

SONY

Une journée en HD

24 Mai 2007
Christian Branteghem

HD now. Be part of it.



Agenda

- Segmentation des formats HD
- Tape based formats
 - HDV
 - HDCAM
 - HDCAM-SR
- File based formats
 - HDV
 - XDCAM-EX
 - XDCAM-HD
 - XDCAM-HD 4:2:2

HD now. Be part of it.

- *Movie*
- *Commercial Ad*



Highest quality HD Production

- *Prime*
- *Drama*
- *Documentary*
- *Sports*
- *News & Magazine*



Networked HD Production

- *CATV*
- *Event Production*
- *Corporate & Education*
- *Prosumer, Journalist*

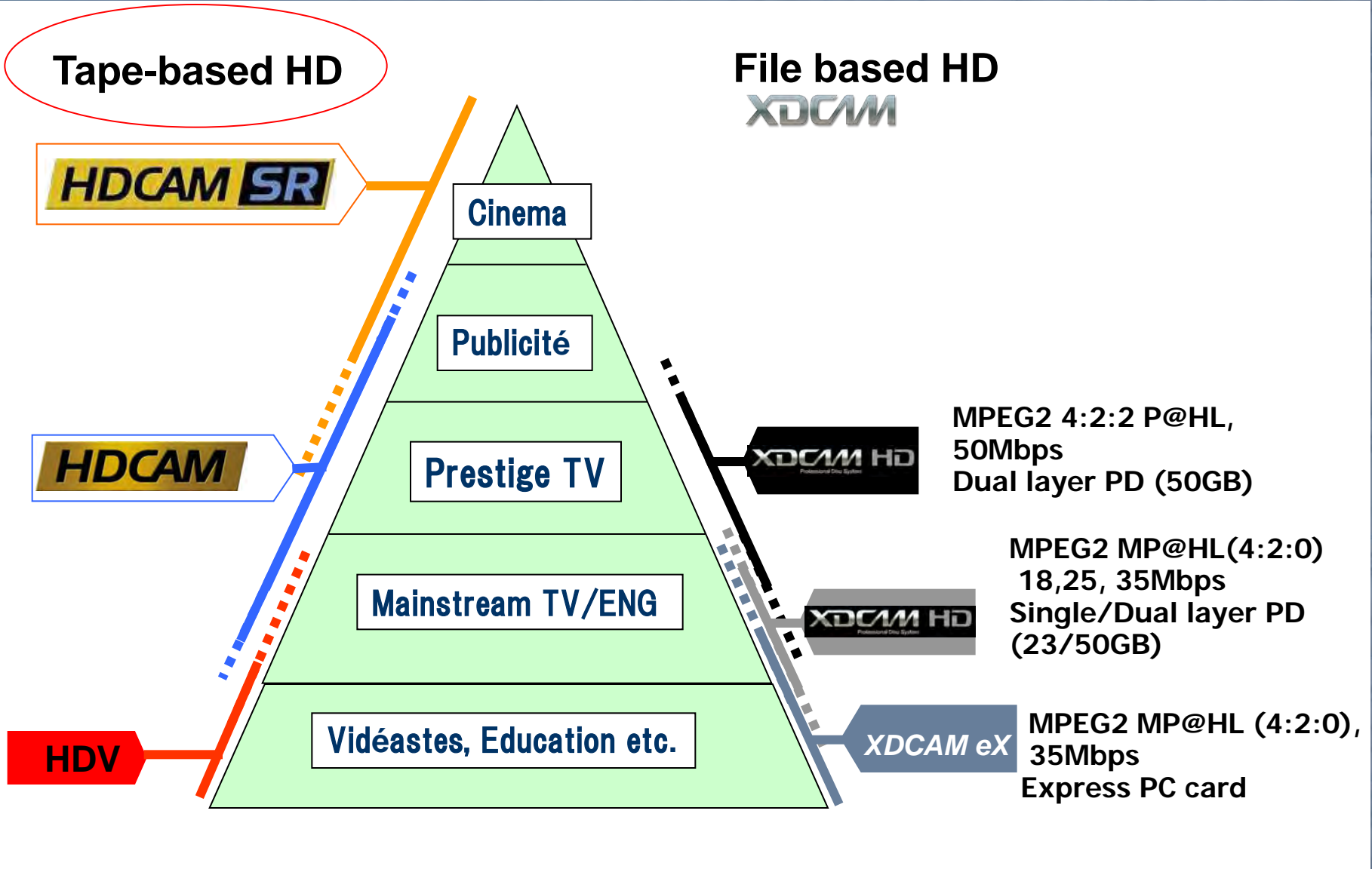


Budget HD Production

- *Family Video*
- *No Editing is required*



Consumer HD Shooting



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Tape based HDV

- **Codecs**
 - Mpeg2 1440 x 1080 50i/25p 4:2:0 Profile / long Gop
25 Mbits/sec CBR , 2Ch Audio Mpeg 1 layer II

- **Application et marché 70.000 unités vendues**
 - Coprorate ,vidéastes ...
 - Prix et taille réduite sont les 1er critères

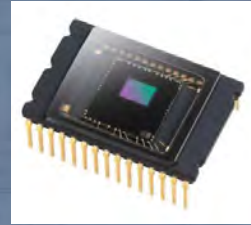
- **Caméscopes**
 - HVR-A1E
 - HVR-V1E
 - HVR-Z1E

- **Decks**
 - HVR-M15E & HVR-M25E
 - HVR-1500

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HVR-A1E

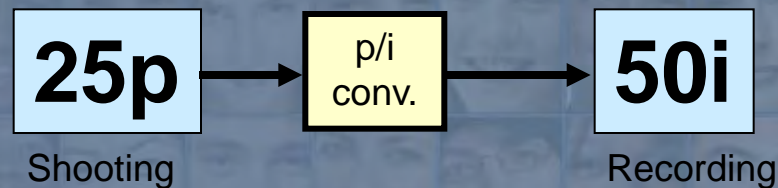
- HDV 1080i / DVCAM / DV recording and playback
- 1/4" ClearVid CMOS sensor
- 20 x Optical lens
- 2 XLR mic inputs
- similaire en taille au modèle gd. public HDR-HC1



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HVR-V1E

- HDV 1080i / DVCAM / DV recording and playback
- 3 x 1/4" ClearVid CMOS sensors
- 25P Native shooting
- 20 x Optical lens
- 2 XLR mic inputs
- Similar size to DSR-PD170P



- Consumer version available but with less professional functions

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HVR-Z1E

