

# DIGITAL FILM ECONOMICS – PART 1

## CREATING A VIBRANT AND SUSTAINABLE EUROPEAN FILM SECTOR

### Executive summary

#### How going digital could help European film

Traditionally, those European films which are made take an average of 3 years to go from original idea to finished film and may then take a further 2 years to find international distributors, if they find any at all. These factors contribute to the high risk and unsustainable nature of the European film sector.

This paper suggests that combining digital film economics with Europe's cultural diversity could lower the risks and lead to a vibrant and sustainable sector. However, Europe is already far behind digital cinema developments elsewhere in the world, including India and Brazil. A belief that films will continue to be distributed on 35mm prints for the foreseeable future has helped to sustain the inertia.

A recent framework agreement involving certain US majors to install digital projectors in cinemas in return for a 'virtual print' supplement per digital film shown should provide a channel for at least the US majors to distribute their films digitally in Europe. Meanwhile, European films continue to be made in 35mm film which will either need to be converted to the US digital specification or distributed on 35mm prints (both expensive options for distributors). This is likely to reduce the market share of European films still further, possibly to the extent that their only cinema showings are at film festivals.

**“As technology gives filmmakers more freedom, you'll see them producing work that is more unique, less beholden to the mainstream film template. That means rethinking the economics.”**

**Steven Soderbergh, US film director**

*Wired magazine, 13 December 2005*

This discussion paper draws on my experience of helping my wife produce what is likely to be one of the first 'digital end-to-end' feature films (ie, having an exclusively digital production, post-production and distribution, including in digital cinemas). It concentrates on the production phase and touches only briefly on digital distribution and promotion of digital film. These subjects, which both deserve further reflection, are deferred until mid-2008 for a possible second discussion paper *Digital film economics – Part Two*.

My thanks to those participants of the Copenhagen Think Tank and colleagues who have helped to refine this paper.

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**About the author:** In the early 1990s, Obhi Chatterjee had set up a theatrical film distribution company in the UK, focusing on releasing international films selected for festivals. More recently, he wrote and directed the digital short film *Adapting* in April 2006 and his digital feature debut *Tagore's Shyama* is due to be released globally from May 2008. Since June 2005, he has been part of the team at the European Commission's Directorate-General for Competition assessing film support schemes for EU State aid approval. **Disclaimer:** Responsibility for the information and opinions in this paper lies entirely with the author. The views expressed may not be regarded as stating an official position of the European Commission under any circumstances.

## The problem

### European film production is commercially unsustainable

There are perhaps six economic factors which make life hard and commercially unsustainable for traditional film producers:

- 1) the long lead time between project conception and related revenue
- 2) the high risk that the revenues from a film may be lower than the costs and that, if the film production runs out of money, an incomplete film offers little security to other potential investors
- 3) the relatively high cost of each film project, compared to the finance available for this level of risk
- 4) since data concerning production budgets and total revenues achieved by films are kept confidential by film producers, no serious investor or lender is interested in making what is intuitively a high risk investment
- 5) the time consuming (not to mention depressing) challenge of persuading distributors to take on a film, territory by territory, which also means that the release in one territory does not usually support the release in another.
- 6) the relatively low return to film producers from conventional distributors (low percentage, distributor's and exhibitor's costs deducted earlier, and last in chain to receive cash so rarely likely to receive anything beyond the distributor's advance on assignment of rights).

## Could going digital be the solution?

### Digital film economics

Rational investors are interested in optimising the return on their investment. So, assuming that the financial sustainability of a film producer is achieved by optimising the return on investment, how does digital technology affect the six factors?

#### *1) Lead time*

With the right equipment and software, the director might do his/her own post-production at times which are convenient to him/her, rather than having to wait for post-production facilities to become available. The producer and director therefore have more control over the time taken to make a film. Digital film production is also less time consuming (if well-planned) than traditional film production: multiple angles can be filmed simultaneously and the results can be viewed instantly, allowing producers to avoid the extra time and costs of reassembling sets, cast and crew to do retakes.

