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DVD TECHNOLOGY UPDATE

Yet Purchased A DVD Player ? Hurry Up ! Within The Next 3 Year, 2 New DVD Enhancing Technologies Promise To Make The Current Crop Of DVD Players Obsolete !

DVD players have emerged as the most successful consumer product in recent times. CETMA has projected 10 million DVD players in India by 2007. Worldwide, there are already 100 Million DVD players. China produced over 30 million DVD players last year and accounted for up to 70% of the world market.

MOVE TO HOME THEATRE

American consumers have shown a strong preference for DVD viewing, in the comfort of their homes, rather than going to a theatre.

In 2003, Americans spent $22.5 billion on DVDs and video cassettes, against $9.2 billion at the box office. That said, pirated DVDs will set back the US film industry by over $500 million.

Clearly, consumers want their home theatre to provide the high definition pictures, so far only available in cinema halls. The enhanced DVD formats promise just this.

PRICES CRASH

While DVD player prices are crashing. A Pioneer or SONY DVD player is available in the Grey market for Rs 5,000. DVD Players sourced from China are available for as low as Rs 2,800 in the retail market.

"I assemble 500 DVD players a month. But there is demand for 1,000 from my unit," says a North Delhi manufacturer, who works on his terrace. "I make a profit of Rs 500 on each piece."

Ofcourse the demand for DVD players has emerged, only because content on DVDs is available cheap. The Indian consumer has often demonstrated that he is willing to ignore copyrights, and buy pirated movies, if the price is right.

An original DVD Indian movie now costs Rs 450. In the pirated market, 3 movies on a single disc cost Rs 150. Moreover, once you're through, exchange it and get Rs 70 back!

"Software prices may fall to Rs 50. VCD software is drying up as prices have bottomed to Rs 30," says a Palika Bazaar dealer. "Best is to bring down original DVD software prices. Hollywood is talking of reducing DVD software prices to $10," says Deepak Puri, chairman, Moser Baer, who is working with Hollywood studios on copy-protection.

But DVD development has not stood still.

BACK TO BASICS

The modern DVD (digital versatile disc) standard was created 9 years ago in a clash between 2 rival technologies. Today, at least 2 separate camps are again battling to set a new DVD standard that promises to boost storage capacity by a factor of 6 or more using new technology based on blue-violet laser.

The eventual goal is to record 2 hour movies in original high definition video, or 1080p. The encoded video on current DVDs are limited to 480p, (480 vertical lines) on a television screen, using red laser technology to read bits from the disc storage medium.

RED LASER VS. BLUE LASER

A red laser pumps out light at a wavelength of 650 nanometers (billionths of a meter); while the blue laser has a wavelength of 405 nanometers. The shorter the wavelength, the smaller the point on which the laser beam can be focused. And the smaller the zones in which data can be stored and read back from, the greater the number of video bits that can be packed into a disc. Blue laser discs will hold much more data than red laser discs.

Red laser DVD discs store up to 9 gigabytes (DVD-9, dual layer) while blue laser discs can hold up to 20 gigabytes with the promise of 50 gigabytes eventually. Blue laser can also stream data at 36 megabits per second, approximately 4 times faster than the rate that data is read off a red laser DVD. More data on a disc streamed at much higher rates delivers high definition for blue laser.

PIXONICS HIGH DEFINITION (PHD) FORMAT

Pixonics has developed pHD - an enhanced Red Laser DVD. It is not a new format. PHD uses a compression technique to produce high definition pictures.

pHD works by encoding a movie into two separate streams -- a base stream and an enhancement stream. Together the streams can provide more than 3.5 hours of both standard definition and high definition video on standard DVD-9 (9 gigabyte) discs. The base stream is standard MPEG 2, typically averaging 6 Mbps. The pHD enhancement stream averages an additional 1.5 Mbps, and displays 1080p high definition video that is nearly indistinguishable from the source. pHD quadruples the combined horizontal and vertical frequency response over the best that standard red laser can offer.

BACKWARD COMPATIBLE

Current DVD players can ignore the pHD enhancement stream and play back the base stream in standard definition, allowing for the backwards compatibility of pHD high definition discs.

BLUE LASER FORMATS

Clearly, the only way to pack more information onto a disk is to use shorter wavelength of light.

FORMAT WARS

As expected, there is a format war, ands its not necessarily superior technology that will determine the winner. The winning format will milk the market, for years, with a royalty fee on every dics and machine produced.

On one side is Sony-led consortium of 13 electronic giants who are pushing for Blu Ray optical disc technology.