- HDV 1080i / DVCAM / DV recording and playback
- 60i,50i , Cineframe 25 & 24
- 3 x 1/3" CCD sensors
- 20 x Optical lens
- 2 XLR mic inputs



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HVR-M25E & HVR-M15E

- HDV 1080i, DVCAM and DV SP recording and play back capability - providing users with an easy migration from standard- to high-definition production
- Down conversion function from HD to SD
- Ability to copy external timecode through the “HDV/DV in TC” feature
- Switchable between 50 and 60 Hz (PAL/NTSC) - to provide full flexibility depending on production needs.
- Compatible with both standard and mini-size DV cassettes – ideal when longer recording times are required.



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HVR-1500

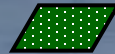
- **Half-rack size, professional HDV deck**
 - Support HDV1080/50i, 1080/59.94i
- **3 formats supported for REC and 4 formats for Play Back**
 - REC: HDV, DVCAM, DV (SP)
 - PB: HDV, DVCAM, DV(SP) and DVCPRO 25
- **2.7" LCD monitor in front panel**
- **A variety of Audio & Video interfaces**
 - i.LINK: DV or HDV
 - HD-SDI Out
 - SD-SDI in/out
 - Full of Analog interfaces option
- **RS-422A for HDV tape control**



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HVBK-1520 Format Converter Board

- **PB Cross conversion from 1080i to 720P or vice versa**
 - Playback HDV tape: 1080/50i → **HD-SDI out: 720/50P**
 - Playback HDV tape: 1080/60i → **HD-SDI out: 720/60P**
 - Playback HDV tape: 720/30P → **HD-SDI out: 1080/60i**
- **Up-conversion (EE & PB)**
 - Playback SD tapes → Up-converted signal via HD-SDI out
 - 525 → 1080/60i or 720/60P
 - 625 → 1080/50i or 720/50P
 - SD input → HD-SDI EE output: 1080/60i or 720/60P
1080/50i or 720/50P



