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## Guide to DVD Authoring - what is involved?



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DVD Authoring is a term often used for the entire DVD Production process, in fact it is a single step in that process. This short guide aims to make you aware of the different elements involved in DVD production. Afterwards, you will be better informed to make artistic and technical decisions in your project, ensuring your DVD is a classy delight.

### Design

In essence a DVD should convey its subject. This is achieved through quality design applied to each aspect of the DVD, including menus, on-body print and packaging.

When planning the DVD design it is important to bear in mind that television screens have a lower resolution than print or even computer monitors. Text which appears crisp and clean on a computer may flicker and be barely legible on a television. Therefore text needs to be big and bold, which means less of it will fit on any given screen.

### Encoding

The point of encoding is to compress video and audio so that it will fit onto a DVD. Essentially encoding works by removing redundant information from the video and audio signals. Video is encoded into MPEG-2, audio is generally encoded to Dolby Stereo, Dolby 5.1 Surround Sound or DTS.

It is important to know the total duration of all the video and audio elements as this will help to determine the level of compression applied and the size of DVD used. *For more information see our DVD Encoding guide.*

### Authoring and Pre-Mastering

The authoring process is where all the separate elements that make up the DVD are linked together and functionality is added. If the DVD includes features such as a play all function, these are brought to life in the authoring process. Pre-mastering is the preparation of DLT or DDP images for submission to a replication facility.

### Quality Control

Once ready to go, the DVD should be emulated on a computer to check that it is functioning correctly and that the quality of the video and audio is up to scratch. DVD check discs can be provided for testing and should be signed-off before copies are made. *For information about DVD handling, see our handling, care and cleaning fact sheet.*

### Fulfilment Phase

Depending on what your DVD is for, it will be either duplicated on DVD recordables or manufactured at a replication facility. A project that requires a small run of DVDs, such as a showreel, is usually duplicated. A project that requires a large run of DVDs would be pressed at a replication plant. *See the DVD formats page for more information.*

Finally the DVDs will be printed and packaged, ready for distribution. The type of packaging can range from a simple jewel case to a DVD Video box or a state-of-the-art DigiPack.

### Planning

When creating a schedule it is important that all these aspects of DVD production are taken into account.

Over the next few pages you will learn more to help you plan your project, such as why region codes aren't the only factor that will determine where your DVD can be played.

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## DVD formats



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### Pressed DVDs

A pressed DVD is the type of DVD that you would buy in a high-street shop. It is made at a replication plant from a process involving glass mastering and injection moulding.

**// There are four physical variations of pressed DVDs, each with a different data capacity:**

DVD-5 (4.7 GB) single sided/single layer. The pressed equivalent of a standard recordable DVD.

DVD-9 (8.54 GB) single sided/dual layer. The second layer allows nearly double the amount of data to be stored.

DVD-10 (9.4 GB) double sided/single layer. Double sided discs have to be turned over to play the second side.

DVD-18 (17.08 GB) double sided/dual layer. The largest capacity possible, twice the size of a DVD-9.

Once the DVD project is checked and signed off, we provide the replication plant with either a DVD-R master or Digital Linear Tapes (DLTs). A DVD-5 requires one DLT and a DVD-9 requires two DLTs, one for each layer. A glass master is then created and subsequent replications are pressed.

The main advantages to replicating DVDs are longevity, large capacities and few compatibility issues with players.

The disadvantages are the cost on small quantities - normally a 500 minimum run - and turnaround time.

For large runs - 500 or more - this is by far the most cost effective option. Turnaround times range from 7 to 10 days.

### DVD Recordables (DVD-R & DVD+R)

There are two main recordable formats of DVD: DVD-R (General Purpose) and DVD+R.

DVD-R was first available in 1997, DVD+R is a rival format that was released in mid 2002. There are many claims that one format is better than the other, but they are actually very similar. Both use light-sensitive dye technology and can be written using the appropriate DVD burner.

DVD-R/+R offer 4.7 GB of space, which amounts to about two hours of digital broadcast quality material. Also available since 2006 are Dual Layer recordable DVD-R/+R discs, the recordable equivalent of a DVD-9.

**The main advantages of DVD-R/+R are turnaround speed and cost, when a small quantity is required.**

The disadvantage of DVD-R/+R is that compatibility issues may arise on older DVD players. The basic problem is that recordable DVDs have a different reflectivity than pressed DVDs and not all players have been correctly designed to read them. However burners, media and dye types have got better over time, and compatibility problems have decreased. Dual Layer recordable DVD-R/+R discs suffer more compatibility errors than single layer (4.7GB) DVD-R/+R discs, even with modern players. *See our DVD Duplication guide for more information.*

While compatibility differences between DVD-R & DVD+R are insignificant, there are much bigger differences between brands. Three brands are regarded as having near perfect compatibility; Verbatim, Maxell and Taiyo Yuden.

