

DIGITAL PRODUCTION CHALLENGE

How to deal with the developments of the digital era



Warsaw, 28 – 30 November 2013



DIGITAL PRODUCTION CHALLENGE 2013

Participants projects

Thursday 28 to Saturday 30 November 2013, Warsaw Poland

Participant projects

Point of views of following experts:

- Filip Kovcin (Director, Editor, Post production supervisor - Poland)
- Philippe Ros, *afc* (DP & Digital imaging supervisor - France)
- Ruedi Schik (Founder & manager of Swiss effects - Suisse)
- Tommaso Vergallo (Digital production manager, Digimage Cinema – France)

Moderator: Pr. Martin Hagemann (Producer, Zero Films – Germany)

Head of project: Xavier Grin (Producer – PS Production)

Production manager: Sophie Bourdon

**DPC 2013
Recommendation**

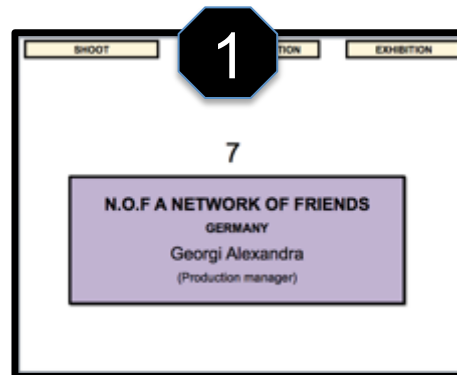
Decision tree designed by:

Franck Montagne
Post production manager
Consultant / Instructor
www.imagemagie.com

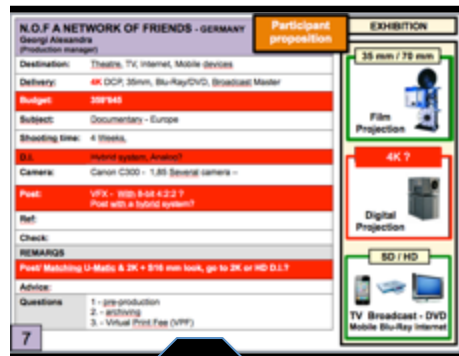
&

Philippe Ros
Director of Photography - AFC
Digital Imaging Supervisor / Instructor
www.philipperos.com

How does the “DPC 2013 recommendation work?”