New
HVBK-1520

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Tape based HDCAM

- **Codec**
 - 1920 x 1080 50i/25p DCT 3:1:1 144 Mbits/sec 8bits/10bits
 - 4ch Audio 20bits
- **Application et marché 31.000 unités vendues (incl. 3.400 SR)**
 - Long Métrages , Documentaires , fictions , Pubs
 - VRT: Witse,,Flikken,Katarakt VMMA: Aspe,Familie
 - RTBF: Melting pot café FR3:Thalassa TF1:Ushuaia
- **Caméscopes**
 - HDW-730S
 - HDW-750p
 - HDW-F900R
 - HDW-790P
- **Decks**
 - J-H1 , J-H3 player /feeder
 - HDW-2000/20 , HDW-D2000/20, HDW-M2000p/20,
 - HDW-M2100P/20 player
 - HDW-1800 , HDW-D1800

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New HDCAM Camcorder Line Up



HDW-F900R

- Top-end CineAlta HDCAM camcorder with an unrivalled track record for high-end drama, commercials and feature films
- 1080/23.98P, 24P, 25P, 29.97P progressive shooting
- 1080/50i and 59.94i interlaced shooting



HDW-790P

- Replacement of HDW-750p
- high quality TV production in Europe
- 1080/25P and 50i switchable



HDW-730S

- Lowest cost HDCAM camcorder
- 1080/50i and 59.94i interlaced shooting
- Ideal for mainstream TV production for European (50i) and US/Japanese (59.94i) audiences

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HDCAM Viewer J-H1 & feeder J-H3

- Analogue SD or HD (no digital video i/o)
- XGA computer interface (1024 x 577)
- Optional i-link DV output



Additional Features compared with J-H1
23.98/24 Pfs playback
Digital video interfaces (HD-
SDI/SDI)



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HDCAM 2000 series VTR's

HDW-2000, HDW-D2000 ,HDW-M2000P,
HDW-M2100P player

Switchable multi frame rate operation:

- 25P/50i and 29,97P/59,94i
- 24P Record & play-back

- Built-in Down Converter (all models)
- “M” replays all Sony 1/2” formats Pal & NTSC
 - HDCAM
 - Digital Betacam
 - MPEG IMX
 - Betacam SX
 - Betacam SP
 - Betacam



- Built-in Up Converter (D & M-models only)
- HD now. Be part of it.

HDW-2000/20 series Line-up



	Recorder		Player
Model Name	HDW-2000/20	HDW-D2000p/20 HDW-M2000p/20	HDW-M2100p/20
REC format	HDCAM	HDCAM	-
PB Format	HDCAM	HDCAM Digital Betacam MPEG IMX Betacam SX Betacam / SP	HDCAM Digital Betacam MPEG IMX Betacam SX Betacam / SP



Note: HDCAM Frame rate is 59.94i & 50i or 29.97psf & 25psf
 24p playback at 25psf is supported
 24Psf & 60i Rec/Pb supported.

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HDW-1800 and HDW-D1800



	Record	Playback
HDW-D1800	HDCAM	HDCAM Digital BETACAM MPEG IMX
HDW-1800	HDCAM	HDCAM

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Main differences from HDW-M2000P Series

- No editing via front panel
- No SDTI input/output option (BNC)
 - HKDW-102 cannot be used
- No SD component output (BNC)
- 2 channels of analogue audio input/output (XLR)
- No control panel extension connector (10-pin)
 - HKDW-101 and BKMW-102/103 cannot be used
- No video control connector (15-pin for BVR-50)
- No Tele-file reader/writer



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720/50P option (HKDW-104)

- 720P output when replaying HDCAM cassettes
 - Up Conversion from 525 to 720/60P, and from 625 to 720/50P
 - HD-HD conversion between 1080 and 720

