European Cinema JOURNAL
MEDIA SALLES

DIGITRAINING PLUS 2006: DIGITAL CINEMA FOR EXHIBITORS

Systems for the digital transmission of various types of content, the new frontiers in sound, digital cinema marketing: these are the main contents of a Newsletter that means to be a useful tool from several points of view.

For the exhibitors meeting at the moment at the Barco headquarters in Kuurne to take part in the third "DigiTraining Plus: New Technologies for European Cinemas" course, it is intended to be an important means of integrating the many topics covered during the course. For our readers it acts as a brief trip inside some of the themes which, due to the technical language they require, are generally more difficult to understand or, due to the excessive evasiveness that often accompanies them, can create some confusion for those who wish to approach the world of digital screening.

For this reason we have asked three experts to explain them in the pages of the Newsletter, a task they have carried out competently and clearly. Competence and clarity are two qualities that have always been demonstrated by the lecturers at "DigiTraining Plus", a course I am proud to say is now commencing in its third edition. As many of you already know, ours is the only one of the 60 or so training initiatives co-financed by the MEDIA Programme to deal with digital screening purely from the exhibitor's point of view.

MEDIA Salles has devoted much time, energy and attention to making exhibitors aware of new technologies in Europe through its initiatives, and in particular these training courses. The feedback from exhibitors encourages us to continue to work to provide this important resource.

Mike Vickers
Treasurer of MEDIA Salles

Mike Vickers, Treasurer of MEDIA Salles.

DIGITAL CINEMA AUDIO: FOR A BETTER EXPERIENCE

We can say that the audio in D-Cinema is the one part of the technology that is peculiar since we have had digital audio in cinemas for over 10 years. Digital Cinema audio does, however, give us an important opportunity to have better quality audio and a more immersive experience for the audience.

One of the most interesting aspects of audio for digital cinema, is that DCI specify the Digital Cinema Package (DCP) should be able to carry 16 channels of uncompressed audio.

First of all: why 16 channels? Most studios and most cinemas have 5.1 channels of audio – are you suddenly expected to install 10 more surround channels in your cinema to be compatible with digital cinema? Of course, the answer is no, but how do we make sure that all cinemas can play back a 16-channel soundtrack when they only have 5.1?

The answer is in metadata, which is information about the audio, which is carried alongside it. Metadata allows us to describe various aspects of the audio, including how to combine channels from a large number (16 in this case) to be played back through a smaller number (say 5.1). This process is called 'down-mixing', and in this way you are saved if a movie arrives with 16 channels, but you only have 6!

What if you do want to upgrade to 16 channels of surround? How do you make sure that the soundtrack plays back correctly, and that all the people in the movie start speaking via the nice new subwoofer you have installed at the back of the auditorium? The answer again lies in metadata, which allows us to send a flag with each channel to describe which speaker it should come from. This is very useful, because the SMPTE specification for digital cinema audio actually allows for 20.2 channels (as if 16 weren't enough!) so the mixer may assign a sound to a speaker channel directly overhead, and if you have installed a surround channel there, that's where it should come from. There is another link that completes this

chain, the cinema audio processor. The audio processor must be capable of not only receiving the uncompressed digital audio from the digital cinema playback system, but also decoding the metadata appropriately and assigning channels to the speakers you have installed. It also should be able to down-mix channels when you don't have them, so that the audience still get to hear all the audio, even if it is via a less complex soundstage.

Alternative content is another hot topic, as this is potentially another stream of revenue that will make D-Cinema attractive to exhibitors. But the audio is potentially another headache, because it is not a cinema standard, it could be any one of a number of broadcast standards. So when thinking about the cinema audio processor, you should also consider whether you want to play back from other sources such as sports from a satellite receiver with 5.1 audio, or HD web-cast music concerts with streamed audio from a PC or MAC… Can your cinema audio processor accept all this? It's an important consideration if you are transitioning to a digital cinema system.

So what does digital cinema mean for the future of audio in the cinema? Almost certainly, given the creative possibilities, we will see the extra audio channels available being used, and so the number of speaker channels considered 'normal' in a cinema will increase. Probably, in the short term, this will be a minimal change, maybe from 5.1 or 6.1 (Dolby Surround Ex) to 7.1 with 4 surround channels instead of 2 or 3. Maybe the 'voice of god' speaker above the audience will come back into fashion, who knows?

