog box, and click Save.
 3. In the left pane, click on the "Volume{GUID}" folder under Drives ("GUID" here is a 32-character hexadecimal value).
 4. Double-click on Drive Type in the right pane. In the Value data box, enter "2" and click OK.
- Quit the Registry Editor. Windows should now recognise the drive as a CD-RW drive.

A Control Freak

Q I have upgraded to Windows XP from Windows 98, and many icons in the Control Panel do not show up at all. How can I restore them?

Shashank Mathur

A This is caused by a bug in Windows XP where certain Registry settings left over from previous versions are misinterpreted. Here is how to (easily!) fix the problem: in the Registry Editor, navigate to `HKEY_CURRENT_USER\Control Panel`. Delete the "don't load" key entirely, and close the Registry Editor. The missing Control Panel icons should appear immediately. ■

Think The Box Outside

With 256 Kbps unlimited connections becoming the norm, there's a new need to transport GBs of data around. Enter our saviour, the external hard drive

Internal storage has become very affordable. As our download folders span several hundred gigabytes and friends request movies, music and games portability becomes an issue. One of my friends has a major problem: he downloads (legal!) movies and documentaries at office (his admin actually doesn't object!), and he needs to ferret these movies across to his PC at home. Now data travels, and his brother-in-law has been wanting to swipe movies and game ISOs off his hard drive. Finally tired of the bickering about being inconsiderate to *bhaiya*, he consulted me.

I set him off on the right track straightaway—an external hard drive solution. The problem now: which? The first decision is whether to go 3.5-inch or 2.5-inch. The bigger PC hard drives have dual benefits—they're cheaper, and you get more storage space. The negatives are the size and weight, as well as the need for a separate power connection. Laptop hard drives are costlier, but smaller, and more importantly, they are powered via a USB port—sometimes two ports.

An external solution is basically nothing more than a regular hard drive—either 3.5-inch or 2.5-inch—housed in some sort of external casing that converts the hard drive's PATA or SATA interface to USB, FireWire, or even E-SATA (external SATA is an extension of SATA, which offers hot-swappable plug-n-play). Some manufacturers like Western Digital and Seagate offer external hard drives. Other vendors offer either only the casing (in which case you buy a hard drive separately), or will sell you a combo, that is, an external case + HDD.

I discovered, during my sojourn to Lamington Road, hard drive cases selling for as little as Rs 150! Of course, these are as reliable as a cat with goldfish around, but if the product fails, you can simply buy another. This is assuming the low-quality casing doesn't affect the drive in any way.

The first vendor I patronised showed me a couple of local branded USB 2.0 cases—the 3.5-inch one cost Rs 250, while the laptop case cost Rs 265. He was sketchy on warranties—it was the check it here, pay, leave, and don't come back if anything goes wrong type of warranty. I asked for prices of laptop hard drives. He suggested Hitachi—the cheapest—followed by Seagate and Western Digital (in ascending order). A 40 GB Hitachi 5400 rpm was Rs 2,200, while the 60-GB cost just Rs 200 more. An 80 GB priced at Rs 2,800 means anything smaller is a poor deal in terms of price per GB.

A block down the road, I was shown a Transcend StoreJet casing. Now Transcend has gone a step ahead, offering both regular casings and complete solutions (sealed external drives), leaving the choice to the user. A 2.5-inch StoreJet casing was priced at Rs 750. I enquired about the Zippy casings I'd come across while surfing. He said they're priced at Rs 300 more, and not many people buy them even though they are much more reliable; I suspect this is due to the brand image that Transcend has carved for themselves.

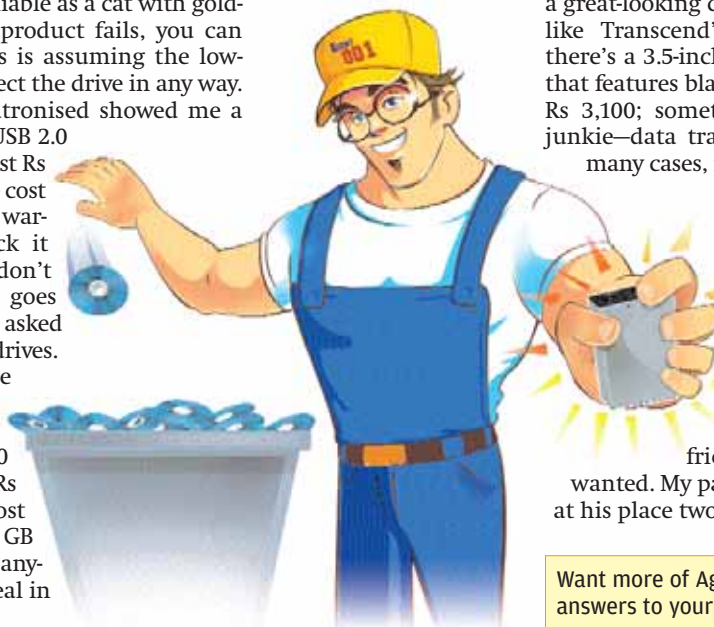
This vendor priced the laptop hard drives identically, mentioning that a faster Seagate drive would cost just Rs 200 more compared to the Hitachi. According to him, Western Digital are costlier because of their door-to-door replacement warranty. Incidentally, a WD laptop drive is around Rs 500 more than a Hitachi of the same class. Mind you, these are 5400 rpm drives. Since the interface is USB, a *much costlier* 7200 rpm drive doesn't make sense: the interface will bottleneck it.

I consulted my friend, and he declared he wanted something reliable since he planned on keeping data for a few weeks on the drive, not necessarily deleting data after transferring it.

Vendor three insisted we choose a hard drive first. He showed us bigger models from Hitachi—100 and 120 GB—priced just Rs 300 rupees apart (3,600 and 3,900 respectively). 160 GB laptop hard drives are also available, but were steeply priced, at Rs 6,150. My friend took a liking to the 120 GB category: "This will be enough for a lot of movies and music, *yaar*."

We then came across an external casing from Vantec called NexStar, priced at Rs 2,100. This was a great-looking case, finished in aluminium, just like Transcend's StoreJet series. Incidentally there's a 3.5-inch version of Vantec's USB casing that features blazing-fast E-SATA connectivity for Rs 3,100; something that will suit the speed junkie—data transfer rates are double, and in many cases, more than that.

We bought the 120 GB Hitachi drive with a five-year warranty for Rs 3,900. No haggling: this fellow wailed about zero per cent margins! We trudged back to vendor two and picked up the Transcend 2.5 StoreJet for Rs 750. For a little more than four and a half thousand bucks, my friend had gotten exactly what he wanted. My payoff was the home-cooked meal at his place two days later...☺



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

Getting The Basics Right

Q I am planning on getting a new PC, but am confused about specifications. I'll be using the PC mainly for multimedia entertainment, and also for gaming. I cannot decide between an LCD and a CRT. My budget is Rs 40,000.

Raghavendra Naidu



With the reduction in Core 2 Duo prices, they're a sizzling deal.

Below is a system you can look forward to within Rs 40,000:

I haven't priced components like the cabinet, keyboard, and mouse, as these are items of personal choice. However, the total cost for these shouldn't be more than Rs 3,000.

Components	My Suggestions	Price
Processor	Core 2 Duo E6300	8,500
Board	MSI P965Neo V	6000
RAM	1 GB Kingston DDR2 667	3000
Graphics Card	Forsa 7600GS	5500
Hard Disk	Samsung SP2504C (250 GB)	3500
Monitor	Benq FP71G +	10800
SMPS	VIP 400W	1500

Decisions, Decisions...

Q I have two queries: first, I'm going to buy a laptop. Which one of these should I should opt for: a Dell Inspiron 6400 or an HP Pavilion DV 2214 TU? Second, I know that CDMA mobile phones can be used for connecting to the Net. Can GSM phones be used similarly? If so, please let me know which cell phones have this capability.

Anjum Ahmad Gilani



The DV2000 series feature 14.1-inch screens, whereas the Dell 6400 Inspiron series features 15.1-inch screens. Another difference is, the DV2000 series features AMD Sempron and Turion processors, while the Inspiron 6400 series features Intel's Core 2 processors.

I'm assuming you'll mainly be using this laptop for work. Note that both brands allow for personal configurations—you can match components to your liking. With the Inspiron 6400 series, you can opt for a Core 2 Duo processor, which is more powerful than the Turion X2 processors on the HP DV2000 series. Looks-wise, the HP DV2000 is miles ahead of the dull-looking 6400.

As regards your second query, yes, using a GSM phone as a modem is very possible. All you need is GPRS activated on the phone, and its drivers installed on your PC or laptop. Any GPRS-enabled phone model will do, we'd recommend the Nokia 6030/6070, which will retail for around Rs 6,000.

The Perfect Printer?

Q I want to buy a printer but am confused. Which is the best for me? My budget is Rs 5,000.

Taranpreet Singh Sodhi



Look no further than the HP D4168. From our tests, it's clear this is a great printer at a killer price (Rs 4,000). It also has inbuilt PictBridge support.



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.

Cost No Bar

Q I have a Pentium 4 2.4 GHz with an 865GBF. Will this combination support DDR400 MHz memory? I also want a pair of headphones. Performance is important for me and money is not an issue.

Gaurav Kumar



Yes, DDR400 memory will work on your motherboard. I'd suggest a dual-channel configuration for improved performance.

Really good headphones can be expensive, but since you've mentioned cost not being a factor, I suggest a look at Sennheiser as a brand. They make some of the best available circumaural headphones. You'll need to check out their "HD" series—look for the HD485 and HD555. Note that these are high-impedance headphones, and MP3 players will have a problem supplying enough juice to drive such headphones. So if you're going to be using these with a portable player, prepare to be carrying around a headphone amplifier as well! Note that Sennheisers are available in some metros, but even if you're not in a metro, you should be able to order one from your dealer.

If you want in-ear earplugs, I'd suggest the Bose Intra Ear headphones that have been featured in an earlier edition of *Bazaar*. These are priced at roughly Rs 5,000, but feature extraordinary comfort and superb sound quality.

If I've gone off the mark when it comes to your budget, I'd suggest looking at the Philips HP 805, which should cost around Rs 1,500.

Pinning Down A Phone

Q I want to buy a mobile phone and I am confused with the following two models—the Nokia 6270 and the Nokia 6680. Which one will be good for me, keeping in mind features, camera, and MP3 quality? Is there a better phone than these at the same price?

Sushant Lama



The Nokia 6270 is a generation ahead of the older 6680, which was touted as the successor to the Nokia 6630. The 6270 has a slider form factor, and not only is the screen bigger and much higher resolution (240 x 320 vs. 176 x 208 pixels) but it has a better camera (2.0 MP vs. 1.3 MP).

Still, instead of the 6270, I suggest you look at the technically superior N70. The N70 will cost around Rs 1,000 more than the 6270, which is priced at Rs 13,000.

Wait For Eight

Q I want to buy a graphics card, and my budget is Rs 10,000. Should I opt for the GeForce 7600GT? Or should I wait for the 8600GT?

Himanshu Gogoi



The 7600GT is available for well below Rs 10,000—around the Rs 7,000 mark. The 8600GT has just been launched, and should be available in proper supply by the time you read this. At anywhere between Rs 8,500 to 11,000 it makes a much sweeter deal with better performance and Direct X10 compliance. Brands to look for are XFX, Leadtek, and Forsa. ☐

Tips & Tricks

SECRETS THAT KEEP YOU AHEAD IN THE RACE

TIPS

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Windows Mobile 137
WinRAR 140

30 MINUTES EXPERT

Altiris Software Virtualization 136
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zBrush 139

GOOGLE



Illustrations Harsho Mohan Chatteraj

Google's a company that never stops surprising us by introducing some really impressive services just when you think they've run out of ideas. They're one company that won't even bother charging you for these services! Since the last *Fast Tracks* for Google were published, Google has added new products and updated some older ones. Let's go through some of the more useful ones and the things you ought to try.

iGoogle

www.google.com/ig

Not too long ago, iGoogle was better known as Google Personalized

Homepage. iGoogle lets you create a customised homepage that you can set as your browser's default page with all you want to see when you fire it up.



Add The Weather Gadget

One of the gadgets you can add to the iGoogle page is Weather, which gives you a forecast for the next few days, along with other information like wind speed and humidity.

The Weather gadget is usually on by default; if it isn't, click on Add Stuff. Here you'll find Calendar under the Popular section. Click on "Add it now". Go back to the iGoogle main page. Click the drop-down button under Weather, and click Edit Settings. Select India as the Country/Region and choose your city. Click Add and then Save.

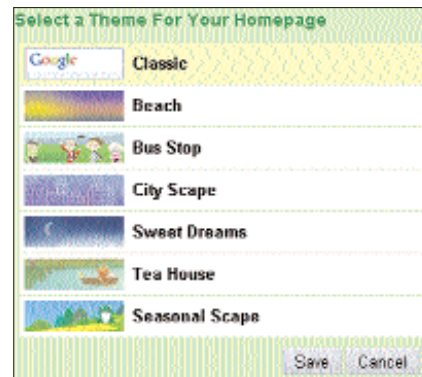


The Weather Gadget in iGoogle



Change The Theme

Google recently added theme support for iGoogle. Google also gives you with a nice bunch of themes to choose from. Click on the "Select



Select a theme from a list...



...and apply it

theme" link. Choose one of the themes and click Save. Certain themes change with the weather in your region, so you might have to enter your city name.



Move Gadgets Around

Gadgets can be moved around the page. This means you can have the more important gadgets on top and the less important ones below. Moving gadgets can be done by clicking the title bar of a gadget and dragging to its destination. The gadget will automatically dock alongside the other gadgets.



Make Your Own Gadgets

Google gives you a base to start off with your own little Gadgets. To add your own Gadgets, click on Add Stuff.



Make your own Gadget from many available ones

Then, click on “Create your own gadget”. You will come to a page with an option to choose between some seven presets. Click on a preset suitable for the Gadget you’re planning on making. Enter the information for that Gadget and click on “Preview gadget” to get an idea of what it will look like. If you’re pleased with the results, click on “Create gadget”.



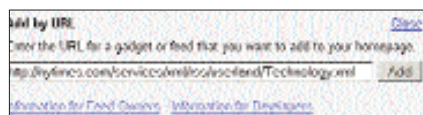
Add A New Tab

If you reach a point when there are too many gadgets in your iGoogle page, you can choose to put the less important ones in a new tab. Click on the “Add a tab” link. You will be asked to enter a name for the tab. Once the tab is created, you can click on Add Stuff to add new Gadgets to that tab. You can also move Gadgets from one tab to another by clicking the title bar of the Gadget and dragging it into the tab name.



Add Feeds To iGoogle

iGoogle lets you do some basic feed reading as well. The steps are similar to adding Gadgets. Click on Add Stuff. Click on “Add by URL” next to the



Enter a URL and click Add to add a feed

search button. Enter the URL for the feed and click Add. Next, click on Close, and go to the main iGoogle Page. You will find the feed listing there. You can change the number of news items displayed by clicking on the drop-down and selecting “Edit settings”. Use the drop-down to change the number of news items and click Save.



View Gadget Source

Anyone can view the source code for Gadgets. Click on the drop-down in the title bar of a Gadget and click “About this gadget”. A new page with comments from users will be displayed. Click on the “View source” link to view the source for the Gadget. On the right panel, lists of similar gadgets are displayed for you to choose from.

Google Notebook

www.google.com/notebook



Export To Google Docs

When you’re done doing research on the Internet and taking notes, you can export these notes to Google’s own word processing service—Google Docs. To do this, click on Tools and then on “Export to Google Docs”. Google docs will then open up a new document

with the notes from the notebook—all formatted and everything.



Note-Taking From Firefox

Google has developed a plugin for Firefox that lets you access your Google notes. If you don’t already have the Firefox plugin installed, a tip with the link to download the Firefox plugin will appear at the top of the screen, or you can visit www.google.com/notebook/download. Click the link in the tip and install the plugin. Restart Firefox, and you’ll find an icon that will let you log in and access your Google Notebook.



Share Your Notebook

You can share your notes with others as a Web page. Click on “Sharing options”. Under “Invite collaborators”, enter the e-mail addresses of other users. Clicking the Yes button under “Publish this notebook” gives you a Web link you can send to your friends.



Enable “Note This”

The Firefox plugin for Google Notebook allows you to select text and add them to your Google notes, so you don’t have to manually type all the notes or even copy-paste. Right-click the Open Notebook link at the bottom right of Firefox and click the “Enable Note this” button. To add notes, simply highlight text, right-click, and click “Note this (Google Notebook)”, and the selected text will be put up as a note on Google Notebook.

Google Bookmarks

www.google.com/bookmark



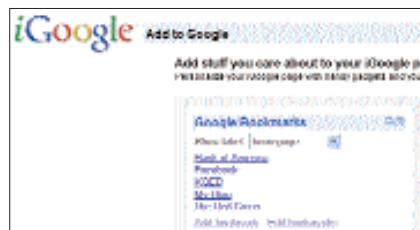
Easy Access Through Firefox

Most users can’t imagine going to Google’s Bookmark page and adding entries manually. Google has thought of everything and given you a toolbar that easily lets you add, edit, and remove bookmarks. Visit <http://toolbar.google.com> to get the toolbar. If you’re a Firefox user, there’s a link for it on the page. After installing the toolbar, click on the Bookmarks button and click on “Sign in” to access your Google bookmarks. Enter your username and password to log in. When you wish to bookmark a site, click on the Bookmarks button and “Bookmark this page” to add the page to your Google bookmarks.



Google Bookmarks On iGoogle

You can also put your bookmarks on iGoogle. First log in to Google



Adding your bookmarks to iGoogle

Bookmarks, and you’ll find a link—“get your bookmarks on your personalized homepage”. Click on it and a page will be displayed with a button—“Add to Google”. Clicking on it will take you to the iGoogle page, and the bookmarks will be displayed as a module.



The Google Bookmark Button

Those who don’t wish to install the entire Google toolbar because you don’t need all the features can choose to install only a single button that lets you add bookmarks to Google Bookmarks. Log in to Google bookmarks and click on the Bookmarks link. A bookmarklet named Google Bookmark will be displayed at the bottom of the screen. Drag and drop the button onto your bookmarks toolbar of your browser. To add bookmarks, click the button while visiting a site.

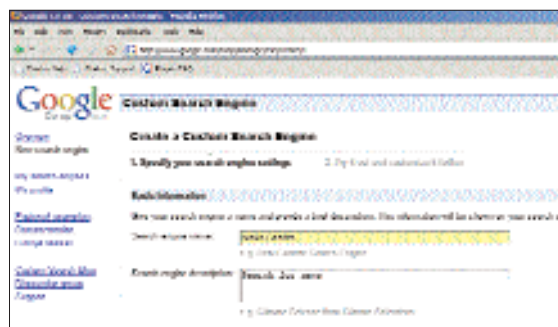
Google Co-op

www.google.com/coop/



Create Your Own Search Engine?

Google Co-op lets you create custom search engines where only selected sites will be searched. Log in to Google Co-op. Click on the “My search engines” link. Next, click on “Create a new



Specifying your own search engine settings is easy

search engine”. Here you first need to enter the name, description, and keywords for the search engine. Enter the list of sites you want to search. Read first, and then click on “I have read and agree to the Terms of Service”. Click Next. You can now preview to check if you get the right

results. If you don't, you can go back one step and make the necessary changes. If the results are fine, click Finish. At this page, you can view statistics for the search engine, or choose to add the newly-created search engine to your iGoogle page.

Marking Sites

You can choose to mark sites that you come across to be included in the list of sites from the custom search engine. To do this, you require a button on your bookmark toolbar. Once you're logged in to Google Co-Op, click on the Google Marker link. Click and drag the Google Marker onto Firefox's



You can add a site to your search engine's list

Bookmarks toolbar. When on a site that you want to add to the list of your search engines, click the Google Marker button. In the pop-up that appears, choose the search engine you want to include or exclude for the site. You can choose to only save a particular page. Once done, click Save to apply the changes.

Google Talk

<http://talk.google.com>

Google Talk On iGoogle

GoogleTalk's gadget can be displayed on iGoogle. First log on to iGoogle. Click on Add Stuff, and then on the Communications link in the left sidebar. Click on the "Add it now" button under Google Talk. Go back to the iGoogle page and click on "Sign in". Enter your login and password, and the Google Talk Gadget will log in to the service.

Google Talk In The Sidebar

Those who wish not to run Google Talk's software client can use the Web-based client. Google's Gadget usually loads up as a separate pop-up window. With browsers that have sidebars, such as Firefox and Opera, you can have Google Talk load up inside them.

For Firefox Users

Firefox users can create a bookmark first by selecting Bookmarks > Organize Bookmarks. In this window, go to File > New Bookmark. Provide a



Google Talk in the Firefox sidebar

suitable name, such as Google Talk. Enter the location as <http://talkgadget.google.com/talkgadget/popout>. Finally, click the checkbox "Load this bookmark in the sidebar". Now click on Bookmarks > Google Talk (or whatever name you gave the bookmark). Google Talk will now open up in the Firefox sidebar. Click on "Sign in" and enter your username and password.

For Opera Users

Opera users can have Google Talk open in the sidebar in a similar manner. Click on Bookmarks > Manage Bookmarks. Click on the Add button, and then on "New bookmark". Give a suitable name and enter the address as <http://talkgadget.google.com/talkgadget/popout>. Click OK, and the bookmark will be made. Press [F4] to show the Opera sidebar, and then drag the newly-created bookmark from the bookmark region to the sidebar. Click on the bookmark in the sidebar and Google Talk should load. Enter your login information if needed.

On The Google Sidebar

If you are a user of both Google Desktop and Google Talk's software client, you can have Google Talk dock into Google's sidebar. To do this, start both the software. Google Talk will automatically dock next to the sidebar but not in it. To get it to dock in the sidebar itself, click the ">>" icon in the Google Desktop sidebar.

Videos And Picasa Web Albums

Using the Web-based Google Talk, you can play YouTube, Google Video, and Picasa Web Albums in the chat window. Whenever you receive a YouTube or Google Video URL, you can choose to play it by clicking on Play. This loads the player within the chat window and plays the video. It's similar with Picasa



GTalk on the Desktop sidebar

Web Albums. When you receive or send a URL to an album on Picasa Web Albums, a preview window pops up with basic controls for moving to the next and previous images.

