



From: http://www.blu-raydisc.com/bluray_site.htm

History of Blu-ray Disc

When the CD was introduced in the early '80s, it meant an enormous leap from traditional media. Not only did it offer a significant improvement in audio quality, its primary application, but its 650 MB storage capacity also meant a giant leap in data storage and retrieval. For the first time, there was a universal standard for pre-recorded, recordable and rewritable media, offering the best quality and features consumers could wish for themselves, at very low costs.

Although the CD was a very useful medium for the recording and distribution of audio and some modest data applications, demand for a new medium offering higher storage capacities rose in the '90s. These demands lead to the evolution of the DVD specification and a 5-10 x increase in capacity. This enabled high quality, standard definition video distribution and recording. Furthermore, the increased capacity accommodated more demanding data applications. At the same time, the DVD spec used the same form factor as the CD, allowing for seamless migration to the next generation format and offering full backwards compatibility.

Now, in the next millennium, high definition video demands a new solution. History proved that a significant 5-10 x increase in storage capacity and the ability to play previous generation formats are key elements for a new format to succeed. This new format has arrived with the advent of Blu-ray Disc, the only format that offers a considerable increase in storage capacity with its 25 to 50 GB data capacity. This allows for the next big application of optical media: the distribution and recording of high definition video in the highest possible quality. In fact, no other format can offer the data capacity of Blu-ray Disc, and no other format will allow for the same high video quality and interactive features to create the ultimate user experience. As with DVD, the Blu-ray Disc format is based on the same, bare disc physical form factor, allowing for compatibility with CD and DVD.

BD vs. DVD

Just as DVD meant a five to ten time increase in storage capacity compared to CD, Blu-ray Disc will increase DVD capacity by five to ten times. This is due, among other reasons, to the usage of a blue instead of a red laser and improved lens specifications, allowing for a much smaller focus laser beam which enables the recording of much smaller and higher density pits on the disc.

Due to the fact that the data layer on a Blu-ray Disc is placed much "closer" to the laser lens than in DVD (or even the HD-DVD proposal), there is less distortion resulting in significantly improved tolerances. Hence, more precision and ultra high storage densities are made possible.

As a result of Blu-ray Disc being manufactured as a single substrate disc comparable to CD, but unlike DVD (and the HD-DVD proposal), the manufacturing process does not involve the bonding of two substrates, resulting in less production material, a shorter production time and hence lower production costs per disc.

Blu-ray Disc has the same physical characteristics as DVD and CD, and like its predecessors, it also does not require a cartridge. This makes it possible to create Blu-ray Disc products that are backwards compatible with CD and DVD, allowing for a seamless transition to the new technology. Likewise, the technology is perfectly suitable for integration in small form factor equipment, like notebook computers.

Broadest Industry Support

History has shown that unified industry support for a particular format is most likely to lead to success. Therefore, the participation of the world's most renowned consumer electronics manufacturers and IT companies are leading in the success of the best standard for next-generation storage: Blu-ray Disc. Blu-ray Disc is supported by leading hardware manufacturers across the CE and IT fields from the U.S., Europe, Japan and Korea, including Dell, HP, Hitachi, LG Electronics, Matsushita (Panasonic), Mitsubishi, Pioneer, Philips, Samsung, Sharp, Sony and Thomson/RCA. Finally, major blank media manufacturers including TDK are supporting the Blu-ray Disc format as the successor of DVD. This broad industry support will lead to a broad selection of Blu-ray Disc products, including home video decks, PC drives, PCs line-fitted with Blu-ray Disc drives and blank media, to

be available when the format is launched in the various regions in the world.

Lifespan

The Blu-ray Disc format is designed to stay relevant for at least 10 to 15 years. Its high storage capacity of 25 to 50 GB allows for the best-possible High Definition video quality and satisfies even the most demanding data storage needs. As we have seen with DVD in the past, most premium titles require two discs. This is why Blu-ray Disc incorporates the additional storage space that is required for a High Definition feature film including bonus bonus material in the new standard from the beginning. Formats with a lesser capacity are only suitable as interim solutions, requiring them to be replaced much sooner than a format that takes tomorrow's data storage needs into account from day one. This will of course require multiple investments in production equipment, and will lead to increased consumer confusion.

Content Protection

Blu-ray Disc provides some of the strongest copy protection methods ever developed for any consumer format. It makes Blu-ray Disc the best choice for any content publisher wanting assurance that their valuable assets are protected from piracy. Based on feedback from the content industry and taking a cue from the lessons learned by other formats, the Blu-ray Disc format incorporates a robust copy protection mechanism, which not only relies on implementation at the playback device, but which also includes precautions at replicator level, which will be strictly controlled. Unlike the voluntary implementation of CSS protection in DVD, the copy protection mechanism for Blu-ray Disc is mandatory and will be governed by strict licensing procedures.

Cost

Blu-ray Disc is developed to offer the best long-term profitability model for content providers. Although it might require a nominal investment in advance, it provides greater and longer-term profit potential. This is because the format is designed to last for a period of at least 10 to 15 years. Due to its enormous storage capacity, short-erm replacement of the technology is unnecessary, unlike other format proposals that might require less investment in advance, but higher investments in the long term due to the replacement of the

technology when it becomes outdated. At comparable volumes, Blu-ray Disc production costs are within 10% of DVD production costs, although a Blu-ray Disc offers 5-10 x the capacity. It is by far the cheapest format measured in cost per GB. Since Blu-ray Disc requires fewer slots in a replication line compared to other formats, it will bring costs on par with DVD, or even cheaper, much sooner. Production facilities can produce many more Blu-ray Discs in the same time period as DVDs. Also, contrary to some rumors circulating, Blu-ray Discs do not require cartridges for any of the format variations (BD ROM, BD RE, and BD R).

Capacity

The Blu-ray Disc format offers the highest capacity of any consumer media format to date, also greatly surpassing the capacity of other format proposals. Blu-ray Disc's huge capacity allows not only for the highest quality High Definition video to be recorded at large bitrates (thereby eliminating the need for tight compression that could affect picture quality), it also opens the doors to new and existing applications. Think of extra sessions on a disc that could be unlocked when a user's Blu-ray Disc player connects to the Internet to validate authorization. Or what about bonus material and special features that will eventually also be recorded in High Definition quality? With Blu-ray Disc's large capacity, these extras can be included in high quality on the same disc, so there is no need for separate bonus discs to accompany the movie title. Only Blu-ray Disc will be able to offer these value-added options.

Robustness of Disc

As the result of recent breakthroughs in the development of hard coating for Blu-ray Disc, the discs offer much stronger resistance to scratches and fingerprints than other existing and proposed formats. Hard-coated Blu-ray Discs do not require a cartridge and can be used as a bare disc, similar to DVD and CD. This avoids extra production costs, and allows for small form factor applications, such as the implementation of Blu-ray Disc drives in a notebook computer. The hard-coating technology is used for BD ROM discs, giving them the same bare disc look and feel consumers know from DVD, and it can be applied to rewritable and recordable Blu-ray Discs as well.

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