What is certain however, is that what people are going to get is a better experience. Not just because it is released in a better quality format, or new loudspeakers have appeared all around them, but in the end because what they will get is a more immersive and entertaining experience than they can anywhere else. This is what has always made cinema special.

Richard Welsh
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DIGITAL PROJECTIONS OF EUROPEAN MOVIES ON THE BIG SCREEN
At the Cityscoop cinema in Roeselare, for participants at DGT 2006
Among the film extracts:

Title	Director	Source	Genre
Malabar Princesse	G. Legrand	35mm	fiction
Joyeux Noël	C. Carion	35mm	fiction
Salvador Allende	P. Guzmán	35mm /S16mm DVcam /archives	documentary
Congo River	T. Michel	HD/archives	documentary
Oliver Twist	R. Polanski	35 mm	fiction
Reine Formsache	R. Huettner	35 mm	fiction

DISTRIBUTION IN THE DIGITAL MODEL: THE DELIVERY AND TRANSMISSION OF CONTENT

Distribution, too, is experiencing transformation in the changeover to digital. Leaving aside here the impact, economic and otherwise, that the digital shift will have on distribution and on relations between this and the other players in the cinematographic chain, it is important to give some idea of the distribution methods that will arise, with a clear explanation of some technical and operational concepts and the introduction of some distinctions that are essential for understanding the new technological and operational scenario.

An initial distinction that should be kept in mind is that between distribution and delivery of content. Distribution is the whole combination of activities and relations of an economic nature that allow content to move from its origins (production) to its final destination (cinemas). Not by chance the so-called distributor is positioned somewhere between the producer and the exhibitor, also dealing with the marketing and promotion of the content in its various time-space windows.

Delivery, instead, is the combination of the technical and logistic functions needed to guarantee the physical transfer of the content from one point to another. In the traditional model it is identified with the work of making prints, duplicating and transporting the reels to the theatres.

This distinction is important to avoid confusion as to the roles of the various players in the shift to digital cinema. Those who manage the rights to the content (the distributor) and those who deal with delivery (the carrier) are and remain distinct, avoiding dangerous "interference" by typically technical players, e.g. telecommunications operators, in a model of consolidated relationships. Those who deal with the delivery of content in a future digital model must not interfere in the economic relations that exist today between distributors and exhibitors, but provide a combination of technical and technological services that should be of economic value in making it possible to have a positive effect on the cost dynamics of the distribution model.

Nevertheless, the radical technological evolution linked to digital cinema does not leave this phase of the process unaffected by its consequences. Thus, alongside the traditional delivery of content, there is also the introduction of the possibility to "transmit" the content itself or send it from a remote site to one or more destinations (theatres), treated in such a way as to guarantee the best quality and its security, as well as correctly addressed for its reception according to agreements established between those who distribute the content and those who purchase the screening rights, agreements which the carrier of the content ignores, acting as a "virtual forwarding agent" of what is to be sent.

Transmission, in turn, may take place simultaneously with the screening of the content (live model) or later (store and forward).

To analyse the different options for delivery and transmission reference must be made to the triad: content, quality and usage. The next few paragraphs will outline the combinations of the three variables mentioned, explaining what modes of transmission are suited to different types of content and distinguishing clearly between the "principal" application in the movie theatre, i.e. the screening of films, and the new forms of exploitation open to theatres by digital technology, such as concerts, sports events, educational events, conferences, advertising.

Brief mention will be made of the provisions for the delivery/transmission of films (and not of other content) in the specifications published in 2005 by the DCI (Digital Cinema Initiatives). It should immediately be said that very little was specified on this occasion, the only "restriction" being total respect, during the delivery/transmission phase, for the demands of quality and security established in order to guarantee the whole life cycle of the cinematographic product.

The digital film and Store & Forward delivery

As previously mentioned, as well as remaining the principal means for exploiting screens, the film is the only one for which precise specifications exist, published by the DCI.

The recommendations contained in the DCI specifications apply both for the delivery and for the transmission of films, whatever means is used.

