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Format Wars, Episode II: The DVD

Competing visions of high-definition viewing head for a showdown on store shelves.

By Alex Pham and Jon Healey, Times Staff Writers

Movie buffs, brace yourselves for another round of Betamax versus VHS.

Two decades after the competing video formats battled for space in American living rooms, a new war is looming between two incompatible types of high-definition video discs scheduled to hit the market later this year.

One, called HD DVD, is the official choice of the group that backs conventional DVDs. The other, called Blu-ray, is spearheaded by more than a dozen big-name consumer-electronics and high-tech companies.

The two camps are trying to strike a last-minute deal and agree on common technical standards.

But with the first devices and discs slated to hit stores this Christmas, the window for an agreement is closing fast.

In addition to the money and egos involved, the physical differences in the two disc formats are keeping the two sides far apart.

"The train is going to start leaving the station shortly," said Josh Peterson, director of strategic alliances for Hewlett-Packard Co., which backs Blu-ray. A format war "looks more and more inevitable every day. We're approaching the point of no return."

Major Hollywood studios exacerbate the problem by splitting their support between the two formats, each of which promises to deliver richly detailed pictures and cinema-quality sound. Both types also will play current DVDs. Guided by differing visions for the high-definition future, half of the studios have announced plans to release HD DVD discs, and the other half are expected to back Blu-ray.

Although HD DVD players are expected to be in stores for the all-important holiday shopping season, the backers of Blu-ray think they have the advantage: Sony Corp. plans to include a Blu-ray drive in its hotly anticipated PlayStation 3 video game console. The game console won't arrive in the U.S. until next year, but the popularity of the PlayStation franchise may inspire buyers to wait for it.

If sales of PlayStation 3 repeat the performance of PlayStation 2, there could be Blu-ray players in several million homes in a matter of months.

If one format quickly becomes obsolete, casualties could include consumers who spend about \$1,000 on the losing disc player. Analysts say a format war would also slow the transition to high-definition discs, reducing sales for consumer-electronics manufacturers and studios alike.

At stake is a multibillion-dollar market for next-generation DVDs.

Since their introduction in 1997, DVD players have become the fastest-selling consumer electronics devices of all time and are now in two-thirds of U.S. homes. Americans spent more than \$20 billion buying and renting DVDs last year.

But sales of players are slowing, prompting technology and entertainment companies to lay the groundwork for a replacement.

The audience for high-definition discs is relatively small today. Viewing the new discs requires a high-definition TV set, and fewer than 13 million homes in the U.S. had one by the end of 2004, according to the market research firm In-Stat.

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That number is rising rapidly, helped in part by the growth in TV programs aired in high definition. The main piece missing for these viewers has been an improved version of the DVD that could bring high-definition pictures to home video.

Consumers like Mike Fujii from Emeryville, Calif., are prepared to spend \$1,000 on a new DVD player – as long as the picture quality makes a significant leap over his current player.

"If the difference in picture quality is that great, then yeah, I'll buy one fairly soon," said Fujii, 41, who bought a 52-inch rear-projection HDTV two years ago to watch high-definition satellite TV broadcasts. "If not, I would just use the DVDs I have now. A thousand dollars is a lot to spend on a player. Right now you can get a DVD player for under \$100."

Still, prettier pictures may not be enough to persuade the masses to embrace high-definition discs, said Bob Chapek, president of Buena Vista Home Entertainment, a division of Walt Disney Co. "You'd better be chock-full of features" that are not available on DVD, Chapek said.

That is why Disney is backing Blu-ray, which offers at least 25 gigabytes per disc, compared with 15 gigabytes for basic HD DVD discs and 4.7 gigabytes for conventional DVDs.

Executives at Warner Bros., which plans to release HD DVD discs, counter that the Blu-ray group has not been able to answer crucial questions about manufacturing costs, their discs' resistance to warping and other reliability issues. They say the HD DVD group has proven its ability to mass-produce double-layer discs and hybrids that combine a conventional DVD on one side with a high-definition movie on the other – a key product for movie fans who have yet to buy an HDTV.

In spite of the format dilemma, many consumer-electronics executives are eager to shift to high-definition discs because profit margins have shrunk dramatically on conventional DVD players and sales have started to drop.

According to Strategy Analytics, worldwide sales of DVD players peaked in 2004 at \$20.1 billion and are expected to drop this year for the first time by 1% to \$19.8 billion, falling to \$15.3 billion in 2010.

Disc sales and rentals are growing more slowly too, yet DVD sales and rentals accounted for about 55% of the revenue from feature films in the U.S. last year, according to Adams Media Research. Though the studios are leery of disturbing that cash cow, they also want to replace DVDs with a format that is less vulnerable to piracy.

The home video market has endured two format wars, starting with the battle between Sony's Betamax and JVC's VHS in the mid-1970s. The fight lasted a little more than a decade, with the VHS share growing from about 75% of the market in 1980 to 95% in 1988 despite Betamax's reputation for better picture quality. Sony abandoned its Betamax product line in 2002.