On the other side of the ring are DVD-inventor Toshiba and NEC who have proposed a AOD (Advanced Optical Disc) jointly developed by them.

Interestingly, China is promoting a third DVD format, saying it does not want to kep paying royalties for DVDs and players that it produces.

''It is reminiscent of the battle between VHS and Betamax,'' says Ramendra Baoni, MD, Bisquare, which offers technology solutions. ''It is also likely that both formats will exist like GSM and CDMA in

mobile technology.'' he claims. Industry experts believe otherwise.

Hollywood studios will flatly refuse to create and marke disks in a plethora of formats, and a sigle format victor will emerge. No one wants to see a repeat of the battle in the recordable DVD space, where DVD-R/RW and DVD+R/RW are currently slugging it out with DVD-RAM sitting on the sidelines.

Most are hedging their bets on Blue Ray.

BLUE RAY DISK

On 19 February 19 2002, nine leading companies announced their collaboration to jointly develop a next generation large capacity optical disc video recording format called "Blu-ray Disc". The Blu-ray Disc enables the recording, rewriting and play back of up to 27 gigabytes (GB) of data on a single sided single layer 12cm CD/ DVD size phase change (similar to CD-RW) disc using a 405nm blue-violet laser. The Blu-ray Disc's tracking pitch is reduced to 0.32um, almost half of that of a regular DVD. This will provide over 2-hour digital high definition video per disc.

The companies that established the basic specifications for the Blu-ray Disc are: Hitachi Ltd., LG Electronics Inc., Matsushita Electric Industrial Co., Ltd., Pioneer Corporation, Royal Philips Electronics, Samsung Electronics Co. Ltd., Sharp Corporation, Sony Corporation, and Thomson Multimedia.

Blue Ray Disks will use the MPEG-2 standard for recording and playback of video & audio.

ADVANCED OPTICAL DISC (AOD)

NEC and Toshiba jointly developed the AOD, or Advanced Optical Disc.

It specifies a 20GB rewritable disc and read-only discs in two capacities: 15GB in a single layer or 30GB in two layers. Work on a recordable (write-once) version of AODs is also under way.

AOD competes with Blu-ray, which is also based on blue-laser. Blu-ray supports either 23GB, 25GB, or 27GB depending on the version.

CHINA'S OWN EVD

Chinese researchers are working on a new standard, called EVD, that promises 5 times the image quality of DVD. The new format, called EVD (Enhanced Versatile Disc), will be playable only on EVD players, according to the official Xinhua news agency.

Details about the format, such as storage capacity, compression format for audio and video files and type of reading laser used have so far been kept under wraps.

The China-developed EVD standard is among several projects supported by the government in its drive to reduce license fee payments (for DVDs & MPEG) and "shake off dependence on foreign technologies in production", according to Xinhua.

The EVD standard does not appear to be a user-recordable format for now, and aims to complement the DVD movie format for those with high-definition TVs.

The company developing EVD, Beijing E-World Digital Technology, comprises government bodies and 10 domestic electronics manufacturers.

A REAL MARKET FOR THESE DISKS ?

A standard DVD currently provides for 2 hours of Video, per layer. This more than adequately accommodates most movies. The capacity can be easily doubled by adding a second layer on the same DVD.

So is there a strong enough demand from consumers for a higher definition or storage capacity medium ?

Most projectors and displays used in home theatre systems do not even fully exploit the existing DVD's capabilities. And then, displays and projectors are the most expensive component in most home theatre systems. Except for a small niche of enthusiast, consumers are unwilling to pay astronomical prices for display devices.

That considered, is the market ripe for a higher capacity DVD medium ? Or do display devices still have a lot of catching up to do ?

Often, rational reasoning does not always win the day. By 2005, the consumer could be thrust down another technological solution, in a situation where no problem really exists ! ■

Key Parameters Of The Blu-Ray Disc And Advanced Optical Disc formats

		Blu-Ray Disc	Advanced Optical Disc (AOD)
Data Capacities [GB]	Single-Layer	23.3, 25, 27	15 (pre-recorded) 20 (rewriteable)
	Dual-Layer	46.6, 50, 54	30 (pre-recorded)
Maximum Recording Time, HDTV	Single-Layer	2 hours	2 hours
	Dual-Layer	4 hours	4 hours
Maximum Data Rate [Mbps]		36.0	?
Video Encoding		MPEG-2	MPEG-4
Disc Diameter [cm]		12.0	12.0
Laser Wavelength [nm]		405	405

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