A single criterion appears to be binding: the transmission of a film terminates always and in any case with the cinema's server, through an interface with TCP/IP protocol, i.e. a protocol of interconnection based on data packages.

This makes it impossible for the content to arrive directly to the projector and thus for a movie to be screened "live". In other words, even when the film arrives from a distance, its screening is managed locally, just as happens today for 35mm film, by programming the screening from the server each time this is provided for by the distribution agreements.

This is why the transmission of a film to the movie theatres by cable or satellite networks is not the same thing as (and must not be confused with) a television broadcast or with the so-called *streaming* typical of the world of the Internet. Not only is the requisite for "contemporary" transmission and exploitation of the content missing, but there is also a clear and insurmountable distinction between "television" quality and "cinematographic" quality, the latter to be derived from the specifications set down by the DCI.

The Store & Forward method is the most versatile one – it can in fact support any type of format – and is also, as has been mentioned, the only one that can be used to date for D-Cinema. Nonetheless, any other type of content (minor or independent productions, short films, documentaries), with the obvious exception of live events, can make use of this method.

In the case of films produced and distributed according to DCI specifications, the source of Store & Forward delivery and transmission is the so-called DCP (Digital Cinema Package), which contains:

- One video and several audio tracks, corresponding to the different languages in which the film is produced.
- Synchronisation of audio and video.
- A different selection of scenes according to the different markets it is destined for, since not all countries see exactly the same scenes.

The DCP must be carried out so as to accept one of the two formats provided for by the DCI specifications, respectively 4K (4096x2160 resolution) and 2K (2048x1080). Once created, the DCP files are then protected by encrypting algorithms (AES 128, as stipulated by DCI).

Whatever the format (DCP in the case of first-run movies produced and distributed in the two DCI formats but also DigiBeta, dvd or others, for "non-DCI" contents), at this stage it is possible to proceed with sending the content by physical delivery – or transmission by cable, optic fibre or satellite.

Let us look briefly at the functional characteristics of the various types of transmission/delivery.

Physical delivery

This type of delivery may of course regard different formats, from dvd and DigiBeta – used for advertising, documentaries and short films – to hard disks and LTO cassettes, necessary for films and other high-definition content. Basically identical to the traditional form of delivery for 35mm, it shares the same limits, first and foremost those of an economic nature: costs do in fact increase, with the number of copies to be distributed (although the costs for a "digital copy" are distinctly lower than for a 35mm print).

"Low definition" cable transmission (Internet networks)

This is the "first type of transmission", or of electronic delivery. The system used for it is DSL (Digital Subscriber Loop), giving rise to the better-known ADSL and XDSL. The transmission capacity is good (up to 640 Kilobytes a second in the currently existing configuration) and the costs very low, but it cannot be used for high definition content which involves heavier deliveries.

There is thus no possibility of this means being used to transmit to cinemas first-run films, produced and distributed according to DCI standards.

Instead, it is extremely useful for transmitting advertising to theatres and as a "return channel" for receiving information on the system's operation or any other type of feedback. Like physical transport, one limit is that it maintains a linear increase in costs: i.e. the costs increase with the number of screens served. This is because, like any kind of delivery or transmission, with the exception of satellite, it is of a "one to one" nature, i.e. each delivery goes to one screen only.

"High definition" cable transmission (optic fibre networks)

The use of broadband technologies increases the speed and quantity of information that can be transmitted in a single session. Transmission capacity can reach 2.5 Gigabytes a second, considering the commercial applications now in existence. It is also possible to send non-compressed files, whilst still retaining high quality. This makes optic fibre an excellent vehicle for any type of content. There are still some negative aspects, however: firstly the cost of laying the line, since the telephone cable can no longer be used. The fact that each cinema requires a specially constructed line also limits considerably the coverage of this service (which, instead, in the previous case, could reach any place provided with an ADSL line, at least potentially). Lastly, it is again a "one to one" service so that the transmission costs grow with the number of screens that request delivery of a certain content.

Satellite transmission

Utilizable for any type of content, with potentially unlimited coverage, already experimented in various fields of communications and, finally, capable of guaranteeing a "one to many" set-up: satellite quite rightly seems the means par excellence for delivering digital content. The fact that the transmission costs do not increase with the number of screens served and the possibility of transmitting even high-definition content live are aspects that weigh heavily in favour of this type of transmission, particularly once the so-called "critical mass" has been reached in terms of screens installed and circulation of digital content - two dimensions that have a close reciprocal influence on one another.