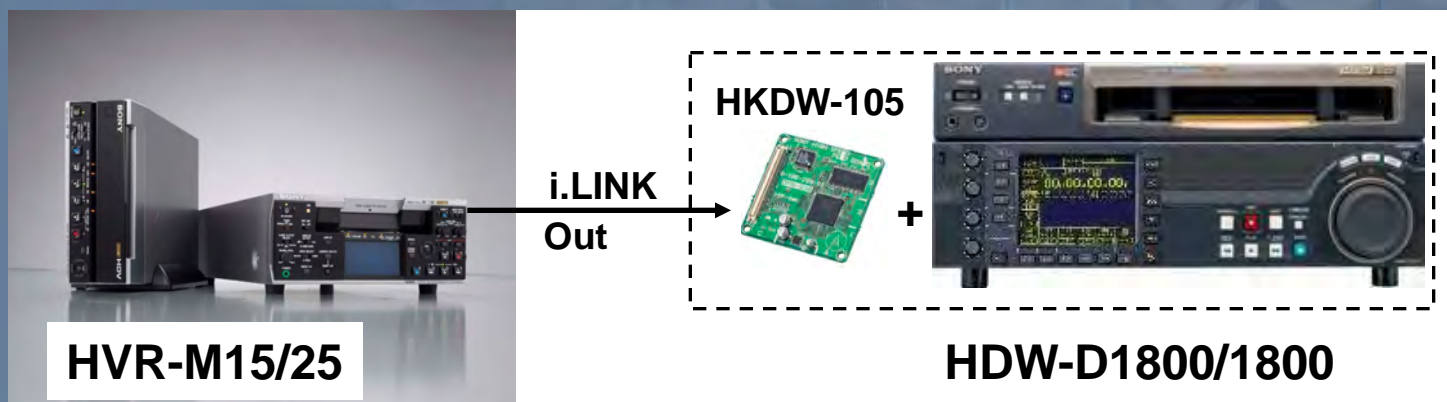
- 3:2 pulldown
 - 1080/23.98P conversion to either 1080/59.94i or 720/59.94P



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i.LINK input option (HKDW-105)

- HKDW-105
- Interface stream is HDV HD2 1080i
 - MPEG TS HD 25Mbps Long GOP, MPEG1 Audio Layer II
- For dubbing only
 - No E-E or remote control over i.LINK



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HDW-S280 compact HDCAM recorder

- Half-rack size and AC, DC and battery operated
- Ideal for use where only battery power is available or where space is limited
 - Helicopters, cars, OB vehicles etc



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Tape based HDCAM-SR



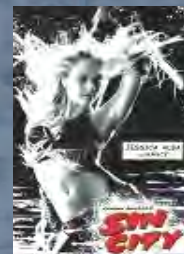
- **Codec**
 - 1920 x 1080 1p > 60p 4:2:2 ou 4:4:4 10bits (lin /log)
 - Mpeg4 440/Mbits/sec (SQ) ou 880 Mbits/sec (HQ) 12 pistes audio

- **Application et marché 3.400 Unités vendues**
 - Cinéma 600 Long métrages 24P ,effets spéciaux, publicité

- **Caméras**
 - HDC-950 ,HDC-F950 ,HDC-1500
 - F-23

- **Recorder**
 - SRW-1 , interface SRPC-1 HD-SDI / dual HD-SDI

- **Decks**
 - SRW-5000 , SRW-5500 ,SRW-5800



F23 & SRW-1

HDCAM SR








- Most powerful 2/3" format HDCAM-SR Production Solution
 - Film style, RGB4:4:4, SRW-1 Docking Mechanism,
 - SR Motion : 1image progressive à 60 images/sec
 - Rugged Lens Mount, Compatibility with ARRIFLEX Accessories...