Using A Third-party Program

You don't have to use Google Talk's software client to use their service. Most instant messengers with Jabber support will work. Not all the features might work, but the basic chatting will. Some clients you can try are Miranda, Gaim, and Trillian. In whichever client you choose to use, create a Jabber account with the following details:

Username: Your username

Password: Your password

Host: talk.google.com

Port: 5222 (5223 if you use Miranda)

Login server: gmail.com

TLS/SSL: On if available

Google Picasa Web Albums

<http://picasaweb.google.com>

Downloading Albums Directly

Google's free photo album hosting site and software allows users to directly download albums to Picasa, the image viewing and altering program. First download and install Picasa from <http://picasa.google.com>.

Go to the album of your choice. In the left pane, you will see a link that says "Download Album". Click it and Picasa will load up asking for a confirmation to download the album.

Upload Images Easily

Images can be uploaded to Picasa Web Album without having to manually upload each image using the Web interface. To do this, start Picasa and then sign into Picasa Web Albums by clicking on the link "Sign In to Web Albums" at the right top of the window. Enter your username and password and log in.

Choose the folder or album you want to upload, and click the "Web Album" button at the bottom of the Picasa window. You will be asked to enter information for the album—album title, descriptions, etc. Choose the resolution of the images before uploading; Picasa will resize the images if needed.

Choose whether you want to make the album open to the public or private. Click OK when done, and the images will be uploaded. You can check your album by visiting http://picasaweb.google.com/YOUR_USERNAME. The same URL can be sent to your friends.



Jayesh Limaye

Altiris Software Virtualization Solution 2

Become a software reviewer! Test-drive your software!

Virtualisation has always been an interesting and intriguing topic, yet most of us do not know enough about it. The concept of virtualisation brings to our minds whole operating systems residing inside virtual machines, though this is not the only meaning of virtualisation, as you will learn. Altiris Software Virtualization Solution (SVS) 2 aims to virtualise not complete operating systems, but parts of it, so that you can install software applications inside these virtual “packages,” leaving the operating system unscathed, in the event that the application malfunctions. This is like placing a polythene bag containing newly-bought fish in an aquarium to monitor if they adapt well to their new surroundings, before releasing them into the water. It is therefore a very useful tool to install and test beta versions of applications.

Software testers would surely find this indispensable. We have already mentioned it in the *Bazaar* section of our January 2007 issue; we now show you how to play around with this gem of an application.

This is a 1.8 MB download available at www.altiris.com. It is free for personal use, and you can obtain a free personal license from the site, which is necessary for the installation to continue. Do not forget to check the box next to the admin tool option, which lets you create virtual software packages. Restart the computer after the setup completes.

Create A Virtual Software Layer

A Virtual Software Layer needs to be created to capture the installation of your test application (Eudora in this case). All the installed files, Registry settings, and application settings will be captured and stored in this layer, isolated from your OS. In the SVS Admin tool, select File >

Create New Layer, choose Install Application, and click Next. Give an identifiable name to this layer and click Next. Select the capture method; here, choose “Single program capture”, click Browse, navigate to the setup files of the test application, select it, click Next, and then click Finish.

The Global capture option is used to capture any and all changes made to the system, and thus is useful if you wish to install more than one application. Note that a layer has two parts; one is read-only, and it stores the installation stage of the application until the capture is terminated, while the other is the writeable part of the layer, which stores changes caused to or by the program when the user interacts with it later. An animated capture icon (“yellow lightning”) appears in the System Tray; the animation indicates that the capture is in progress. The test application installer will be launched, and you can complete the installation of that program as you normally would.

Launch the test program, and if there is any first-time configuration, it will be saved to the read-only part of the layer too, like the rest of the installation. Right-click on the flashing icon in the System Tray and select “Stop Capture” to end the capture process. If you run the configuration of the test program after the capture part ends, it will be saved in the writeable part of the layer.

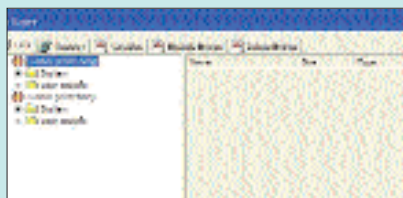
Test, Activate, And Deactivate The Layer

The layer created in the previous step is in the activated state by default, meaning that the contents of this layer (Eudora in this case) are visible to the user. To activate or deactivate a layer, in the SVS Admin window. Right-click on the layer in question, and click on Activate or Deactivate as required.

If you deactivate the layer in our example, you will find that all instances of Eudora in Windows, including the program folders and icons as well as the Registry entries, will vanish without a trace. You should test the layer by launching the application; if the application runs well, the layer is working properly.

Modify The Layer

You can modify the properties of a layer, but to do this, you need to first deactivate it. You can then right-click on the layer in SVS Admin and select “Edit Layer Properties”. A new Edit Layer window will open, where you can edit the properties of the layer such as to modify the installed files and Registry entries. This is something we wouldn’t have advised you to carry out, had the application been installed normally in Windows, but in this case, we encourage you to get your hands dirty because your OS is safe: the layer is isolated from it. So if anything goes wrong, you can simply restore the layer by right-clicking on it and selecting Reset Layer.



Editing layer properties

Making A Distributable Application Package

If you have multiple computers, you can deploy a certain application on all the computers using Altiris SVS.

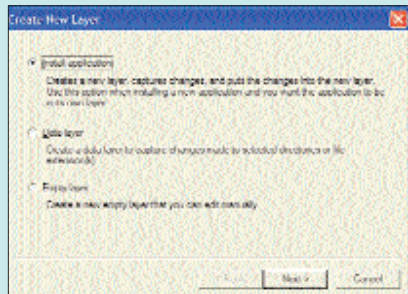
Install the application on the primary computer with Altiris SVS installed and store it in the layer as explained before. Deactivate the layer. Right-click on the layer, select “Export Layer”, and save it as a Virtual Software Package (.VSA) file.

Now install Altiris SVS on all the other computers and copy the VSA file you created to those computers. Launch Altiris SVS Admin on the other computers, click File > Import from Archive, and open the VSA file. That’s it—your application will appear as if it had already been installed and ready to use.

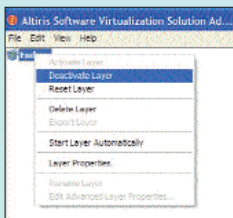
Bear in mind that there are currently certain limitations to Altiris SVS, such as drivers, virus checkers, file encryption products, OS patches, and computer management agents. Also, you cannot encrypt files in a layer, i.e. files pertaining to application(s) installed in a layer.

Now that you have the tools of the trade and we’ve already got you started, why not give it a try? Become a software tester! ☑

jayesh_limaye@thinkdigit.com

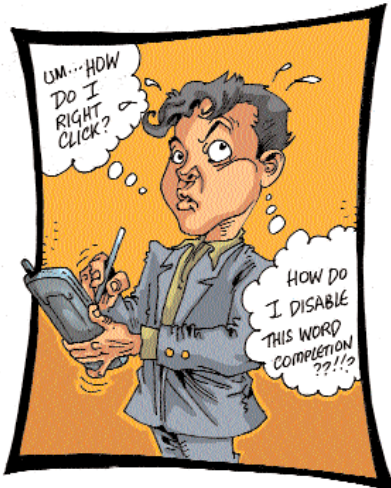


Creating a new layer



Deactivating a layer

WINDOWS MOBILE



Windows Mobile is what all smart phone or PocketPC users use. Being a Microsoft product, users are on familiar territory. There are differences, though, when it comes to connecting wirelessly or syncing with desktop PCs. There are certain limitations that can be overcome by changing a few settings here and there.

Here are some tips to help optimise the way you use your device.

Change Views In IE

Having a compact portable device gives you a lot of flexibility, but they aren't without the handicaps. A small screen means you scroll horizontally a lot more because of the way pages are designed.

Internet Explorer has a single-column view that can be enabled by going to Menu > View > One Column. You can also choose to view Web pages in full-screen mode by clicking on Menu > View > Full Screen.

No Right-click?

Most newcomers to the mobile smart device spaces may be wondering how you right click with a stylus. It's easy; the trick is to tap the screen and not let go.

Set Wallpapers

Wallpapers help lighten up your computing environment—Pocket PCs and smartphones are no different. Go to Start > Pictures & Videos (or any location where images are stored). Open the image, click on Menu, and then on "Set as Today's Background".

Fix For FAT16 File Length

File lengths can be a problem in FAT16 and folders like My Documents cannot be displayed. The only fix is to use Windows to create the file name.

Use Transcriber And Hardware Keyboard

People can be confused by the types of recognisers. When typing long messages, it's best to use the transcriber rather than the letter recogniser. Similarly, the hardware keyboard is better than using the soft keyboard on-screen. To switch to the transcriber, click the arrow next to the recogniser button; click on transcriber.

Switch Time To Digital

The clock in Windows Mobile can be switched between digital and analogue. To switch between the two modes, keep the stylus pressed on the time in the taskbar and you will be prompted with a choice between a digital and analogue clock.

Disable Word Completion

Word completion is enabled by default in Windows Mobile. Every time a user starts entering a word, Windows Mobile suggests the complete version. This can be a little irritating at times when you want to enter words which aren't in the dictionary. You can disable word completion by going to Start > Settings > Input > Word Completion. Uncheck the checkbox "Suggest words when entering text" to disable word completion. You can also alter other settings such as the timing of the word completion.

Disable Unnecessary Connections

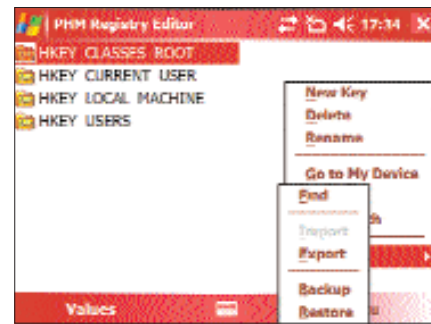
As it is, portable devices are short on power. Using wireless connections means you'll be running short on power in no time. It is then important to disable wireless connections whenever they aren't required. To do this, start the Comm Manager by tapping its icon when on the Desktop. Disable Bluetooth and Wi-Fi by clicking their respective icons. Disabling vibration should also help conserve your batteries.

Control The Registry From Windows

When your mobile device is connected to a PC, you can use one of the many registry editors on your desktop. Mobile Registry Editor (www.breaksoft.com/Blog/Utilities/2005/1/Mobile_Registry_Editor.aspx) is a good example.

If you want a Registry editor that runs on the device itself, you can use PHM Registry Editor (www.phm.lu/Products/PocketPC/RegEdit). We'll be needing Registry editors for the next set of tips. (Note: Create a backup of your registry and proceed with caution!)

To create a backup using PHM Registry Editor, select Menu > Tools >

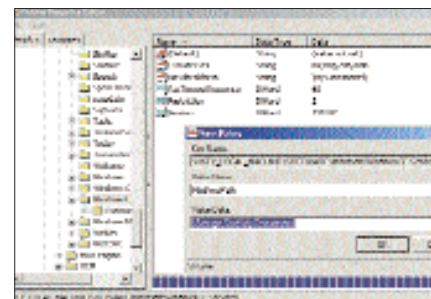


Back up your Registry!

Backup. Enter a location and the backup will be saved. We used Mobile Registry Editor to make changes to the Registry on the mobile device through the hardware link.

Change Location Of My Documents

By default, the My Documents folder is located on the onboard memory of your device, which cannot be removed. So the only way to access those documents is to use a cable and connect it to your Desktop. You can change the location at which your My Documents is stored to



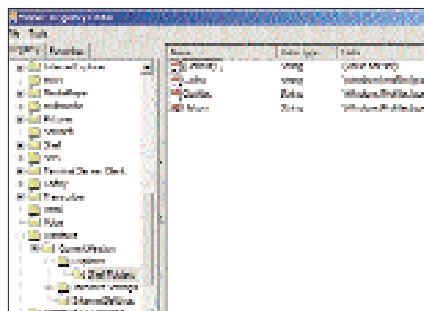
Change the path of the My Documents folder

an external storage card. Browse to the key HKEY_LOCAL_MACHINE > Software > Microsoft > Windows CE Services. Create a key FileSyncPath value to \Storage Card\My Documents or any other location of your choice. Remember to create a folder on the storage card with the name "My Documents".

Change The IE Cache Location

Similar to changing the location of your My Documents folder location to a storage card, the contents of the Internet Explorer cache can be stored on the same card. This can give you extra space for the cache. To modify this setting you need to go to HKEY_CURRENT_USER > Software > Microsoft > Windows > CurrentVersion > Explorer > ShellFolders. Alter the values of

\Windows\Profiles\Guest\History
 \Windows\Profiles\Guest\Cookies
 \Windows\Profiles\Guest\Temporary Internet Files

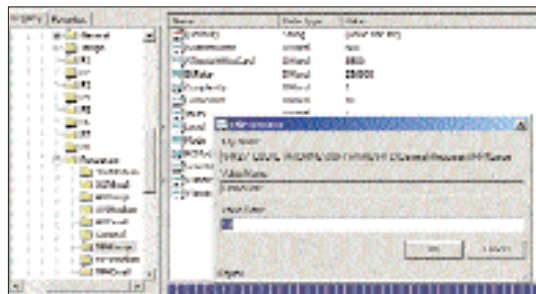


Change the IE temporary files location

to the new locations, for example, Storage Card\Internet Explorer 6\ (History, Cookies, Temporary Internet Files)

Improve The Camera's Frame Rate

The frame rate of the camera on your device is limited to around 10 fps. You can take the frame rate up to around 19 fps, which will result in smoother videos. To do this, browse to the key HKEY_LOCAL_MACHINE > Software > HTC > Camera > RecParam > MP4Large. You can choose MP4Medium or



You can change the frame rate of the camera

MP4Small for the other resolutions. Change the value of FrameRate to 19 or any frame rate in between.

Alter Battery Low Warning

When the battery charge level reaches around 10 per cent, your pocket device starts alerting you. To be able to alter any settings or the way you are alerted, start the Registry Editor and browse to HKEY_CURRENT_USER > ControlPanel > Notifications > {A877D663-239C-47a7-9304-0D347F580408}. Create a new string "Default". Change its value: Default="Low battery warning". Now go to Settings > Personal > Sounds & Notifications. Tap on Notifications. Under the Even drop-down menu, click on "Low battery warning", and you can set a range of alerts.

Disable 3GP Video Recording Limitation

3GP video recordings are limited to a particular size. This limitation can be removed by changing a setting in the

Registry. Browse to HKEY_LOCAL_MACHINE > Software > HTC > Camera > AppDefSettings > P3 > EnableLimit. Making the value 0 will disable the limit. Making it 1 again will enforce the limit.

Enable Time In All Applications

The time on the Taskbar can be displayed on the Today window or across all applications. This can be enabled by going to Start > Settings > System > Clock & Alarms. Uncheck the box to disable it, and check it to enable the displaying of time in all applications.

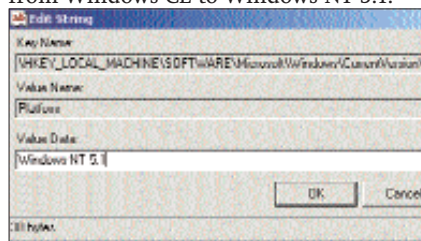
Closing Applications

When you click the OK button in Windows Mobile, it really doesn't shut the program, but in a way makes it inactive. To really shut the program down, go to Start > Settings > System > Memory > Running Programs. Here, you will see the list of programs running. You can choose to shut all of them or select a few individual ones. Clicking a particular program and tapping Activate will make the program active and display it on screen.

Internet Explorer 6?

You can identify your Pocket Internet Explorer as Internet Explorer 6 to sites on the Internet to give you the non-mobile versions.

Browse to HKEY_LOCAL_MACHINE > SOFTWARE > Microsoft > Windows > CurrentVersion > Internet Settings > 5.0 > User Agent. Change the value of Default from Mozilla/2.0 to Mozilla/4.0. Next change the value of Version from MSIE 3.02 to MSIE 6.0. Finally change the value of Platform from Windows CE to Windows NT 5.1.



Identify your browser to sites as IE6

Improve Performance

You can get some additional performance from your devices by changing the cache size.

Browse to HKEY_LOCAL_MACHINE > System > StorageManager > FATFS. Change the value of CacheSize from 0 to 4096. Make sure EnableCache has its value set to 1. In HKEY_LOCAL_MACHINE > System > Filters > fsreplxfilt, set the value of

ReplStoreCacheSize to 4096. A soft reset will be required after this.

Disable Menu Animations

You can do this to cut down on reaction time. Browse to HKEY_LOCAL_MACHINE > System > GWE > Menu. Change the value of AniType from 6 to 0 to completely disable menu animation.

Scrolling In IE

Using a stylus to scroll can be cumbersome over long periods. Using the navigation buttons is relatively comfortable. Navigate to HKEY_LOCAL_MACHINE > SOFTWARE > Microsoft > Internet Explorer > Navigation. Change the value of 4-Way Nav from 1 to 0.

Change The Operator Logo

To change the graphical logo of the phone provider to one of your choice, create a GIF file and place it in the \WINDOWS folder with the name Carrierlogo.gif. The resolution of the image should be around 120x20 to avoid stretching or deformation.

Modify Scrollbar Thickness

A compact device such as a pocket PC or smartphone only has so much space it can spare, so reducing the thickness of scrollbars can help get a little more workspace. Start your Registry Editor and make your way to HKEY_LOCAL_MACHINE > System > GWE. Alter the values of cyHScr (horizontal scrollbar) and cxVScr (vertical scrollbar) to the size of your choice.

Similarly, you can also change the size of the scrollbar arrow buttons. Browse to HKEY_LOCAL_MACHINE > System > GWE. Change the values of cyVScr (the horizon scrollbar button) and cxHScr (the vertical scrollbar button) to a smaller size.

Keypad Backlight Timing

In devices with keypads, a backlight automatically turns on if it is used. The time the light remains on can be changed by going to HKEY_CURRENT_USER > ControlPanel > Backlight. The default value of QKeyLedTimeout is 6; change it to the time you want the backlight to stay on.

Where To Install?

By default, Windows Mobile installs programs on the local memory. If you wish to be able to specify where the program is to be installed, using the Registry Editor, go to HKEY_CLASSES_ROOT > cabfile > Shell > Open > Command. Alter the value of "Default" to wceload.exe "%1" /askdest.

By removing the /nodelete parameter, Windows Mobile will delete the cab after being installed. ☐



zBrush

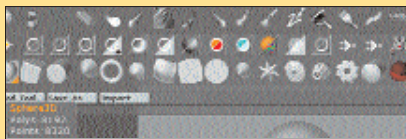
3D modelling doesn't demand that you be a design guru

Rossi Fernandes

ZBrush has revolutionised the way we model 3D objects, and even more so for organic modelling. You no longer have to be a 3dsmax or Maya guru to know how to model things. A newcomer can pick up this software in a day or two and get the hang of things. We take a look at some of the things that should get you up to speed!

Creating Objects And Navigating

When you first run zBrush and run your mouse around the workspace, it draws in the same way you would in Photoshop with some depth, but that really isn't the core feature of zBrush. To create a proper model, click on the Tool icon in the left toolbar and choose a 3D shape—sphere, cube, cylinder, etc. These are primitives that you can create and then modify to make the object you want. Click and drag in the main workspace to draw the object.



Easy access to the primitive objects toolbar

- ▣ Pressing [T] enables Edit mode, where you can make changes to the model or navigate around it. If you click again without switching to Edit mode, a duplicate model will be created.
- ▣ Clicking in the blank region of the workspace and moving the mouse rotates the object.
- ▣ Pressing [Alt], clicking in the blank area of the workspace and moving the mouse moves the canvas around.
- ▣ Pressing [Alt] while clicking in the blank area of the workspace and then letting go of [Alt] switches to zoom.

Importing And Exporting Objects

People often need to export their models into zBrush and make modifications there and export it back. Keep in mind that in zBrush, 3D models are considered as tools. So to import a model into zBrush you need to click on Tool in the left toolbar and then on Import. zBrush2 supports importing of OBJ and DXF files, so while exporting from a modeling application, export your model as OBJ or DXF. Choose your model and click Open.

Now click and drag to draw the model by clicking and dragging in the workspace.

When you are done working with the model in zBrush and want to export it back again, click on Tool in the left toolbar and then on Export to save the file.

Modifying Objects

Once primitive or imported objects are added to their workspace, they need to be modified. While in edit mode, left-click on the model to add height to the object. Pressing [Alt] and then left-clicking on the object creates depth. These modifications aren't smooth and require some refining most of the time. To even out the changes, you can press [Shift] and left-click over the region that was modified to smoothen it.

Using The Move Tool Effectively

The move tool lets you stretch areas on a model whereas the draw tool creates height or depth. The move tool, which can be accessed from the top toolbar, can also be used to deform objects. The move tool's area of effect depends on the size of the brush. You may need to change the size of the brush by right-clicking or from the top toolbar. Left-click on the region of the model and move it around to make changes. This is useful for creating shapes like wrinkles.

Create And Switch Between Levels Of Subdivisions

Creation of subdivisions is required to create high-quality models, but working at high levels can really be too much for the best of systems to handle. So the best way to go about modelling is to create the subdivisions needed and then make the major changes on the lower levels, and as detail such as fine wrinkles and pimples come, switch to the higher level of subdivision. Press [Ctrl] + [D] to add new subdivisions. Pressing [Shift] + [D] goes down the levels, and pressing [D]



Adding subdivision levels

goes up. The controls are also accessible from Tools > Geometry.

Change Brush Type And Size

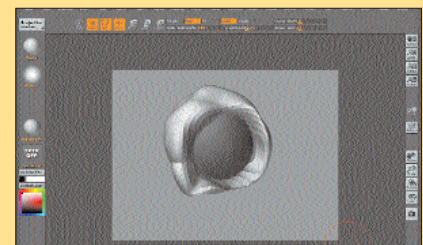
While in Edit mode and sculpting models, switching to appropriate brush types and sizes is important to get good results. You can change the size of the brush from the menu on top or by right clicking. Altering the Z Intensity will change the amount of depth or height your brush delivers.

Masking Your Model

While working with models, sometimes, delicate regions are being altered while modifying the rest of the model. You can mask regions of the model to stop any tool from doing so. To paint a mask, hold down [Ctrl] and left-click and paint the region you don't want affected. To remove the mask, do the same in the blank region of the workspace.