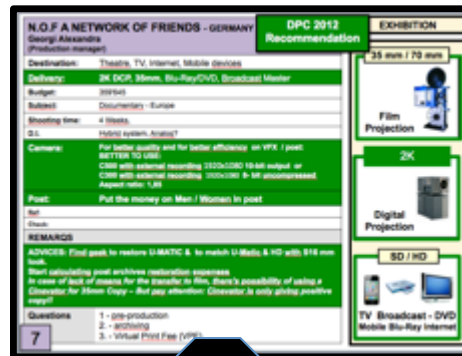
Project



2

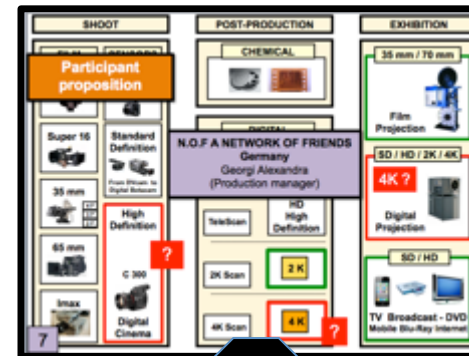
Participant project proposition

DPC experts remarks highlighted in red



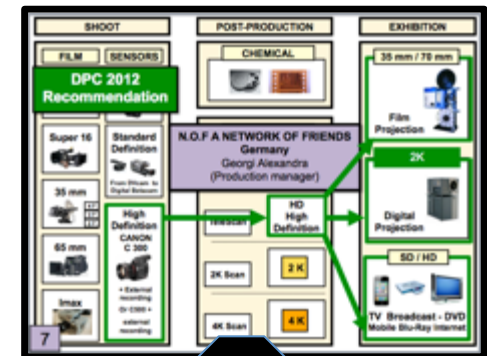
3

DPC experts propositions highlighted in green



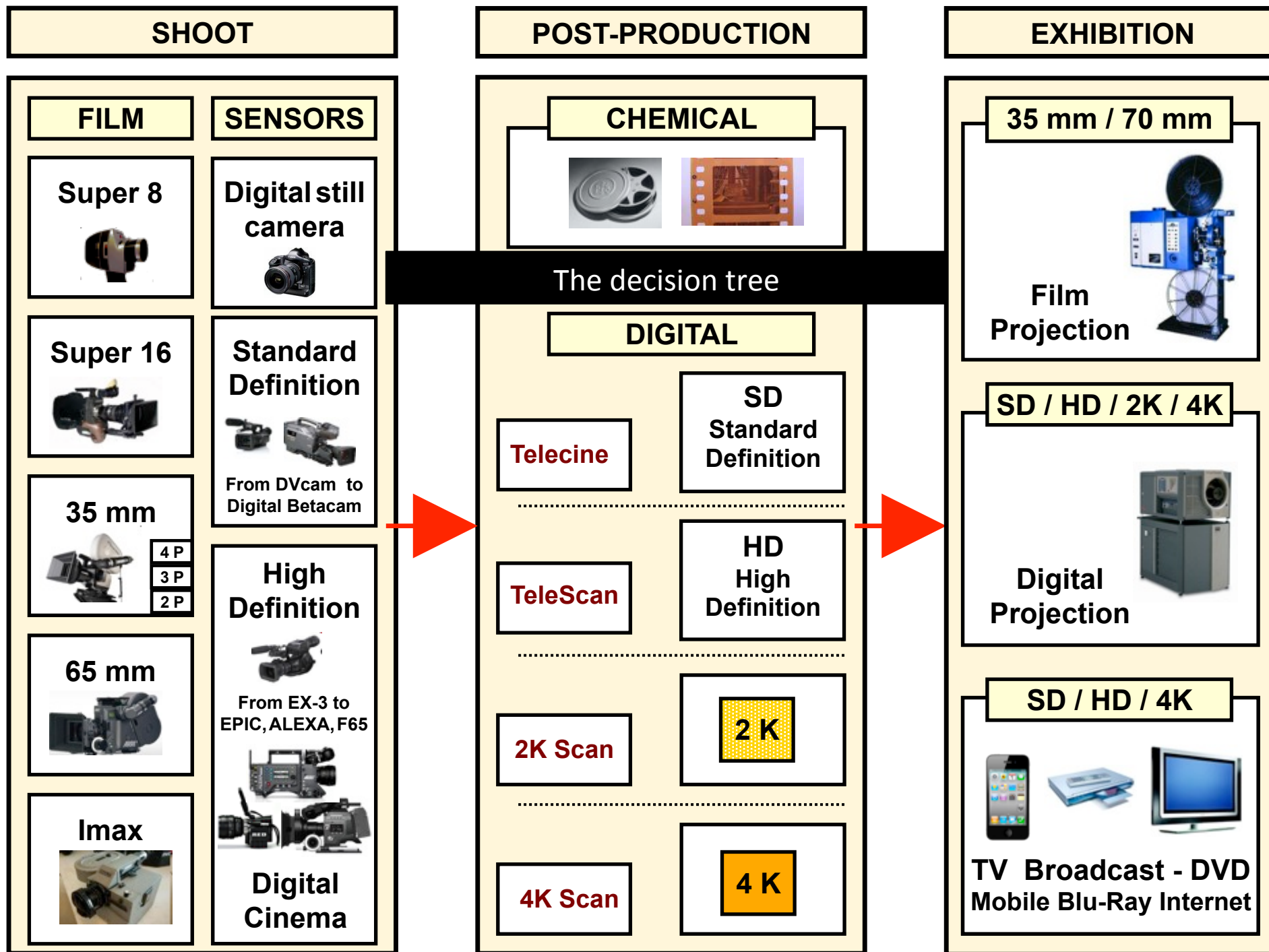
4

Participant proposition for Digital intermediate represented by decision tree



5

DPC experts proposition for Digital intermediate represented by decision tree



SHOOT

POST-PRODUCTION

EXHIBITION

1

YARDEN – Sweden

EMMA ÅKESDOTTER RONGE

(Producer & PP Manager)

ANAGRAM

YARDEN – Sweden

EMMA ÅKESDOTTER RONGE (Producer & PP Manager)

