

Using Matroska and FFV1 for DPX Preservation

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The Reel Thing XXXVIII
Pickford's, Hollywood, 18–20 August 2016



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acronyms

«raw» formats:

- Y'C_BC_R 4:2:2
- RGB or R'G'B' 4:4:4

Data is anything but «raw».

Standardisation

SMPTE

- CineForm (VC-5), ProRes

ISO

- TI/A

IETF

- EBML, Matroska, FFV1, FLAC

IETF

Internet **E**ngineering **T**ask **F**orce

- voluntary Internet standards
- open standard organisation
- volunteers

→ <https://www.ietf.org>

CELLAR

Codec **E**ncoding for **L**oss**L**ess **A**rchiving and
Realtime transmission

- open source

→ <https://datatracker.ietf.org/wg/cellar/>

EBML

Extensible **B**inary **M**eta **L**anguage

- binary XML format

→ <https://github.com/Matroska-Org/ebml-specification>

Matroska

- extensible media container
- based on EBML

→ <https://github.com/Matroska-Org/matroska-specification>

FFV1

FFmpeg **V**ideo codec **1**[FF = **F**ast **F**orward]

- simple and efficient lossless intra-frame only video codec

→ <https://github.com/ffmpeg/ffv1>

4.3. Context

		t1	T	
L	l	t	X	tr

The quantized sample differences L-l, l-t1, t1-t, t-T, t-tr are used as context:

```
$context=Q_{0}[l-t1]+\left|Q_{0}\right|(Q_{1}[t1-t]+\left|Q_{1}\right|
\left|Q_{2}[t-tr]+\left|Q_{2}\right|(Q_{3}[L-l]+\left|Q_{3}\right|Q_{4}[T
-t]))$
```

If the context is smaller than 0 then -context is used and the difference between the sample and its predicted value is encoded with a flipped sign.

FLAC

Free **L**ossless **A**udio **C**odec

- fastest and most widely supported lossless audio codec

→ <https://xiph.org/flac/format.html>Y'C_BC_R 4:2:2

from:

- MOV / «uncompressed»
- AVI / «uncompressed»
- MP4 / «uncompressed»

to:

- Matroska / FFV1

RGB or R'G'B' 4:4:4

from:

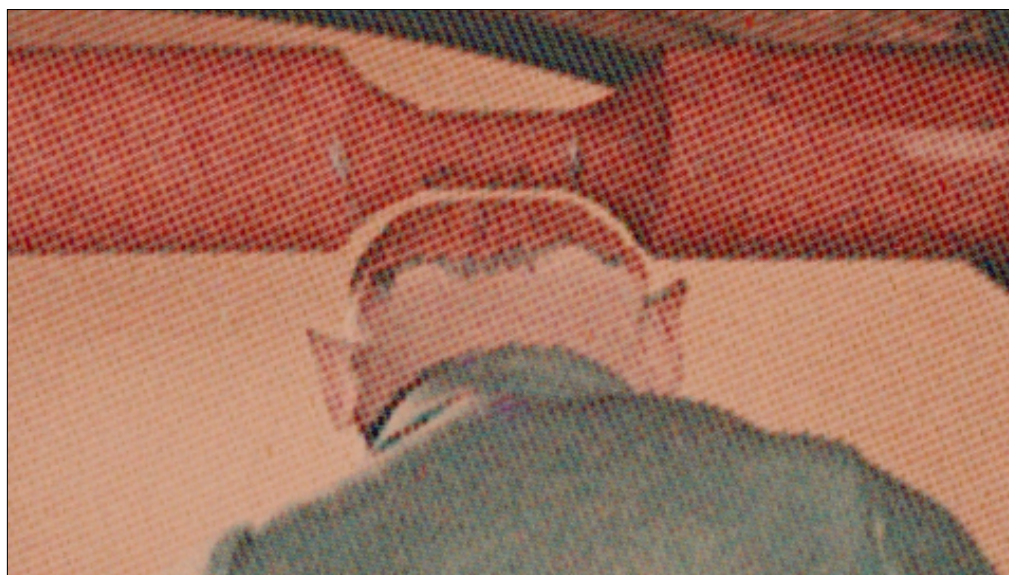
- folder or TAR / TIFF 16 bit
- MXF / DPX 16, 12 or 10 bit
- MXF / JPEG 2000

to:

- Matroska / FFV1

What is inside my DPX?

- log neg
- log RGB (quasi-log)
- gamma (power function), hyper-gamma
- scene-linear



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