

Cintel diTTo with Kodak Color Science



Cintel's **diTTo** is the fastest Pin Registration film scanner available – Black and White Film can be scanned at up to 13 frames per second (fps). Pin Registration is almost essential at resolutions of 2K and above where the slightest movement can cause problems in compositing.

An over-sampled, 'super' 2K scan can be performed at 4.5fps with 4K output at over 3fps. These scans are D-MIN (Minimum Density) calibrated to Kodak's Cineon Standard in LOG (logarithmic) format to capture the whole of the film image.

An RGB LED light source provides greater stability, repeatability and life expectancy than any other light source especially gas-discharge light bulbs.

The Area Array CCD sensor used in diTTo enables a fixed RGB sequential scan of the film to be made without moving the film gate or the sensor. This way, mechanical inaccuracies which can be introduced during such movements are eliminated.

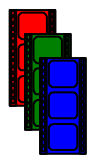
Cintel and **Kodak** have joined forces to improve Motion Picture Film Scanning by incorporating Kodak Color Science into the diTTo data scanner. These improvements fall into three areas –

- **Scanner Calibration**
- **Display Management**
- **Workflow Enhancement**

Scanner Calibration:

Every diTTo scanner will be factory calibrated using Kodak's Scanner Calibration Target Film and Kodak Motion Picture Services (KMPS). The target film is scanned on diTTo during the final phase of the System Test cycle and the resulting files sent to KMPS. These files are then analysed to produce Colour transform data which is used back at the Cintel Test department to fine-tune the diTTo scanning path.

Kodak Scanner Calibration Target Film



Characterisation
DPX Files

Kodak Motion Picture Services



Data generated via the characterisation is analysed and used to generate a **colour transform** that will ensure that each scanner is calibrated to accurately record the vast colour gamut associated with colour negative films.

Colour transform
data used to fine tune
diTTo scanning path

This factory calibration 'loop' will provide complete piece of mind regarding motion picture scanning. Any doubts regarding the accuracy of the scanner optical path and image reproduction are eliminated.

Display Management:

diTTo will optionally include the Kodak Display Manager (KDM) system to emulate the look of motion picture film in the 'Playback Viewer'.

The KDM option includes a monitor calibration probe which ensures that the diTTo GUI monitor is accurately displaying the image content.

Utilising patented film emulation technology, this custom version of KDM will allow diTTo customers to pre-visualize what their scanned film will look like when Printed by invoking different Look Up Tables (LUT's).



The monitor calibration probe (supplied with the diTTo KDM option) is used to sample, analyse and adjust the diTTo GUI monitor characteristics to ensure accurate image playback

See www.kodak.com/US/en/motion/products for more information



diTTo Playback Viewer



KDM LUT applied

Workflow Enhancement

The D/SCO Dust/Scratch Concealment Option fixes approximately 95% of all surface damage 'live' during the scanning process. This fix is an 'optical' process which replaces the lost light with the actual film image – it is not an electronic 'paint' process. D/SCO is based on the technology used in Cintel's renowned OLIVER 'solid state wet-gate' system but has the advantages of working in all film stocks including black and white.

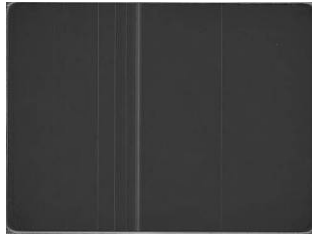
Original Image



Corrected Image



Any remaining surface damage can be flagged to a downstream process by a 'defect map' stored with each frame of image data.

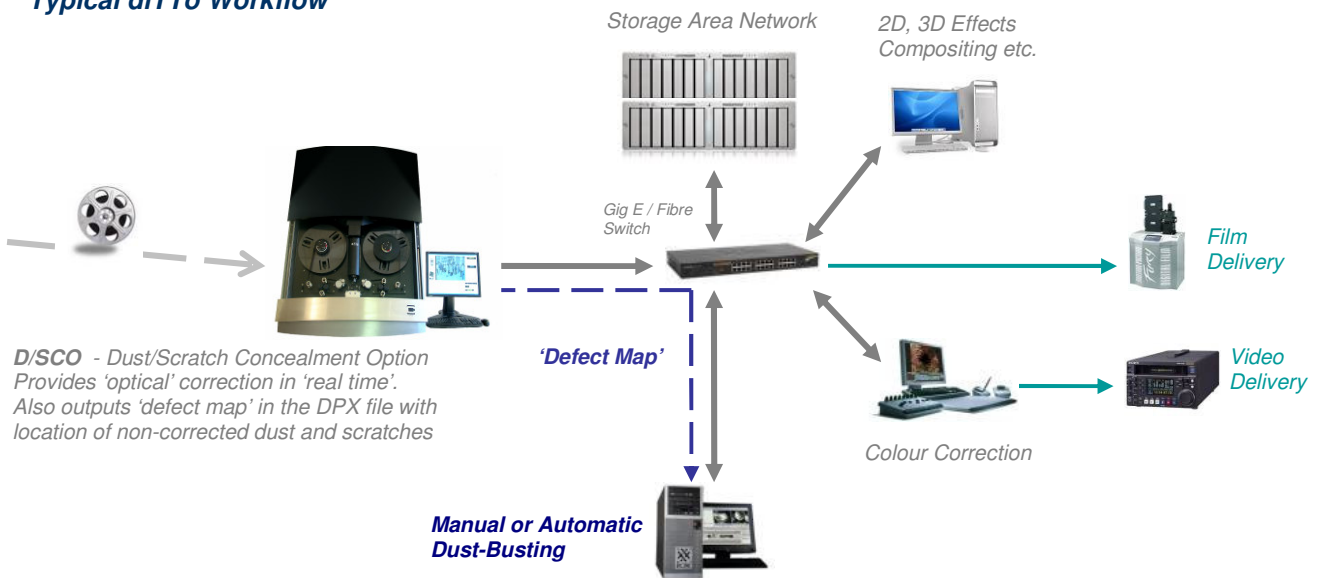


Typical 'Defect Map'

The DPX file format can carry this information either in the Alpha channel or in the second element and can be used by downstream software systems such as 'PF Clean' from the Pixel Farm, The Foundry's 'Forge', MTI's 'Correct' and 'Revival' from daVinci.

Cintel has incorporated Kodak intellectual property associated the use of the 'Defect Map' by end user customers so that no additional costs are involved and no annual license fee required.

Typical diTTo Workflow



To summarise, the alliance between Cintel and Kodak gives diTTo users three additional benefits:

- **Scanner Calibration**
Real piece of mind and complete confidence that film scans performed on diTTo will be calibrated, true and accurate.
- **Display Management**
Management of how the scanned film will look when printed back to different stocks. Complete confidence in the calibration of the diTTo display.
- **Workflow Enhancement**
License-free use of 'defect map' tools in addition to the un-equalled dust and scratch concealment performance of D/SCO.

More information on diTTo and D/SCO can be obtained from www.cintel.co.uk or contact sales@cintel.co.uk