1997

Innovations Affecting Us-DVD: The CD-ROM Phoenix

Norman Desmarais  
Providence College

Judy Luther  
Consultant

Albert Simmonds  
R.R. Bowker

Sandra K. Paul  
SKP Associates

Follow this and additional works at: http://docs.lib.purdue.edu/atg

Recommended Citation
Desmarais, Norman; Luther, Judy; Simmonds, Albert; and Paul, Sandra K. (1997) "Innovations Affecting Us-DVD: The CD-ROM Phoenix," Against the Grain: Vol. 9: Iss. 3, Article 32.
DOI: http://dx.doi.org/10.7771/2380-176X.2157
Innovations Affecting Us

DVD: The CD-ROM Phoenix

by Norman Desmarais (Acquisitions Librarian, Providence College, Providence, RI 02918; phone: 401-865-2241; fax: 401-865-2823) <normd@sequent1.providence.edu>

Column Editors: Norman Desmarais (Providence College, <Normd@Brownvm.brown.edu>)
Judy Luther <jluther@earthlink.net>

CD-ROM is dead. Long live CD-ROM!

When CD-ROM first appeared in 1985, librarians received it enthusiastically because of its voluminous storage capacity. It seemed that few applications would ever come close to filling the disc’s 650 megabyte capacity. Large, unwieldy databases suddenly became manageable and portable; and it seemed that CD-ROM would siphon off business from online information providers. However, it wasn’t long before preferences for graphics and text images, rather than ASCII text, caused databases to grow exponentially. Storing products with this type of data soon gobbled up all a CD’s storage space and required multiple discs.

Managing titles with multiple discs, resolving hardware setup problems and incompatibilities, and dealing with multiple formats and user interfaces conspired to make CD-ROM appear less than a user-friendly option in libraries. Many critics pronounced it a dead technology.

The emergence of the Internet seemed to offer a solution and the pendulum eventually swung back to the online environment. A common user interface (Web browser) facilitated searching. To keep their products up-to-date and to avoid losing their customer base, CD-ROM producers had to incorporate links to Internet sites.

Does the attraction of the Internet and the return to online sound the death knell of CD-ROM? Maybe, maybe not. The Internet is often slow and unreliable. Sites change or move without notice. Multimedia bogs down because of narrow bandwidth and slow data transfer times. Also, because of copyright restrictions and embargoes to protect print resources which constitute publishers’ main streams of revenue, many online products are not much more current than their CD-ROM counterparts.

The DVD Format

Meanwhile, a new format is ready to materialize that may give CD-ROM a new life. Whereas CD-ROM emerged from the audio recording industry, the new format has its roots in the video industry. This format is called DVD (for TV set-top devices) or DVD-ROM (for devices attached to personal computers). Initially, the acronym stood for Digital Video Disc; and some people still refer to it as such. When the rival Phillips/Sony and Toshiba/Time Warner camps agreed to set aside their differences to avoid a format war similar to the one between Beta and VHS in the videotape market and probably to avoid any confusion with the Video CD (also called Compact Videodisc) or videodisc formats, they changed the name to Digital Versatile Disc.

The DVD format promises to expand the CD-ROM’s 650 megabyte capacity to 4.7 gigabytes -- equivalent to more than 7 CD-ROMs. This would provide enough space for more than two hours of video. (A movie with CD-quality sound requires an enormous amount of storage space and broadcast bandwidth to keep the data streaming without interruption.) By storing data in two layers on a single side, producers can have the capacity for up to 8.5 gigabytes. Using two layers on both sides of the disc, they can reach data storage capacities of 17 gigabytes.

Not only will the DVD have the ability to package a large quantity of data, it will have the ability to deliver that data to the user much faster. Transfer rates of CD-ROM drives have continued to increase faster than the capabilities of the search and retrieval software. DVD players build on these advances and promise data transfer rates between 1.0 to 10 MB per second, with an average of 3MB per second.