Participant proposition

Destination:	Theatre, TV, Internationals
Delivery:	4K DCP
Budget:	11 000 000 SEK - 1 233 000 Euros -
Subject:	90 mn FICTION
Shooting time:	6 Weeks - Sweden Belgium – 25 people in the team
D.I.	4K D.I. ?
Camera:	ARRI Alexa with raw recording 1,85 – Ikonoskop A-Cam
Post:	25 weeks
Ref:	
Check:	Data wrangler or DIT
REMARQS	
Post prod:	Multi Home labs - With a "homemade" system
Advice:	
Questions	1. No keywords selected

EXHIBITION

35 mm / 70 mm

Film
Projection



4K 2K

Digital
Projection



SD / HD



TV Broadcast - DVD
Mobile Blu-Ray ~~Internet~~

YARDEN – Sweden

EMMA ÅKESDOTTER RONGE (Producer & PP Manager)

Participant proposition



Ikonoskop
A-Cam

<http://www.ikonoskop.com/>

Interesting little
swedish camera
for specific
applications

1



Technical Specifications

Image size	1920 x 1080 pixels (1966 x 1092)
Format	CinemaDNG (Individual files in RAW sequences)
Color depth	12bit
File size	3,2MB/frame
Sensor	CCD 10,6mm x 6mm
Shutter	Global 5°-360°
ISO	200ASA at 0db
Dynamic range	11 stops
Framerate	1 - 30 fps, time-laps recording and still image
Sound	2 channel 16bit 48kHz Line level Input (5pin Lemo to XLR)
Timecode	SMTPE 5pin Lemo Input
Viewfinder	VGA LCOS viewfinder and OLED side display
Video out	HD-SDI 1080p 4:2:2 10bit SMB connector
Data output	USB 2.0
Power	Sony NP-F770 type battery or 7,2-15v external input.
Body	Machined solid aluminium
Measures	222 mm x 91 mm x 83 mm
Lensmount	IMS mount (PL, C-mount and more with adapters)
Threads	3/8" and 1/4" UNC(bottom and top)
Weight	1650g Incl. memory card and battery

Special features:

Gain: 0, 3, 6 and 12db.

Focus assist: 1:1 viewfinder pixel zoom.

Exposure: Viewfinder histogram and false color.

 A-Cam d11 Product Sheet.pdf

YARDEN – Sweden

EMMA ÅKESDOTTER RONGE (Producer & PP Manager)

Participant proposition

A-Cam 1966 x 1092 photosites for 1.78

Alexa 2880 x 1558 photosites for 1;85

A-Cam RAW DNG 12 bit

Alexa PRORES 12 -bit

A-Cam CCD SENSOR 200 ISO

Alexa CMOS SENSOR 800 ISO

Different file format, different sensitivity could create some problems but the main problem will come from the difference of resolution between the A-cam and the Alexa

Technical Specifications

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A-Cam d11 Product Sheet.pdf

Participant proposition

YARDEN – Sweden
EMMA ÅKESDOTTER RONGE (Producer
& PP Manager

CTION

CHEMICAL



Super 8



Digital still camera



Super 16



Standard Definition



From DVcam to Digital Betacam

35 mm



4 P

3 P

2 P

IKONOSCOPIA CAMERA



ARRI ALEXA RAW RECORDING



Digital Cinema

65 mm



Imax



DIGITAL

Telecine

**SD
Standard
Definition**

TeleScan

**HD
High
Definition**

2K Scan

2 K

4K Scan

4 K

EXHIBITION

35 mm / 70 mm

**Film
Projection**



4K 2K

**Digital
Projection**



SD / HD



**TV Broadcast - DVD
Mobile Blu-Ray Internet**

YARDEN – Sweden

EMMA ÅKESDOTTER RONGE (Producer & PP Manager)

Participant proposition

Destination:	Theatre, TV, Internationals
Delivery:	4K DCP
Budget:	11 000 000 SEK - 1 233 000 Euros -
Subject:	90 mn FICTION
Shooting time:	6 Weeks - Sweden Belgium – 25 people in the team
D.I.	4K D.I. ?
Camera:	ARRI Alexa with raw recording 1,85 IKONOSCOPE ACAM Not so easy to harmonize
Post:	25 weeks
Ref:	
Check:	Data wrangler or DIT
REMARQS	
Post prod:	Multi Home labs - With a "homemade" system
Advice:	
Questions	1. No keywords selected

EXHIBITION

35 mm / 70 mm

Film
Projection



4K?

