

Colour Management: from camera to delivery

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digitale **cinematographie** || |
see the reality

Colour management?

« In digital imaging systems, color management is the controlled conversion between the color representations of various devices, such as image scanners, digital cameras, monitors, TV screens, film printers, computer printers, offset presses, and corresponding media. » *Wikipedia*

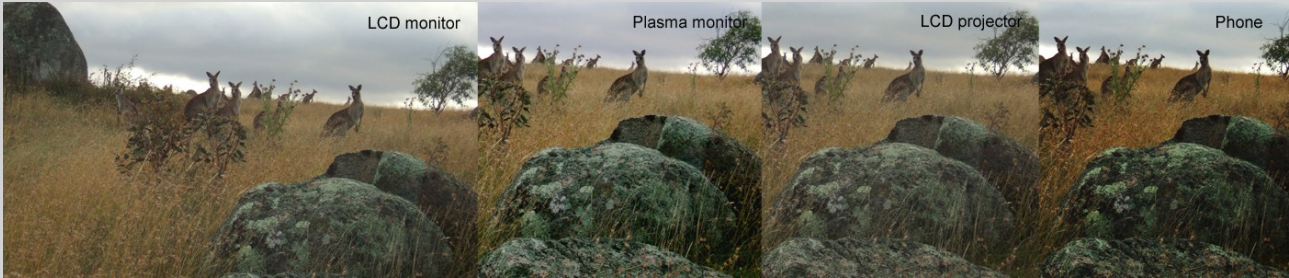
Why colour management?

Different display technologies:

Monitors: LCD, LED, Plasma, CRT, OLED, FED...

Projectors: DLP, LCD, SXRD, DILA...

All different ways to represent colours



Signal recorded is a stimulus:

RGB informations give different colours on different devices

Colour management changes the values to obtain the « right » colour

The ideal world: standards

Shooting a video project
Record with a video camera set to « video » mode
Monitor on a CRT monitor:

What you see is what you get

But...

The real world

- You want to keep extra info for post > special curves
 - CRT monitors don't exist anymore
- The final movie might get printed to film, go to the web...

And so you need a LUT

What's a LUT?

Look Up Table: it's a table of numbers

These numbers represent a colour transformation

A LUT can combine several different colour transformations in one:

- technical transformation (colourspace conversion)
 - artistic input (warmer, more contrast...)
- emulation of a film print on a certain display

There is no way to set them apart!

Solution: metadata

Separate the artistic input from the technical transformation

ASC-CDL: American Society of Cinematographers – Colour Decision List: a standard format that carries simple colour transformations

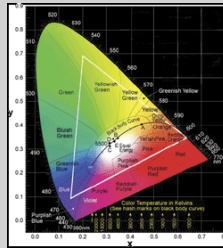
Combined with a Colour Management System (CMS)

The CMS

Will make different display devices match the same target:



- a film output
- a video standard (Rec 709)
- A phone screen, a LED wall, etc.