The digital producer should expect to be the global distributor of the film, relying on the internet as a low cost way of raising awareness of the film among its target audience. The producer then obtains perhaps 70%-80% of all sales revenue from the first sale (which would probably be either DVD or video on demand), reducing the lead time between completing production and global release. The global release could be days after completion if the producer's online marketing campaign started during production or even pre-production.

This also means that the producer must identify the target audience in the pre-production phase. The producer could make additional arrangements with territorial distributors for more tailored marketing. However, territorial distribu-

tors should not be expected to be interested in taking on the film until it has already attracted some public attention, such as in film festivals, online reviews, video downloads, DVD sales, etc.

**“In the late 90s, [director Michael Winterbottom and producer Andrew Eaton] were among the first high-profile British film-makers to embrace the possibilities of digital film-making, installing editing suites in their production office and creating a virtually self-sufficient in-house operation. At the same time, they concentrated on paring down the number of people they needed to bring with them to shoot the film. And the effect on Winterbottom's film-making was liberating. ... He's now on to his 10th film this decade: ... last year he made *Road to Guantánamo*; the year before *A Cock and Bull Story*. This year's effort, *A Mighty Heart*, is about to come out the UK; and he's already halfway through his next ...”**

*The Guardian*, 14 September 2007

As the digital film producer is able to control the global release date, he/she can set the lead time between starting pre-production and first revenues from the film. With a high proportion of these revenues going directly to the producer, the producer can estimate the time taken to achieve the break even level of sales, based on the potential audience for the film, selling price on different platforms and

The commercially vibrant example of filmmaking in Nigeria<sup>1</sup> illustrates the extent to which short lead times contribute to financial sustainability, greater technical expertise of the crew and a higher level of production.

## 2) Cost

With an exclusively digital production, post-production and distribution, including theatrical, the fixed costs are lower. Technological advances mean that high technical quality can be achieved with fewer crew and significantly less expensive equipment. For example, the basic 4k digital Red camera package ([www.red.com](http://www.red.com)) already being used on

some Hollywood films costs €14,000 to buy. This is equivalent to a little over 2 weeks' rental of a 'standard' Arricam package, which would cost several times this amount to buy. The images would be stored directly either on a hard drive or on solid state storage media. Such media are becoming cheaper while their capacity is increasing fast. This eliminates the expenditure on film stock, developing, processing, cutting, rushes, etc, all of whose costs are increasing.

The fees payable to the cast, director, etc, are probably unchanged, although digital film economics probably means that a film with a less well-known but nonetheless able (and hence less expensive) cast, director, etc is more likely to reach a paying audience than before. In addition, the time taken for principal photography is usually shorter: the smaller, digital cameras can be moved quickly and shots can be covered from several angles at once. Any errors in a take can be spotted immediately without having to wait for rushes to be developed so that all the necessary takes can be shot while the actors are made-up and in costume and the cameras are in position.

So, overall, the basic production costs of a digital film will be lower than for an equivalent 35mm production. Producers could in future either apply more of their production budget to better quality set decor, cast, etc, or take advantage of the saving. As a result, the precise cost comparison between digital and 35mm production will depend on the film in question and on the attitude of the film producer(s).

The digital producer could expect to be the worldwide distributor of the film, relying on the internet as a low cost way of raising awareness of the film among its target audience. This also means that the producer must identify the target audience in the pre-production phase. Territorial distributors should not be expected to be interested in taking on the film until it has already attracted some public attention, such as in film festivals, online reviews, etc. The global marketing costs of the film should be included in the production budget and perhaps also some territory-specific marketing

<sup>1</sup> See, for example, [en.wikipedia.org/wiki/Cinema\\_of\\_Nigeria](http://en.wikipedia.org/wiki/Cinema_of_Nigeria) and [www.thisisnollywood.com](http://www.thisisnollywood.com)

and certification costs, depending on the nature of the film. Subtitling costs should also be included, though these are minimal for a digital film once the translations have been done.