Digital
Projection



SD / HD



TV Broadcast - DVD
Mobile Blu-Ray ~~Internet~~

YARDEN – Sweden

EMMA ÅKESDOTTER RONGE (Producer & PP Manager)

DPC 2013 Recommendation

Destination: Theatre, TV, Internationals

Delivery: 2K DCP

Budget: 11 000 000 SEK - 1 233 000 Euros -

Subject: 90 mn FICTION

Shooting time: 6 Weeks - Sweden Belgium – 25 people in the team

D.I. 4K D.I. ?

Camera:

- ARRI Alexa SXS ProRes 2K 4:4:4 Log C 800 ISO + SxS proxys or
- ARRI Amira CFast 2.0 flash memory cards ProRes 2K 4:4:4 Log C – 800 ISO (after tests) or
- SONY F55 XAVC 2K (after tests) 1250 iSO
- Put the money on lenses

Post: 25 weeks

Ref:

Check: Data wrangler or DIT

REMARQS

Post prod: Because Multi Home labs in different countries and use of a "homemade" system strong recommendation having a PP Manager

Advice: Better doing tests between cameras / codecs / ergonomics with actors (skintone) during nights on location where public lighting (sodium, mercurius) will become keylights

1

ions

1. No keywords selected

EXHIBITION

35 mm / 70 mm

Film
Projection



2K

Digital
Projection



SD / HD



TV Broadcast - DVD
Mobile Blu-Ray Internet

DPC 2013 Recommendation

YARDEN – Sweden
EMMA ÅKESDOTTER RONGE (Producer
& PP Manager

CTION

EXHIBITION

Super 8



Digital still
camera



Super 16



Standard
Definition



35 mm



4 P
3 P
2 P

Choice between

ARRI ALEXA
Plus



ARRI AMIRA



SONY F55



Digital Cinema

65 mm



Imax



CHEMICAL



DIGITAL

Telecine

SD
Standard
Definition

TeleScan

HD
High
Definition

2K Scan

2 K

4K Scan

4 K

35 mm / 70 mm

Film
Projection



2K

Digital
Projection



SD / HD



TV Broadcast - DVD
Mobile Blu-Ray ~~Internet~~

YARDEN – Sweden

EMMA ÅKESDOTTER RONGE (Producer & PP Manager)

**DPC 2013
Recommendation**

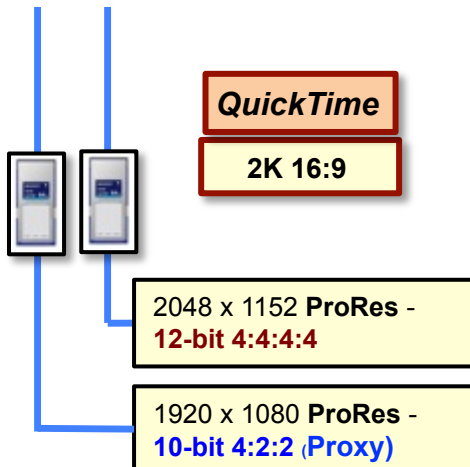
AMIRA®



ARRI AlexaPlus

SXS cards ProRes + SxS
proxys

2K 12-bit 4:4:4:4 ProRes



ARRI Amira

C Fast 2.0 flash memory cards

2K 12-bit 4:4:4:4 ProRes

(after tests)

<http://www.arri.com/amira/>



SONY F55

SxS PRO+

XAVC 2K 10-bit 4:2:2

Possibilities to record proxies on the
same card

[http://www.sony.co.uk/pro/
article/broadcast-professional-
camcorders-pmw-f55-video](http://www.sony.co.uk/pro/article/broadcast-professional-camcorders-pmw-f55-video)

Jon Fauer FDTimes

[http://www.fdtimes.com/
2012/10/30/sony-f55-and-f5/](http://www.fdtimes.com/2012/10/30/sony-f55-and-f5/)

SHOOT

POST-PRODUCTION

EXHIBITION

2

MURKWOOD

Switzerland

Remo Pini

(Producer)