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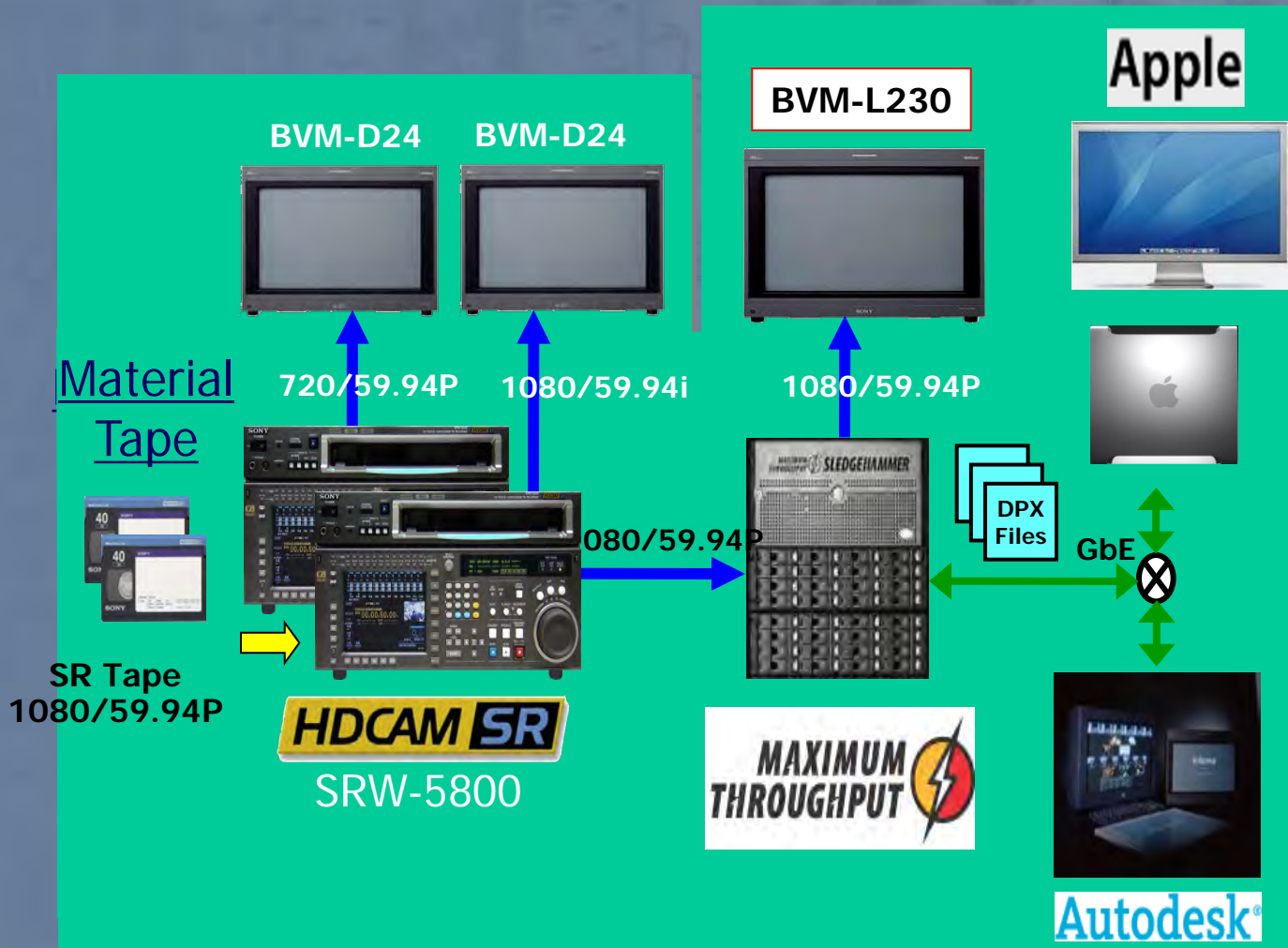
SRW Positioning in BC Workflow

Recording Format	Broadcast Workflow		
	Studio	Edit	Transmission
	Studio Recording  SRW-5800	Ingest to NLE  SRW-5800	Ingest to Server/TX  SRW-5800
		Linear Edit  SRW-5000	QC  SRW-5000
	HDCAM-SR/HDCAM Hybrid Operation  SRW-5500		

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SRW-5800 4:2:2 1080 60P Transfer System



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SRW Positioning in RGB/DI Workflow

Recording Format	RGB/DI Workflow		
	Digitizing	Conform/ Color Grading	Mastering/ Distribution
	 SRW-5800	<p>Non-Linear Companion</p>  SRW-5800 w/Network Option	 SRW-5800
		<p>Linear</p>  SRW-5000	
	<p>HDCAM-SR/HDCAM Hybrid Operation</p>  SRW-5500		

