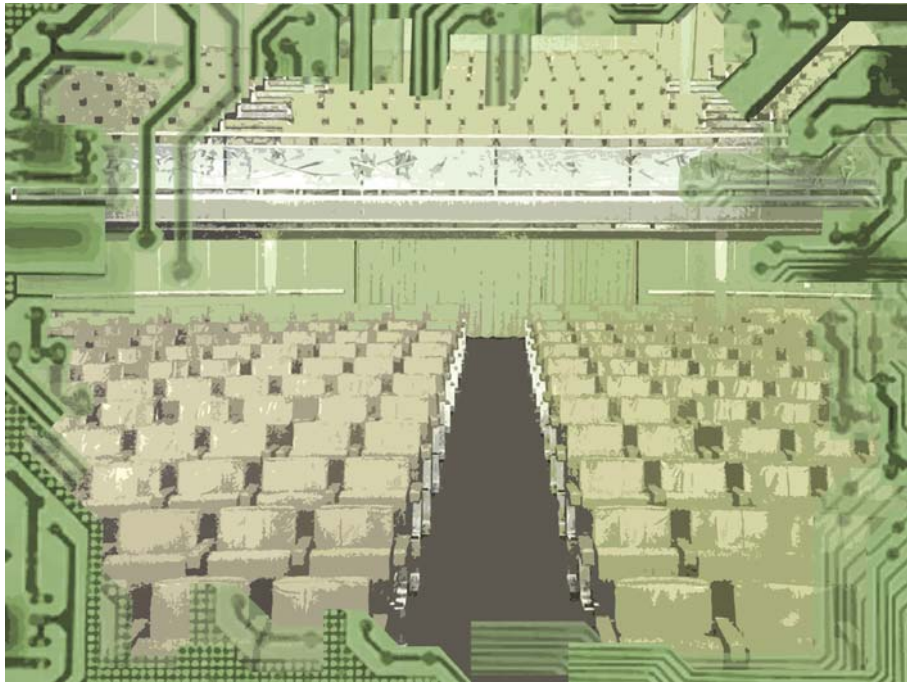


Digital Cinema: Rollout, Business Models and Forecasts to 2010



screen Digest

Contents

3	Contents	
5	List of tables and charts	
7	1 Executive summary	
7	Roll-out and forecasts	
7	Digital screens	
7	Technology providers	
8	Digital releases	
8	Third-party facilitators	
8	Challenges	
9	2 Global overview of digital cinema	
9	DCI process	
10	D-cinema screens: the numbers	
10	Recent developments in d-cinema roll-out	
11	Digital film releases	
12	D-cinema versus E-cinema	
12	Pan-territory theatrical distribution networks	
15	3 Digital roll-out business models	
15	<i>Third party facilitators</i>	
15	<i>Distributor</i>	
15	Virtual print fee	
17	Digital distribution charge	
17	<i>Exhibitor</i>	
17	Exhibitor rental	
18	Costs savings passed on to audience/increased attendance	
18	Capital investment	
18	Audience premium	
19	Additional revenue generation	
19	Sponsorship	
19	Bulk purchase	
19	Government Support	
21	4 D-cinema drivers	
21	<i>Catalysts for the roll-out phase</i>	
21	DCI	
22	Business models	
22	Audience awareness	
22	Content	
22	Digital availability	
22	Film-makers	
22	End-to-end providers or facilitators	
23	Push for audience growth	
23	<i>Drivers for change</i>	
23	Studios	
23	Exhibitors	
23	Distributors	
25	Government	
25	Film-makers	
25	Technology	
26	Piracy	
29	5 D-cinema: The numbers	
29	D-screens and sites	
33	Leading d-cinema territories	
33	Total d-cinema screens as a proportion of total screens	
33	Leading d-cinema locations	
35	Leading exhibitors by number of d-screens	
35	D-cinema projector resolution	
35	Projector manufacturers	
37	Projector territories	
37	Leading third party operators	
38	Server manufacturers	
44	D-screen forecasts	