GRAY EMINENCE PRODUCTIONS GMBH

MURKWOOD Switzerland**Pini** (Producer)**Participant
proposition**

Destination:	VoD - International – No theater
Delivery:	2K DCP - Blu-ray / DVD
Budget:	500 000 CHF - 406,000 € - Private equity investors.
Subject:	90' - Fiction, (crime-drama/horror)
Shooting time:	4 weeks Switzerland - (4-5 distinct locations)
D.I.	2K D.I.
Camera:	Red Epic Dragon – Canon C300 - Black Magic Cameras, RED Scarlet -GoPro 3 + or BMPCC Handheld/Steadicam/Gimbal – Shoot in 4K with several cameras – Test of cameras - 1,85 - 10 persons in the crew
Post:	VFX - Home made except grading and deliveres – Minimalist No ppm – 6 months
Ref:	" Fargo " - " Blair Witch Project " – " Twin Peaks, The Series " - " Long Weekend " (1978) - " The Rime of the Ancient Mariner » - Monsters, Evil Dead
Check:	On set – Director + Production Assistant
REMARQS	
Post prod & Prod	
Advice	
Questions	2K / 4K Archiving DCP

EXHIBITION**35 mm / 70 mm****Film
Projection****SD / HD / 2K / 4K****Digital
Projection****SD / HD****TV Broadcast - DVD**
Mobile Blu-Ray Internet

Participant proposition

MURKWOOD
Switzerland
Remo Pini (Producer)

DUCTION

MICAL

Super 8



Digital still camera



Super 16



Standard Definition



From DVcam to Digital Betacam

35 mm



4 P
3 P
2 P

65 mm



Imax



High Definition

Red Epic
Dragon –
Canon C300 -
Black Magic
Cameras,
RED Scarlet -
GoPro 3 + or
BMPCC

Digital Cinema

DIGITAL

Telecine

SD
Standard
Definition

TeleScan

HD
High
Definition

2K Scan

2 K

4K Scan

4 K

EXHIBITION

35 mm / 70 mm

Film
Projection



SD / HD / 2K / 4K

Digital
Projection



SD / HD



TV Broadcast - DVD
Mobile Blu-Ray Internet

MURKWOOD Switzerland**Pini** (Producer)**Participant
proposition**

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Camera:	Red Epic Dragon – Canon C300 - Black Magic Cameras, RED Scarlet -GoPro 3 + or BMPCC Handheld/Steadicam/Gimbal – Shoot in 4K with several cameras – Test of cameras - 1,85 - - Only 10 persons in the crew
Post:	VFX - Home made except grading and delivers – Minimalist No ppm – 6 months
Ref:	" Fargo" - "Blair Witch Project" – "Twin Peaks, The Series" - "Long Weekend" (1978) - "The Rime of the Ancient Mariner » - Monsters, Evil Dead
Check:	On set – Director + Production Assistant

REMARQS

Post prod & Prod: Logistics and ergonomics to organize on set with so much cameras : A lot of camera to harmonize) Need to do tests

Advice

Questions	2K / 4K Archiving DCP
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EXHIBITION**35 mm / 70 mm****Film
Projection****SD / HD / 2K / 4K****Digital
Projection****SD / HD**

TV Broadcast - DVD
Mobile Blu-Ray Internet

MURKWOOD Switzerland

Pini (Producer)

**DPC 2013
Recommendation**

Destination:	VoD - International – No theater
Delivery:	2K DCP - Blu-ray / DVD
Budget:	500 000 CHF - 406,000 € - Private equity investors.
Subject:	90' - Fiction, (crime-drama/horror)
Shooting time:	4 weeks Switzerland - (4-5 distinct locations)
D.I.	2K D.I.
Camera:	Just choose 1 or 2 camera s maximum
Post:	VFX - Home made except grading and deliveres – Minimalist No ppm – 6 months
Ref:	"Fargo" - "Blair Witch Project" – "Twin Peaks, The Series" - "Long Weekend" (1978) - "The Rime of the Ancient Mariner » - Monsters, Evil Dead
Check:	On set – Director + Production Assistant

REMARQS

Post prod & Prod: Shoot one single file format and send to the lab for safety back up & quality check

Questions	2K / 4K Archiving DCP
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EXHIBITION

35 mm / 70 mm

**Film
Projection**



SD / HD / 2K / 4K

**Digital
Projection**



SD / HD



TV Broadcast - DVD
Mobile Blu-Ray Internet

DPC 2013 Recommendation

MURKWOOD
Switzerland
Remo Pini (Producer)