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## where will my DVD be playable?



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There are two factors which affect the playback of a DVD: Region Coding and Television standards.

### Regional Coding

To ensure that entertainment companies have control over the international distribution and timing of their DVD releases, the DVD specification divides the world into eight regions.

- 1: U.S., Canada, U.S. Territories
- 2: Japan, Europe, South Africa, and Middle East (including Egypt)
- 3: Southeast Asia and East Asia (including Hong Kong)
- 4: Australia, New Zealand, Pacific Islands, Central America, Mexico, South America, and the Caribbean
- 5: Eastern Europe (Former Soviet Union), Indian subcontinent, Africa, North Korea, and Mongolia
- 6: China
- 7: Reserved
- 8: Special international venues (airplanes, cruise ships, etc.)

For a regionally-coded DVD disc to play, the regions of the title and DVD player must match. Region coding is only possible on pressed DVDs and not on DVD recordables. This means that all DVD recordables are "All Region" DVDs.

### Television Standards

Regional coding should not be confused with international television standards.

**The two main formats used for worldwide television signals are PAL and NTSC.**

PAL is used in Europe and Australia; NTSC is used in the USA and Japan.

PAL and NTSC have different frame sizes and frame rates.

There are also subtle differences in picture quality between the two.

It makes no difference whether a DVD is PAL or NTSC when played back on a computer because the computer does not look for a television signal.

The ideal solution is to have a PAL version made for Europe, and an NTSC version made for the USA and Japan.

**It is not possible to directly convert a PAL DVD to an NTSC DVD, or vice versa.**

The format of a DVD depends upon the format of the source video.

If you have a PAL DVD and also want an NTSC DVD, the whole process will need to be started again from scratch.

The PAL video will have to be standards converted to NTSC, all the graphics re-sized because of the difference in frame sizes, menus rebuilt, the NTSC footage encoded, the disc authored and tested anew.

**An international DVD could be made solely in NTSC format.** Nearly all DVD players in the UK are dual standard (play both PAL and NTSC) whereas in the USA and Japan the majority only play NTSC. Most televisions in the UK can interpret both PAL and NTSC signals, which is not the case in the USA or Japan. It should be noted, however, that televisions need to be colour adjusted for the NTSC signal to get an accurate colour balance. Though one could argue that most TVs in people's homes need to be colour adjusted to get an accurate colour balance - PAL or NTSC!

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## planning your DVD project



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**// Why DVD?** DVD offers high quality audio and video, plus features such as interactivity, multiple video and audio tracks, and subtitles.

**// What is your DVD for?** DVD lends itself to many project types, including feature films, music video compilations, educational tools, exhibitions, presentations, and showreels.

**// What special features do I want to include?** For example, a slideshow, stills gallery, a simple game, Web links or ROM content. If you desire features such as multiple angles, it is wise to plan for them before shooting.

**// Do I want subtitles or multiple audio tracks?** If you are including subtitles you will most likely need the services of a subtitling bureau, whereas a 5.1 mix usually requires the services of an audio post-production company. Both of these services can often be handled through a DVD authoring house.

**// What are your deadlines and how much content is going on the DVD?** Allow adequate time for duplication or replication, and be aware that the amount of content and functionality will impact the time to create the master DVD.

**// Do I have a strong idea for the design of the DVD?** Design and functionality are the most rewarding aspects of a DVD and are especially important if you are trying to convey a particular image and style. Think about each element of the DVD, including menus, on-body disc print and packaging.

**// What can I provide in the way of artwork?** Are there specific fonts, logos, or images you want incorporated into the design? Any reference material you can provide will be useful for the designers.

**// How many copies do I require?** This is a factor in determining whether your project is duplicated on DVD recordables or glass mastered and pressed at a replication plant. Usually DVD recordables are the preferred option for small quantities; large runs are generally pressed at a replication plant.

**// In which countries do you want your DVD to play?** Two factors affect where a DVD can be viewed: regional coding and television standards (PAL or NTSC). For your DVD to play, both the region code and television standard of the DVD must match those of the country it is viewed in.

**// What about copy protection?** Copy protection is an effective “speed bump” to prevent users ripping the content, there are options for both pressed DVDs and DVD recordables. Region coding can only be applied to pressed DVDs.

**// When is my DVD finished?** Before signing off, the authoring house will check the DVD for errors and quality. They can also provide you with a DVD check disc. Often a 3rd party testing facility is employed - not only will they pick up errors, but they will also be able to highlight specific player issues.

**// I've signed off on the DVD, what's next?** Finally the DVDs will be printed and packaged, ready for distribution. The type of packaging can range from a DVD Video box to a state-of-the-art DigiPack.

For a free DVD consultation with Will, Terry or Sophie call 020 7439 3266