45	6	Driver territories	91	11	Profiles
45		USA	91		<i>Exhibitors</i>
46		UK	92		Utopolis
46		Italy	92		Cinecitta MultiplexKino
47		Belgium	93		Palace Cinemas Europe:
47		France	94		Eng Wah
48		Korea	94		Megabox Cineplex
48		Singapore	94		Carmike
49		China	95		Landmark Theatres
49		Japan	95		Regal
50		Norway	95		Nordisk Film
51		Germany	96		UltraStar Cinemas
51		Ireland			
69	7	D-cinema content and releases	96		<i>Third party operators</i>
71		Hollywood	97		Christie/AIX
71		Non-Hollywood	98		AccessIT
77	8	Content distribution	99		Technicolor Digital Cinema (TDC)
77		1. Physical transportation of media	100		National CineMedia (NCM)
78		2. Wireless delivery	101		Dolby Digital Cinema
78		2a. Satellite	101		Kodak Digital Cinema/Barco
80		2b. WiMAX	102		XDC
80		3. Wireline delivery	103		Arts Alliance Digital Cinema (AADC)
80		3a. Cable delivery	105		Digital Cinema Limited (DCL)
80		3b. Fibre-based delivery	106		Unique Digital
81		3c. DSL delivery	107		Éclair Digital Cinema
81		4. Hybrid solution	107		FHP
83	9	Hollywood's d-cinema role	108		T-Joy
85	10	Challenges facing the industry in the conversion to digital cinema	108		China Film Group
86		<i>Technical</i>	109		<i>Projectors</i>
86		File size and distribution implications	109		Texas Instruments
86		Manufacturing capacity of projector manufacturers	109		DLP Cinema Technology
86		Format choice	109		Barco
86		Interoperability and DCI-compliance	111		Cinemeccanica
87		Post-production to distribution master workflow	111		Kinoton
88		<i>Economic</i>	111		Christie Digital Systems
88		Business models for international markets	112		NEC Corporation
88		Dual deployment issues	113		LCoS Technology
88		Price of equipment	113		Sony Electronics
88		<i>Logistical</i>	114		<i>Servers</i>
88		Deployment of distribution infrastructure	114		Avica Technology Corporation
89		Training issues	115		EVS Group
89		Screen bookings and management systems	115		DTS
89		Booth size and air-conditioning	116		GDC Technology
89		Lack of content	117		QuVis
			117		Dolby
			118		Doremi
			119		Kodak
			119		Qube
			120		Time Anteaus
			120		<i>Digital 3D</i>
			120		RealD
			120		In-Three
			123	12	D-Cinema timeline

List of tables and charts

3	Contents	
5	List of tables and charts	
7	1 Executive summary	
9	2 Global overview of digital cinema	
10	Regional split of d-cinema screens	
10	Global d-screen development	
11	Regional split of d-cinema releases in 2005	
11	Digital releases over time	
15	3 Digital roll-out business models	
16	Third Party Facilitators Main Proposals (end 2005)	
21	4 D-cinema drivers	
24	Analogue versus digital distribution	
29	5 D-cinema: The numbers	
29	D-screens per region	
29	Global d-cinema screen growth	
30	D-Cinema screens per territory	
31	D-cinema sites	
32	D-cinema sites per screen	
33	Leading d-cinema territories ranked	
34	D-screens as a proportion of total screens	
35	Leading European Cities by d-screens 2005	
35	Leading world cities by d-screens 2005	
36	Leading exhibitors by d-cinema screens in 2005	
37	Top 10 d-cinema chains in Europe 2005	
37	Top 10 d-cinema chains in the USA 2005	
37	Leading world cities by d-screen 2005	
38	Number of units deployed by projector manufacturer	
38	Number of projectors by resolution	
38	Number of d-cinema projectors by resolution	
38	Top 10 d-cinema chains in Asia Pacific	
39	Share of d-cinema screens per region	
39	D-Cinema Screens by Region	
40	Regional projectors deployed per manufacturer	
40	Regional projector deployments	
41	Market share of projector units by manufacturer %	
41	Number of d-cinema screens ranked by networked operator (end 2005)	
41	Regional market share of projectors deployed by manufacturer in %	
42	Leading NEC projector territories 2005	
42	Leading Barco territories 2005	
42	Leading Christie territories 2005	
42	Number of units deployed by cinema server manufacturer	
42	Market Share of cinema server manufacturers (%)	
43	Number of D-cinema screens forecast	
44	Number of D-cinema screens forecast (continued)	
44	Regional d-screen forecasts	
44	Global d-screen forecasts	
45	6 Driver territories	
52	Digital Cinema installations worldwide	