### *3) Risk*

The reason why a conventional film producer cannot usually afford to diversify his/her risks by working on a 'slate' of films at a given point in time is probably a combination of limited access to funds, limited staff resources to juggle several productions in parallel and possibly taste. As digital film costs less to produce and distribute, the investment at risk for a given project is lower. If the producer is also the global distributor, he/she would have more control over when the film will start to make money.

Short lead times also mean that the same film producer can work on a number of different projects in the same year. This allows revenues from one film project to be recycled into the costs of the next, allowing the film producer to diversify his/her risks.

Since the digital film producer will not regard a cinema release as the make-or-break first line of distribution for a film but rather the ultimate goal of the marketing mix, the film would need to appeal to an audience of all ages, not just the 18-35 and occasionally 55+ age ranges to whom feature films are currently addressed. This opens up a revenue stream from the affluent but essentially house-bound 36-54 age range. Watching family films with their children is not necessarily their only viewing interest.

### *4) Invisible success*

Traditional sources of finance in other sectors are unwilling to take the time to investigate the potential returns from investing in film. Some European films are apparently popular but it is impossible for outsiders (or even for insiders) to know how profitable they were. So, overall, the European film sector has a credibility problem caused by its obsession with secrecy.

The only revenue statistics available for European films are box office data. When only a tiny proportion of European films make it to the cinema and, in any case, most of the revenue for any film has not come from its cinema release for over 20 years, looking only at box office data can only give a very unbalanced picture of the success or failure of the sector. According to one source, the cinema release accounts for 13% of the revenue of Hollywood films. For European films, the majority of which are barely shown in commercial cinemas, this percentage is likely to be even lower. Consequently, as the US majors have found in recent years when raising finance from banks and private equity investors, if the film sector wishes to be taken seriously by any commercial financier, they need to show their revenue data for all films on all platforms.

An online database for film professionals through which film productions could announce their future projects to attract film finance (public and private), and on which they would publish the results of their completed films, could help to build investor confidence in the sector. As the production progresses, digital film producers could build confidence further and attract distributors and audiences through a blog including excerpts from the digital storyboard, production stills, and other background information about the film.

### *5) Distribution*

The digital film producer could also be the global distributor. He/she would not need local distributors to break even but, if a film is popular with audiences on other platforms or in other territories, distributors in each territory will be interested in taking on the film and promoting it in their territory. The producer's revenue share may not be higher but begging distributors will no longer be an essential obstacle to getting a film to a paying audience.

Publishing on demand should avoid the need for significant investment by the producer to achieve basic worldwide distribution of the film. The main challenge for the producer will be to identify the internet forums and newsgroups which could contain high proportions of the target audience. Hiring one or two college students for a few days' online research could be a cost effective way to achieve this. Since the producer would be able to generate sales directly from the film website, he/she could also build up a database of those buying the film which could be useful to announce future releases of the same genre or by the same producer/director/cast.

Digital theatrical distribution is an increasingly widespread reality outside Europe. It allows digital cinemas to show films when they want and in as many or as few showings and screens as they want, See, for example, [www.ufomoviez.com](http://www.ufomoviez.com) and [www.rain.com.br](http://www.rain.com.br). UFO Moviez has over 830 screens in its network in India<sup>2</sup> and is expanding worldwide, with investment from UK venture capitalist 3i. Rain has over 100 screens in its Brazilian network. Both networks are expanding to Europe and are building digital content libraries from which cinemas in their networks can pick and choose films to show. They both use the standard HD resolution of 1920 x 1080 and transmit compressed, encrypted digital files by satellite to cinemas.

There is also the recent non-exclusive framework agreement brokered by Arts Alliance Media in the UK under which certain US distributors pay for the installation of a DCI-compliant digital projection system in return for a 'virtual print fee' paid by the exhibitor. The impact of this on producers other than the US distributors involved remains to be seen.