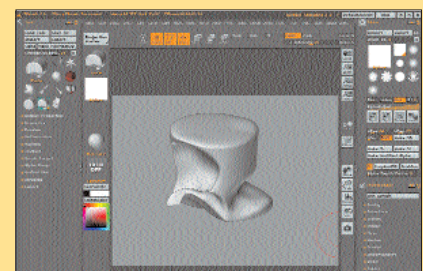
Customising The Interface

The zBrush interface is unique compared to most modelling



A mask prevents an area from being changed

applications, and can be highly customised. There are spaces provided on the edges of the window to dock your most used tools and menus. Clicking on



Toolbars can be docked all over the interface

the divider opens blank spaces. Click on the menu of your choice and click on the icon at the top left of it and drag it to one of the blank spaces. ▣

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WINRAR



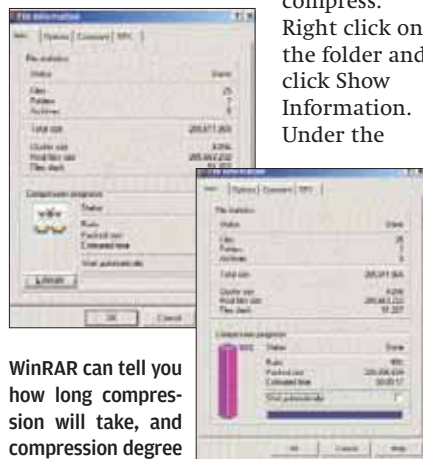
WinRAR has become everybody's favourite data compression tool mainly because of its support for many formats. WinZip and PowerArchiver have lost their charm as well: WinRAR stands out as a clean no-nonsense compression solution. We take a tour of some features you would normally not use.

Enable Explorer-like Folder View

WinRAR normally shows up a single pane view with the files and folders you last visited. There is no option to access your Desktop or any network shares. To gain access to them, you can choose to enable the two-pane view similar to that in Windows Explorer. Go to Options > Folder Tree > Show folder tree. To show all file details, you can click on Options > File List > Detail.

Get Compression Prognosis

Say you have a big file or a folder you want to compress, and you have no clue how long it will take or how much compression will actually take place. To get this rough idea, you can browse in WinRAR to the folder you plan to compress. Right click on the folder and click Show Information. Under the



WinRAR can tell you how long compression will take, and compression degree

Info tab, click on the Estimate button in the Compression prognosis section to get the information.

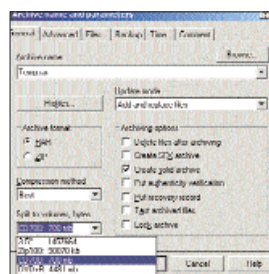
Customise Toolbar And Add Themes

WinRAR's toolbars can be customised to look a lot more attractive. First, there are skins you can download from www.rarlab.com/themes.htm. To install a theme, click on the Options menu bar and then on Themes > Organize Themes. Click on the Add button and select the downloaded theme. Then click on Options > Theme and choose the newly added theme.

You can choose to add some more buttons or remove unused ones by right-clicking on the toolbar and clicking on Select Buttons.

Use WinRAR To Split Files

WinRAR does more than just compress data. It can be used to split up big files so they fit on multiple CDs for mailing purposes. Choose a file or folder



Split files using WinRAR!

you want to split and choose to compress it by right-clicking on it, and clicking "Add files to archive". Click on the drop-down menu for "Split to

Make An SFX

volumes, bytes". Enter a value in KB or MB—or choose from one of the presets—and click OK.

Many a time, you end up sending files to people who don't use WinRAR or any compression tool for that matter. In such cases, it's best to convert your file to a self-extracting archive. Click on an existing archive and click on Tools > Convert archive to SFX. Choose one of the modules and click OK. A self-extracting archive will be created in the same folder. You can also create a SFX while compressing a file or folder by clicking on the Create SFX Archive checkbox.



Creating an SFX archive

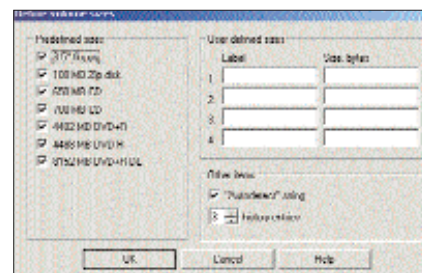
Create A Basic Installer Using WinRAR

Creating self-extracting archives gives you the option to create your own little

installer which uncompress an entire program to a set location. You can also choose to execute a program before or after the decompression process. Start by clicking on the folder you want to install, and click Add Files to archive. Check the "Create SFX archive" box. Click on the Advanced tab and then on "SFX options". Here you can enter the path you want the installer to unzip the files to, and whether you want the folder created in Program files or some other folder. You'll find many other options here to customise the installer, such as adding shortcuts or licensing information.

Additional Splitting Sizes

During the compressing and splitting process, you can choose from the presets what size you want your archives to be split. Additional presets



"Define volume sizes" lets you add more presets

can be added by clicking on Options > Settings. Click on the Compression tab and click the Define volume sizes button. You can check the boxes not checked to add those volume presets. At the same time, you can add your own presets under the "User defined sizes" section.

Compress And Mail

A feature called Compress and mail, which lets you directly compress a folder and e-mail it to anyone, is normally hidden. You can make it visible by clicking on the Options menu and then on Settings. Click on the Integration tab and then the Context menu items. Here, check the checkboxes for "Compress and mail" and "Compress to <archive name> and mail".

Change The Temp Folder

By default, the temporary files created by WinRAR are stored in the C:\Documents and Settings\USERNAME\Local Settings\Temp folder. If you are short on space on your Windows partition, you might want to move your temporary folder elsewhere.

Click on Options > Settings, and then on the Paths tab. Click the "Choose Folder for temporary files" section and select a path of your choice. ☑

Digital Tools I Know More About

UEFI

How about a "proper" boot loader instead of the DOS-like BIOS screen?

Samir Makwana

How does PC hardware load the operating system? Well, there's pre-loaded firmware called the BIOS (Basic Input/Output System), embedded on a chip (mostly PROM, EEPROM, or Flash memory) located on the motherboard. The BIOS primarily recognises hardware components and performs basic initialisation of the OS.

Since the origins of the BIOS in the late 1970s, hardware components such as hard drives—and the hardware technologies—have changed, and thousands of peripherals have come in.

In 1998, Extensible Firmware Interface (EFI) technology came into the picture from the Intel Boot Initiative program, which was first implemented on the Intel-HP Itanium architecture (formerly IA-64) based computers. Intel has been pushing it as a replacement for the PC BIOS.

Later in 2005, when leading BIOS and hardware developing companies started adopting this alternative for the BIOS, it was renamed "Unified Extensible Firmware Interface" (UEFI). The UEFI specifications derive from EFI specifications.

What Is EFI?

EFI is the next-generation of firmware that serves as an interface between the OS and the hardware in the boot environment. System-hardware-related information is stored in the form of a data table in this interface. Along with that, the OS and the OS loader can avail boot and runtime services before the OS loads.

EFI is one step ahead of, and performs all the basic functions of, the BIOS: running hardware/OS setup and diagnostic utilities, loading the OS, and scanning for viruses—through a clean interface between the hardware and the OS at the time

of system boot. Like the BIOS, EFI checks for the availability of necessary system hardware for bootup, and prepares the hardware by loading the respective drivers to boot the OS faster.

EFI resides between the OS and the firmware of the hardware components.

Drivers for certain components that at times rely on the

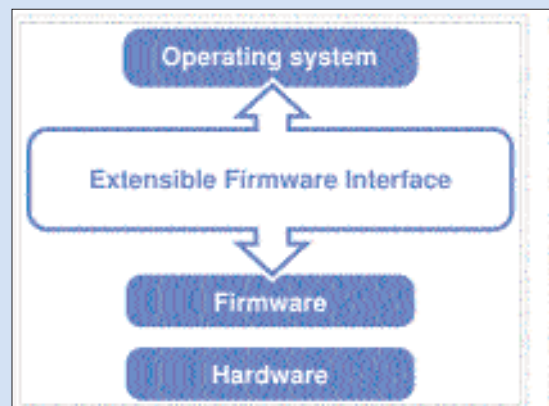


Image Courtesy: Wikimedia Commons

EFI will work in sync with firmware and PC BIOS

OS for loading will be created so as to be able to work with EFI: EFI thus enables functioning of third-party applications to perform certain functions in the pre-boot environment.

As compared to BIOS, which is written in "real-mode" 16-bit assembly language, and which offers a text-only interface, EFI will offer a proper 32-bit GUI. Being platform-independent, EFI decreases the compatibility and maintenance issues that often occur with legacy firmware. EFI driver codes are written in C, a high-level language, so developers can reuse driver codes and make modifications easily.

Functions And Benefits Of EFI

The device driver environment, which is platform-independent in the EFI specification, allows basic graphics and network support until the OS drivers load. EFI can thus provide boot services such as a graphical console for image loading of drivers and third-party applica-

tions, and the OS loader. In addition, runtime services for boot time are provided, such as a wake-up alarm and system reset.

The boot manager is an application in EFI used for OS selection at boot time if the system has more than one OS. In case the OS freezes at a certain stage, you can go into the pre-boot environment and reload the OS by replacing the faulty or corrupt drivers.

Also, an open source shell environment has been created for EFI to enable executing media without booting into the OS. This means you can watch a movie on the PC without booting up.

The Future

The development of EFI specifications has been stopped by Intel; only UEFI exists today. UEFI is the looked upon as the future firmware for the pre-boot environment. The pre-boot environment and functions will become such that users will be able to optimise OS booting, diagnose errors, and more.

UEFI becoming the industry standard for all PC makers will take time. The UEFI firmware image (32-bit and 64-bit) would be larger than that of the BIOS, and would therefore not fit into PROMs. It would add to the material and validation costs for system manufacturers for including them on ROM.

For instance, support for UEFI is not available for Windows Vista, but they promise that in a future service pack. Windows Longhorn Server edition will support UEFI.

The newer Intel Macs are based on EFI with a module update in Boot Camp.

UEFI might replace the BIOS in a few years to come. Right now though, it's difficult to comment on whether UEFI will deliver what it promises; we'll need to wait and watch. Keep an eye out for details as and when they appear, right here in *Digit*.

samir_makwana@thinkdigit.com

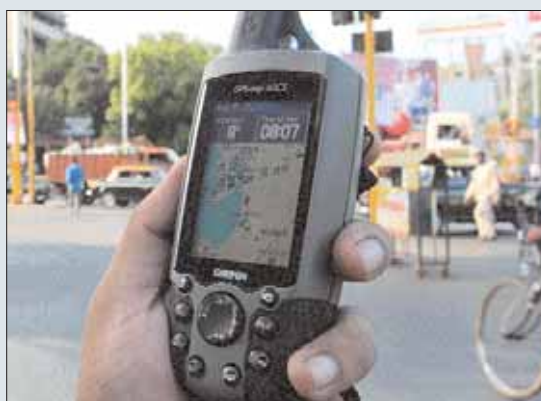
Treasure Hunt vs GeoCaching

We decided to pit the traditional way of treasure hunting using maps against GeoCaching using a GPS receiver. Samir chose the Old Way, and Michael, the Tech Way. It was a fair fight because both are new to Mumbai. We organised two way-points that they would have to go through before reaching the final destination. I accompanied both on their respective assignment days.

Asfaq Tapia (asfaq_tapia@thinkdigit.com)



Looking silly holding up a map in Mumbai...



...and looking so weird holding the thing, it was cool!

1

The first way point was Hotel Kumkum on Lamington road. Getting there was easy for Samir. Because we're *Digit*-ians, we can smell technology hot-spots from a mile away!

Michael eagerly typed in "Hotel Kumkum" into his GPS receiver. It brought up three results, one of which was in Lamington Road. As soon as Michael chose the right hotel, an arrow appeared showing the direction we needed to head in. "This should be easy," muttered Michael.

2

The receptionist gave Samir another clue, which told him to get to Hotel Ascot in Colaba. He didn't know how to get there, so he checked the map, only to realise that it did not give him exact street-level detail! The map was not to scale, either... The only way to reach there now was to remember all the areas lying in between. After referring to the map a few times, we finally arrived at our destination—two wasted bus rides and a train ride later!

Getting to Lamington Road and then following the arrow to Hotel Kumkum was a breeze. Michael got his second clue and punched in "Hotel Ascot." He soon found Mumbai isn't as well-mapped as we'd like, and the GPS receiver was showing turns and roads where there were none, and failed to mention existing roads. He asked for directions. We finally hopped on the right bus and got down at Colaba, and found Hotel Ascot easily using the GPS' direction arrow.

3

The receptionist there gave Samir another clue, which asked him to go to Hotel Sahil in Mumbai Central—he could smell the treasure now!

Michael's third clue was Hotel Sahil in Mumbai Central, and his GPS showed a few hotels with that name—none of them in Mumbai central. He realised he was in trouble. He did use the GPS to find his way to Mumbai Central though.

4

By now Samir had gotten the hang of using the map, so finding Mumbai Central was not a problem. It looked huge though, and hotel Sahil was not on the map. After an hour of asking people for directions, we finally arrived.

On the way to this last way-point, the GPS receiver ran out of power. After buying some new batteries, Michael continued to search for the treasure. He did the smart thing and asked for landmarks near Hotel Sahil, and found those on the GPS. He finally got there about half an hour quicker than Samir had done earlier. So what was the treasure? Free lunch at the hotel, of course...

Time Taken: **5 hours** (Bad even for Mumbai)
Easiness/Fun meter: **1.5** (We looked silly)



Time taken: **3.5 hours** (Not all that bad)
Easiness/Fun meter: **4** (We looked *cool*!)



**AND
THE
WINNER
IS...**

The old way was fun, and not as much a pain as we'd expected. Of course, this is Mumbai, so finding your way is not really hard. We also found that you cannot just rely on GPS—when it had the destination listed, it was good, but not all places were mapped. Since neither Michael nor Samir could complete their task

without asking for directions, the result was headed for a tie. However, since Michael had to stop less often to ask for directions, we decided the tech way should win. When GPS catches on, and cities are mapped completely, you could use a GPS receiver to get to destinations without ever needing to ask for directions.



Hack your Mouse



Build a Wi-Fi Antenna



Tips for Laser MFD



LCD Monitor-Tweak it!

Do
It
Yourself



Silence your PC

Build A Wi-Fi Cantenna

Boost your Wi-Fi network using, strangely enough, a can!

Dhruv Mohindra

Often believed to mean “Wireless Fidelity,” where the word “Wi-Fi” comes from remains a mystery. Still, most people agree it’s much better than using the name “IEEE 802.11b Direct Sequence.”

The “Can”tenna

A cantenna is a home-made antenna built from commonly found, empty tin cans. Why would your network need a cantenna, rather than an (inbuilt) antenna? Consider:

- ▣ They increase the range to a greater extent
- ▣ Provide high gain comparable to those of commercial antennas
- ▣ Can help spot Wi-Fi hotspots as you travel
- ▣ Commercial antennas are expensive

In other words, if you wish to have a wire-free network across distances of several metres, a cantenna is indispensable. It allows direct communication, at the same time maintaining good speed. In fact, you can enjoy a game of *Counter Strike* over the network across several buildings. Apart from these, it will aid in your being interpreted as the geek, at least in your group of friends!

What you need is what you get!

Building the cantenna is easy, provided you get the right material. Here, we will be putting together the classic Pringles cantenna. If you’ve ever enjoyed Pringles potato chips and have experienced the immense misery that accompanies seeing the empty can’s metallic bottom, don’t get upset. In fact, the chips should be consumed as

quickly as possible so that the cantenna can be built right away! Likewise, you may need to visit a radio shack for some special goods and the number of trips are proportional to how carefully you read the next few lines.

Visit your favourite supermarket and purchase a can of Pringles. The four items that follow can easily be found at a radio and electronics shop, while the next few can be obtained from a hardware store.



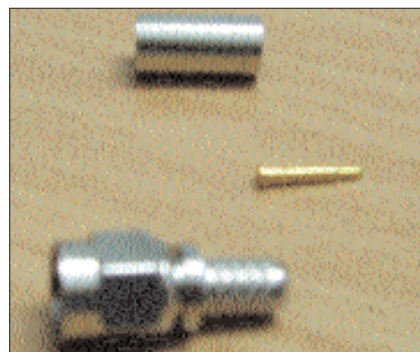
The Pringles can



The N-type female connector



The N type connector from the back



RP-SMA male connector components

You will also need

- ▣ A wire cutter
- ▣ Something to drill a hole or two
- ▣ Soldering skills

Building It

This procedure shall not take more than half an hour if you’ve already gathered the tools.



Let’s start with the can itself. The precondition is that you have consumed all the contents and properly rinsed the can. If you’re using the Pringles can, measure 3 3/8 inches from the bottom. Drill a hole such that the N type female connector can easily slide in. Now put away the can for a while.



Hole in one!

The Raw Material

Item	Quantity	Dimensions	Cost (Rs)
Pringles or equivalent can	1	Standard	80 (includes chips)
N-type female connector	1	Standard	56
RP-SMA male connector	1	Generally 8 mm dia.	76
LMR 400/RG-213 /RG-58 coaxial cable	1	1 metre	15
Copper wire piece	1	1. 1/16", Gauge 12	0
Thin conducting rod	1	6", < 1 cm dia.	12
Washers	5	Dia: inner > rod's dia; Outer = 1"	7
Small sized nuts and bolts (optional)	2	For N type connector	0

STEP 2

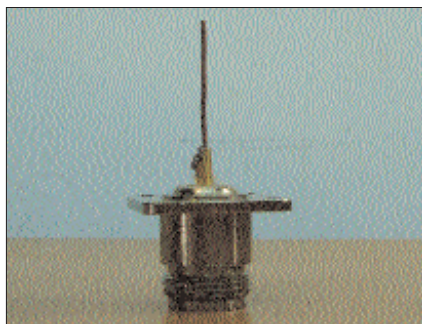
The next step is to prepare the cable. This special cable is called a pigtail. Ready-made pigtails can be expensive, so we'll construct our own. The RG cable that you acquired earlier has two ends (naturally)—one of them should be soldered to the N type female connector. The inner conductor of the coaxial cable will go into the respective protruding metal of the connector while the shield should be soldered to its body. Similarly, solder the other end and then crimp it to the SMA male connector. For the same, first solder the small male pin to the inner conductor of the cable and then insert this into the minute hole through the connector. The pigtail is now ready.



A pigtail from scratch

STEP 3

Take a piece of Gauge 12 copper wire. Solder it to the top of the N type connector.



The soldered copper wire

STEP 4

Now mount the assembly on the can. Let the SMA connector end pass through the hole first. The



The top view

N type will form a lock and will appear as shown.

STEP 5

Mark a point on the copper wire such that the arrangement extends approximately to the centre of the can's diameter. Gently pull out the cable and chop off the extra wire above this point.

STEP 6

Put back the cable, and if required, use a few nuts and bolts to secure the assembly. This completes the construction of the reflector.

STEP 7

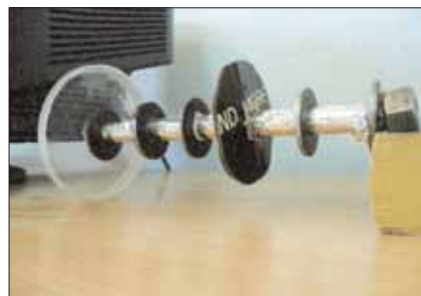
For the collector bit, attach a nut at one end of the metal rod. Now hold it such that the nut points towards the ground.

STEP 8

Add the lid and slide it to the bottom such that it hugs the nut. Next, place three washers one after the other such that the last one reaches the mid-point of the rod. If the washers don't fit the rod perfectly, try using some household aluminium foil. If there is a large diameter difference,



Taming the collector



The final collector

don't lament—get four pieces of a pipe with a larger diameter than the inner rod and washers. Begin by inserting a washer, then a pipe, then a washer, and so on. The pipe would hold all the washers in place since its diameter is greater.

Coming back, insert a roundish insulating material (plastic will do) and let two more washers occupy their respective places on the rod.

STEP 9

The collector can now be mounted. Put the lid back in place with the rod hanging inside the Pringles container. Make sure the rod doesn't touch the copper filament that was previously soldered to the N-type connector.

STEP 10

It's time to test your hack now! Go find a wireless card and a wire-free network or two.

Putting It All Together

If you have a desktop computer with a PCI or USB WLAN card, you're probably already testing your newfound passion! Unfortunately, if you are the lucky owner of a laptop with an inbuilt Wi-Fi system, life isn't that easy. You will have to open a small cover, generally found on the lower surface of the laptop. This will expose a couple of cables running up to the inbuilt antenna. Think twice before pulling them out and inserting your own—make sure you don't end up voiding your warranty in the process. However, if you know what you are doing and do it correctly, there should not be any problems.

Testing Times

Yagi antennas (like the one you just made) are highly directional, and this signifies greater range (remember the highly directional laser light?). Also, noise is kept down for neighbours who share the same channel as you.

To establish a connection with someone, start by aiming slightly towards the left or right of their receiver, and slowly rotate the assembly to find the best gain possible. Elevating the antenna can sometimes help.

If the antenna is to be placed amidst open surroundings, some weatherising needs doing—paint the external surface to ward off rust, or enclose the whole assembly in a PVC pipe.

Wrapping It Up

We have discussed the basic antenna, and it is from here that the true hacks emerge. You have learnt how to construct a relatively tough-to-build antenna, and a tin-can setup should follow similar but easier steps. So put your creative shoes on—and don't forget to aim at the right building! ☒

readersletters@jasubhai.com

A Tweak In Time

Bought an LCD, but still can't escape how awful things sometimes look?

Rossi Fernandes

LCDs are quickly becoming mainstream here in India: 19-inch widescreen monitors can be easily found at around Rs 11,000. Let's take a look at what you can tweak, what makes LCDs a must-buy today, and more.

Note: Use the following tweak(s) with care. We are not responsible for any damage that may occur. For any Registry tweaks, back up your Registry before proceeding.

The Field Of View Problem

Most latest games come with resolutions suitable for widescreen monitors. But the issue is with older games, where resolutions of the 4:3 ratio are stretched to the widescreen aspect ratio. The field of view in game changes considerably and your game seems stretched and warped.

If a game has a resolution matching your screen, just go ahead and choose it. For those games that don't have it, you can manually try and force the game to run at a particular resolution. Most games have their resolutions settings in a config file in the installation folder, or in the Registry. You can alter those settings to suit your current resolution.



Quake 3 Arena running at standard 4:3 resolution looks just fine



Quake 3 Arena running at widescreen resolution causes stretching



For example, most *Quake 3*- and *Doom 3*-based games have variables in their config file—such as `r_customwidth = xxxx` and `r_customheight = xxxx`; `r_mode = -1` enables custom resolutions. Make the necessary resolution changes and save the file.