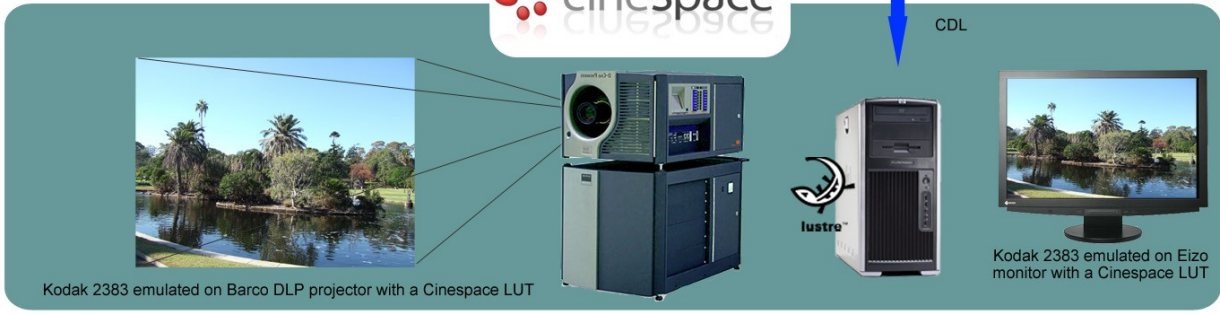


Digital acquisition to film workflow example

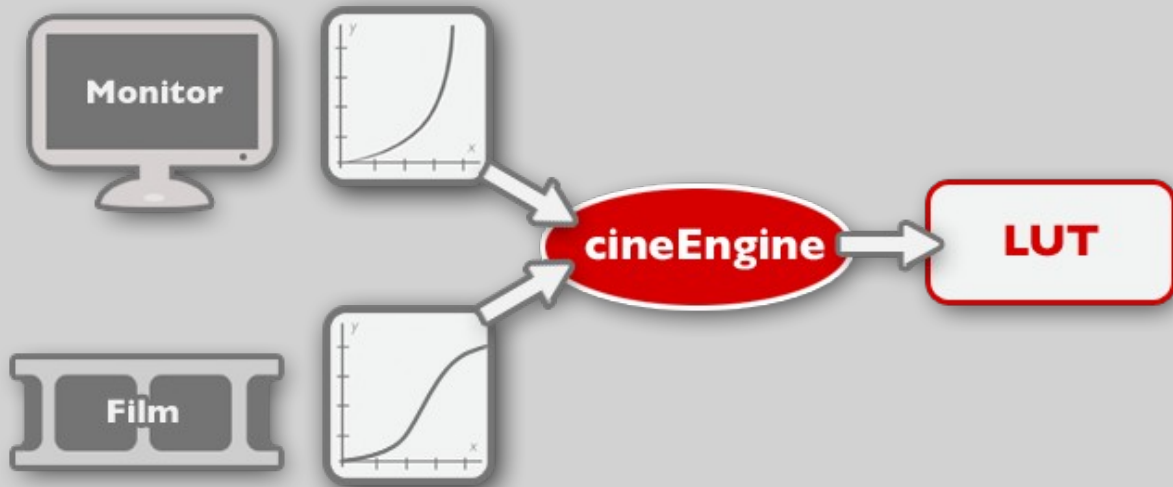
- Prepare your look with a colorist on a *CDL-enabled* grading system
 - Use a *CDL-enabled* onset tool
- Use a *CDL-enabled* dailies system (automatic process) to bake the correction in the video file
 - Send CDL to the VFX with original footage instead of renders
 - Use a *CDL-enabled* grading system for final grading

All of that in a calibrated environment, matching the same target on all displays with their own LUT, thanks to the **CMS**

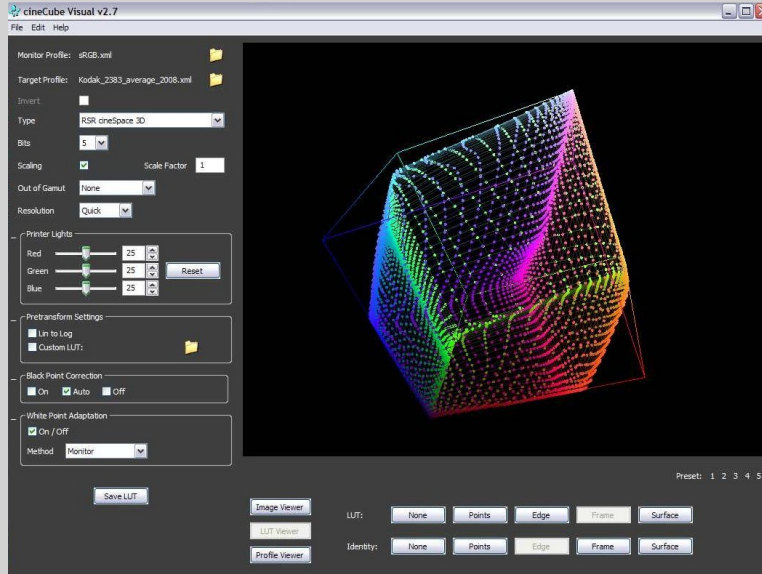
It works with all cameras!



Profiles and LUT



Interactive LUT creation



Deliverables

Cinespace will generate the LUTs for deliverables:

- Film Print
- Video Master (Rec 709)
- DCP (XYZ)
- Web (sRGB)...



Conclusion

It is now possible to display colour accurately all along the chain, to combine final medium emulation with artistic input and to carry metadata from one system to the other.

Make your life easier and your picture predictable!

If you need more information:

www.bandpro.de (reseller of Cinetal products)

www.cinetal.com (Cinespace, DAVIO and Cinemage)

www.workflowers.net (Calibration and training)

Thank you!

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