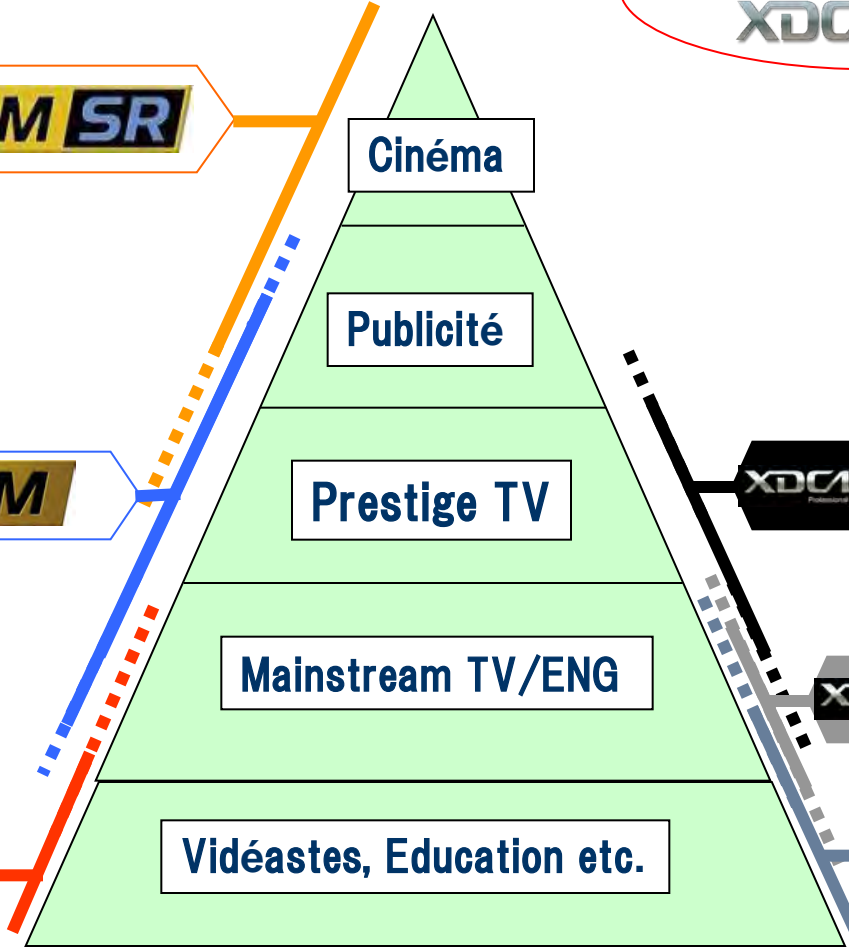
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Tape-based HD

HDCAM SR

HDCAM

HDV



Cinéma

Publicité

Prestige TV

Mainstream TV/ENG

Vidéastes, Education etc.

File based HD

XDCAM

XDCAM HD
Professional Disc System

XDCAM HD
Professional Disc System

XDCAM eX

MPEG2 4:2:2 P@HL,
50Mbps
Dual layer PD (50GB)

MPEG2 MP@HL(4:2:0)
18,25, 35Mbps
Single/Dual layer PD
(23/50GB)

MPEG2 MP@HL (4:2:0),
35Mbps
Express PC card

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File based HDV

- **Codec**
 - Mpeg2 1440 x 1080 50i/25p 4:2:0 Profile / long Gop
 - 25 Mbits/sec CBR , 2 pistes son MPEG1 layer II
- **Application et marché (70.000 tape based HDV)**
Extension du format HDV en mode fichier & applications réseau
- **Disque dur portable pour toute caméra DV,DVCAM,HDV**
 - HVR-DR60

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HVR-DR60

- HD (.m2t) and SD (AVI type 1) recording
- 60 GB HDD and 4.5hrs recording time
- Uses NP-970 battery
 - 690mins battery life
- 6 pin i-LINK connector
- LCD panel
- Shock protection from heights of up to 1 metre