PRODUCTION

ANALOGICAL

Super 8



Digital still
camera



Super 16



Standard
Definition



From DVcam to
Digital Betacam

35 mm



4 P
3 P
2 P

High
Definition

To be
determined

Digital
Cinema

65 mm



Imax



DIGITAL

Telecine

SD
Standard
Definition

TeleScan

HD
High
Definition

2K Scan

2 K

4K Scan

4 K

EXHIBITION

35 mm / 70 mm

Film
Projection



SD / HD / 2K / 4K

Digital
Projection



SD / HD



TV Broadcast - DVD
Mobile Blu-Ray Internet

SHOOT

POST-PRODUCTION

EXHIBITION

3

JAKUBA

Croatia

Dragan Šiša

(DOP & PPM)

ANING FILM

JAKUBA Croatia
Dragan Šiša (DOP & PPM)

Participant proposition

Destination: Theatre, TV, Internet, Mobile devices, VoD - National, International

Delivery: 2K DCP, HD Broadcast master

Budget: 110.000€

Subject: Documentary 75 ' Archlval footage
 Needs to know about types of footage

Shooting time: 4 weeks -

D.I. HD D.I.

Camera: Canon 5D Mark3 – RAW Magic la?? - DSLR CANON - 5D - 7D Black
 Magic Cameras Risk of melting – Assuming rolling shutter artifacts with
 night club strobe lights - extreme low light and no artificial lighting –
 Multi cameras - 1,78

Post: Hybrid system ?? – 12 weeks of Post – Problem of harmonization

Ref: The Comedian

Check: On set, In post-production by post-production producer and producer

REMARQS

Post prod: A lot of cameras – Need to do some tests - Recommendation

Advice:

Questions Not filled

EXHIBITION

35 mm / 70 mm

**Film
Projection**



2K

**Digital
Projection**



SD / HD



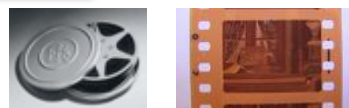
**TV Broadcast - DVD
 Mobile Blu-Ray Internet**

Participant proposition

JAKUBA
Croatia
Dragan Šiša
(DOP & PPM)

PRODUCTION

CHEMICAL



Super 8



Digital still camera

CANON 5D
Magiic Lantern
7D

Super 16



Standard Definition



From DVcam to
Digital Betacam

35 mm



4 P
3 P
2 P

High Definition

Black Magic
Cameras -
GoPro 3

65 mm



Imax



Digital Cinema

DIGITAL

Telecine

SD
Standard
Definition

TeleScan

HD
High
Definition

2K Scan

2 K

4K Scan

4 K

EXHIBITION

35 mm / 70 mm

Film
Projection



2K

Digital
Projection



SD / HD



TV Broadcast - DVD
Mobile Blu-Ray Internet

JAKUBA Croatia
Dragan Šiša (DOP & PPM)

Participant proposition

Destination: Theatre, TV, Internet, Mobile devices, VoD - National, International

Delivery: 2K DCP, HD Broadcast master

Budget: 110.000€ €

Subject: Documentary 75 ' Archlval footage
Needs to know about types of footage

Shooting time: 4 weeks -

D.I. HD D.I.

Camera: DSLR CANON - 5D Mark3 – RAW Magic lantern - DSLR CANON 7D,
 Black Magic Cameras - GoPro 3 extreme low light and no artificial
 lighting – Multi cameras - 1,78

Post: Hybrid system ?? – 12 weeks of Post **Problem of harmonization**

Ref: The Comedian

Check: On set, In post-production by post-production producer and producer

REMARQS

Post prod: **Importance of look to be defined - A lot of cameras – Need to do serious
 tests with DCP screenings**

Advice:

Questions Not filled

EXHIBITION

35 mm / 70 mm

**Film
Projection**



2K

**Digital
Projection**



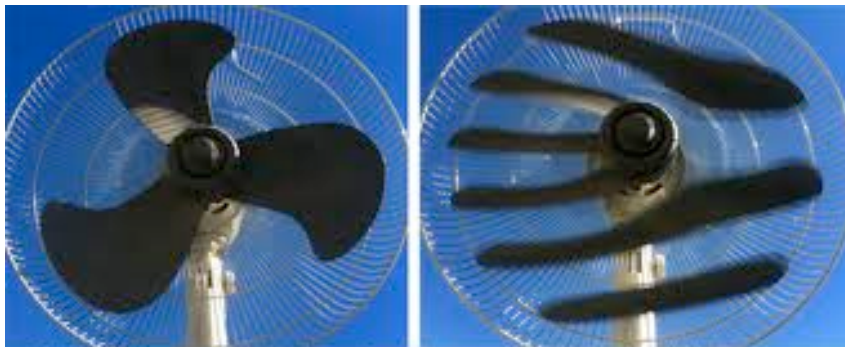
SD / HD



**TV Broadcast - DVD
 Mobile Blu-Ray Internet**

Camera: DSLR CANON - 5D Mark3 – RAW Magic lantern - DSLR CANON 7D,
Black Magic Cameras - GoPro 3
Risk of melting – Not appropriate to night club strobe lights due to
rolling shutter artifacts - extreme low light and no artificial lighting –
Multi cameras - 1,78

- The rolling shutter artefacts Example: Jello effect



Left, a house fan at rest. Right, the same fan in motion with the "rolling shutter" effect. (Camera: iPhone 3, Lens: 3.8mm, Exposure: 1/606th sec. @ f/2.8, ISO: 64).



You will encounter problems of skew, blur, wobble and flutter on many cameras owning rolling shutters with different level of importance. (Example: Sony F5, Red Epic, DSLR's) – BETTER TO TEST!

Camera: DSLR CANON - 5D Mark3 – **RAW Magic lantern** - DSLR CANON 7D,
Black Magic Cameras - GoPro 3
Risk of melting – Not appropriate to night club strobe lights due to rolling shutter artifacts - extreme low light and no artificial lighting –
Multi cameras - 1,78

- The rolling shutter artefacts
Partial image

These artefacts can be reduced by software on 5D Mark III but the main problem of DSLR's cameras is the heat which can create serious damages.

Recommendation: When shooting with 5D or other still cameras better to have several similar DSLR's



JAKUBA Croatia
Dragan Šiša (DOP & PPM)

DPC 2013 Recommendation

Destination:	Theatre, TV, Internet, Mobile devices, VoD - National, International
Delivery:	2K DCP, HD Broadcast master
Budget:	110.000€
Subject:	Documentary 75 ' Archlval footage Needs to know about types of footage
Shooting time:	4 weeks -
D.I.	HD D.I.
Camera:	DSLR CANON - 5D Mark3 – RAW Magic lantern - DSLR CANON 7D, Black Magic Cameras - GoPro 3 Risk of melting – Not appropriate to night club strobe lights due to rolling shutter artifacts - extreme low light and no artificial lighting – Multi cameras - 1,78
Post:	Hybrid system ?? – 12 weeks of Post – Problem of harmonization
Ref:	The Comedian
Check:	On set, In post-production by post-production producer and producer
REMARQS	
Post prod:	A lot of cameras – Need to do some tests with DCP encoding
Advice:	
Questions	Not filled

EXHIBITION

35 mm / 70 mm

**Film
Projection**



2K

**Digital
Projection**



SD / HD



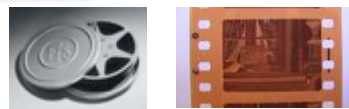
**TV Broadcast - DVD
Mobile Blu-Ray Internet**

DPC 2013 Recommendation

JAKUBA
Croatia
Dragan Šiša
(DOP & PPM)

PRODUCTION

CHEMICAL



DIGITAL

Telecine

SD
Standard
Definition

TeleScan

HD
High
Definition

2K Scan

2 K

4K Scan

4 K

EXHIBITION

35 mm / 70 mm

Film
Projection



2K

Digital
Projection



SD / HD

TV Broadcast - DVD
Mobile Blu-Ray Internet

Super 8



Digital still
camera



Super 16



Standard
Definition



From DVcam to
Digital Betacam

35 mm



4 P
3 P
2 P

High
Definition

To be
determined

65 mm



Imax



Digital
Cinema

SHOOT

POST-PRODUCTION

EXHIBITION

4

WOMAN ON TOP

POLAND

Radosława Bardes

(Production Coordinator)

RUN FILMS

WOMAN ON TOP - FRANCE

RADOSŁAWA BARDES (Director / Producer)