There's even a program called Game Resolution Switcher (<http://grs.mini-info.net/>) which lets you set custom resolutions for a list of games. Another software that lets you set custom resolutions is called Powerstrip—www.entechtaiwan.net/ps.htm.

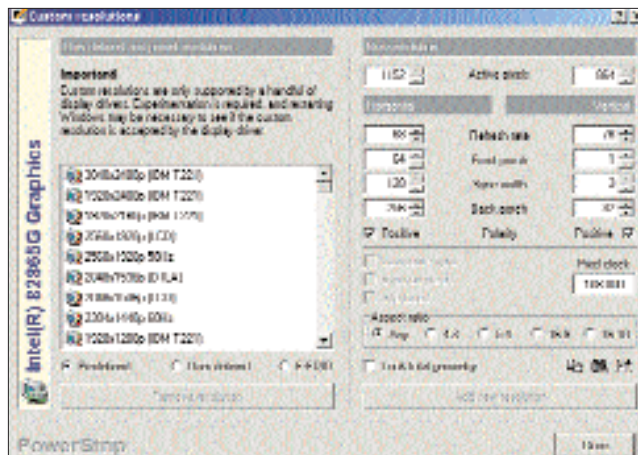
The other way to make things look a bit more normal is to change the Field Of View (FOV). There are some programs and sites that offer FOV calculators that calculate the preferable FOV for widescreens for those who have moved from the standard 4:3 ratio res-

olutions. For games where the default FOV is set at 90 degrees, 16:10 ratio resolution (1280 x 800, 1440 x 900, 1680 x 1050, 1920 x 1200) screen users should set their FOV to around 100 degrees. You may find these variables in the game config files.

Lower Power Consumption By LCDs—No Big Deal?

Some people believe that the lower power consumption of an LCD is overrated and that a cheaper CRT is the way to go. Let's just compare the power consumptions. A typical 19-inch CRT's power rating is set at around 100 W, and a similar-sized LCD, around 30 W. So what type of savings are we talking of here? Say you run a monitor for seven hours a day for a year. A CRT will then consume around 255 kilowatt-hours of power, and the LCD will do around 76. Assuming that 1 unit (1 kilowatt-hour) of power is priced at around Rs 4, the difference in bills between the CRT and LCD over a year is around Rs 700. Multiply that by three years (the common warranty with most monitors), that's over Rs 2,100 saved. If you use your screen for more than seven hours, that translates to a lot more! Keep in mind, the difference in prices for CRTs and LCDs for the 17-inch and 19-inch monitors is really minimal these days.

Also remember, LCDs run at much lower temperatures. If you use an air conditioner in your computer room, the benefits of using an LCD might show up for this reason as well. Let's not forget the glare reduction.



Powerstrip allows you to force resolutions on games

Widescreen—Better Use Of Screen Space?

Widescreen monitors, obviously, have a wider layout. While this means that you'll have to do some amount of vertical scrolling, you can place two windows side by side. It provides a similar way of working to dual-screen setups. Certain LCDs let



Widescreen resolutions allow better use of workspace

you rotate the screen to a vertical layout. This is really useful when you're browsing.

Widescreens are perfect for HD media and even standard DVD resolutions. When these videos are played on standard 4:3 screens as on almost all CRTs, you find a thick black band at the top and bottom—wasted space. On a widescreen LCD monitor, you're rid of these blank spaces, and the movie fits your screen perfectly (or close to perfect, depending on the media).

DVI Or VGA?

DVI (Digital Video Interface) is what you should be using with your LCD monitor—not your old VGA cable. DVI gives better quality compared to the VGA. Before buying an LCD, you need to make sure your graphics card has a DVI connector, and at the same time, make sure the LCD has it too. Most LCDs today come with both VGA and DVI connectors, but you might come across some that only have VGA connectors—to save on costs. VGA cables carry analogue signals that are converted by the graphics card. DVI is a digital solution and needs no conversion. Also, faulty VGA cables would result in degradation of quality.

Resolutions And More

It's common to find groups of monitors supporting the same resolution.

For example, 17-inch and 19-inch widescreens usually have a resolution of 1440 x 900, and 20-inch and 22-inch widescreens have a resolution of 1680 x 1050. Larger screens don't always mean higher resolutions, so you need to find the perfect balance between size

and resolution and see if it's worth the extra price you pay for a larger monitor.

There's no doubt that bigger areas on screen, no matter what the resolu-

tion will display, comparatively, some increase in text size. You might therefore want to increase the distance. But always remember, never sit with your face too close to a screen—it can cause damage to the eyes.

It's the same case with large LCD or plasma screens which you would use as a television—a huge screen doesn't always mean high resolution. It's best again to keep it a distance that takes into account the size of your screen. Remember that sitting too close to the screen, in case of large widescreens of sizes such as 24-inch and higher, means you wouldn't be able to comfortably view the entire screen with a gap of 1 to 2 feet.

Resolutions, too, are a factor while talking of viewing distance. For example, low-resolution videos up-scaled to a screen won't be suitable for closer viewing. As much as possible, it's advisable to play high-definition media if you



A visual comparison of commonly used resolutions

tion, are always fun for movies and games, but when you buy a large screen for general Desktop use, you might have to place the monitor a little away from yourself. For example, if you currently have a 20-inch screen and sit 2 feet away from it, a 22-inch screen of the same res-

want to sit really close to the screen.

To give you a clearer idea of how much difference in workspace there is between resolutions, here's a graphical representation to help you relate with your current monitor resolution. ☒

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Hack That Mouse

...Did you even think you could?

Rossi Fernandes

Here at *Digit*, we take our games seriously. We play a lot of FPS games, especially on the LAN. However, a few of us also play online, and this is where things get complicated—it's a whole different ball game when we're on the Net, and we usually get fragged to kingdom come. It's not uncommon for us to hide in shameful misery, or just moan about our cheap mice, bad mouse pad, light-weight mouse, tangled wires... the list is never ending, as excuses generally are.

In this article we'll show you all the tips, tricks, and tweaks you may never even be aware of existed in your mouse. We'll warn you right here: performing some of the tweaks will void the warranty on your mouse, so be careful before removing any stickers—and perform the tweaks at your own risk.



Playing With Pads

While it is true that optical mice work well on almost any surface, the same can't be held true for laser mice. They tend to be picky when it comes to surfaces. Now, we know there are pads available like Icemat, Ratpad, Razer, Steelpad, Everglide, etc. However, they cost an arm and a leg, so most of us will never use them. We decided to look for cheaper alternatives.

The two main things we need are a hard base and the fabric that you want to put on it. We used acrylic as our hard base. If you want something cheaper, a thin sheet of wood, plastic, or aluminum works just as well. You might wonder if acrylic by itself would be a good surface. Its not! Optical mice fail miserably on acrylic just like on glass. We'll be talking of using glass itself as a mousepad a little later.

STEP 1 We went out and bought a 12 x 10-inch sheet of acrylic (Rs 50). We had a hacksaw and some sandpaper lying about, which we used to cut / shape the



Smoothing out the sharp edges

acrylic. We also got some fabric and a needle and thread.

STEP 2 We took the sheet of acrylic, created an outline of the shape we wanted, and then cut it.

STEP 3 We used sandpaper to smoothen out the cut edges.

STEP 4 Next, we held the fabric in place on the pad and made the necessary scissor markings.



Wrapping the fabric tightly around the board

STEP 5. We could either stick the cloth on the pad or hem up the pad. We kept things simple, but you can make a tight-fitting cover, or one that you can open easily and wash. Just make sure the surface is smooth, and has no wrinkles.



A complete mousepad @ Rs 50!

Some people would like to have a glass surface as their pad. This is easily done—just get a glass sheet cut to the size of your table or keyboard drawer, and have it etched. Optical and laser mice will not work unless you get the glass etched.



Using an etched sheet of glass as a mousepad



Wire Management

When gaming, mouse wires often get entangled and send your view in the game haywire. This is easily avoided by taking the

proper precaution when connecting all wires, and making sure the mouse wire is free to move.

If the cabinet is located beside the monitor, it's wise to run the wire from the opposite side of where all the other PC wires are. If the cabinet is located at the bottom, we often find ourselves tugging away at the mouse wire; after all, gravity will always pull it down. This means that there's never any slack in the wire, which is terrible when gaming, and quite irritating even with regular PC use. This is also easily solved by looping the wire around a paper-weight after getting the slack you need. For gaming however, it's probably a good idea to invest a little time and make a mouse-bungee.

Mouse-bungees basically avoid cables spilling over your table and keep the mouse wire suspended in the air for least resistance. Although products are sold for around Rs 600 to 700 that do exactly this, they're not widely available, and besides, why pay Rs 700 for something you can make yourself for one-fifth the price?

STEP 1 We needed a stand of some sort, and chose an old, broken microphone stand. You can use a bendable webcam stand, or one of those bendable table lamp stands. Plastic clips, rubber bands or a rubber/plastic sleeve is all we needed to hold the mouse cable in place.

STEP 2 We ran the mouse cable along the length of the stand. When you're doing this, remember to measure and leave enough space between the mouse and the stand, depending on placement.

STEP 3. We added clips wherever necessary, and tightened them to prevent the mouse wire from moving about.

STEP 4. Positioning is important. We positioned our mouse-bungee in such a way



Attaching clips to the stand

that there was little or no wire touching the table, and still had enough slack to move about easily. At home, you could add plastic hooks alongside your monitor or cabinet to hold the mouse cable in



Properly positioning the mousepad and stand

place—depending on placement, of course.

We found that just these simple steps helped us optimise our mouse for gaming, and headshots in Counter Strike were a lot simpler—the mouse moved freely and smaller hand movements were necessary.



Overclock 'em!

Yes, you *can* overclock mice. Depending on the mouse, it'll either drastically improve performance, not have any effect, or just damage it beyond repair (if you push too far). First up, we should tell you that doing this voids all warranties, so don't start shooting off angry e-mails to us if you mess it up. Next, you should know whether your mouse can handle overclocking. Those of you with Razer mice need not attempt this, because the drivers already support changing refresh rates—the same applies to other mice that allow you to change refresh rates. Also, high-quality mice such as the MX518 perform exceptionally well at the native 125 Hz.

Now most mice have refresh rates of 125 Hz, and you can increase this to a whopping 1000 Hz. Basically, the idea is, the faster the refresh rate, the lower the response time. At 125 Hz, this is about 8 ms for normal mice, at 250 Hz it's 4 ms, and if the mouse can be overclocked to 1000 Hz, it's 1 ms. Most mice will not support 1000 Hz, so don't try to go that high.

Of the mice we overclocked, the ones that seemed to offer the best performance improvements were the MX300 and MX500; upon bumping them up to 1000 Hz, they performed almost as well

as the legendary MX518, and all their skipping problems are taken care of. The same tweak should work with pretty much every USB mouse.

STEP 1. The first thing we did was checking the existing mouse rate using software called Mouse Rate Checker—www.tscherwitschke.de. You can also use a tiny application called Direct Input Mouse Rate. All we did was start Mouse Rate checker and move the mouse around randomly within the window. The polling rate is shown.

STEP 2. We decided to increase the polling rate in sane increments. We used a software called USB Mouserate Switcher—<http://tinyurl.com/hyonv>. After running it, we were prompted for whether we wanted to switch the polling rate to 250 Hz. After selecting Yes, we rebooted for the settings to be applied.

STEP 3. After the reboot, we checked the mouse, found it functional, and then restarted Mouse Rate Checker. It told us that the current rate was 250 Hz. Since the mouse was working perfectly, we decided to try for 500 Hz and increased the polling rate just as we had done in the previous step. We decided not to try 1000 Hz, and suggest that you do not either, because cheaper hardware just will not support it.

STEP 4. A well-known problem in XP is the acceleration bug, wherein mouse acceleration cannot be disabled. Those used to Windows 98's sensitivity would have noticed it while migrating to Windows XP. The only way to fix it is to use a Registry key that disables it. We downloaded the fix from www.fpsbanana.com/tools/717; it's a WinRAR file, and we added the Registry key it contained.

Apart from what we did above, we also want to share other things we do to improve our input device performance, especially when gaming.

Mouse On A Diet?

Every gamer has his own choice of mouse weight. There's not much weight difference between what's considered

too light and what's too heavy, and even then there's no perfect mouse weight for everyone. Some Logitech mice, including the MX500, come with weights. These add to the resistance and result in slower reaction times in a game, but a steadier hand for, say, Photoshop work. We have found a lot of mice brands add dummy weight inside the mouse body, which can be reduced (or increased) depending on your preferences. Open your mouse up to see if it does have such weights.

Reshoe That Mouse

Mice need their "shoes" replaced when they get dirty and worn out. For cheaper mice, these shoes are made of Teflon or plastic, and wear out faster. Our secret to making these shoes last longer is to use cello tape. We just tape over the mouse feet, and this causes the mouse to move more smoothly, and also when the tape gets dirty, we just remove it, throw it away, and add more tape.

Nail It Down

We've noticed that a lot of us get restless when we're losing in a game, and this causes us to move the mouse around a lot more aggressively. It happens to any person who plays FPS games all the time, actually. Unfortunately, when this happens, we find ourselves hunting for our mouse pads under the table—because they're gone flying off when we make sudden jerky movements of the mouse. To solve this problem, a lot of us at Digit use big, heavy mouse pads; some don't use a mouse pad at all; others find the middle path—using regular mouse pads, but gluing them to the surface of the table. This only works if you have a fixed seating position, of course.

Remember, at the end of the day, any number of tips, tricks, and tweaks will not magically improve your game. Even a good player with a ball mouse can tackle mediocre players armed with expensive mice. The key is to practice a lot, but hopefully, this little DIY will give you a slight edge and improve your accuracy a little. ☒

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Answer
'n' Win

Answer 5 simple questions
and stake claim to a swanky
iPOD VIDEO

Log on to
www.zdnetindia.com/contest





ZD Net India
Where Technology Takes You

Fine-tuned Prints

MFDs—Multi-functional Devices—have progressed a lot since the days of being just copy and print machines...

Rossi Fernandes

Let's look at some of the things they can do now. We start off with connectivity. Fax has been around for a while now and is still found on most MFDs, to eliminate the need for a PC and an Internet connection if documents have to be sent from one place to another. E-mail is the newcomer, and is best for those with an Internet connection; you can now directly send scanned documents to anyone via the Internet directly through the MFD.

The laser MFD doesn't even have to be connected to a PC any longer; you can keep it in one corner of your room and it'll connect wirelessly to a machine—and other machines can wirelessly connect to it—in addition to USB connectivity.

Memory card readers are another addition. You can insert memory cards from your digital camera or phone to transfer data onto the MFD for printing or other purposes.

Let's not miss out on the scanning and printing features. Laser MFDs, for example, are much cheaper to run than their inkjet counterparts, and the price itself for most MFDs is now low enough to be practical for home users. The performance of laser printers, too, far exceeds that of inkjet printers, which make them perfect for office use.

Optimum Scanning Settings

You notice while scanning is that as scanning dpi increases, so does the time. In most cases, you don't really need 300 dpi. 72 dpi to 100 dpi should

suffice for most Web-based applications or regular desktop use. Only when you're required to scan for other print media will you require the higher resolutions such as 300 dpi or more.

Quality drops the moment you save the image using a lossy compression format such as JPEG. If quality is what you need, lossless formats such as TGA or TIFF ought to be used. If you scanned at a high resolution, make sure it's stored with the same or a similar dpi.

For images to be processed using an OCR (Optical Character Recognition) software, try and keep dpi as high as possible in order to get more accurate conversion.

Optimum Printing Settings

Text documents can waste toner if high-quality prints are taken, especially in moderate-sized offices, where large numbers are printed. In such cases, you can make a few changes to your printer settings to optimise the use of toner cartridge.

You need to be on the machine to which the MFD is connected. In the Control Panel, click on Printers and Faxes. Right-click on the MFD's icon and click Properties. Click the Printing Preferences button. Depending on the printer, click on the tab for quality settings. Some of the settings that can help save a lot on toner costs are the printing dpi and the colours used. If text forms the major part of your printouts, you can switch to a complete black and white printing scheme to save on the colour cartridges. The brightness and contrast settings do help a lot as well. Some printers have an "economical" printing mode, which usually saves toner.

Interpolated Images

Some scanners might sport unimaginable scanning resolutions. These claims aren't always true—*interpolation* is probably what's being used. The resolution isn't the real optical resolution; it's software-enhanced. It's similar to digital

zoom in a digital camera. In interpolation, images' resolutions are increased with the same amount of data. This results in poor-quality images. Avoid using interpolated scanning resolutions as far as possible.

The major cost these days isn't the printing device itself, but the running costs. Cartridges are still quite costly, and this is where laser MFDs are the better option overall. A toner cartridge lasts a lot longer, and if you think you're going to print a lot of text, you can always stick to black toner cartridges for best economy.

Cleaning Your Laser MFD

Note: Opening and cleaning your laser printer toner can void your warranty and can be dangerous—proceed with caution!

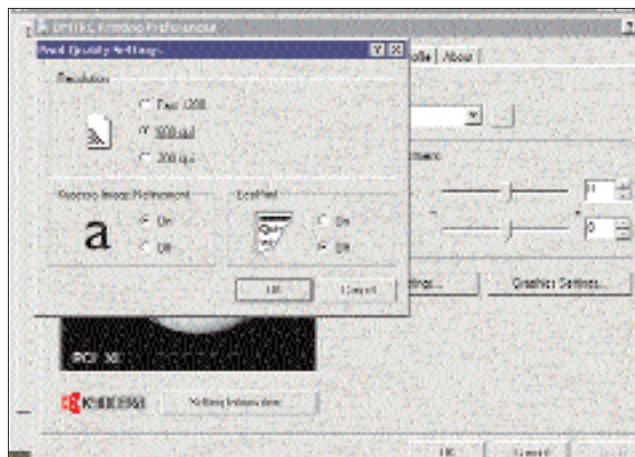
The component in your laser MFD that mainly requires cleaning is the laser printing device. You must take great care while cleaning the printer, as the laser printer toner powder is really



Keep your MFD nice and clean

fine and contains hazardous materials. The particles in air don't settle very quickly either. Use a mask to make sure you don't breathe in any.

Start by turning off the power and unplugging the printer. Next, open up the laser printer and remove any paper sheets from the trays. Wear a mask and gloves if needed, and remove the toner carefully. Use a brush (or a vacuum cleaner, carefully) to clean out any toner powder lying around. Use a cloth to clean out any toner stuck to the printer's insides. It's also best to dispose of the cloth once you're done cleaning. Make sure not to damage any components or cables. Using isopropyl alcohol on a cloth is a good way to clean stubborn stains. You can use this to clean the rollers as well. When you're done, put the toner cartridge back into the



Don't go overboard on the dpi settings if you don't need them



This is the way the cookie crumbles



The bald and the beautiful



The coolest futuristic war...

Remember Kane? He's back. This time he's meaner, stronger, and balder than ever before. I'm glad EA has continued the glory road by keeping the same formula that made all the *Command and Conquer (C&C)* games so enjoyable. *Tiberium Wars* has all the good things from the previous games, and then some. And this makes *C&C 3* even better. Whether you're a hardcore *C&C* fan—or this is your first—it's fun, with amazing gameplay!

No matter whether you are a NOD fanatic or a GDI supporter, both campaigns are awesome. The video cutscenes are awesome and really make you feel like a part of the game. The game rewards you with medals based on your performance in the campaign mission mode, so you can always try to outperform yourself by playing the campaign mission again.

Both campaigns start off with a video of the Earth hit by Tiberium. GDI's job is to get rid of Tiberium and fight NOD, who are trying to convince the world that Tiberium should be used as an energy source. The main objective is the same in both the campaigns, but it is showcased differently. For the first time in the *C&C* series, aliens make their way into the game.

After you complete both missions, the third bonus campaign will pop up, in which you get to play as "Scrin", an alien race. Scrin is by far the strongest faction in the game, and with its UFO units, the GDI and NOD forces can be crushed very easily.

Like in any other RTS game, you'll start by collecting resources and build an army along the way. The battles are fast-paced. The AI is very good, and will play according to your weakness. It can surprise you by sending an army by the path you least expected. All the factions have their own strategy for success. The super weapons are amazing, and the graphics detail during the blasts is superb.

GDI relies on its brutal force and attack from the word Go, and with about 10 Mammoth tanks in its army. It's doomsday for the enemy, and once the super-weapon is charged, its virtually game over and a certain victory!

NOD on the other hand tries to attack from all sides, and it is a force to reckon with. Scrin is the most powerful faction in the game and has the best-looking units as well. Scrin does not have to build silos to harvest Tiberium—you can store endless amounts!

Voiceovers are up to the mark and the background music and the sound effects brilliantly done. The online multiplayer games can be easily accessed. The leader board is a fun thing to compete for.

The structure placement is the only thing EA could have worked on to make this great game even better. But overall, *C&C 3* is arguably the best game in the series, with thrilling gameplay, amazing graphics, and sound to match the feel of the game. It has all the ingredients to be the game of the year. ☐

Shantanu Bhide, Courtesy SKOAR!

Rating: 9/10
Developer: EA Pacific
Publisher: EA Games Los Angeles

OVERLORD

Putting the "evil" back in,
well, "really evil"

EXCLUSIVE
PREVIEW

It's easy to see why Dark Lords don't like heroes too much. Apart from the goody-two-shoes attitude, their penchant for destroying your favourite Dark Tower can get quite irksome, we'd imagine.

Overlord starts with your resurrection into a now ruined Tower, complete with broken throne and stolen Source of Power. Now you must exact your vengeance upon the seven heroes that did this to you and re-establish the Dark Kingdom they were kind enough to dismantle. The background isn't special, but like all good stories, it's the delivery that counts. *Overlord* doesn't take itself too seriously, and throws away the larger than life style of other fantasy games, preferring a cheeky nod to all the fantasy fiction we've read thus far. The seven heroes, incidentally, have succumbed to the seven deadly sins—the gluttonous Halfling, the lazy elf, the Paladin who surrounds himself with harem women and so on.

Of course, no evil overlord must do his dirty work himself—such rubbish is for heroes. You must command your horde of minions to do your dirty work (viz. Looting, pillaging, sheep-killing, Halfling-pounding, general carnage, etc.) for you on your various quests, sub-

quests and side-quests. They come in four varieties—the brown ones are the strongest and are adept at the pounding and thrashing bit, the red ones control fire, the blue ones can swim (the others die in water) and heal the rest of the gang, and smiting begins.