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File based XDCAM-HD

- **Codec**
 - DV & DVCAM SD 4:2:0 intra frame
 - Mpeg2 HD 1440 x 1080 50i/25p 4:2:0 Profile / long Gop (12)
 - 18Mbits/sec VBR , 25 Mbits/sec CBR , 35 Mibts/sec VBR
 - 4 pistes son non-comprimées
- **Application et marché**
- **21.000 XDCAM vendues , 6.000 XDCAM-HD**
 - Extension du format HDV en mode fichier & applications réseau

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XDCAM Partners @ NAB '07



35 XDCAM Partners in 4 Years

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Professional Disc Partners



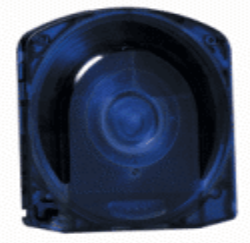
Sony



Maxell



TDK



Fuji

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XDCAM



eX Series



MPEG HD



MPEG HD422

Size & Price

Quality & Price

Quality

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XDCAM

eX Series Concept



- Extension to XDCAM Family
- Much requested “gap” in product line-up
- Target Market is any HD production where Size & Affordability is the issue

*Companion sales for XDCAM HD
HD ENG Production
HD B + I Production*

- 1/2” superior image quality
- Express Card technology is the right choice for the right product at the right time

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XDCAM eX Series

Features



- New Memory based Handycam
- 1/2" Sensor – Fixed 14X Fujinon Zoom Lens
- 1080/50i & 720/50p
- 24P, Cine Gamma
- 1~60P Variable Frame Rate
- Express Card (up to 800Mbps)
- 2 Express Card slots
- MPEG2 Long GOP (25CBR/35VBR)



**Dispo
@
IBC 2007**

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eX Series



MPEG HD



MPEG HD422

Size & Price

Quality & Price

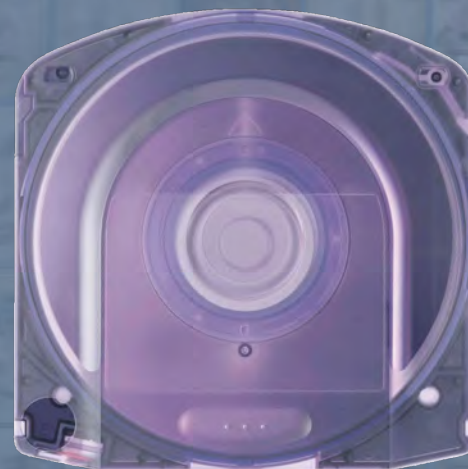
Quality

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XDCAM & Dual Layer Media

Dual Layer Media

	23.3GB	50GB
50 Mbps	45 min	100 min
35 Mbps	66 min	145 min
25 Mbps	87 min	190 min
18 Mbps	113 min	250 min



50 GB

– Dual Layer Media avail. end '07

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XDCAM-HD

PDW-F330L XDCAM (DVCAM/MPEGHD) Camcorder

PDW-F70 XDCAM (DVCAM/MPEGHD) Compact Deck

PDW-F30 XDCAM (DVCAM/MPEGHD) Compact Deck



Introduction @ NAB 2007

PDW-F355L XDCAM (DVCAM/MPEGHD) Camcorder

**Dual Layer
Ready**

PDW-F75 XDCAM (DVCAM/MPEGHD) Compact Deck

**Dual Layer
Ready**

PDW-U1 XDCAM (DVCAM/MPEGHD) USB Data Drive

**Dual Layer
Ready**



XDCAM Phase 2A

PDW-U1

- USB 2.0 interface
- Single optical head (Max Read is 120Mbps)
- Supports Phase 1,2 & 3 media
- Dual Layer ready
- Multiple File access
- Bundled software utilities
 - PDZ-1 Proxy Browsing Software (for Win)
 - PDZ-VX10 XDCAM Viewer (for Win)
 - PDZK-P1 XDCAM Transfer (for Mac)
 - Utility (firmware upgrade etc. for Win and Mac)



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XDCAM



eX Series



MPEG HD



MPEG HD422

Size & Price

Quality & Price

Quality

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2004

2005

2006

2007 ~

Codec

H

D

S

D

MPEG2
4:2:2P@HL

Phase-3

MPEG2
MP@HL(4:2:0)

Phase-2

Phase-1

MPEG IMX 30/40/50Mbps

DVCAM 25Mbps

Consistent Workflow

Same media / Same proxy / Same file format / Same metadata

Media



23.3GB

Proxy

MPEG-4

File

MXF

Metadata

Essence Mark / Extended UMID / XML Metadata

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The right CODEC for the right application.