Participant proposition

Destination:	Theatre, TV, Internet, Mobile devices, VoD International
Delivery:	HD Broadcast master
Budget:	1 500 000 Euros
Subject:	100' - Fiction, Drama Mountain Shooting Himalaya Alpqs
Shooting time:	8 weeks Seems short (Austria & Poland). ?? No Himalaya
D.I.	HD
Camera:	35 mm 4 perfs - SONY F55 Raw recording 4K / 2K -RED Epic – Red One - DSLR CANON 1D C - 1D - 5D - 7D - SONY NEX-FS700 - 1,85
Post:	VFX
Ref:	
Check:	postproduction manager On set & in post
REMARQS	
Prod :	
Advice:	
Questions	1. - Formats 2. - Digital Distributionsn 3. - Special Effects

EXHIBITION

35 mm / 70 mm

Film
Projection



HD

Digital
Projection



SD / HD



TV Broadcast - DVD
Mobile Blu-Ray Internet

Participant proposition

WOMAN ON TOP
POLAND
Radosława Bardes

PRODUCTION

CHEMICAL



DIGITAL

Telecine

SD
Standard
Definition

TeleScan

HD
High
Definition

2K Scan

2 K

4K Scan

4 K

EXHIBITION

35 mm / 70 mm

Film
Projection



HD

Digital
Projection



SD / HD



TV Broadcast - DVD
Mobile Blu-Ray Internet

Super 8



Digital still
camera

CANON 1D C -
1D - 5D - 7D -

Super 16



Standard
Definition



From DVcam to
Digital Betacam

35 mm



4P
3P
2P

SONY F55
Raw
recording
4K / 2K

RED Epic
Red One

SONY NEX-
FS700 1,85

65 mm



Imax



WOMAN ON TOP - FRANCE

RADOSŁAWA BARDES (Director / Producer)

Participant proposition

Destination:	Theatre, TV, Internet, Mobile devices, VoD International
Delivery:	HD Broadcast master ??
Budget:	1 500 000 Euros
Subject:	100' - Fiction, Drama Mountain Shooting Himalaya Alps
Shooting time:	8 weeks Seems short (Austria & Poland). ?? No Himalaya
D.I.	HD ??
Camera:	35 mm 4 perfs - SONY F55 Raw recording 4K / 2K -RED Epic – Red One - DSLR CANON 1D C - 1D - 5D - 7D - SONY NEX-FS700 - 1,85 ?? ??
Post:	VFX
Ref:	
Check:	postproduction manager On set & in post
REMARQS	
Prod :	Budget seems weak HD workflow ? Why so many camera, file formats? Missing infos on style No indication on High Speed cameras
Advice:	
Questions	1. - Formats 2. - Digital Distributionsn 3. - Special Effects

EXHIBITION

35 mm / 70 mm

Film
Projection



HD

Digital
Projection



SD / HD



TV Broadcast - DVD
Mobile Blu-Ray Internet

WOMAN ON TOP - FRANCE

RADOSŁAWA BARDES (Director / Producer)

DPC 2013 Recommendation

Destination:	Theatre, TV, Internet, Mobile devices, VoD International
Delivery:	2K + Broadcast master
Budget:	1 500 000 Euros (missing some means)
Subject:	100' - Fiction, Drama Mountain Shooting Himalaya Alps
Shooting time:	8 weeks Seems short (Austria & Poland). No Himalaya location
D.I.	2K
Camera:	35 mm 2 perf s or Super 16 or Canon C500 (ergonomics and final result to be checked)
Post:	VFX
Ref:	
Check:	postproduction manager On set & in post
REMARQS	
Prod :	Minimize VFX
Advice:	
Questions	1. - Formats 2. - Digital Distributionsn 3. - Special Effects

EXHIBITION

35 mm / 70 mm

Film
Projection



2K

Digital
Projection



SD / HD



TV Broadcast - DVD
Mobile Blu-Ray Internet

DPC 2013 Recommendation

WOMAN ON TOP
POLAND
Radosława Bardes

PRODUCTION

CHEMICAL



Super 8

Digital still
camera



Choice between
Film camera

Super 16



Standard
Definition



From DVcam to
Digital Betacam

35 mm



2 P

Or digital
camera

65 mm



Canon C500
with external
recording



Digital
Cinema

Imax



DIGITAL

Telecine

SD
Standard
Definition

TeleScan

HD
High
Definition

2K Scan

2 K

4K Scan

4 K

EXHIBITION

35 mm / 70 mm

Film
Projection



SD / HD / 2K / 4K

Digital
Projection



SD / HD



TV Broadcast - DVD
Mobile Blu-Ray Internet