Controlling your minions is quite intuitive—use the mouse to point, click, and they'll be off, destroying everything in sight, and using what they can as armour, weapons or helmets. To follow complicated paths, guide them—tricky, but not too bad. On the consoles, or if you're using a game controller, you'll be doing this with the right analog stick—definitely less stressful.

We even encountered some graphical glitches—the Overlord model would vanish sometimes—but since this is preview code that will still take a month or two to go retail, we'll forgive it. Apart from the minion-moving issue, nothing else about the game's control system hampers enjoyment, and that's a good thing.

And there's plenty of enjoyment to

be had. Just walking the vast, beautiful environments watching your minions turn them into wastelands has evil grin written all over it. You can establish your dominion by being evil ("So he kills our sheep, but at least he give us food", the villagers will say), or by being *really* evil ("My, he's *really* evil", they'll say).

Overlord looks awesome, is fun to play and is full of attitude. It quite obviously takes a poke at *The Lord of the Rings*—the Overlord looks much like Sauron, the minions are somewhere between Gollum and the orcs, and the Halflings are just evil Hobbits. Other references to LOTR culture are peppered throughout the game as well. Overall, this promises to be a very refreshing game and is a must-have for any adventure game junkie with questionable morals. ☒

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DIGIT'S GAMING PC

XFx GeForce 8800GTX, Intel Core 2 Duo E6600, 4 GB RAM, Windows Vista Ultimate x64, WD 250 GB (x2) - RAID 0

Rating: 8/10

Developer: Triumph Studios

Publisher: Codemasters

Distributor: E-Xpress Interactive

E-mail: sales@e-xpresindia.com



Pocket Jockey

Music on the go, tiny, in your pocket, and with high fidelity sound—the portable media players available today are hard to choose from. Let us help

Michael Browne

Music is the harmonious voice of creation; an echo of the invisible world.

Thus spake Giuseppe Mazzini, Italian patriot, philosopher and politician once said. Come to think of it music is the universal idiom that transcends all boundaries, man-made or otherwise. In fact music has bridged unfathomable opposites, and is truly a universal language irrespective of its creator.

It's also been said that the history of a people is found in their song. While quotes on music can run several pages, perhaps even longer than this article, the point is nearly all of us are into music, in some form or the other.

The phrase "listening to music" is synonymous with a comfortable couch, a decent music player and perhaps most significantly, spare time. The hum-

ble portable media player (often, but incorrectly, called the MP3 player) owes its origins to the lack of the latter in this day and age.

Today, Portable Media Players (PMPs) aren't just about a passion for music or seeking a temporary haven from noise, but a fashion statement. In fact, many PMPs are designed ground-up as a nice extension of your wardrobe, be it formal and suave, or let-your-hair-down casual. They also aren't just the tiny jukeboxes they were originally meant to be. Like any technology product of the past five years or so, they've matured into user-friendly, infinitely customisable devices. It's not uncommon to find a PMP that allows you to tune in to FM radio channels, maintain contacts and appointments and even play games when you're bored, or watch a movie!

This time we did a market survey and hand-picked PMPs that we felt would suit every possible audience among our readers—for different budgets. We covered 13 brands, and looked at PMPs suitable for mobile



warriors who want movies and music on the go. We have the gimmicky players for the show-off in you, and the fashionable “as hot as you are” players! We even have suitable workout companions. We selected 36 PMPs to test from amongst the multitude of options available. Creative couldn't send us any models for this test, but you can be sure that we'll cover them in the coming months.

Lately, Flash memory has become a lot cheaper, and everyone is basing products on it. Sharply declining prices coupled with steeply rising densities may mean hard drive based PMPs will become extinct soon. Of our contestants, 33 were Flash-based, and only three were hard drive based, including one microdrive-based player from MobiBlu.

TINY MIGHT! **Up to Rs 4,000**

By far the most populous category featuring 12 players, this was also the “hot” category as far as price goes, and most of our readers taking the portable media plunge will be shopping within this price bracket.

Surprisingly, features weren't in short sup-

As we discovered performance and features weren't always mutually exclusive

the sub-4000 category—three different capacity avatars of their YMP-18 and one unique-looking YMP-35, that looks like it's folded in the middle.

The YMP-18 has a single colour LED screen that would have looked bland if not for the changing backlight colours at every press of a button. A siren to some, garish to others—our opinions were about even. The screens on the Mitashi MPL-1004, Eurone 838S and the YES YMP-35 are all quite good and easily readable. Not surprisingly, this trio also plays video, which explains both the relatively better quality of the screen and the larger dimensions.

What Can You Offer Me?

In keeping with the times, all the players in this category feature FM tuners, except for the diminutive Upro AMP-777. The YES YMP-18 supports multiple recording possibilities, from the inbuilt microphone, line-in and the FM radio. Dual headphone jacks mean there's enough music for two! The 1 GB Mitashi MPL 1004 is the only player to feature expansion; this is a welcome add-on, since the bigger screen and interface will hint at emphasis on the space-gobbling video-player capabilities. Its cheaper sibling, the

ply here, and some of the contestants offer superb value for money.

Features **It's all about the look...**

The tiny Intex Aura is the smallest player in our shootout to feature an LCD. Despite this, it is built to stand the rigours of daily use well. A tiny bit larger is the MobiBlu DAH-2100—equally well built, this one. But the smallest of the bunch is the very iPod Shuffle-like Eurone Upro AMP-777. Built like a little tank and featuring a clip-on style fastener, this player's button layout is identical to that of the Shuffle. The colour combination risks dirt—pure white and silver—but we liked it.

The Mitashi MPF1001 resembles a USB pen drive albeit with an OLED screen—compact yet practical. The Root VJE-1GB has a beautifully chromed rear that should be an unparalleled scratch magnet. This player's weight also led us to suspect the rear was solid steel—not bad. Speaking of weight, the YMP-18 (YES) is the lightest of the bunch by far—in fact, without its AAA battery, this featherweight seems insubstantial in one's pocket.

YES managed to squeeze four players into



MPF-1001, features an audio cassette adapter—something to keep in mind for car owners who like music. You can hook up your PMP to your cassette audio system—save space by dumping all those cassettes lying in your glove compartment. All these PMPs can be used as plug-n-play USB drives: convergence at work again...

Performance

Performance has always been a function of price. We were interested to see if any of the minnows could buck this trend. In terms of sheer music performance, nothing beat the YES YMP-18 in this category. This little player had no issues driving the Bose intra-ear headphones, and producing some good highs and deep bass. The Mitashi MPF-1001 also deserves a mention for good sound, as does the MobiBlu DAH-2100 and the YES YMP-35. Although just behind the YMP-18 is terms of quality, the MPF-1001 did have a slightly higher maximum volume, which is a good thing for noisy environments. The YMP-35 has relatively lower maximum volumes, although it has an excellent equaliser which does boost volume quite a bit (from normal settings), all this without any noticeable distortion in quality.

A word on the default earphones on our little maestro (YMP-18): they're not quite the best. If you enjoy clear, well defined sound, you might want to consider getting a better set.

The Eurone 838S and the Root VJE-1GB are a little short on sound quality—if this is an important consideration, overlook these two options.

The other half of performance is battery life. After all, no-one wants a good PMP that gives out on you within a couple of hours. And this is

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JUNE 2007



MobiBlu DAH-2100
Small sight, big sound

where YES loses out to the likes of Mitashi and MobiBlu—at nearly one third of the music time of the MobiBlu player, the YMP-18 is definitely not marathon material.

Boiling It Down

For its combination of features, sound music performance and stellar battery life, we've awarded MobiBlu's DAH-2100 with our Digit Best Buy Gold award. The combination of good MP3 playback capabilities, a great equaliser, and a cool screen catapult the YES YMP-35 into second spot and earn it a well-deserved Digit Best Buy Silver.

If music performance is of primary importance and you can do without a colourful screen, the YES YMP-18 makes a decent deal—just remember to add the cost of a good set of earplugs, Creative's EP630 for example! We'd say it was a terrific deal if only it didn't have the double whammy of poor battery life and costly AAA batteries. However, in this price category, nothing beats it acoustics-wise. If you want a good balance between looks, performance, and features, including a decent screen for movies, the Mitashi MPL-1004 makes for a good buy.

THE INTERMEDIATES Rs 4,001 to Rs 6,500

Populated by eight players, this category hits the sweet spot between performance and price. Although nearly all the sub-4001 rupee players already boast of most of the features we thought we'd only see this category onwards, there's the little matter of quality to deal with, both in terms of build and sound. This is the category where performance starts to get as important as features. Although definitely not in audiophile territory, it's a milestone on that path.

How We Tested

For our PMP test, we first categorised the players into price brackets as follows:

1. Up to Rs 4,000
2. Rs 4,001 to Rs 6,500
3. Rs 6,501 to Rs 10,000
4. Rs 10,001 and above

Features

The following parameters were looked at when it came to features:

1. Capacity (GB)
2. Size of Display
3. Upgradeable Memory
4. Presence of FM Tuner
5. Voice Recording
6. Photo Viewing and Video Playback

Besides this, we looked at player features like support for custom playlists, screen brightness adjustments, number of equaliser modes, support for custom equaliser settings, and inbuilt speakers. We also looked at useful features like inbuilt stopwatch functionality, as well as support for contacts, calendar and alarms. Extra points were awarded for extra features like camera functionality, games, and gimmicky but useful features such as touchscreen interfaces.

Performance

To gauge performance, we used a mix of test tracks that test the aural capabilities of any music device at varying frequencies. We listened for certain nuances present in the tracks that many audio devices have problems reproducing. All the audio test files were encoded at high-quality settings to MP3 format at 320 kbps. We used CBR (Constant Bit Rate) to ensure quality.

Rather than use the bundled headphones, we tested all the players on a set of reference headphones—the Bose Intra ear headphones, which offer superb quality and comfort. After rating each player, we tested their bundled headphones and rated them as compared to the excellent Bose on a scale of 10.

To test the performance of the players while transferring data, we used a set of 10 files each of 10 MB. The MBps figure is achieved as follows:

Transfer speed (MBps) = (total file size (100MB in this case))/(seconds taken for the transfer)

For our battery life test, we played the same MP3 test files (320 kbps) on each player, with the screen powered off and the bundled headphones plugged in. Music volume was kept between 50 and 65 per cent of the maximum on the basis of what sounded good to the ears on each player (not too muted). All equaliser settings were turned off.

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YES YMP-35
 Snazzy looks, jazzy sound

Features Pretty, pretty

Perhaps the most traditional looking (as in what a PMP *should* look like) players of this lot are the Transcend T.sonic 610 and the Philips SA3125, albeit in vastly different threads—the former favouring a smooth finish, off-white, while the latter is decked in a smudge-prone and glossy piano black. The T.sonic 630 was heralded as the successor to the long-running 610; it is much smaller, but it's not as attractive. The "Lil Monsta"—as it's called—from Sandisk (the Sansa c240) looks unassuming, though build quality is top class. The unique-looking YMP-35 makes another appearance here in 1 GB guise, while the YES YMP-30 is a solidly built, but plain-looking device.

Both the Transcends have issues with navigation buttons, while the 5-way menu button on the T.sonic 610 is a major pain. To use the small, hard-to-press buttons on the 630 is an ergonomic nightmare! The Mitashi MPS 1002 has a good array of well-laid-out buttons. The Philips SA3125 also has very hard-to-press, tiny buttons that weren't fun to play around with.

Gimme More...

The Transcend T.sonic comes with a transparent plastic case and an armband. A neck strap is an accessory in common with both the Transcend players. This makes it an out-of-the-box companion for workouts. With MicroSD expansion, FM support, and a clear and crisp screen, the Sansa c240 is loaded on the features front. In fact, the screen is one of the highlights on the c240—it's also the best priced in its category.

Once again, all the players in this category don't miss a trick with FM radio support. The Eurone Upro PMP-MM5 also includes a 3.2 megapixel camera—the only PMP bold enough to take this convergent move. The display, however, could have been a bit better. Incidentally, the camera is very ordinary and performs inadequately as compared to the 3.2 megapixel camera on the Nokia N73 phone.

On a slightly negative note, the Upro PMP-

MM5s metal body got quite hot while charging via USB, though this wasn't so apparent while charging using the AC adapter. We tried another USB port only to face the same problem.

Performance

The Philips SA3125 and the Transcend T.sonic 630 were the barely legal boys—just brushing the upper limits of the category. The former offers decent sound, but lacks decent volume levels on the Bose earplugs (due to driving issues). To Philips' credit, the bundled earphones are pretty good.

The T.sonic 630 was followed by its (Rs 500 cheaper) sibling, the T.sonic 610. We feel the internals of these players including the codecs used are identical. There is one issue, however: the default earphones on the 610 are much better than the ones supplied with the 630; these distort quite a bit. Sound quality with the Bose in both cases is nearly identical.

The YES YMP-30 also performed commendably, stealing Transcend's thunder with sheer audio quality. The Mitashi MPS-1002 also did quite well, though we noticed a slight lack in bass depth, particularly in U2's *With or Without You*.

If you're looking at good music quality and features above everything else, the simple and compact "Lil Monsta" (a.k.a. the c240 from Sandisk) makes a very good deal—good quality with the bundled earphones, but didn't perform well on the Bose reference earplugs. Especially noticeable was the sharp, clear treble. Of course, the YMP-30 (YES) and the MPS-1002 (Mitashi) provide a better overall sound experience. The attractive looking Eurone PMP-MM5 didn't do too well here—it wasn't driving the Bose earphones well enough, and didn't come bundled with a good set of earbuds itself.

Where Do I Go From Here?

For its combination of good build, a great set of features, and exemplary music experience we're giving Digit's Best Buy Gold award to Sandisk's "lil monsta"—the Sansa c240 (Rs 4,975). For a slightly lower set of features and a little drop in acoustic quality, you can pick up our Best Buy Silver winner—the Transcend T.sonic 610—for Rs 4,500. As attractive as the newer T.sonic 630 looks, we suggest you go with the older, more proven model—although there's a negligible difference, the 610 sounds better on its bundled earbuds, and the accessory list is a little better.

If you want a little better sound quality, opt for the loud-speaker-bearing Mitashi MPS-1002 or the simple-looking rugged YES YMP-30.



These sound slightly better than the Sansa c240 and the T.sonic 610, but miss out on quite a few features like expansion, a customisable equaliser (important for music buffs), and intra-track repeat.

Many of the PMPs come bundled with average earphones. Make sure to test players with a standard set as well

BEST BUY
digit
 JUNE 2007



Sandisk Sansa c240
 A real lil monsta!

Scoreboard					
Portable Media Players Upto Rs 4000					
BRAND MODEL	Intex Aura	Eurone Upro AMP-777	Eurone Upro MP-819F	Eurone 838S	Mitashi MPF1001
					
Price (Rs)	3800	1995	3100	3250	3690
Comments	+ Compact, sturdy - Mediocre performer	+ Tiny - Poor performance	+ Well priced - Poor build quality	+ Video playback - Sound quality disappoints	+ Good performer - Slightly expensive
Total (Out of 100)	46.97	43.03	45.98	47.75	48.13
Features (Out of 30)	7.41	1.11	7.59	9.60	6.21
Performance (Out of 55)	32.65	28.77	29.92	30.07	34.80
Price Index (Out of 15)	6.91	13.16	8.47	8.08	7.11
Features					
Capacity	2 GB	1 GB	2 GB	2 GB	1 GB
Display Type	LCD	NA	LCD	LCD	OLED
Number of Colours	Single	NA	Single (multiple backlit)	65K	2
Size of Display (H x W)	24 x 14 mm	NA	30 x 35 mm	38 x 29 mm	13 x 25 mm
Type of Battery	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion
Weight of Device	NA	NA	NA	NA	NA
Firmware Upgradeable (✓/✗)	✓	✗	✓	✓	✓
Memory Upgradeable	✗	✗	✗	✗	✗
Type of upgradeable memory	NA	NA	NA	NA	NA
FM Tuner (✓/✗)	✓	✗	✓	✓	✓
Voice Recording (✓/✗)	✗	✗	✓	✓	✓
Audio Formats supported	MP3, WMA	MP3, WMA	MP3, WMA	MP3, WMA	MP3, WMA
Photo Viewing (✓/✗)	✗	✗	✓	✓	✗
Video Playback (✓/✗)	✗	✗	✓	✓	✗
Video formats supported	NA	NA	AMV	NA	NA
Screen Brightness adjust (✓/✗)	✗	NA	✗	✗	✗
Screen Orientation Sensor (✓/✗)	✗	NA	✗	✗	✗
Built-in Speakers (✓/✗)	✗	✗	✗	✓	✗
No of Preset Modes	4	NA	4	4	5
Customisable Equaliser (✓/✗)	✓	✗	✗	✓	✗
Point A to B Track Repeat (✓/✗)	✓	✗	✗	✗	✓
Custom Playlist saving (✓/✗)	✗	✗	✗	✗	✗
Folder Creation (✓/✗)	✗	✗	✗	✗	✗
Use as Portable Drive (✓/✗)	✓	✓	✓	✓	✓
Add-on Features					
Built-in Calendar	✗	✗	✗	✗	✗
Built-in Contacts	✓	✗	✓	✗	✗
Built-in Stopwatch	✗	✗	✗	✗	✗
Built-in Alarm	✗	✗	✗	✗	✗
Bundled Software	LRC Creator, Tel Book	-	Phonebook	-	-
Bundled Accessories	-	-	-	-	Cassette Adapter
Additional Features (If any)	-	-	-	-	-
Performance					
Music Performance (Out of 10)					
Eagles—Hotel California	5.75	5.5	5.25	5.25	6.5
Peter Andre—Mysterious Girl	6	6	6	5.5	6.75
Ricky Martin—Nobody wants to be Lonely	6	5.5	5.25	5.25	6.75
U2—With or Without You	5.5	5.5	5.5	5	6.25
Dire Straits—Sultans of Swing	6	5.25	5.5	5	7
Dire Straits—Walk of Life	6	5	5.25	5.25	6.25
Chand Sifarish (Fanaa)	6.25	5.5	6	6	6.5
Beedi (Omkara)	6.5	5.75	6.25	6	7
Transfer Rate Performance (MBps)	1.2	0.67	1.26	1.3	0.6
Bundled Headphone Quality (Out of 10)	5.25	5	4.75	4.75	6.25
Battery Life (Hours)	12.5	6.5	8.1	11.4	11.2

Portable Media Players Upto Rs 4000

Mitashi MPL1004	MobiBlu DAH-2100	Root VJE-1GB	YES YMP-18	YES YMP-18	YES YMP-18	YES YMP-35
						
3990	4000	3000	2950	3250	3950	3150
+ Decent screen - Expensive	+ Good performer - Tiny screen for video	+ Very sturdy build - Lacks music quality	+ Good sound - Tiny screen	+ Good sound - Tiny screen	+ Good sound - Tiny screen	+ Funky looker - Earphones could be better
50.19	53.53	44.91	50.65	50.01	48.94	52.75
10.53	10.14	8.31	6.12	6.30	6.66	10.68
33.08	36.83	27.85	35.63	35.63	35.63	33.74
6.58	6.56	8.75	8.90	8.08	6.65	8.33
1 GB	1 GB	1 GB	512 MB	1 GB	2 GB	512 MB
LCD	OLED	LCD	LED	LED	LED	OLED
262K	65k	65K	Single (multiple backlit)	Single (multiple backlit)	Single (multiple backlit)	65K
38 x 30 mm	22 x 22 mm	28 x 26 mm	10 x 34 mm	10 x 34 mm	10 x 34 mm	20 x 27 mm
Li-ion	Li-ion	Li-ion	AAA	AAA	AAA	Li-ion
NA	31 gm	NA	25	25	25	40
✓	✓	✓	✓	✓	✓	✓
✓	✗	✗	✗	✗	✗	✗
SD	NA	NA	NA	NA	NA	NA
✓		✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓
MP3, WMA	MP3, WMA, OGG	MP3, MP1, MP2, WMA, ASF, WAV	MP3, WMA, WAV	MP3, WMA, WAV	MP3, WMA, WAV	MP3, WMA, WAV
✓	✓	✓	✗	✗	✗	✗
✓	✓	✓	✗	✗	✗	✓
MPEG-4	AVI, MPG, WMV	AMV,WMV	NA	NA	NA	.smv
✓	✗	✗	✗	✗	✗	✗
✗	✗	✗	✗	✗	✗	✗
✓	✗	✗	✗	✗	✗	✗
6	6	4	4	4	4	5
✗	✗	✗	✗	✗	✗	✓
✓	✓	✗	✓	✓	✓	✓
✗	✓	✗	✗	✗	✗	✓
✗	✗	✗	✗	✗	✗	✗
✓	✓	✓	✓	✓	✓	✓
✗	✗	✗	✗	✗	✗	✗
✗	✗	✓	✗	✗	✗	✗
✗	✗	✗	✗	✗	✗	✗
✗	✗	✗	✗	✗	✗	✗
-	AVI Maker	-	-	-	-	-
-	-	-	Carry Pouch	Carry Pouch	Carry Pouch	Carry Pouch
MiniSD Slot	-	-	Voicer, audio recording, Two headphone jacks	Voice, Line-in, FM radio recording, Two head-phone jacks	Voice, Line-in, FM radio recording, Two head-phone jacks	Two headphone jacks
6.5	6.5	5	6.75	6.75	6.75	6.25
6.5	7	6	7	7	7	6.5
6.25	7	5	7	7	7	6.5
6	6	4.75	7.5	7	7	6.5
6.5	6.25	5	7.25	7.5	7.5	7
6	6.5	4.75	7.25	7.25	7.25	7
6.25	6.75	5	7	7.25	7.25	6.75
6.5	6.75	5.5	0.7	7	7	6.25
0.6	1.9	0.86	5.5	0.7	0.7	0.9
5.75	5.5	4.5	5.7	5.5	5.5	5.25
10.5	15.3	11.6		5.7	5.7	6.5

THE INCREDIBLES Rs 6,500 to Rs 10,000

This is the least populous category in our mega PMP shootout, and in some ways, the most interesting. Enter the big players—Apple, Sony, Samsung, Cowon, and Sandisk. This is a category where people usually shop for something very specific. You wouldn't spend upwards of rupees 6,500 on just "any" PMP now, would you? Prospective buyers tend to get very discerning here—they know their iPods from their Zens.

Features Drop-dead Gorgeous

If one player symbolises the catchphrase above, it has to be the Samsung YP-K3. We can guarantee looks from just about every non-myope around by simply taking this player out of your pocket. It's slim, it's shiny black with a classy looking chrome bezel, and the single colour OLED screen is ultra clear. Did we mention illuminated touch controls (another finger print and smudge magnet, though...)? While macho stereotypes are sure to call it a "chick-only device," we beg to differ. If the look is all-important to you, and you want a suave and sophisticated device, the YP-K3 is your answer.