Highest quality HD Production

No compromised Picture Quality

JPEG2000 (for D-Cinema Distribution)

MPEG4 Intra-frame (HDCAM SR)

Networked HD Production

What CODEC is best suited for the application

What is the most

Budget HD Production

Lower cost & Editable solution.

MPEG2 4:2:0@35Mbps (XDCAM HD)

MPEG2 4:2:0@25Mbps (HDV)

Consumer HD Shooting

Cost is all. Editing is low priority.

AVCHD

= AVC Long GOP
Sony & Panasonic

AVC Long GOP (Low cost distribution : **Bluray** , Location Free TV & PSP)

MPEG HD

MPEG HD422

	SONY XDCAM HD	SONY XDCAM HD	AVC Intra 50*	AVC Intra 100*	DVC PRO 100M
Resolution	1440 × 1080	1920 × 1080 1280 × 720 (FULL HD)	1440 × 1080 960 × 720	1920 × 1080 1280 × 720 (FULL HD)	1280x1080 1440x1080 960x720
Sampling structure	4:2:0	4:2:2	4:2:0	4:2:2	2.6:1.3:1.3
Compressed bit rate	(18/25) 35Mbps	50Mbps	50Mbps	100Mbps	100Mbps
Picture type	Long GOP	Long GOP	Intra	Intra	Intra
Entropy Coding	VLC (Light process)	VLC (Light process)	CABAC	CABAC or CAVLC	VLC
Bit	8bit	8bit	8bit	10 / 8 bit	8bit
Multi Generation Picture Quality	Good	Excellent	??	Good +	Good

MPEG 2 OEM Devices

Now!



MPEG 2 Codec Module

2008



MPEG 2 PCI Express
I/O card



Express
Memory card

CODEC Devices are supporting all operating points of XDCAM HD, eX and HDV

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XDCAM Phase-3 Concepts

- 2/3" HD CCD Imager for Multi-format HD
- Newly Developed ASICs for MPEG HD 4:2:2
 - Bit-rate supports up to 50 Mbps
- Dual-layer Disc (50GB) with New Generation Optical Drive
 - Co-exist with Single-layer Disc (23.3GB)
- Legacy Format Support
 - DVCAM / MPEG IMX / MPEG HD (4:2:0)
- Improvement of XDCAM Workflow
 - Transfer Speed / User-interface / Feature-set and Operation-style



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XDCAM Phase 3

Camcorder

Formats

4:2:2 HD 1080 (59.94i, 50i, 25P)

4:2:2 HD 720 (59.94P, 50P)

Main Features

2/3" 2.2M pixels CCD x 3

14bit A/D conversion

Sensitivity F11

Dual layer disc

Hi-speed FAM and FTP

Built-in up and down converter

Built-in conversion 1080 to/from 720

Built-in color LCD

Live & Play (Clean switching from EE to PB for one-man operation)

Data transfer on HD-SDI such as Teletext, ARIB, Closed Caption

Remote recording with the connected deck through HD-SDI



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XDCAM Phase 3

Deck

Formats

4:2:2 HD 1080 (59.94i, 50i, 25P)

4:2:2 HD 720 (59.94P, 50P)

Main Features

Dual layer disc

Hi-speed FAM and FTP by 2 optical-heads

Legacy format (DVCAM & MPEG IMX & 420HD) support

Built-in up/down converter

Built-in conversion 1080 to/from 720

Built-in color LCD & speaker

AC/DC/Battery power supply

Compact & light weight design

A variety of interfaces

Data transfer on HD-SDI such as Teletext, ARIB, Closed Caption

Remote recording through HD-SDI



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Merci !

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