While piracy may be of concern to mass market film producers, for niche market producers such as the majority of those in Europe, obscurity is perhaps the most pressing issue<sup>3</sup>. So it could be quite useful for the promotion of a film and its leading actors, director and producer if individuals pass copies of DVDs of films to friends who they think would be interested in seeing the film. This is the most targeted distribution possible and is likely to lead to wider public interest in future films from the same leading actors, director and producer, as well as possible sales of merchandise related to the film (music album, book, T-shirt, poster, etc). At the same time, the individuals are in effect taking on the distribution costs. The Creative Commons Attribution-Noncommercial-No Derivative Works 3.0 License allows this sort of personal copying while retaining commercial copyright.

## 6) Return

Being the global distributor and using 'on demand' publishing services should make sure that the digital film producer maximises his/her return. For example, if the retail price of the DVD version of the film is €15 and the cost of the 'on demand' service to burn, package and post the DVD to the buyer is €3.60, even at a VAT exclusive price of €12.60, the producer gets a 70% return on the sale of the DVD. As usual, a higher selling price could achieve a higher return since the burning/packaging/postage cost is fixed but sales might be lower - this depends on the film. The producer also retains the customer database for future use.

So, for example, a €100,000 digital feature film would break even after selling about 11,000 DVDs ... even if it could not make any money on any other platform and had no merchandise attached to it. However, in reality, digital TV has considerably expanded the number of TV channels worldwide seeking niche content. Different viewers have different preferences about how they watch films (ranging from cinema to iPod). The film producer could therefore obtain an income from each of these platforms in each territory for which he/she has a local language version available.

In addition, thanks to the infinite shelf space of online providers and digital film libraries, the film could continue to be available on all platforms indefinitely. This implies that the release strategy should be adapted for each film. Apart

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<sup>2</sup> UFO Moviez apparently aims to have 2,000 screens in its Indian network by June 2008

<sup>3</sup> Based on a remark by Peter Broderick ([www.peterbroderick.com](http://www.peterbroderick.com)) at the Cannes Film Festival, May 2007

from mass audience films, the theatrical release would probably not be the first release platform as it is not likely to be cost effective for the film producer (owing to the lower return) to promote a film so heavily as to be able to fill a cinema on the first day of release. However, it may be concurrent on all platforms since recent research shows that there is little overlap between those who watch films on DVD, through video-on-demand and in cinemas. Indeed, like many stage shows have been doing for years, digital cinemas could increase their returns by selling the soundtrack album, poster, DVD and other memorabilia to those cinemagoers who enjoy the film.

## Conclusions

### The impact of the digital revolution on films

The switch from 35mm to digital is a logical step for the film industry. The post-production work on films has been digital for several years already though few feature films have been shot entirely digitally and none have been screened only in digital cinemas. This means that, at some stage in the production process, there has been either a Telecine or a reverse Telecine conversion or both, which is an expensive process in itself which can lead to imperfections creeping in.

Filming in digital rather than 35mm means that the results can be stored directly either on hard drives or on solid state chips. For example, Steven Soderbergh has been shooting his latest film on two pre-release versions of the Red 4k digital camera using a series of 8GB Compact flash cards. Each card can film for 4.5 minutes. The storage capacity is being increased by the developers to allow 32GB Compact flash cards to be used – ie, 18-20 minutes of footage each.

A 12-minute 4k digital short called *Crossing the Line* has been made by Peter Jackson (who directed the *Lord of the Rings* trilogy and other well-known films) to test prototypes of the Red camera. It was screened digitally at the IBC Amsterdam (7-11 September 2007). The camera costs \$17,500 and will soon be available for rental in Europe. The entire post-production of the film was done using Apple's Final Cut Studio 2, which retails for €1,299 in Europe, including VAT.

These prices explain why so many have been contributing excitedly to the Red discussion forum ([www.reduser.net](http://www.reduser.net)). There are, of course, other 4k digital cameras being developed (for example, by Dalsa and Sony) but not in this 'democratic' price range.