If you're the sporty type, then you'll want to look at the Sony NW-S203F... another visual stunner. It's shaped like a pen, and comes with a holder / armband assembly that will keep it in place while you pump iron or try to burn away those tyres.

iPod nanos have been around a while, and we tend to forget just how stunning they look to someone who's seeing one for the first time. Slim and sleek seems apt—and light. Then there are the flashy colours that attract some and outrage others.

The other two occupants were relative plain-janes here—Cowon's Iaudio F2 and Sandisk's Sansa e250. The F2 is reminiscent of a tiny cell phone. The Sansa e250 has the best-built back we've seen—titanium alloy, absolutely scratch proof!

All That I Have

The iPod nano has never been conventional—in fact, Apple is all about a statement (synonymous with contra-convention)—the nano loses FM radio functionality. It also loses voice recording capabilities. Then there's the fact that the nano doesn't play video, and you can't use it as a pen drive. Shocking omissions? Let's see.

The Sansa e250 almost buckles under the feature load it bears—FM radio, voice recording, video playback, photo viewing, customisable equaliser and expansion... whew! Drop in a really good screen, and the Sansa is very practical. Another very practical offering is Cowon's F2, which has dual headphone jacks—what was that about the best things coming in pairs?

The Sony NW-S203F has only three equaliser settings; however, two of them are user-customisable, so you can save and use those set-

A Can Full Of Sound

If you thought headphones were just headphones, you're dead wrong. Portable devices are personal, and PMPs even more so. Remember, no two ears are alike, and choosing the right "cans" for them is no easy task. A pair of headphones has to feel comfortable, sound good, and look neat as well—in that order.

Headphones have been classically divided into three broad categories, which may have further subcategories.

Let's start small. "Earbuds" actually fit inside your ear and are typically tiny, and suitable for portable devices—especially PMPs. Earbuds also deliver sound right into your ears, and right on to your eardrums, which is why some love them, and others hate them. It's a personal choice, because some people find it horribly intrusive to have something poking into their ear canals. Regardless, this type of earphone is suitable while on the move, working out, etc., because of their size and the fact that they're actually anchored to your ears.

Variants of earbuds include in-ears, whose shape actually mimics the ear canal so they fit snugly inside your ear. Most of these feature soft rubber or silicone material to avoid irritation to the delicate insides of our ears. They're also called "intra-ear" headphones, earplugs, or simply earphones. They usually block out a lot of external noise.

The second type of headphones is the Supra Aural variety. Supra aural headphones just cover your ears; however, they don't envelop the entire outer ear. Some of the most famous names in the headphone industry, including Grado and Bose, swear by Supra Aural earphones. Due to their unique acoustic models, Supra Aurals are said to offer the best balance of sound (audiophile-grade sound), but some find the pressure they create on the outer ear and cartilage uncomfortable after a few hours. A more comfortable variety of Supra Aurals are the clip-on types, which don't have a headband for fastening. Rather, they have clips that hook on behind your ears.

This category also features most of the active noise cancelling models. They can be used for travel because of their size (they're portable), but they're not suitable for use while working out, unlike earplugs.

The third category consists of the biggest headphones called circumaural headphones. These are comfortable for most people, as they feature a large, heavily padded ring that completely ensconces the ear within. In short, they rest on your head and engulf your ears. They also have the potential for large drivers because of the sheer size. Brands like AKG and Sennheiser use circumaural designs for their audiophile range, though they have products in other segments as well.

tings. A few customisable settings for different music genres would have sweetened the deal. This player also has the ability to up the tempo of the music to suit your workout pace driving you to achieve more in the gym. Sony also claims it's water resistant.

The iPod nano has a few features that some of the other players missed out on—it has a fully functional calendar, contacts, and stopwatch inbuilt. We'd have loved an alarm! iTunes used to be bundled with all iPods, but we've heard the newest iPods come without it; Apple encourages users to download it.

Performance

Somebody once said that in music, one must think with the heart and feel with the brain. If you belong to this school of thought and are extremely finicky about sound, the iPod Nano is the only way to go—Apple doesn't compromise on what they clearly feel is the only thing a PMP should really excel at. Nothing comes close to the auditory experience the iPod nano 2 GB provides on the Bose headphones. This is also the player for you if you like heavy



SanDisk Sansa e250
Unbeatable conglomerate of features, performance and price

bass, since none of the others could provide that resounding, low punch. It also had the highest volumes amongst all the players, and doesn't distort any frequency even at peak volumes. The iPod nano also has a very crisp 1.5 inch screen. How we wish for video support on this one...

The little Cowon F2 also sounds good, and comes with a good set of earbuds. The Sansa e250 sounds excellent with its bundled earbuds: clear treble, well-defined mids and good bass. In fact, the treble is the highlight, making these suitable for classical music. Plug in the Bose reference headphones, and the sound is a let down—however, as we've explained, this is a problem with mismatched impedances, and not a player issue.

However, at Rs 9,800, we feel the Cowon is a little overpriced; the Sansa e250 offers more features and double the storage space for a substantially smaller amount. There are the better performers, better lookers, and better built players amongst the competition. If only the Cowon were Rs 1,500 cheaper...

Sony's Walkman NW-S203F also performed well, though the bundled earphones look a little different. They also aren't that comfortable, and don't provide very good sound. The Bose Intra Ears were an entirely different story, and this little player will come into its own with the right pair of headphones...

Samsung's YP-K3 proved that sometimes, just sometimes, beauty can have brawn too. It

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Scoreboard Portable Media Players Upto Rs 6500

BRAND MODEL	Eurone Upro PMP-MM5	Sandisk Sansa c240	Mitashi MPS1002	YES YMP-30	Philips SA3125
					
Price (Rs)	4950	4975	4390	4250	4999
Comments	+ Large Screen - Price per GB is high	+ Good performer, compact - Screen clarity lacking	+ Good performer - Poor bundled earbuds	+ Good build quality - Poor bundled earbuds	+ Solid build - Mediocre performer
Total (Out of 100)	51.50	59.47	53.95	52.43	54.30
Features (Out of 30)	8.92	10.49	6.26	6.35	9.94
Performance (Out of 60)	34.81	41.24	38.92	37.02	36.66
Price Index (Out of 10)	7.78	7.74	8.77	9.06	7.70
Features					
Capacity	512 MB	1 GB	1 GB	1 GB	2 GB
Display Type	LCD	LCD	LCD	OLED	LCD
Number of Colours	260K	65k	2	2	65k
Size of Display (HxW)	36 x 50 mm	20 x 33 mm	14 x 21 mm	17 x 28 mm	36 x 30 mm
Type of Battery	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion
Weight of Device (gm)	NA	NA	NA	35	48
Firmware Upgradeable (✓/✗)	✓	✓	✓	✓	✓
Memory Upgradeable	✓	✓	✗	✗	✗
Type of upgradeable memory	SD Card	MicroSD	NA	NA	NA
FM Tuner (✓/✗)	✓	✓	✓	✓	✓
Voice Recording (✓/✗)	✓	✓	✓	✓	✓
Audio Formats supported	MP3, WMA, WAV	MP3, WMA, WAV	MP3, WMA	MP3, WMA, WAV	MP3, WMA, WAV
Photo Viewing (✓/✗)	✓	✓	✗	✗	✓
Video Playback (✓/✗)	✓	✗	✗	✗	✓
Video Formats supported	ASF	NA	NA	NA	NA
Screen Brightness adjust (✓/✗)	✓	✓	✗	✗	✗
Screen Orientation Sensor (✓/✗)	✗	✗	✗	✗	✗
Built-in Speakers (✓/✗)	✗	✗	✓	✗	✗
No of Preset Modes	3	7	5	4	NA
Customisable Equaliser (✓/✗)	✗	✓	✗	✗	✗
Point A to B Track Repeat (✓/✗)	✗	✓	✗	✓	✗
Custom Playlist saving (✓/✗)	✗	✗	✗	✗	✓
Folder Creation (✓/✗)	✗	✗	✗	✗	✗
Use as Portable Drive (✓/✗)	✓	✓	✓	✓	✓
Addon Features					
Built-in Calendar	✗	✗	✗	✗	✗
Built-in Contacts	✗	✗	✗	✗	✗
Built-in Stopwatch	✗	✗	✗	✗	✗
Built-in Alarm	✗	✗	✗	✗	✗
Bundled Software	Video Converter	Adobe Acrobat, Sansa Media Converter	-	-	Video converter
Bundled Accessories	AV cable, Carry Pouch,	-	-	Carry Pouch	-
Additional Features (If any)	3.2 MP camera	-	-	-	-
Performance					
Music Performance (Out of 10)					
Eagles—Hotel California	5.5	6	6.5	6.5	6.5
Peter Andre—Mysterious Girl	6	6.75	7	7	6.5
Ricky Martin—Nobody wants to be Lonely	5.5	6.75	6.75	7	6.5
U2—With or Without You	5.5	6.5	6	6.75	5.75
Dire Straits—Sultans of Swing	6	7	7.25	7	6
Dire Straits—Walk of Life	5.75	7	7	7	5.75
Chand Sifarish (Fanaa)	6	6.75	7	7.25	6.75
Beedi (Omkara)	6.25	6.75	7.25	6.5	6.5
Transfer Rate Performance (MBps)	1.1	2.5	0.9	0.5	0.57
Bundled Headphone Quality (Out of 10)	5	6.75	6.25	5.25	6.25
Battery Life (Hours)	9	13.5	10.4	6.9	12.6

Portable Media Players Upto 10000

Transcend T.sonic 610	Transcend T.sonic 630	Cowon audio F2	Sony NW-S203F	Apple Ipod Nano	Samsung YP-K3	Sandisk Sansa e250
						
4500	5000	9800	7990	9800	9000	8150
+ Good accessory list - Poor quality earbuds	+ Compact - Tacky buttons	+ Compact, good sound - Poor build quality	+ Good looks, good sound - None in particular	+ Great Sound - No video support	+ Great performance, looks - None	+ Feature-rich, performance - Tacky scroll wheel
55.11	54.61	64.12	62.06	65.18	59.31	67.27
10.90	10.95	10.21	7.18	8.16	6.96	12.09
35.65	35.97	46.25	45.49	49.37	44.02	45.98
8.56	7.70	7.65	9.39	7.65	8.33	9.20
2 GB	2 GB	1 GB	1 GB	2 GB	2 GB	2 GB
OLED	OLED	LCD	OLED	LCD	OLED	LCD
single	single	65K	single	65k	single	65k
13 x 23 mm	23 x 13 mm	27 x 21 mm	6 x 24 mm	25 x 32 mm	38 x 30 mm	37 x 30 mm
Li-ion	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion
28	30	39.6	30	42.55	NA	76.54
✓	✓	✓	✓	✓	✓	✓
✓	✗	✗	✗	✗	✗	✓
NA	NA	NA	NA	NA	NA	MicroSD
✓	✓	✓	✓	✗	✓	✓
✓	✓	✓	✓	✗	✗	✓
MP3, WMA, WAV	MP3, WMA, WAV	MP3, WMA, OGG	MP3, WMA, AAC, ATRAC	AAC, MP3, Apple Lossless, AIFF, WAV	MP3, WAV, WMA	MP3, WMA, WAV
✗	✗	✓	✗	✓	✓	✓
✗	✗	✓	✗	✗	✗	✓
NA	NA	AVI, MPEG	NA	NA	NA	AVI, MPEG4, DAT, ASF, MOV
✓	✓	✓	✗	✓	✗	✓
✗	✗	✗	✗	✗	✗	✗
✗	✗	✗	✗	✗	✗	✗
6	6	6	3	22	4	7
✓	✓	✓	✓	✓	✗	✓
✓	✓	✓	N	✓	✗	✓
✓	✓	✓	✓	✓	✓	✓
✗	✗	✗	✗	✓	✓	✓
✓	✓	✓	✗	✗	✓	✓
✗	✗	✗	✗	✓	✗	✗
✗	✗	✗	✗	✓	✗	✗
T.sonic Utility	T.sonic Utility	-	Sonic Stage	Itunes	-	Adobe Acrobat, Sansa Media Converter
Carry pouch + wrist strap + Neck strap	Neck Strap	-	Wrist strap with holder	-	Carry pouch	-
-	-	2 x 3.5mm Jacks	Calorie counter, Music Pacer, water resistant	Inbuilt games	Touch Controls	-
6	6	6.75	7.75	7.25	7	6.5
6.5	6.5	7	7.5	7.5	7	7
6	6	7	7.5	8	7.25	7.25
6	5.75	6.5	7	7.25	7.25	6.75
6	6	6.75	7.5	8	7	7.5
6.25	6	6.5	7.75	7.75	7	7
6.5	6.5	7	8	7.25	7	7.5
6.5	6.5	7.25	7.25	7.5	7.5	7.25
0.59	1.59	5	1.6	5	1.1	2.4
5.5	3.5	6	6	4	6.75	7
11.2	11.8	16.8	12.4	17.6	13	15.5

Digital Leisure | MP3 Player Test

sounds good on the bundled earbuds and extremely good on the reference earplugs. Good bass (though not nano-class bass), and very good vocal reproduction. Treble was sharp but not too rich—just right!

All the players in this category are very good performers. Although differences in performance are clearly noticeable to trained ears, any of these players would suit you if music quality is the only qualification. There's no clear all-round winner here, and every one of these players left some sort of an impression on us.

Freedom Of Choice

One of our biggest fears has always been making decisions, particularly in the absence of hindsight. So you've 10,000 odd bucks to burn; you want something compact, smart, and most of all, your ears crave audiophile-grade sound on the move. You might want to check out our Digit Best Buy Silver winner, the Apple iPod nano 2GB, priced at Rs 9,800. It is a sound decision (pun intended) to make.

BEST BUY
digit
JUNE 2007



Apple iPod Nano
Aural excellence par none

A little cheaper, a lot of features richer, and a little lower on the audiophile scale is the Sandisk Sansa e250—2 GB of functional fun, all for Rs 8,150. Digit Best Buy Gold belongs here.

For something really funky and thoroughly unconventional, go the Sony NW-S203F way—the sound is good, and it actually looks good tucked into a sweaty armband. A lifetime workout partner at a bargain price of Rs 7,990.

You prefer your chauffeur to do the driving; you've been there, done that, you also like to dabble in a little music between board rooms, but as always, quality and impressions count. Samsung YP-K3 all the way—a gorgeous looking, great sounding PMP. At Rs 9,000, even good old Giorgio would approve of an YP-K3 peeking out of that Armani's pocket.

WE WILL ROCK YOU... Rs 10,001 and above

This is the category for the rich or for the enthusiast. We doubt many in India will bite, coughing up more than 10,000 for a few odd MP3s and videos. However, there is a niche audience—"gadgetophiles," if you will—who have enough to burn on costly PMPs.

When Size Matters...

Hard drive based players have nearly died off, with manufacturers relying more and more on Flash. Why not? It's infinitely more dependable, cheaper to manufacture, and how much storage do you need anyway?

If you're one of those who like to lug their entire music collection with them, or carry a bunch of movies on your player, then measly 6 or 8 GB players aren't going to cut it.

Our search revealed three portable media players based on hard drives—a 1-inch microdrive-based player from MobiBlu, the DHH-200, an 80 GB fifth-generation iPod video, and Cowon's A2 30GB. While the MobiBlu was the minnow, it looks good, decent with light and dark blue tones. The screen is an 18-bit affair, though not as good as the screens on the other two. The Apple 80GB looks every bit the part, but it leans towards music rather than movies with a screen that is just 2.5 inches diagonally. Make no mistake however; this 65K colour screen is much better than the one of the DHH-200, and far more suited to movies.

The Cowon is perhaps the best looker, despite its colossal size. The player has an off-white colour tone, with a band of dark steel grey running around all the sides. A neat, flush fitting cover hides the USB port and the video connectivity (AV out). The screen—a massive four inches—is clear, crisp, and vivid. Watching movies on the Cowon is fun, simply because of the wide aspect ratio and screen size.

Apple's 80GB iPod has very similar features to the nano series, except for as mentioned a larger screen and video playback support. It's a good bit bulkier too, and heavier. Sound quality is top notch on the iPod video; in fact, this player seems to drive the reference earphones better than do the nanos. Its bundled earplugs are also better in terms of sound quality, though if you settle for this player, do try to get another set of cans for more bang.



MobiBlu DH-200

The Cowon A2 is a capable multimedia companion and handles all the MP3s you can throw at it without breaking a sweat.

Sound is good, but not as good as the iPod video, mainly lacking deep bass. The bass you do get is clean and low, but lacks thump. Mids are good (something we've noticed Cowon's good at), while treble is easily on par with the iPod video. In comparison, however, we were disappointed that the Flash-based D2 sounds better. MobiBlu was somewhat of an unknown entity, and pitting it against the giants seemed utterly ruthless. However, this is a decent media player, with good music capabilities even with the default headphones.



Cowon A2



Apple iPod Video 80GB

If you want a large screen to watch all your movies, you'll have to make do with 50 GB less space than the iPod video, though in return you get a marvellous screen. This one is less suitable for a music enthusiast simply because of its sheer bulk, and the fact that the iPod sounds better across all genres.

Eight players fell into this price bracket; reminiscent of the previous category, the big brands slug it out here...no quarters given and none asked for!

The contenders consisted of two Apple nano's, a couple of Samsungs, two Sansas from Sandisk, and a solitary participant each from Cowon and Sony.

Features

Oh, Beautiful

Hiding between the fashion-statement-making nanos and the simple but extremely functional Sansas was beauty, pure and unmatched. Sony's NW-S705F is a gorgeous looking player, period. Uniquely sculpted, with an excellent matte finish, a maroon and glossy chrome body, this player has the best build quality we've seen so far. The OLED screen is tiny but ultra-crisp, and adds to the classy look. The player has a click-type slider to toggle between track and folder views—similar to its cheaper sibling in the previous category. The quality of the bundled in-ear type earplugs is also excellent.

Cowon's D2 is another looker—the large screen looks good, and is a touchscreen to boot! Although made of plastic, the build quality is very good.

Samsung dropped in another bombshell—the YP-K5. Although this player looks like a solid brick at first, it's a slider that opens to reveal reasonably powerful inbuilt speaker. Once again, the tastefully backlit touch button interface appears, although we must say the YP-K3 is much slimmer and looks better. Comparing the YP-K3 to the YP-K5 is like comparing a Miss Universe to a Miss World—who cares, we like them both!

The other Samsung (YP-T9) looks similar to the Philips 768 cell phone we reviewed last year—the sides curve in towards the edges. This is another sleek player, slim enough to fit your pocket without a bulge, and light enough too.

It's A Materialistic World

Feature-rich was synonymous with Cowon here—the D2 adds more features than you'd ever likely use, and then some. Besides a large 24-bit screen that you can operate entirely with your fingers, there's expansion (SD), photo and video support, and a number of track-playing options. The D2 is also the only Flash PMP here to feature an alarm, though it misses out on the calendar and contacts option.

The feature-rich Sansa players also score really high on the feature count—identical to the e250, except these have more storage. Another feature-rich little thing was Samsung's YP-T9, which handles photos and videos in addition to music, FM radio, and voice recording, besides having support for games.

The hot-looking Samsung YP-K5 comes with a decent feature set and ever better accessories. The least-loaded model would have to be the Sony NW-S705F, although in all

Cowon's D2 was another looker—the large screen looks good, and is a touchscreen to boot!

fairness, we have to say it's a brilliant PMP in its own right.

Performance

At Rs 10,000+, you'd expect all these PMPs to excel at their bread and butter—playing music. With two customisable equaliser settings, the Sony NW-S705F is a great-sounding player with its bundled earplugs. Plugging in the Bose Intra Ears gives a further sound upgrade. Volumes are also good.

But then it gets better. Cowon's D2 actually manages to (gasp!) sound better than the iPod nano duo on the Bose earplugs. Excellent treble, completely neutral highs, and well-modulated vocals. Note that the nanos still have the edge when it comes to ear-pummelling bass; they go lower and give more of a rumble, and the D2 sounds a tad clearer. The difference between these players in terms of sheer audio quality is minute, and who the winner is depends largely on the genre of music you listen to. The nanos make Mark Knopfler's guitar come to life in *Sultans of Swing*, while Sony brings the tabla thumps and vocals in *Chand Sifarish* to life.



Cowon D2
An emphatic winner

The Sandisks cannot help but trail the trio above in terms of quality, and *Hotel California* was less delightful an overall experience as we remember it. The Samsung duo bring up the rear here, with the YP-K5 outperforming its feature rich sibling the YP-T9. The A2 has another ace up its sleeve—the battery life is a stellar 38 hours, absolutely unmatched! The nanos also have good battery life—a little under a day.

Perfect Dreams

If you plan on burning 15,000 odd bucks on a PMP, you better know exactly what you want. We also suggest investing in a good set of in-ear type earplugs like our reference set or Creative's EP630, another much cheaper yet good-performing set of earphones.