Live transmission

As mentioned, this mode is excluded in the case of film content produced and distributed according to DCI formats and is, in any case, poorly suited to any type of content that does not require simultaneous screening in order to have commercial value for the audience.

This is why, in the case of live transmission, the concept of the "event" is generally referred to. An event, as such, has characteristics that make live coverage necessary; we are talking about sports or music events but also conferences and distance training carried out in cinemas on behalf of companies, schools and universities.

The live event arises from the combination of film technology, television direction and satellite communication. The television signal is sent to a mobile device known as SNG (Satellite News Gathering), fitted with a transmitter dish able to send the signal, and the event in question, to all the theatres connected.

Both the signal and the receivers to be installed in theatres have costs and features that compare perfectly to those of satellite television, even though the availability of a cinema screen makes it possible for better quality to be appreciated in the case of transmissions carried out at higher speed. It is, however, important to point out that the marginal cost of the equipment for satellite reception and decoding is slight when compared to the overall investment needed for a digital theatre, and also opens up new and important forms of exploitation of the cinema to the Exhibitor's advantage.
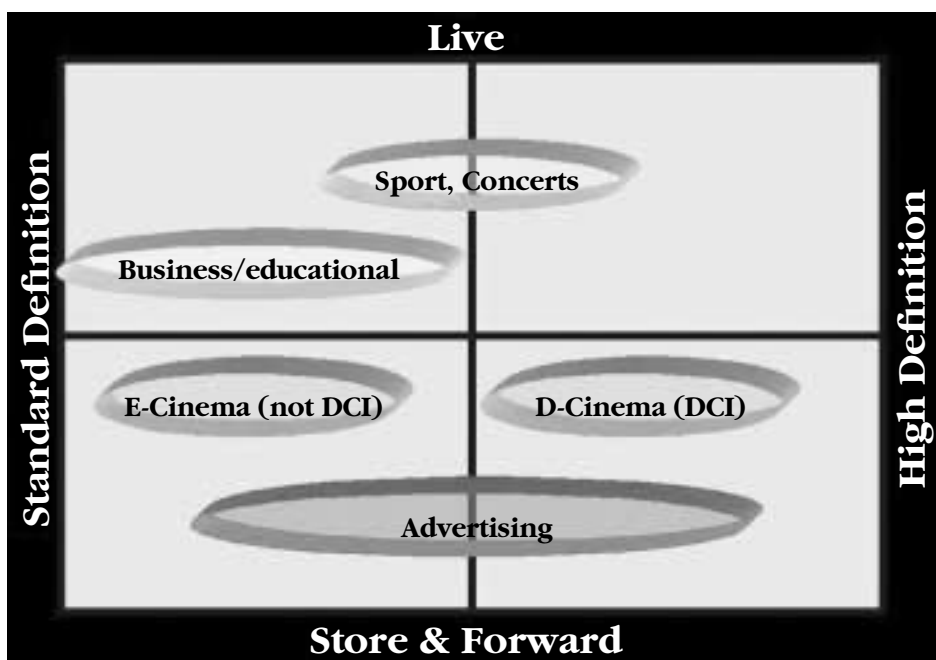
Transmission and delivery: the use template

In the light of what has been previously explained, we can now visualise the overall combinations of techniques for delivery/transmission and the various types of content and their relative uses. The whole combination is shown here (see the diagram).

It is interesting to stress that advertising, since it is generally produced in television format and consists of short "breaks", lends itself to transmission by streaming (direct), thus opening up interesting opportunities for "last-minute" advertising, able to make the cinema more competitive on the scenario of existing advertising channels.

Conclusions

This article has attempted to describe the new technical and operational opportunities that Digital Cinema makes available for the Distribution of films, advertising and so-called alternative content, distinguishing between "distribution" and "delivery/transmission" of content, illustrating the various different modes.

All the situations previously described are perfectly mature now from a technological point of view and the choice between the different systems is a question of different rationales.