This, in turn, could lead to a substantial increase in the quantity, diversity and originality of film production since both the traditional entry and exit barriers will be lower. In principle, anybody with the time and inclination, as well as a modest budget, could create his/her own, professional-quality film and distribute it to digital cinemas and other platforms, such as DVD, video-on-demand, HD DVD, iPod, iPhone and Apple TV.

### The role of public subsidies

€6.9 billion of national subsidy was spent by EU Member States on film production in the four years between 2002 and 2005<sup>4</sup>, on top of the hundreds of millions of euro of film subsidies from various EU programmes. Few European feature films are made without such subsidies. The average market share of European films (excluding US coproductions) in Europe was just 27.6% in 2006, compared to the 69.7% market share of US films and coproductions. Could the money available for European film be used to encourage the switch to digital film?

Over 80% of European national film subsidies goes to film production. This results in a lot of films being produced (over 3,900 between 2002 and 2005<sup>2</sup>) but only a small fraction of these are shown in cinemas. A switch to digital projection would allow cinemas to offer more varied programming, as well as giving screen space to more films. This would

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<sup>4</sup> Based on data presented at the Copenhagen Think Tank on European Film and Film Policy, June 2006

also expand the range of films available to cinemagoers, who would be more likely to find films being shown locally which match their individual tastes. A November 2007 survey by UK Consumer Association magazine *Which?* confirms that a significant proportion of cinema-goers appreciate wider choice and more interesting (non-Hollywood) films.

As the original material on YouTube, MySpace and similar websites illustrates, individuals with no previous connection with the film sector are very likely to take advantage of the possibilities presented by digital film economics to start making films, even without public subsidies. The inertia which most European filmmakers have shown so far on this digital switchover is therefore likely to leave them at a competitive disadvantage, facing higher costs and lower revenues.

In the same way as public funding has been used to stimulate the technology change in the broadcasting sector from analogue to digital transmission, it could be appropriate for public funding to stimulate the change from 35mm production and distribution to digital in the European film sector. For example, given that most of the films produced in Europe depend on public funding, the funding bodies could set a 'digital switchover deadline' after which they would only fund digital productions.

Of course, this would require a network of digital cinemas across Europe. The evidence from India and Brazil suggests that private operators are prepared to invest in setting up such a network, provided that they can access a sufficiently large library of digital films. Until recently, the UK Digital Screen Network, which now has some 240 digital screens across the UK, has been the only publicly-funded European initiative in this area. In April 2007, the MEDIA programme launched a call for proposals for support to video on demand and digital cinema distribution, with an overall budget of €4 million.

Initiatives such as these, coupled with training in digital techniques for both traditional filmmakers and new filmmakers could encourage a creative resurgence in European film. This could help build a vibrant, sustainable and interesting European film sector which is able to engage audiences and could collectively outperform the mass audience films which currently fill the programming schedules of most local cinemas across Europe.

This discussion paper has not considered the practicalities of digital film distribution and promotion in detail. These issues will be considered further in *Digital Film Economics - Part Two*. Meanwhile, [www.bravenewtheaters.com](http://www.bravenewtheaters.com) and [www.withoutabox.com](http://www.withoutabox.com) give a foretaste of what this will contain.

**“The interesting by-product was the speed at which we shot. I operated one camera, and Neill Blomkamp the other. We did aerial dog fights with choppermounts, and a pretty big battle scene. Over the two days, we probably shot upwards of 100 set ups – a speed that would have been impossible with film. Our crew, many whom were veterans of the gruelling 300-plus day *Lord of the Rings* shoot, had big smiles on their faces at the end of the two days. We all shook hands and said, ‘Why aren’t we making more films like this?’”**

***Peter Jackson, NZ film director on filming the short *Crossing the line* with prototype 4k digital cameras***

***ONFILM magazine, May 2007***