69	7 D-cinema content and releases
69	Digital releases over time
69	D-cinema screenings by region
70	Breakdown of d-releases per territory in 2005
71	D-release territories in 2005: Ranked by total releases per territory
72	D-cinema screenings by region
73	D-cinema screenings by region (continued)
74	US digital releases by distributor in 2005
74	US digital releases by month in 2005
74	US digital releases by distributor in 2005
74	US digital releases by month in 2005
75	Widest global digital releases in 2005
75	Widest global digital releases in 2005
77	8 Content distribution
83	9 Hollywood's d-cinema role
84	Studios involvement in d-cinema schemes (at end 2005)
85	10 Challenges facing the industry in the conversion to digital cinema
91	11 Profiles
123	12 D-Cinema timeline

3 Digital roll-out business models

During 2005 and 2006, several digital cinema business models came to be offered to the market but it is worth stating that ultimately, the market will decide what the dominant business model will be, and this may well vary by territory or region, depending on the market structure and state of market development. The ones that respond most closely to the various market demands that are appearing from exhibitors will most likely win out. These demands can be summed up as follows:

Price - as low as possible for the equipment

Cost - neutral for the exhibitor

Interoperability - exhibitors want a system that is as universal as 35mm

Content - the promise of quality content via agreements with distributors

Upscaleability - in essence, future proofing, at least for a set period of time

Quality - as good as or better than 35mm

Third party facilitators

Many third party facilitators offer the potential for large scale roll out. This is because they are able to raise a large amount of capital, and slowly recoup this investment over time. A summary of the main players, their targets and their business models currently offered on the market can be found on the following page.

In reality, there are only a limited number of payment options for digital cinema deployment.

- **Distributor**
 - Virtual print fee (VPF)
 - Digital distribution charges
- **Exhibitor**
 - Rental of equipment
 - Costs savings passed on to audience
 - Capital Investment
 - Audience premium
 - Additional revenue generation
 - Sponsorship
 - Bulk Purchase

- **Government**

Distributor

Virtual print fee

A virtual print fee (VPF) or digital distribution charge signals the clear intention of a distributor to help fund the roll out of complete d-cinema systems in that particular market. The VPF is said to be the same market value as that paid for conventional 35mm film prints (in the region of \$1,000 to \$1,500 per copy), whereby the distributor is still 'virtually' paying for the print. So far, only the Studios have signed long term agreements to pay a VPF in the US market.

The industry-coveted VPF does not affect the traditional exhibitor/distributor agreements. The VPF is usually based on long term agreements with Studios or other content providers who will continue to subsidise the equipment over a number of years, typically 10-15 years, whilst also

providing digital content to put through the system. So far this model has been deployed in US where studio product is dominant. It has also been touted in Ireland, whereby DCL expects the distributor to pay according to their use of the network. However, the commercial phase of this network has yet to take off at time of writing.

At the heart of the virtual print fee model for the roll-out of digital cinema is the middle-man or facilitator between the interested stakeholders. The facilitator acts to bring together the exhibitor, distributor and financial markets, seeking to exploit the potential cost benefits of digital cinema distribution down the line so that exhibitors may re-equip today for a low or no price.

Under the Christie/AIX business plan, exhibitors will be responsible for installation costs, repayable over a ten year period, whilst distributors, including independent operators, will continue to pay a virtual print fee. This is backed up by an \$18m private placement on

capital markets (with an additional amount being sought in a private placement in March 2006), which is where part of the funding for the roll-out is coming from. Once signed up (as five studios are as 1Q 2006), the distributor will pay a virtual print fee to Christie/AIX for each movie shown. The scheme is funded through the capital markets, with Christie AIX acting as a facilitator between exhibitor, distributor and capital markets. The virtual print fee paid to the facilitator is the basis for capital market interest.