In the mid-1990s, Sony and Philips Electronics backed a new format for video discs, while Toshiba Corp. and Warner Bros. supported a more radical shift to a higher-capacity approach. Sony and Philips eventually backed a compromise based largely on Warner and Toshiba's technology, and the DVD format was announced in December 1995. But a format war broke out anyway when Circuit City Stores Inc., a handful of consumer-electronics manufacturers and a few of the major studios offered – briefly – a pay-per-play approach called Divx.

This time, compromise is more difficult, both sides acknowledge. That's because the core difference lies with a single aspect of the disc: a thin layer of plastic above the metal surface on which data is written. An HD DVD disc calls for a 0.6-millimeter coating, while a Blu-ray disc requires 0.1 millimeters.

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Although that doesn't seem like much, the half-millimeter gap amounts to a technological chasm. HD DVD's thicker coating is the same as that on current DVDs, which allows manufacturers to use existing equipment to stamp the new discs. That gives HD DVD a significant cost advantage and more predictability about what those costs will be, backers say.

Whatever differences exist in manufacturing costs, retail prices to consumers are likely to be comparable.

Blu-ray's thinner coating requires all new manufacturing equipment, but it's the secret behind the disc's higher capacity. Because the laser travels through a thinner layer, it's able to focus more sharply and write 67% more data onto the disc.

"Since they're different designs, it's not possible to compromise down the middle," said Brian Zucker, technology strategist at Dell Inc. and a Blu-ray spokesman. "To come up with a mix of the two approaches for that physical layer would not be practical."

The two sides could use one camp's disc structure and the other's software, generating royalties for both. But doing so would require one side or the other to give up the core advantages of its format – either the cost, compatibility and reliability strengths of HD DVD, or the capacity of Blu-ray.

Warren Lieberfarb, the former Warner Home Video president often called the father of the DVD, is now a consultant to Toshiba and a leading advocate for HD DVD. He argues that the roots of the split over high-definition video discs lie in the long-standing competition between a pair of consumer-electronics companies – Sony and Philips – and their rival in disc innovation, Toshiba.

Sony and Philips introduced the CD format in 1980, and their patents generated hundreds of millions of dollars in royalties from the sale of discs and players. So when their format for video discs did not prevail, it was "an enormous loss of face and had very significant commercial consequences for Sony," Lieberfarb said.

Despite efforts by Lieberfarb and several top studio executives to rally their counterparts around a single format, the drive for unification has been stalled by the studios' differing priorities.

Warner Bros. is much more attuned to the manufacturing costs and compatibility with conventional DVDs than Disney, which craves maximum capacity as a way to make the new discs stand out from current discs. Sony Pictures Home Entertainment President Ben Feingold envisions people playing movies on all kinds of digital devices, and he likes the prospect of Blu-ray discs being played in game consoles as well as set-top players.

Sony's corporate siblings also stand to collect a share of the royalties from Blu-ray discs, while Warner Bros. would receive a piece of the HD DVD fees. And News Corp.'s 20th Century Fox has held off from endorsing either format as it presses both sides for more extensive antipiracy features and weighs the evidence on manufacturing costs.

One factor that could buy more time for negotiations is antipiracy protection, an issue that remains unresolved. Without a final blueprint for copy protection, studios will put off releasing movies and TV shows on the new discs, which in turn will delay a hardware rollout.

"A delay in content protection gives us a little more time to work things out," Peterson said.

Still, the window for compromise is short. Toshiba, Sanyo Electric Co. and Thomson Corp.'s RCA have announced they will have HD DVD players in stores for Christmas. And Sony plans to roll out its PlayStation 3 console with Blu-ray players next

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spring. To make technical changes to these products would require several months of lead time.

Retailers prefer a single format over two competing technologies. "Ultimately, we believe one standard is far preferable to multiple standards," Circuit City spokesman Jim Babb said.

Wal-Mart Stores Inc., the nation's largest retailer, echoed the sentiment. "We think it could be too confusing for our customers if there are two different formats," spokeswoman Karen Burk said.

Stores are reluctant to devote shelf space to two technologies instead of one. In addition, analysts say the lack of a clear winner would dampen sales as consumers adopted a wait-and-see approach.

"When you introduce an element of confusion, you're encouraging the consumer to put off the purchase," said James Penhune, media analyst with Strategy Analytics. "That's been the case with previous format wars."

Hence, the financial incentive to come to an agreement is strong.

"Nobody wants a format war," said Dell's Zucker. "Not the device manufacturers. Not the studios. Not the consumers. Consumers will delay their purchase if there's confusion, and that results in a market stagnation for everyone. The problem is that we all believe we have the solution that's best."

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DVD formats

HD DVD and Blu-ray systems will play current DVDs, but differ in these ways:

Data capacity (per layer)

Current DVD: 4.7 gigabytes

HD DVD: 15 gigabytes

Blu-ray: 25 gigabytes

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Maximum image resolution (in pixels)

Current DVD: 640x480

HD DVD: 1920x1080

Blu-ray: 1920x1080

Current DVD: All

HD DVD: Warner Bros., Universal, Paramount

Blu-ray: Sony, Disney

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Retail launch

Current DVD: 1997 Christmas

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HD DVD: 2005

Blu-ray: Spring 2006

(1) Content Scrambling System, a type of encryption designed to prevent people from making usable copies of DVDs.

(2) Advanced Access Content System, a digital rights management technology designed to allow limited copying and sharing of movies on a home network.

Source: Times research