If satellite transmission does not yet seem to be ready for digital cinema (though perfectly adaptable for use with alternative content, e.g. concerts and conferences), if cable and optic fibre seem to partly lack versatility and if physical delivery is still prevalent in the initial development phases of digital cinema, the best solution, seen in perspective, seems to be an integration of the various systems. A good model might be as follows: production and post-production studios can be connected using optic fibre and, again thanks to this, can access central transmission points. The latter, in turn, can transmit content to the various cinemas using a wide range of systems: physical or satellite delivery (the latter to an increasing extent in the future) for high-definition content, and cable transmission for low definition.

In the transition phase, then, it is especially necessary to renounce any "ideological choice" and to get the best out of all the tools available, whether they are a little out of date or, on the contrary, still too new to be completely reliable. To look for the best and not to preclude the possibility of trying out new paths.

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MEDIA SALES AT THE BERLINALE 2006

As every year, MEDIA Salles has returned to its historical appointment in Berlin, confirming its presence within one of the most important showcases for European cinema. On 13 February, the traditional "Italian Breakfast" at the CineStar Imax in the Sony Center was the occasion to present the "European Cinema Yearbook – 2005 Final Edition" (in the photo dr Wolff during the presentation). For the first time, at the Berlinale, MEDIA Salles brought forward the publication of the main figures on cinema-going for the year just concluded, providing data on the situation in 15 countries of Western Europe and 10 territories of Central-Eastern Europe and the Mediterranean in 2005.

There was a punctual updating also for the digital section, that photographs the situation of cinemas and digital screens (DLP Cinema™) throughout the world as of 31 December 2005.

Here below, a synthesized table represents the dynamics of changes that have involved, on a worldwide scale, the number of cinemas and digital screens during the second semester of 2005.

DLP Cinema™ screens worldwide as at 31 December 2005

	Total number of cinemas			Total number of screens		
	06/2005	**12/2005**	**Var. %**	**06/2005**	**12/2005**	**Var. %**
Asia	126	161	27.8%	167	204	22.2%
Europe	82	139	69.5%	104	194	86.5%
Latin America	12	16	33.3%	12	17	41.7%
North America	81	133	64.2%	104	173	66.3%
Oceania	2	3	50.0%	2	3	50.0%
Total	**303**	**452**	**49.2%**	**389**	**591**	**51.9%**

THE CHALLENGE OF PROMOTING THE DIGITAL OFFER IN MOVIE THEATRES

Over the past few years the competitive potential both of movie theatres as a place of entertainment and relaxation and the prerogative of viewing a film at the cinema rather than at home have been challenged by the rapid spread of consumer electronics, which have developed a large number of new digital products. The spread of dvd players, I-Pods, mobile phones with digital cameras, digital video cameras, LCD and plasma screens, together with the increase in home access to decoders and satellite connections have all contributed to a weakening of the technological supremacy which, up until a few years ago, allowed cinemas a competitive edge compared to the home entertainment market, relying on the core attributes of its offer.

Today movie theatres are faced with the necessity of responding to the digital challenge to regain their leading position on the entertainment market. In this respect, fitting cinemas with digital projection systems can bring new life to their still unchallenged advantages both in terms of screen size and power of the sound system, and in terms of the total immersion in the atmosphere of leisure and relaxation that this creates for spectators.

Nevertheless, digital screening systems alone are not sufficient to determine a competitive edge for the movie theatre: to achieve this, those who start out to make the changeover to digital in their cinemas need to support it by a focused promotional policy. The core of this policy should consist in the **"promise of quality"** offered to the spectator. A full-spectrum of quality that regards not only the technological aspect connected to the type of vision and sound experienced thanks to the digital projector, but also involves the whole range of services that the digital cinema offers to audiences. First of all it would be useful, where digital technology is adopted, to inform audiences that the technology is being used in that theatre and of its impact on the quality of the movie's images and sound. It would also be useful, for example, to put the digital projector on view to spectators, allowing them to see it personally and ask the projectionist questions about its special features. An effective method, that has already been successfully used in some cases, is to precede the digital screening by showing a short film illustrating its potential.

A necessary support, and in this case a particularly suitable one, is also offered by a website, on which a gallery of photographs about the digital projector can be placed, accompanied by information on the qualitative advantages offered for screening movies.