A second driver company using the virtual print fee model is Technicolor Digital Cinema. Under their business model, a studio/distributor will continue to book a film directly with an exhibitor, and the studio/distributor will pay a virtual print fee to Technicolor Digital Cinema (TDC) for using the equipment in cinemas where TDC has deployed digital projectors. There is no stipulation on the technology to be used, with

Third Party Facilitators Main Proposals (end 2005)

Network	Ownership	Territory Operational	Projection Equipment	Server	Business Model	Start Date	End Date	Target Screens	Screens 2005
Christie/AIX	Christie Digital, AccessIT	USA	Christie	Doremi	VPF	2005	2008	4,000	150
XDC	EVS 60%, Financial Partners 40%	Europe	Barco, Christie, Cinemeccanica	EVS (XDC)	Exhibitor rental, Distributor charges	2005	2016	5,000	105
China Film Digital	China Film Group Corporation	China	Barco, Christie	GDC, Various	Government	2002	NK	NK	91
Dolby	Dolby	USA/ International	Barco, Christie	Dolby	VPF	2005	NK	84	90
T-Joy	Industry consortium	Japan	Barco, Christie, NEC	Various	NK	2000	NK	100	28
AADC (UKFC)	UKFC	UK	Christie, NEC	QuVis	Government	2005	2007	238	25
AADC (commercial)	Arts Alliance Media	Europe	NK	NK	VPF, Exhibitor contribution	NK	NK	NK	NK
DCL	Avica (majority), Financial Partners	Ireland	NEC	Avica	VPF	2005	2007	500	23
Vista Vega Inc	Vista Vega Inc	UK, USA	NK	NK	NK	2005	2006	50	2
Technicolor Digital Cinema	Thomson	USA/ International	NK	NK	VPF, Exhibitor contribution	2006	2010	5,000	0
National CineMedia	Regal, Cinemark, AMC Entertainment	USA	NK	NK	NK	2007	NK	14,000	0
Unique Digital/ D-Kino Alliansen	Various	Norway	NK	NK	NK	2006	2007	400	0
Éclair Digital Cinema	Éclair Labs	Europe	NK	NK	NK	NK	NK	NK	0
BT/DCNS	BT/DCNS	USA	NK	NK	Distribution Charges, No Cost to exhibitor	NK	NK	3,500	0
Microspace	Microspace	USA/Canada	NK	NK	NK	2004	NK	NK	3