Then, take a serious look at Cowon's D2: at Rs 15,000, we'd have to be plumb crazy to put our gold elsewhere. It's got the looks, it's got the gimmicky touchscreen among a host of



Scoreboard

Portable Media Players Above Rs 10000

BRAND MODEL	Samsung YP-K5	Samsung YP-T9	Sony NW-S705F	Apple Ipod Nano	Cowon D2
					
Price (Rs)	11500	12500	13990	13200	15000
Comments	+ Nifty, good sound - Bulky	+ Good looking, compact - Mediocre performance	+ Great build quality, sound - None	+ Very good sound, slim - No video support	+ Features, performance - None
Total (Out of 100)	54.64	54.14	53.58	57.76	67.99
Features (Out of 30)	5.80	9.58	4.42	8.28	14.34
Performance (Out of 62)	42.02	38.28	43.56	43.55	48.43
Price Index (Out of 8)	6.82	6.27	5.60	5.94	5.23
Features					
Capacity	2 GB	2 GB	2 GB	4 GB	4 GB
Display Type	OLED	LCD	OLED	LCD	LCD
Number of Colours	single	single	single	65k	16M
Size of Display (HxW) (In mm)	37x30	37x30	9x22	25x32	40x52
Type of Battery	Li-ion	Li-ion	Li-ion	Li-ion	Li-ion
Weight of Device (gm)	NA	NA	NA	42.55	91
Firmware Upgradeable (✓/✗)	✓	✓	✓	✓	✓
Memory Upgradeable	✗	✗	✗	✗	✓
Type of upgradeable memory	NA	NA	NA	NA	SD
FM Tuner (✓/✗)	✓	✓	✗	✗	✓
Voice Recording (✓/✗)	✗	✓	✗	✗	✓
Audio Formats supported	MP3, WAV, WMA	MP3, WAV, WMA	MP3, WMA, AAC, ATRAC	AAC, MP3, Apple Lossless, AIFF, WAV	MP3, WMA, FLAC, OGG, WAV
Photo Viewing (✓/✗)	✓	✓	✗	✓	✓
Video Playback (✓/✗)	✗	✓	✗	✗	✓
Video Formats supported	NA	MPEG	NA	NA	AVI, MPEG
Screen Brightness adjust (✓/✗)	✗	✓	✗	✓	✓
Screen Orientation Sensor (✓/✗)	✗	✗	✗	✗	✗
Built-in Speakers (✓/✗)	✓	✗	✗	✗	✓
No of Preset Modes	4	12	2	22	5
Customisable Equaliser (✓/✗)	✗	✓	Y	✓	✓
Point A to B Track Repeat (✓/✗)	✗	✓	✗	✓	✓
Custom Playlist saving (✓/✗)	✗	✗	✓	✓	✓
Folder Creation (✓/✗)	✓	✗	✗	✓	✓
Use as Portable Drive (✓/✗)	✓	✓	✗	✗	✓
Addon Features					
Built-in Calendar	✗	✗	✗	✓	✗
Built-in Contacts	✗	✗	✗	✓	✗
Built-in Stopwatch	✗	✗	✗	✓	✗
Built-in Alarm	✗	✗	✗	✗	✓
Bundled Software	✗	✗	Sonic Stage	Itunes	Converter
Bundled Accessories	-	-	-	-	Stylus, Carry case
Additional Features (If any)	Touch Controls	Inbuilt games	-	Inbuilt games	Touchscreen interface
Performance					
Music Performance (Out of 10)					
Eagles—Hotel California	7	6.5	7.75	7.25	7.75
Peter Andre—Mysterious Girl	7	6.5	7.5	7.5	7.75
Ricky Martin—Nobody wants to be Lonely	7.5	6.75	7.5	8	8.25
U2—With or Without You	7.25	6	7.25	7.25	7.25
Dire Straits—Sultans of Swing	7	6.5	7.5	8	7.75
Dire Straits—Walk of Life	7	6	7.5	7.75	8
Chand Sifarish (Fanaa)	7	6.5	8	7.25	7.5
Beedi (Omkaara)	7.5	7	7.5	7.5	7.75
Transfer Rate Performance (MBps)	3.3	3.5	1.4	5.1	5.2
Bundled Headphone Quality (Out of 10)	7	6.75	7.5	4	7.25
Battery Life (Hours)	21	18	24.1	18.7	38

Sandisk Sansa e260	Sandisk Sansa e270	Apple iPod Nano
		
10750	15000	16400
+ Features, build quality	+ Features, build quality	+ Great performance
- Tacky scroll wheel	- Overpriced	- Overpriced
60.51	58.81	57.78
12.84	13.09	8.78
40.39	40.50	44.22
7.29	5.23	4.78
4 GB	6 GB	8 GB
LCD	LCD	LCD
65k	65k	65k
37x30	37x30	25x32
Li-ion	Li-ion	Li-ion
76.54	76.54	42.55
✓	✓	✓
✓	✓	✗
MicroSD	MicroSD	NA
✓	✓	✗
✓	✓	✗
MP3, WMA, WAV	MP3, WMA, WAV	AAC, MP3, Apple Lossless, AIFF, WAV
✓	✓	✓
✓	✓	✗
AVI, MPEG4, DAT, ASF, MOV	AVI, MPEG4, DAT, ASF, MOV	NA
✓	✓	✓
✗	✗	✗
✗	✗	✗
7	7	22
✓	✓	✓
✓	✓	✓
✓	✓	✓
✓	✓	✓
✓	✓	✗
✗	✗	✓
✗	✗	✓
✗	✗	✓
✗	✗	✗
Adobe Acrobat, Sansa Media Converter	Adobe Acrobat, Sansa Media Converter	Itunes
-	-	-
-	-	Inbuilt games
6.5	6.5	7.25
7	7	7.5
7.25	7.25	8
6.75	6.75	7.25
7.5	7.5	8
7	7	7.75
7.5	7.5	7.25
7.25	7.25	7.5
2.3	2.5	5.2
7	7	5.5
15.5	15.5	19.1

Contact Sheet		Hard Drives	
Brand	Company	Phone	E-mail
Apple	Apple Computer International	1800-4254683	indiainfo@asia.apple.com
Cowon	Lipap Systems Pvt. Ltd.	022-28759382	NA
Intex	Intex Technologies Ltd.	011-51610224-6	info@intextechnologies.com
MobiBlu	J.J.Mehta & Sons	022 24306356	info@jjmehta.com
Transcend	Mediaman Infotech Pvt Ltd	022-23818100	sales@mediamangroup.com
Sony	Sony India Pvt. Ltd	1800 1111 88	sonyindia.care@ap.sony.com
Samsung	Samsung India Pvt Ltd	011-41511234	www.samsung.com/in
Eurone	Mediatech India Distribution P. Ltd.	022-26361111	ghanshyam@mediatechindia.com
YES	Thakral Computers Pvt. Ltd.	9312898894	ashmit.singh@thakralind.com
Mitashi	Mitashi India Pvt Ltd	022 25006661	vishal@mitashi.com
Philips	Philips Electronics India	66912000	anand.santahnam@philips.com
Sandisk	Rashi Peripherals Pvt Ltd	022-67090909	navinderc@rptechindia.com
Root	KMI Business Technologies P. Ltd.	022-30224715	Salesit@kmi.co.in

features, brings Beethoven into your living room for a song, and bags Digit's Best Buy Gold award.

With a combination of features, practicality and solid build, not to mention oodles of space with expansion to boot, Sandisk's Sansa e260 is Digit's Best Buy Silver.

If you want something slim that makes a style statement, look no further than the acoustic marvel known as the

Sandisk Sansa e260
Practical and solid



nano—either model will do; they sound identical and have the same features.

Equally stylish (in fact, more so in our collective opinion) would be the Sony NW-S725F, but you decide... style is a very subjective thing. Regardless, performance will be nearly identical, though you do get 2 GB less than the iPod nano 4 GB at a steeper price and no fewer features. Nanos are more Nikes and Levis, while the NW-S725F is more Louis Vuitton and Chanel...which threads do you prefer to be seen in?

The Samsung YP-T9 offers a lot of features, but isn't as showy as the YP-K3, which is the *numero uno* attraction. The YP-K5 is cool, but the form factor is a little too hard for your pocket.

Our Conclusion

The end of this test saw each of us with a PMP on his desk, click-clacking away to the sound of his favourite tunes. One thing's for certain—PMPs are as cheap or as expensive as you want, courtesy the falling price of Flash as well as magnetic media, coupled with wider consumer acceptance across the product group. While many will haggle over features, a few will put quality over value for money. Irrespective of your needs, and what your demands are, there's something for everyone—we've got newcomers and grizzled audiophiles alike well and truly covered. ☑

michael_browne@thinkdigit.com

iFirst, iSecond, iMore

- 1** 1. Yahoo! has announced they would shut down two services in June. Which ones?
a) GeoCities and Groups
b) Travel and Maps
c) Auctions and Photos
d) Video and 360°



- 2** What percentage of the online adult American population visits Wikipedia?
a) 4 per cent
b) 10 per cent
c) 36 per cent
d) 54 per cent

- 3** Which of the following is true of the Ultra-Mobile PC (UMPC)?
a) It's a portable gaming device
b) It was code-named Project Origami
c) It's a Tablet PC that can run Mac OS
d) It will support DirectX 10

- 4** Which was the first product launched by Apple with the "i", in 1998?
a) iMac
b) iPod

- c) iPhone
d) iBook

- 5** Which of the following is *not* a valid memory card format?
a) Intelligent stick
b) xD-Picture Card
c) SmartMedia
d) MxS Memory Card

- 6** Who is known as the Father of the PlayStation?
a) Ken Kutaragi
b) Kevin Bachus
c) Shigeru Miyamoto
d) Akio Morita

- 7** Which version of Ubuntu will be pre-loaded on PCs by Dell?
a) Fiesty Fawn (Ubuntu 7.04)
b) Edgy Eft (Ubuntu 6.10)
c) Dapper Drake (Ubuntu 6.06 LTS)
d) Gutsy Gibbon (Ubuntu 7.10)

- 8** Which of the following has not been discontinued by Amazon's A9.com?
a) A9 Maps
b) A9 Yellow Pages
c) Search Inside The Book
d) Clickriver

- 9** Which of the following is incorrect about rootkits?
a) They can take full control of a system

- b) They are used for system intrusion
c) They are used for tweaking TCP/IP parameters
d) They are often used to hide utilities

- 10** Game development companies: spot the odd one out. (And why is it odd?)
a) Electronic Arts b) Ubisoft
c) Gameloft d) Epic Games

The first video-card the Monochrome Graphics Adapter (MDA)—was developed by IBM and released with the first IBM PC in 1981. The MDA could only work in text mode representing 25 x 80 lines in the screen, and had 4 KB of video memory.

Did You Know?

Answers

Card	5. d, MxS Memory
mobile games	4. a, iMac
10. c, Gameloft	Project Origami
tweaking TCP/IP	3. b, Code named as
9. c, Used for	2. c, 36 per cent
The Book	Photos
8. c, Search Inside	1. c, Auction and
7. d, Gutsy Gibbon	6. a, Ken Kutaragi
6. a, Ken Kutaragi	

Got an interesting question? Send it in with the answer to TQ@thinkdigit.com Mark "TQ" in the subject area.

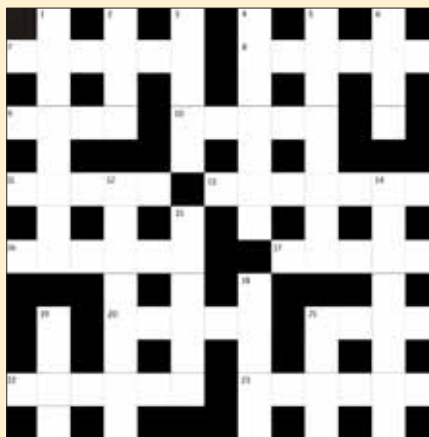
Crossword

ACROSS

7. Website that serves as a starting point to other destinations(6)
8. False or phantom signal that appears in a super heterodyne wireless receiver(6)
9.---- Up account--Internet account allowing you to connect to an ISP with a modem(4)
10. Intelligent----: program that gathers information without your presence on the internet (5)
11. To fix problems in hardware or software(5)
13. Gummed label on electronic products(7)
16. A syntax directed compiler written by Barnett and Futrelle in 1962(6)
17. Release prior to the beta test for a software or hardware product(5)
20. Helps in showing the relationship between two quantities- is denoted by :(5)
21. Write content to a CD, DVD(4)
22. Australian VoIP wholesaler -----Telecom (6)
23. Worldwide BBS accessible through the internet and OSPs(6)

DOWN

1. Swiss company manufacturing PC, game consoles and music devices(8)
2. Hypertext Markup Language(abbr)(4)
3. Command that erases information from a spread sheet(5)
4. Data items selected with instructions to be performed on it(7)
5. A specification that describes how computers talk to each other on a network(8)



6. A collection of records in data processing(4)
12. An internet Relay Chat network(8)
14. The hardware device that enables the LAN to work at the office(8)
15. 'Hop' from one point to another in the network(6)
18. New window that suddenly appears on the computer screen(3,2)
19. Operating system invented by Bell Labs(4)
21. Moser----: second largest optical media manufacturer based in New Delhi(4)

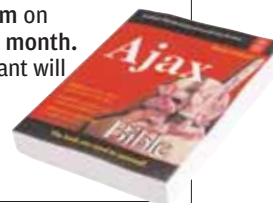
Crossword by Nitta Jaggi

May's Winner:
Annapurna Gaddiannaram,
Hyderabad-500 060

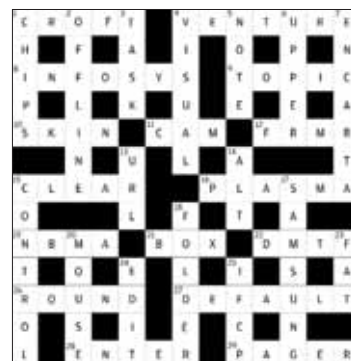
Send in your entries to TQ@thinkdigit.com on or by 20th of this month. One lucky participant will win **Ajax Bible**

By Steven Holzner
Published by
WILEY-INDIA

Win!



Last Month's Solution



Isn't This 2007?

In a trial that involved cyber-terrorism, Judge Peter Openshaw told prosecutors at Woolwich Crown Court, London: "I don't really understand what a Web site is." Lawyers tried to explain, but without success: "I haven't quite grasped the concepts." Oh well, it takes all sorts...



No Dithering, Please

Apple is fighting another lawsuit, filed by two California residents. It contests Apple's assertions that Macbooks can display "millions of colours", as those colours are made possible through dithering! Apple claims to display 8 bits per channel—over 16 million colours without dithering



Escape

WIN BY LOSING

The Web As Community

This one illustrates the idea of "Internet Phenomenon." Having read this bit of news, this writer fondly remembers Mahir Cagri, Internet Phenomenon par excellence in 1999. There's a .org devoted to preserving the original Mahir homepage (they were pages then, not blogs), while updating it with photographs of Mahir's new successes with the public at large. However, at www.IKissYou.org, they seem to have omitted the "I like sex," which was one of Mahir's glib statements on his original page.

The page, to keep a long story short, was the Turkish Mahir's attempt at reaching out to people by telling them about himself. The English was atrocious, and that made for about half the appeal of the page—and of Mahir. Essentially, people loved Mahir because of his

seeming innocence, generosity, and child-like frankness. Some of the gems on the page included "I like music, I have many many music enstrumans my home I can play," and "I like to be friendship from different country." Well, that's quite enough of the nostalgia: fast-forward to 2007, and we have Casey Serin, 24, a would-be real estate agent from California, who bought eight houses in eight months in four states with no money as down payment. He managed that through credit—he was hoping to sell the properties for a huge profit. As it came to pass, he lost everything, and ended up owing about \$1,70,000 to his creditors.

Almost bankrupt, Serin launched IAmFacingForeclosure.com to tell the world about his mistakes, to help others learn from his financial mismanagement. Overnight, a community was

formed, the members of which began competing with each other to post the most biting criticism of Serin's failure. That's quite the essence of "Internet Phenomenon."

What is Serin doing now? What follows reads like a mish-mash of a bad dream, so brace yourselves.

Serin has discovered it can be profitable to outrage and annoy thousands of people through his blog every day. He gets around \$1,000 a month through Google ads. His ill-gotten fame has taken him all the way to a couple of talk shows. Serin's creditors are still suing, and there happens to be a set of bloggers who want to see him annihilated.

As had happened with Mahir, Serin has become so famous there's a remix mocking his favourite sayings, doctored photos of his, and a couple of anti-Serin Web sites. A Google search on "casey serin" without the quotes brings up about a third of a million

Whatever Happened To...

Copy-Protection Dongles

A while ago, someone came up with the bright idea of hardware copy protection for software, something like a key. These are called dongles, and look like connectors. They're hardly seen today.

Earlier versions of parallel port dongles looked like connectors and had electronic chips installed. These chips stored data that was used for software encryption and key validation of a program. Dongles evolved; USB hardware dongles cropped up with microprocessors and inbuilt strong encryption by way of cryptographic cipher texts and keys. But—you guessed it—crackers found ways to crack the keys and therefore the software.

Today, you can order software online. Most software available these days need a registration with the user's name and e-mail. Which can, of course, be worked around, to put it gently. One merit dongles had was that they couldn't be downloaded... but there were the demerits: for every application, the copy protection software created a separate key, and one had to enter the key for each application, each time. The keys and ciphers of the dongles could be decrypted, so dongles couldn't survive as trusted client models for legitimate users. Finally, the high cost of dongles was a factor that led to their demise. You'll still see a few lying around here and there, though.

Win! My Desktop

Last month's winner is

Wasim Akram S.N., Chennai

How he did it:

1. Use the "Panther" StyleXP theme
2. Installed Object Dock with "OS-K" icons from kde-look.org
3. Removed unnecessary icons from desktop.
4. Removed system icons using TweakUI
5. Took a screen shot of the desktop and reduced the image to 85% of its size
6. Used that picture as his desktop wallpaper (centered) and repeated the above 9 times.

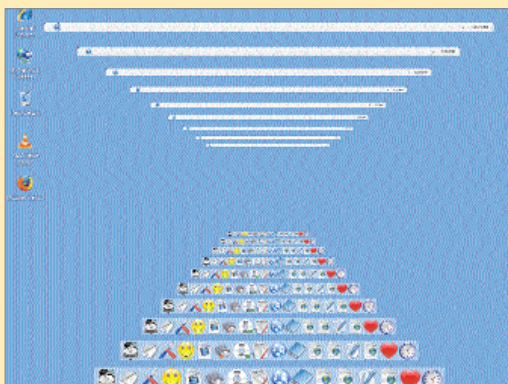
Participate in this contest and win next month

Professional XML

by Bill Evjen & Kent Sharkey

Published by

 **WILEY-INDIA**



Send in your Desktop with a 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

"Aha! A Backup!"



Last month's winner is
Soundarapandian

Madurai

Participate and win next month

Windows Vista

by Michael Meskers



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 20th of this month** to **digipick@thinkdigit.com**. One prize-winning picture will be published each month.

entries, making him almost a celebrity.

Serin is officially called the most hated blogger in the world, and news has it that one reader paid Serin to answer personal questions, such as explaining why his wife dropped out of college. Someone even paid \$250 for the opportunity to vent at him for an hour about financial responsibility.

Ah, it's all good. This is the Internet, and we have our own idiosyncrasies, we're really a community, we have our own celebrities. We're one big happy family.

THERE'S CASH TO BE HAD

Of Webcams And Worship

We're supposing you've read earlier in this section about how Casey Serin, the loser-blogger, now makes his money. If you thought that was a rip-off, just read on.

Take this MySpace user for example, who claims to have 1,00,000 friends on his or her MySpace profile (S)he's selling the profile on eBay.

The winning bid hit \$2,125. Explanations, anyone?

Perhaps the buyer wanted a spam-list... but then those come at much lower prices. Perhaps it's out of an ego that says one should have a lot of friends—but then whatever happened to the Bard's "To thine own self be true"? Our best guess is that some kind of bet was happening, with two people slugging it out over who had the most friends.

Then, check out www.poip.co.il/english/main-english.htm. This is an Israeli start-up called POIP (Prayer Over Internet Protocol), and it sends prayers with the customer's voice to eight sacred sites in Jerusalem. So how does this work? Simple. From the site: "Your recorded prayers will gain access to your chosen holy site/s in Israel. It's only 3 easy steps away. Try it now and have your prayer heard today at the sight (sic) you choose for a cost of only \$7.00.

"We provide your soul unlimited access to holiness, Try it now!" "It's just \$10 and you get eternal life," POIP chairman Hanan Achsaf told *The Wall Street Journal*. "With the lottery, what do you get?

A piece of paper. This is much better value." True enough, come to think of it.

Is this the way ahead? We've heard of a Pakistani site that will sacrifice an animal for you at a holy site for money. No news on how that one is doing.

How long before you can do virtual *darshans*? No, wait. Isn't something like that already up? Google it.

OF FAIRIES AND FAT PEOPLE

The Zeitgeist Of The Times

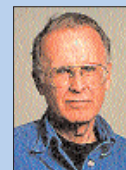
The Google Zeitgeist, as you might know, gives you a window on what the world is searching for. Here are some gems from the last updated country-wise Zeitgeist—April 2007. (No, this is not stale news—the Zeitgeist takes some weeks to get updated.)

In Afghanistan, there are no railways, which we learnt in school. We also thought there was no Internet there—ever been to an Afghan Web site? Surprise, surprise! There are Internet users in Afghanistan, though no-

People Who Changed Computing

John "HLL" Backus

An IBM team led by a man called John Backus created FORTRAN, the language that changed the way humans and computers



John "HLL" Backus

communicate. Prior to FORTRAN, programmers had to program in assembly code—time consuming, tedious, and difficult to debug. FORTRAN was so efficient that it reduced programming statements by a factor of 20!

After graduating from Columbia University, he joined the IBM computer centre in New York, where his job was to fix the Selective Sequence Electronic Calculator (SSEC) whenever it stopped running. The SSEC was one of IBM's early electronic computers; it had thousands of unreliable, electromechanical parts. Tired of the machine, Backus asked his superiors to allow him to head a research project to simplify programming. In 1953, IBM developed the first mass-produced computer that supported floating-point arithmetic and "core memory." It was called the 704; its features could reduce the operating time of the system, but for the lack of efficient computer programs they could not harness its true potential.

Backus outlined design of a programming language for the 704. Overcoming challenges, FORTRAN was developed, and became the most used programming system in the world.

Backus received the W. W. McDowell award for outstanding contributions in computing from the IEEE in 1967, and the ACM Turing award in 1977 for his contributions to the field of programming languages.

Bluff

YOUR WAY THROUGH

Interfaces

It's coming, the time when everything will just connect to everything else. For now, we have all these terms for the things our components need to communicate. Get the basics here, then go brag.

ISA: The Industry Standard Architecture was introduced for IBM computers in the computer stone-age years of 1981-83. Users had to know the ins and outs of the hardware they were going to install. Stuff like the IRQ line and the I/O address had to be entered manually—you can imagine why this was phased out quickly!

SCSI: Small Computer System Interface (pronounced *suzziy*) is the standard interface used to connect storage devices in commercial computers and for transferring large volumes of data on high-performance RAID servers.

ATA: Those broad, flat wires inside your computer cabinet... Advanced Technology Attachment is designed to connect storage devices like hard drives and CD-ROM drives. The cables can only be up to 36 inches long.

PCI: Peripheral Component Interconnect refers to a computer bus for attaching peripherals to a motherboard; for example, RAM. This interface allows for all hardware to be identified during bootup process, disabling hardware that may conflict.

Fibre Channel: Ever wondered how supercomputers transfer such large volumes of data so quickly? Fibre Channel is a gigabit transfer interface, running on fibre-optic wires, transferring very large volumes of data, very quickly. Don't we wish we had a few of these in the office...