DVD systems will also have faster processors with Intel’s new MMX instruction set built in. Intel has designed the MMX chips for insertion on the motherboard to handle multimedia functions. Putting the multimedia commands in hardware rather than in software accelerates the processing of video and audio data. This means that viewers will be able to enjoy high quality, full-screen, full motion video with CD quality audio in real time without any pauses. DVD, with a resolution of 720 pixels x 480 lines, will produce a sharper picture than possible from a laserdisc and one far better than the VHS’s 300 lines of resolution.

Not only does the DVD disc have better video capabilities, it also has better audio range. Audio CD samples sound at 44KHz. DVD can go as high as 48KHz. It also has six channels, instead of two. This permits true surround sound for movies and games or multi-language voice tracks. For text applications, these channels can also be used for subtitles, editor’s notes, cast bios, or other types of secondary information.

DVD players and DVD-ROM drives use the same digital video codes for the digital signal as the film and TV industries are working toward. This should make it much easier to trade bits among video, DVD-ROM, and World Wide Web pictures. DVD also uses the same compression scheme employed by Digital Satellite Systems. DVD players promise backward compatibility with existing media; so audio CDs, CD-ROMs, and other CD-format discs should play in the new players. Software producers will also support a universal disc format (UDF) that will guarantee backward compatibility. However, the drives won’t be able to read discs written on CD-Recordable or CD-Erasable drives, as they use different technologies.

DVD’s higher-quality digital video, graphics, and audio, along with better integration with Internet and cable, will allow developers to create products that are much more interesting than the book-and-disc combinations currently available. Multimedia titles will be able to incorporate more and better quality audio and video. In addition, that video will play on the full screen rather than inside tiny postage stamp windows.

Copy Protection

The technology to produce DVD players has been available for some time; but the delay in producing them resulted from the inability of the software developers, system manufacturers, and movie studios continued on page 79

<http://www.against-the-grain.com>
Chaos
from page 78

actions between users and rights adminis-
trators.

Providing the liaison between this ISO
group and the information industry is M.
Dominique Yon of the International
Confederation of Societies of Authors
and Composers (CISAC) in Paris.

DOI
Another important development is rep-
resented by the Digital Object Identifier
initiative of the Association of American
Publishers which was demonstrated at the
AAP’s Professional and Scholarly Pub-
lishers’ meeting in February. As noted by
the AAP, “The DOI System connects cus-
tomers, via the Internet or any future net-
w orks, with the current copyright holder
of a digital object. Its purpose is to facili-
tate digital commerce and scholarly re-

search by ensuring the uninterrupted avail-
ability of publishers’ digital objects over
time.”

The technology underlying the DOI
system is called the Handle System. It
was developed by the Corporation for
National Research Initiatives (CNRI),
an internationally recognized leader in
information technology research and devel-
opment located in Reston, Virginia. Since
its inception in 1986 as a non-profit orga-
nization, CNRI has been actively engaged
in the establishment of open, non-prop-
rietary technological approaches for net-
worked systems. The president of CNRI
is Dr. Robert E. Kahn, who spent thir-
teen years at the Advanced Research
Projects Agency (ARPA) before found-
ing CNRI. The DOI system development
team at CNRI is headed by Constance
McLindon.

A prototype of the system is currently
under development, and the status of this
prototype will be demonstrated at the
Frankfurt Book Fair this fall. Video-
tapes of the February demonstration are
available from the AAP’s Washington of-
ce (1718 Connecticut Ave., Suite 700,
Washington, D.C., 20009-1148: $15 US
in NTSC format and $20 US in SECAM
and PAL formats.) In addition, informa-
tion can be found at <http://www.doi.org>.

Innovations
from page 76

to agree on a copy protection solution.
The issue revolved around the movie
industry’s decision not to provide content
without such protection. The hardware and
software producers, on the other hand,
were not concerned with copy protec-
tion as with developing new markets and
expanding existing ones.