Source: Screen Digest

Digital Cinema installations worldwide

<i>location</i>	<i>cinema</i>	<i>projector</i>	<i>model</i>	<i>server</i>	<i>install date</i>
North America					
USA					
Emeryville, CA	AMC Bay Street 15	Christie	CP2000	Avica, QuVis	Jun-03
Eden Prairie, MN	AMC Eden Prairie 18	Christie	CP2000	Avica	Jul-02
Manhattan, NY	AMC Empire 25 Theatres	Christie	DCP	EVS, QuVis	May-00
Manhattan, NY	AMC Empire 25 Theatres	Christie	DCP	EVS, QuVis	May-00
Framingham , MA	AMC Framingham	Christie	DCP	Avica, QuVis	May-00
San Diego, CA	AMC Mission Valley 20	Christie	DCP	Avica	May-01
Lake Buena Vista, FL	AMC Pleasure Island 24	Christie	DCP	EVS, QuVis	Nov-99
Lake Buena Vista, FL	AMC Pleasure Island 24	Christie	CP2000	Dolby	Dec-05
Lake Buena Vista, FL	AMC Pleasure Island 24	Christie	CP2000	Dolby	Dec-05
Chicago, IL	AMC River East 21	Christie	DCP	Avica, QuVis	May-02
Santa Monica, CA	AMC Santa Monica 7	Christie	DCP	Avica	May-99
South Barrington, IL	AMC South Barrington 30	Christie	DCP	NK	Dec-02
Leawood, KS	AMC Town Center 20	Christie	CP2000	Dolby	Nov-05
Houston, TX	AMC Willowbrook 24, Houston	Barco	DP100	Dolby	Nov-05
Silver Spring, MD	AFI Silver Theatre Culture Center	Barco	DP50	QuVis	Mar-03
Silver Spring, MD	AFI Silver Theatre Culture Center	Barco	DP50	QuVis	Mar-03
Silver Spring, MD	AFI Silver Theatre Culture Center	Barco	DP50	QuVis	Mar-03
Greenville, SC	Camelot Theatres	Barco	DP100	QuVis	May-05
Grand Rapids, MI	Celebration! Cinema 16	Christie	CP2000	Dolby	Nov-05
Daly City, CA	Century 20 Daly City	Christie	DCP	Dolby	Sep-04
Daly City, CA	Century 20 Daly City	Christie	CP2000	Dolby	Nov-05
San Jose, CA	Century 20, Oakridge	Christie	CP2000	Dolby	Nov-05
Las Vegas, NV	Century Theatres	Barco	DP100	Dolby	Nov-05
Las Vegas, NV	Santa Fe Station	Christie	CP2000	NK	May-05
Melbourne, FL	Cinema World 16	Christie	DCP	GDC	Sep-02
The Woodlands, TX	Cinemark	Christie	CP2000	NK	May-05
Plano, TX	Cinemark at Legacy	Christie	DCP	EVS	Oct-00
Plano, TX	Cinemark at Legacy	Christie	CP2000	NK	May-02
Valley View, OH	Cinemark at Valley View	Christie	CP2000	EVS, QuVis	Dec-99
Vancouver, WA	Cinetopia	Barco	DP100	Dolby	Nov-05
Chicago, IL	Classic Cinemas Lake Theatre	Barco	DP100	Dolby	Nov-05
Annapolis, MD	Crown Annapolis Mall XI	Christie	DCP	GDC	May-02
Annapolis, MD	Crown Annapolis Mall XI	Christie	CP2000	Dolby	Nov-05
Trumbull, CT	Crown Marquis	Christie	DCP	GDC	May-02
Hartford , CT	Crown Palace 17	Christie	DCP	GDC	May-02
Skokie , IL	Crown Village Crossings 18	Christie	DCP	GDC	May-02
Skokie , IL	Crown Village Crossings 18	Christie	CP2000	Dolby	Nov-05
Lee Summit, MO	Dickinson Eastglen 16	Christie	CP2000	Dolby	Nov-05
Los Angeles, CA	Walt Disney El Capitan Theatre	Christie	DCP	Avica, QuVis	Nov-99
Birch Run, MI	Emagine Cinema Hollywood	Christie	DCP	Avica	Oct-02
Novi, MI	Emagine Novi	Christie	DCP	Avica	May-02
Seattle, WA	AMC Seattle Cinerama Theatre	Barco	DP50	Avica	May-02
Austin, TX	Galaxy Theatres	Christie	CP2000	Doremi	May-05
Monroe, WA	Galaxy Theatres	Christie	CP2000	Doremi	Jun-05
Sunnyside, WA	Hallett Grand Cinemas	Barco	DP100	Dolby	Nov-05
Meridian, ID	Majestic Theatre Hallet Cinemas	Christie	CP2000	Dolby	May-05
Meridian, ID	Majestic Theatre Hallet Cinemas	Christie	CP2000	NK	May-05
Tempe, AZ	Harkins Arizona Mills 24	Christie	CP2000	Dolby	Nov-05
Peoria, AZ	Harkins Arrowhead Fountains 18	Christie	CP2000	Dolby	Nov-05
Peoria, AZ	Harkins Arrowhead Fountains 18	Christie	DCP	EVS, QuVis	Dec-99
New York, NY	Jazz at Lincoln Theatre	Christie	CP2000	NK	May-05
Coon Rapids, MI	Kerasotes Showplace 16	Christie	CP2000	Dolby	Nov-05
Evansville, IL	Kerasotes Stadium 16	Christie	CP2000	Dolby	Nov-05
Rockwood, IL	Kerasotes Theatres	Christie	CP2000	NK	May-05
Shereville, IL	Kerasotes Showplace 12	Christie	CP2000	Dolby	Nov-05
Indianapolis, IL	Kerasotes Showplace 16	Christie	CP2000	Dolby	Nov-05
New York, NY	Loews 34 th St.	Christie	DCP	Avica	May-02
New York, NY	Loews 42 nd St E -Walk	Christie	CP2000	Avica	May-01
New York, NY	Loews 42 nd St E -Walk	Christie	CP2000	Avica	May-01