Usage: Thank God for *SCSI* and *PCI*—I remember the *ISA* days—they sucked! Can't wait for everything to go *Fibre Channel*?

Wild Wild Web

The Wild, Wide Reach Of The Net

Inspired by a YouTube video that showed a man hugging strangers, pretty much *Munna Bhai*-style, Ryan Fitzgerald put up his own video on YouTube. "I never met you, but I do care," he went, offering to speak to anyone who cared to call—to lend a listening ear, as it were. He says he sincerely wanted to be a good listener.

He received over 5,000 calls.

The calls Fitzgerald received even came from faraway places like Sweden and London, but there were also some frightening calls, including one from a man who threatened Fitzgerald

with violence if he didn't meet him.

A Northeastern University criminologist, Jack Levin, says he feels Fitzgerald has taken a "terrible risk" by putting himself up on the Internet.

The video will probably be taken off YouTube upon the request of Fitzgerald himself, our *Sixth Sense* tells us. So if that's happened by the time you read this, doff your hats to us!

Botgangs!

Did you know there were gangs on the Internet? That you might be the owner of a zombie computer? That the gangs are vying for control over it? How awful!

For the evil ones who have entered the murky waters of spam and botnet-creation (a botnet is a network of zombie computers, which unwittingly relay spam), it's all about territory and control—just like with real-life gangs. AV researchers at Kaspersky Labs have identified three criminal gangs: those behind the Bagle, Warezo, and Zhelatin worms. Even as you read this, they are trying to rid zombie computers of rival-gang malware to be able to install their own!

You're part of all this if you don't use anti-stuff! You own either a Bagle or a Warezo or a Zhelatin computer! Believe it...

one's sure how many. OK, so what do they Google up? "trigger happy," "iraq war," "world trade center." You're thinking we're making this up, of course. Suit yourselves—check out the Zeitgeist! Yes, Afghans seem to have caught on that the world calls them "trigger-happy," and they probably want to check what exactly the phrase means. And they're still stuck on 9/11.

Actually, ranked even higher than the above is "sunny deol photo." Just might have something to do with the movie in which Deol's wife ends up in Pakistan, but we're speculating. They're also interested in "jennifer lopez."

In neighbouring Iraq, where, too, we didn't know the Internet was popular, at #8 is "iraq." Do they do that in the spiritual sense of "finding oneself"? Or are they wondering whether their map has changed since they last saw it? Corny guesses, and this one beats us. What doesn't stump us, however, is "ako" (Army Knowledge Online) at #1, and "sexy" at #14. How cute.

If Afghans are looking for Sunny Deol, Singaporeans are looking



for "hrithink roshan." No typo there. Sheer wonderment: it's Deol in one country, and Roshan in another. Seems all random to us.

No good Indian magazine can leave out talk of Pakistan, and there are some nice ones there. Bollywood again: "salman" at #5.

Apparently, a lot of women in Pakistan use the Internet: "beauty tips" stands at #1. But even if women there are progressive, it does look like people are still getting online for the first time and all that: "internet" is at #10, and they're behind the times—"anna kournikova" is still in their top 15. (The rest of the world got over that skirt a long while ago, as you'll recollect.) And, oh,

"uk" is at #15: they all want to get there eventually, as you know all too well.

Now, if we're talking about Pakistan, we've got to talk about ourselves as well, to be fair. We're a bit better off, searching for "real estate india" (#2)—what with prices doing the roller-coaster. But at #1 is—surprise—"jolie". People still hung up on her? And not "Angelina Jolie," but just "jolie"? What gives...?

The Norwegians search for "fat people" at 10,000 Gbps. We figure they're looking to make fun of Americans, because the popular conception in Europe of the typical American heavily involves obesity. "Fairies" play a role in the Norwegian scheme of things: it's at #11, so they probably believe in them. Fitting: since they have 1,00,000 Tbps, they're in fairyland anyway.

And finally, here's about how a single phone model can take a nation by storm: in Turkey, they search a hell of a lot for "samsung e 250." Not just Samsung, not just "samsung cell phone": specifically the Samsung E250. If you have one of these, do write in and tell us what's ultra-special about it! We'd love to know!

THIS IS WHERE IT'S AT

Serious Politics In *Second Life*

In case you've missed out on the news, politicians are flocking to the free realms of *Second Life*. John Edwards, one of the US presidential candidates, has set up his headquarters there. It won't be long before the others join the fray... even as we write this, there's probably some breaking news of someone new having set up court in the it's-now-getting-ridiculous *Second Life*.

Spanish politicians, meanwhile, are ahead of the game: the two main political parties in Spain were busy fighting last month's local elections in the true spirit of good politics by attempting to burn down each other's headquarters. Some gory details: the socialist government has accused the Partifo Popular party of bombs being thrown, the building having been

What's Next?

This little piece is usually the last thing we write for the magazine. After the month long battle called the *Anniversary Issue*, a lot of us are tired, sleepy and just dying to go home to our families. Seriously, it's no joke preparing this much more content in June with the same team strength as every other month.

While sitting around and chatting (boasting even) about the issue, the innovations that the different teams managed to pull off—marketing, design, editorial and distribution—we started wondering what next year would be like.

"Last year it was the *Power of 5*, this year it was the *Sixth Sense*. What will next year be?" asked a dozing FatBeing (Nimish). It's all we needed to start another informal brain storming

session. "Seven deadly sins?" opined Ram. "Ooh, I choose Gluttony," replied FatBeing. "I'll do Pride", came Asfaq's reply. "I could use a little Sloth", droned Raaabo. "I'm Lusting for a new system", quipped Michael.

This set the ball rolling and the comments got cornier. Samir and Rossi both wanted Greed, and started an argument, leaving Sanket and the Ed with a lot of Wrath.

There were mentions of Iron Maiden's *Seventh son of a seventh son*, and how could we forget the *Seven Wonders of the Technology World*, or someone's wise-crack about VII being the Indian spelling for Wii. Whatever we do for our next anniversary issue, we hope the current team won't suffer from the *Seven Year Itch* and leave!

DIGIT DIARY

entered with sub-machine guns, and arson having been committed. Partifo Popular says it had merely retaliated. "We have complained to the *Second Life* commission about the terrorism." There seems to be no letting up.

So it's come down to that. We gave you the details just so you could gather the very real idea that people with broadband are living *Second Lives*.

Politicians could be getting aboard *Second Life* so they can target younger voters better. Interesting, and very practical... But then most *Second Life* citizens probably don't have a first life, so they won't vote anyway. Then again, can we anticipate a country actually going online and elections being held and made official and all right within the game? *Sixth Sense* again!

Gamepolitics.com hosted a video report of one US candidate speaking out about *Second Life*. One statement went, "A candidate has no need to put up a flat Web page when they can create a... space." One Greg went thus in response: "No NEED? I think The Internet has a few more users than *Second Life* does, and is a bit more accessible."

For now, perhaps. ☒

Blog WATCH

All around the world are important people talking about the "Microhoo" possibility; even otherwise, it's Google, Microsoft, and Yahoo! all the way

Robert Scoble

"Fear of Google" now actually has a TLA!

<http://tinyurl.com/2a4zus>

<http://scobleizer.com/2007/05/06/fear-of-google/>
Fear of Google

Yesterday... Geoff Ramsey, CEO of eMarketer's funniest remark was when he told us that the "Fear of Google" was so prevalent that it even had a three-letter acronym: FOG. Anyway, I've been hearing more and more about FOG all weekend... Here's a few examples:

Why did the stock market drive shares of Yahoo! up so fast on total rumors that Microsoft was buying Yahoo!? Easy, we wanted it to happen. "We" being journalists who are living in FOG land. Bloggers who'd like to see Microsoft be interesting again... Several people on the boat were hoping that Microsoft would buy Yahoo! simply to keep competition going in the advertising market...

Wolfgang Gruener

<http://tinyurl.com/yuzdl9>

<http://www.tgdaily.com/content/view/31899/113/>
The UMPC dies. And no body notices.

...When Microsoft pitched a mysterious Origami device, which essentially became the concept and general understanding of what a UMPC should be,

we learned that the industry had a new device in mind created to cash in on the increasingly mobile and connected world: A device that may be purchased in addition to the notebook users already own, but small enough to fit in a small backpack or purse...

...The UMPC looks like it has hit dead end. To turn it around, there are two possible solutions: Correct the product design mistakes and offer a more tailored product to the mainstream market, or, ...

Greg Sterling

<http://tinyurl.com/3dzuw2>

<http://gesterling.wordpress.com/2007/05/18/two-networks-to-rule-them-all-us-and-google/>
Two Networks to Rule Them All: Us and Google

I just got off the phone with Joe Doran, General Manager, Microsoft Digital Advertising Solutions. Doran said, "We believe there will be two major ad delivery platforms at most..." By "platforms," he meant companies. I then asked who the other company was (assuming MSFT is one), he said that it was Google. Hmm . . . does that mean that Yahoo!, still the largest site on the Internet, will gradually lose more and more share in his mind? Or does it mean Microsoft intends to acquire or merge with Yahoo! at some point?



May 2007

Suggestions Galore

I would like to say a big Thank You to the Digit Team for your fantabulous computer magazine. I am from Nagaland and I find this magazine is the best source for technological updates.

A few thoughts:

● Here in Nagaland, we do not have much access to original software, thus making most of us depend upon pirated stuff. It was also surprising to know that certain reputed brands were using pirated software on their PCs. For instance, a friend of mine bought a branded Desktop and when I tried to install Windows Media Player 11, I was surprised to find out that the Windows OS they had installed was not registered. Also, even though some of us can afford the original software, we do not have access to them as there are no outlets selling original software here. This leaves us with no other option but to go for pirated stuff. From the time you guys introduced the idea of open source, I have started making use of open source and I do agree that they are the best. However, ever since I got into open source, I find them use-worthy (if there is such a word). Thanks Guys.

● Registry hacking was my hobby because I am an experimental person by nature. Hence your tips on the Registry, particularly the *Fast Track to the Windows Registry*, proved to be very useful. I do have a few more tweaks up my sleeve, which I might consider sharing with you later!

● IRC is one very important chat portal, the "in-thing" here in Nagaland. There isn't much about IRC that I do not know now. However, it would be helpful if you can cover this chat portal in one of your issues.

If I were to highlight here all of the ways in which Digit has helped me, boy, it would take quite a lengthy mail.

Do keep on updating us with great technological stuff. Thank you so much once again for this wonderful magazine.

Viky Noel Jimomi
Nagaland

Dear Viky,

Thanks for your mail and the appreciation. This June we have Ubuntu on the disc—go ahead and try it. It's great.

We've done an article quite some time ago on IRC—perhaps it's time we relook at it.

— Executive Editor

Where's The Poll?

Here's a poll for you guys: will you ever, ever, get the results of your last month's poll to show in the mag properly?

- A) Once in a full moon, which falls on Friday the 13th
B) No
C) Perhaps Not
D) Never

Come on fellas, it's getting really irritating. If it's really that hard to publish the results in the mag, better leave it altogether, to be displayed on the site alone. (**Important Notice** : This letter was written in a joyous spirit, and the context used is purely fictitious. Any resemblances of the writer appearing as grudging or complaining *à la* any person living or dead is purely coincidental. Editor's discretion is advised.)

Anubhaw Shrivastav
Muzaffarpur, Bihar

Loved your mail, Anubhaw.

Let me admit it.... we too have been wondering whether the Digit poll page is jinxed. It's a goof-up we're just not able to control. Actually it's the printer's fault—and the bugger does it so bloody often that we are indeed considering either dropping it or suing him!

Still, being the incorrigible optimists that we are, we're hoping this month will be better...

— Executive Editor

Take A Bow

Hats off to your magazine. It is really worth the price and the content currently lives up to all my standards and more. The magazine content can be understood equally well by a person with less computer knowledge and much more clearly with a person with advanced knowledge regarding the subject.

Digit has been always expanding its horizons, and in every issue seems to

amaze us with its new reviews for various products and entering new fields of technology like mobile phone (as in the May 2007 Issue).

Its content makes terms such as RAID and other difficult terms more understandable by all.

The *Fast Track* is simply fantastic, offering a quick and/or detailed reference to today's various software and other applications.

And the DVD/CD provides elaborate update tools to people that are disconnected from the Internet or don't have a large download arsenal. It also introduces one to all the new software which have released and which were unknown but very useful. They also offer trial versions of software which can be made fully-functional by just purchasing a key online.

Although Digit exceeds in all these fields, it can yet be better. Here are a few suggestions that I think can make the Digit experience phenomenal.

First, in the magazine: There is not much that can be done to the perfection already achieved by Team Digit, but it would be nice that a brief introduction be given to all software in the CD/DVD. Secondly, you should consider increasing content and also the cover price only if necessary.

In the *Fast Track*, the paper quality is quite poor. It would be nice to receive a slightly improved paper copy, as most of them have more content than the magazine itself.

The DVD/CD should switch just to a DVD as it would make organisation simple, and a "copy software to location" button should be added, that is, one should not have to browse the CD to find the software's setup file.

Arjun Sabharwal
Via e-mail

Dear Arjun,

So glad to get such a detailed mail and the appreciation you have expressed regarding our efforts.

Coming to your suggestions, we do give a few lines of description to each software in our CD/DVD. Press the "View details" button at the bottom of the interface, next to the Install button. Or did you mean we should increase the description?

Better quality of *Fast Track* pages is not financially viable as of now for us, though we will certainly give it shot. Also, increasing the number of pages in the magazine is again a cost

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

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Inbox

implication, and increasing the price beyond Rs 125 is a risky preposition. Even now, many of our readers feel Rs 125 is expensive.

Putting a "Copy to" button in our CD/DVD is quite possible, but we have to evaluate how useful that function would be.

Thanks for your mail... and keep the feedback mails coming in!

— Executive Editor

Accidental Reader

Dear Sir,

I first read an issue of *Digit* in 2004 when I was travelling from Ranchi to Patna... someone had forgotten the magazine on the train.

It greatly charged me with joy when I got the relevant answer of something about my computer debugging, which was making my life hell before that. Since then I've been a regular reader, as it helps me in becoming the system administrator in a small office. I don't know how the people like you, have carried such a tough job to make us, the laymen, the learners of computers, in a country where still more than half the population is struggling for their daily bread without caring for the importance of the information technology era. Great job done, sir.

Abhishek Choudhary
Ranchi

We're happy to have helped you in some way, Abhishek—small or big. It is indeed our agenda to make more and more people computer-literate—in small and big ways.

— Executive Editor

Digit Before All

I am a Hutch employee working as a computer operator (backend support) in Moradabad. Last month I had a shortage of money, and had two options—either recharge my mobile or purchase *Digit*; I selected to purchase *Digit*. This is how important *Digit* is to me. The *Fast Track* to the student's Web was a good one, and Excel 2007 is best for me to help me in my work because I mostly work with Excel. Waiting for the sixth anniversary wonder!

Manoj Tiwari
Moradabad

Dear Manoj,
I'm sure you'll like our sixth anniversary special—do write in after you've read it! Also, I'd like to express the sheer joy of receiving a mail that says someone prefers *Digit* over talk-time! We put in a lot of effort into our

magazine, and we love it when we are adequately appreciated. Thanks for reaching out to us.

— Executive Editor

Demands

I am a regular reader of your magazine, but this is the first time I am writing to you. I have a few suggestions to make:

Please use a dual-layered DVD.

- Have a *Fast Track* to 3D animation, Java, DBMS, OOP, IMAX, etc.
- If this is not possible, then at least get some e-books on these topics in your DVD.
- Have more movies and game videos (but not old movies)
- Include more games and add some full versions.
- Increase "Take A Crack"-like sections.
- Reduce loads of product reviews and instead give articles about robotics, AI, Web 2.0 & 3.0, etc.
- Give Madriva One live distro.
- Finally, as Sun provides its free DVD set containing Solaris 10 and Java Development Kit, kindly give it in some issue.

Hope you will pay heed to all my demands and fulfil them.

B Vaibhav
Via e-mail

Thanks for the suggestions, Vaibhav. I'll address them: regarding the magazine, we try our best to look at what the majority of our readers want, and our magazine content reflects that. Regarding the *Fast Track*, yes, we have one each month, so we'll to topics in programming and more.

Coming to the DVD, we'll include more games when possible; it's currently not. As for *more* movie and game videos, we also need to include software, so it's really not possible. Regarding the Mandriva One live distro, we've provided Ubuntu this time—we're sure you'll love it!

Solaris and the JDK... perhaps sometime. But the great thing about the DVD is, we're going dual-layer from now on!

— Executive Editor

ERRATA

The price of XBOX 360 was erroneously misquoted in our May 2007 issue. The correct price is: Core system - Rs. 19,990/- and Premium system - Rs. 27,750/- (including taxes). It's the taxes that got us into a fix. Inconvenience to whomsoever concerned is regretted.

Bravo!

Kudos for writing a very timely editorial on the status of Indian languages in IT, particularly the Web. It makes me happy to see a magazine of your repute highlighting such important but generally overlooked topics. They are integrally linked with the broad objective of bridging the digital divide, and they have massive economic implications too. You have rightly said that after 60 years of independence, we need to break free from the mentality of linking Indian languages with backwardness.

Also, your analysis of the psychosocial causes and trends behind Indian languages not being as popular on the Net as English is praiseworthy and precise. However, as someone who is integrally related with technical development in Indian languages for past 10 years, I beg to differ on a few counts. Development in Indian languages has taken a fast pace following introduction of Unicode, and you would be happy to know that Hindi and other Indian languages are making steady progress in almost all major directions as far as IT is concerned. I am leading the Web development cell for the World Hindi Conference, to be organised by the Ministry of External Affairs in New York from July 13 to 15, and we were pleasantly surprised to receive more than 50 per cent of the participation requests (online forms) in Hindi!

Indian language portals are getting popular fast. We at Prabhasakshi.com (a Hindi portal, which I edit) have registered a whopping figure of 8.5 lakh hits on May 11 last (the day the UP election results were declared). Our average daily hits are in the range of 3.7 lakh.

During the past five years, path-breaking work has been done in Indian languages, particularly in important fields including operating systems, typing systems, Web portals, Web sites, blogs, podcasting, search, mail, discussion Forums, mailing lists, education, and GUIs.

In fact, scope of this topic is very wide and many interesting articles could be written on various aspects of IT in Indian languages.

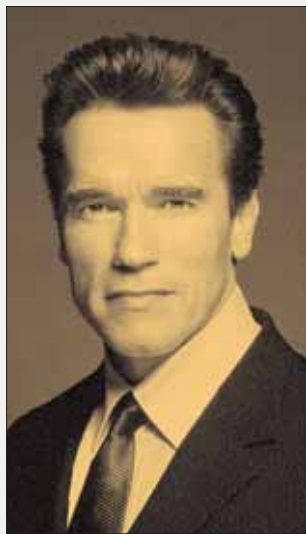
Balendu Sharma Dadhich
Via e-mail

LETTER
OF THE
MONTH

Tabloid TECH

People And Events That Grabbed The Headlines—For Better Or For Worse

The Career Girl



Celebrity blonde Paris Hilton is to serve a prison sentence for drunk driving, and she's been doing something about it. Like asking California governor A Schwarzenegger to pardon her. Herr Schwarzenegger doesn't seem to have done much about the situation, but the pretty Hilton has a lot going for her, and her sentence was reduced from 45 days to something like 23: she got credit for her "good behaviour."

Before that, the 26-year-old posted a blog on her homepage at MySpace, urging her 1,70,919 "friends" to sign a petition calling for her to be spared. Then, the poor girl's fans launched FreeParis.org in an attempt to collect a million signatures on a petition seeking clemency before she is to report to jail. "Please allow her to her return to her career and life," goes the petition. We know what her life consists in,



but we didn't know she has a career... but more on that later.

There are polls aplenty you'll find on the Web that go, "Should Paris Hilton be jailed?" And most often, the 90 per cent figure is in the red. The "Free Paris Hilton" petition gathered more than 25,000 signatures as of this writing; a rival campaign, "Jail Paris Hilton," has more than 60,000 supporters. So much for having 1,70,919 friends...

In the California "jail," which isn't quite like our jails, the girl will live in the "special needs housing unit." She will get at least an hour outside her cell each day "to shower, watch television, participate in outdoor recreation, or talk on the telephone." We're sure that'll be extended to, like, 16 hours or something—unless something like JailParisLike AProperPrisoner.org comes up.

Would you vote? Actually, do you care?

"Executive Summaries"

We're always on the lookout for delightful new Firefox extensions, and we found one that lets you search for celebrities. The Celebrity Search Firefox extension "puts all that Hollywood searching power right at your fingertips," as one blogger so accurately put it.

The developer put it this way: "You can search movie stars—actors, actresses and directors, musical performers, supermodels, politicians, prominent businessmen, other publicly known people. Nice research tool." You'll find the extension at <http://tinyurl.com/j2k2nvk>.

Research tool? What's to research on celebrities? So anyway, we selected "Pamela Anderson" off a site, right-clicked, and searched for the celebrity, hoping to research her... and *whump!* Mammaries! OK, we got distracted for a bit, then we looked at the "Executive Summary" for the person: it said "Star of Baywatch

and home movies." *Home movies?* That has that lingering something-fishy sound to it... did the folks at nndb.com (where the Firefox extension takes you to) intentionally imbue the humour into that one?

Next up was Paris Hilton—"Unexpected porno actress." Nuff said.

And then this writer typed in the name of someone we shall not name because we promised not to, and the Executive Summary went, "Oops... I did it again." The first paragraph of the person's profile goes thus (we've removed the person's name):

"Apparently the most successful of their numerous experiments, (she) was genetically engineered by the Disney Corporation to bring Western culture to its knees. OK, so that's a bit of an exaggeration: in fact, she was engineered to bring the enormous sex-deprived male population to its knees."

"Nice research tool." Hmm.

So This Is Web 2.0?

We've mentioned elsewhere in this issue that no-one really knows what Web 2.0 is, but here's news: some tech celebrities don't even care.

Truemors.com opened sometime in May. It's the brainchild of entrepreneurship expert Guy Kawasaki, who, when asked to describe it, had this to say: "It's true that it could have no purpose. I don't want to be known as a Web 2.0 company, but we're a Web 2.0 company."

Kawasaki has been a Silicon Valley celebrity since the 80s, when he was a Mac evangelist. Most famous quote: "Those who can, do; those who can't, motivate."

At Truemors.com, people can mail in or phone in "true rumours" they've heard. As of this writing, the top-rated Truemor was that British singer Amy Winehouse would be the new Bond girl. Ugh. Google her up.