Moreover, a theatre that decides to equip itself with digital technology creates considerable expectations in its audiences as to the technology offered, expectations that must be met to avoid the risk of causing the spectators' dissatisfaction. It is thus necessary for other aspects to work properly, such as, for example, the possibility of booking and/or buying tickets online; the presence of computerised displays showing the seats occupied in the theatres; the presence of a website offering services, and not just a showcase, giving audiences detailed information on the theatre's programming and the technical details of individual films, accompanied by interviews, photos, reviews.

It should, in fact, be remembered that audiences that may be interested in digital technology at the cinema are not normally mass audiences but rather the more demanding, more sophisticated, better informed spectators, more likely to use technology, and curious to see and be informed about technological innovations, who wish to broaden their experience of viewing by searching for information on the Internet.

It is also necessary to learn how to exploit the experience of leisure and extended entertainment made possible by digital technology. It does, in fact, allow for the potential segmentation of audiences to be improved, accompanying the screening with the offer of other shows, such as documentaries and short films for niche audiences interested in a less popular and sophisticated type of programming; or concerts, interviews, live coverage of sports events with interactive opportunities for a mass audience; or advance viewings of TV serials for specific segments of the general public.

This alternative programming potential stresses the role of the cinema as an "event" that brings people together, puts on shows and provides total immersion in a unique and memorable entertainment experience. The theatre should, however, be able to take up this opportunity, making the most of its spaces from a promotional point of view, showing its experiential, relaxing and socialising aspect in the best possible light. In other words, the theatre must attract and involve the spectator from the moment he enters the structure until the moment he leaves it, through the integrated use of promotional tools such as:

- the **presence of attractive exhibitions** in full view, which link the characters of the film (for example cardboard cut-outs of the film's heroes) to the digital technology (for example the presence of displays with images of well-known figures in cinema shown alongside digital projectors or inside digital theatres as quality cinema-goers);
- the offer of on-the-spot **promotional material and information** regarding both the theatre's programming and its technological equipment (folders, leaflets, brochures, postcards) and, perhaps, the **offer of promotional corners with merchandising material** (badges, stickers, books, studies) showing and explaining technological innovations;
- the **presence of a theatre newsletter** to be distributed on the premises and mailed to spectators who are interested and ask to receive it by leaving their personal data;
- the offer of **a policy on discounts and reductions** during the week for specific segments of the general public and days to be linked to an integrated offer of different types of movies and perhaps other alternative shows. In connection with this, it may prove best not to increase ticket prices for digital movies, but to raise prices for pre-screenings or exclusive live shows where the cost of a ticket for the live event would be very high.
- the **availability of questionnaires**, to be distributed in open spaces or in the theatres at the end of the programme, designed to find out the audience's opinion, to keep them in the theatre longer and involve them in a relationship with it, leading them to prefer it to others and creating customer loyalty towards its services. Using digital technology the questionnaires could even be projected onto the big screen, making it possible to fill them in from the theatre seats by means of remote control devices allowing immediate interaction with the audience. One example is the **customer satisfaction questionnaire** regarding the theatre's services, the type of programming, the quality of the cinema-going experience and the show viewed, giving spectators the opportunity to express their opinions and suggestions for improving the theatre offer;
- **films edited to include interviews with people working in the cinema industry** (directors, scriptwriters, editing professionals, actors) and experts (critics, journalists, technicians) who explain and give examples of the superior features of digital technology and the advantages to the spectator. These films serve as endorsement tools, where technological innovation is legitimised by opinion leaders who enjoy high credibility in the eyes of the general public. They should be included in the theatre's programming before the beginning of the film and should anticipate the screening of trailers for coming films, in order to entertain the audience and further enhance their cinema-going experience.

These proposals represent only a few examples of opportunities for making the most of digital technology open to cinemas which, if they wish to take up the challenge of digital, should do so being aware of the basic role that promotion and communication inside the theatre play in the frame of a total quality promise to spectators, in offering them a unique cinema-going experience that is truly competitive.

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SEE YOU IN CANNES

MEDIA Salles looks forward to seeing you at Cannes Film Festival, 17-28 May 2006.