The Motion Picture Association of
America and the Consumer Electronics
Manufacturers Association proposed
copyright legislation, called the Digital
Video Recording Act in April, 1996. That
act intended to enforce compliance with a
specific method of copy protection. It
would have also made any importation,
manufacture, or distribution of devices that
do not comply with the stated method of
copy protection punishable by law. That
proposal met with much opposition and
had to be re-worked.

An ad hoc group of 90 representa-
tives from 60 companies and trade groups,
known as the Copy Protection Technical
Working Group, finally agreed on a pro-
posal for a worldwide system for protect-
ing material at a meeting in mid-Septem-
ber, 1996. Instead of endorsing a single
manufacturer’s method, the participants
made the protection scheme part of the
DVD specification. They agreed to have
different encoding formats for each of six
different geographical regions, similar to
the NTSC and PAL video formats. This
would make it difficult to copy or play
discs created in a region other than that of
origin. For example, discs made in the U.S.
will not play on drives produced in Eu-

The copy protection agreement requires
encrypted DVD movie discs from being
copied. Its only purpose is to prevent
people from watching or copying movies
on a PC and to force them to pay for extra
hardware which they don’t need in most
cases. It has no effect on other types of
data, other than encrypted and scrambled
audio and video. Software publishers and
owners or providers of textual and still
graphic information will need to find an-
other way to protect their products.

System Availability
Shortly after reaching agreement on the
copy protection issue, Toshiba and
Matsushita began selling DVD players
in Japan on November 1, 1996. Akai Elec-
tric Co., Ltd. quickly followed suit. Pio-
ioneer began selling DVD players in the
U.S. on March 1, 1997. Toshiba planned
to delay introducing DVD players in the
U.S. until the end of the first quarter of
1997, while California-based Diamond
Multimedia announced plans to market
Toshiba’s drive to end-users in a DVD
multimedia upgrade kit in early 1997. The
kit includes Diamond’s PCI-based adapters
which include decoders for MPEG-2
video and Dolby Digital Surround Sound
AC-3 audio and copy protection decryption
hardware. Creative Labs, Inc. also
developed a new line of DVD products for
the PC consumer, similar to Diamond’s,
which it will price beginning at $499.

Wired, Inc. introduced free DVD play-
back software for its MasonX PowerMac
MPEG board. The software allows the card
to play DVD movies from either compu-
ter DVD-ROM drives, from DVD files
stored on a hard disk, from a standard CD-
ROM drive, or from a computer network.
While the software is free, the card costs
$899.

While title producers will focus on
movies and multimedia, some companies,
like SilverPlatter, are poised to convert
some of their titles to the new format.
SilverPlatter demonstrated its first data-
base on DVD-ROM, The Union Cata-
logue of Belgian Research Libraries, at
the Online Information 96 conference
held in London last December. It plans to
follow it with MEDLINE Advanced by
mid-1997 and other databases later in the

year.

At present, DVD looks like an expen-
sive, nonrecordable alternative to the VCR.
While recordable and eraseable DVD drives
could arrive before the end of the year,
they still won’t have the re-recordable flex-
bility of a VCR.

Just as the audio CD was adapted for
text and graphics, DVD-ROM could find
a welcome audience in the library. It will
be particularly appropriate for multime-
dia-rich titles. Titles could also be written
with HTML code to permit downloading
updates straight from the Web. The large
storage capacity could solve the problems
of handling multi-disc titles or large col-
lections of images. Whether it will sup-
port a common user interface or be more
user friendly than current systems remains
to be seen.

It appears that DVD-ROM will eventu-
ally supplant CD-ROM; but the full tran-
sition will probably take a couple of years.
With prices priced around $800 for the
foreseeable future, adoption will be slow.
The issues related to networking the hard-
ware and the development of DVD-ROM
jukeboxes will also need to be addressed.
In any case, adoption will require libraries
to replace their hardware infrastructures.
Whether or not DVD-ROM will provide
enough incentive to do so or to break the
popular fascination with the Internet re-
 mains to be seen.

<http://www.against-the-grain.com>

June 1997 / Against the Grain 79