Source: Screen Digest

progress. Utopolis has screened six European films digitally out of a total 15 digital titles on its screens. Fifteen (out of 27, therefore over half) US studio titles that were released digitally in USA did not receive a further digital release in the world, which does suggest that titles may be being held back to a certain degree.

German distributor Senator Film has recently announced its intention to launch digital copies of all its films for purpose of screening them at digitally equipped cinemas. Senator is the first German film distributor to offer all its future slate as digital cinema versions. The company is working with pan-European d-cinema initiative XDC, who is responsible for the production, coding, and duplication of the copies.

In Central and Eastern Europe the lack of studio d-film releases has also been compounded by the general release lag of Hollywood titles (which can be up to six months) as well as the fact that only around 80 per cent of US movies actually reach multiplexes in the region.

In Sweden, the e-cinema circuit run by FHP (62 screens) has regular digital screenings of local first-run films. There were 15 digital films released in Sweden in 2005, all on e-cinema quality projection systems. However, FHP tends not to distinguish between d and e-cinema standards, and if the circuit does not want to screen Hollywood films, and if other distributors have no problem, then e-cinema is a viable option.

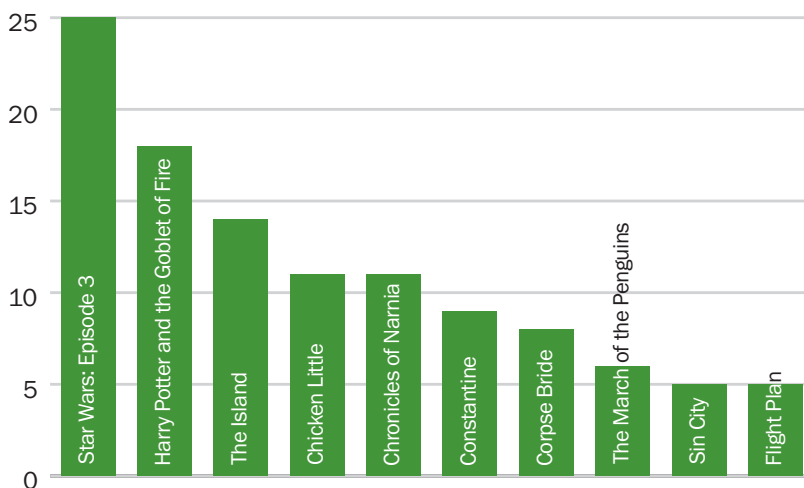
Outside of Europe, Brazil is an active digital cinema territory, again at e-cinema level, through the Rain Network circuit. The circuit is used for advertising and screening local movies, which have proved successful.

Widest global digital releases in 2005

		<i>Distributor</i>	<i>Territories</i>
1	Star Wars: Episode 3	20th Century Fox	25
2	Harry Potter and the Goblet of Fire	Warner Bros	18
3	The Island	Warner Bros	14
4	Chicken Little	Buena Vista	11
5	Chronicles of Narnia	Buena Vista	11
6	Constantine	Warner Bros	9
7	Corpse Bride	Warner Bros	8
8	The March of the Penguins	Buena Vista	6
9	Sin City	Miramax	5
10	Flight Plan	Buena Vista	5

Source: Screen Digest

Widest global digital releases in 2005



Source: Screen Digest