

Colour Management in Compositors

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CompICC / OpenICC

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Colour Management in Compositors

Problem



varying native appearance without colour correction

Colour Management in Compositors

CompICC



CompICC - sRGB for all
(except applications opt out)

Colour Management in Compositors

CompICC

- Colour Management near X
 - OpenICC *Google Summer of Code* project in 2008
 - Tomas Carnecky three summer months
 - multi monitor support
 - per region colour conversion
 - Client / server protocol called the *net-color spec*
- 2009-2010
 - conversion to whole desktop colour correction
 - assume content is sRGB, except holes

Colour Management in Compositors

CompICC

- 2011-2012
 - project rename to CompICC
 - readd per region colour conversions
 - rename *net-color spec* to *X Color Management*
 - helper library libXcm
 - example tools in xcm
 - CompICC still uses Compiz C API (0.8.x)

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CompICC

- no per monitor device link profiles
 - interesting feature for movie compositors
- no integration in scene graph
 - overlapping regions
 - no custom blending space
 - leads to complicated code
- Artefacts
 - synchronisation, cube switch, no prelogin correction

Colour Management in Compositors

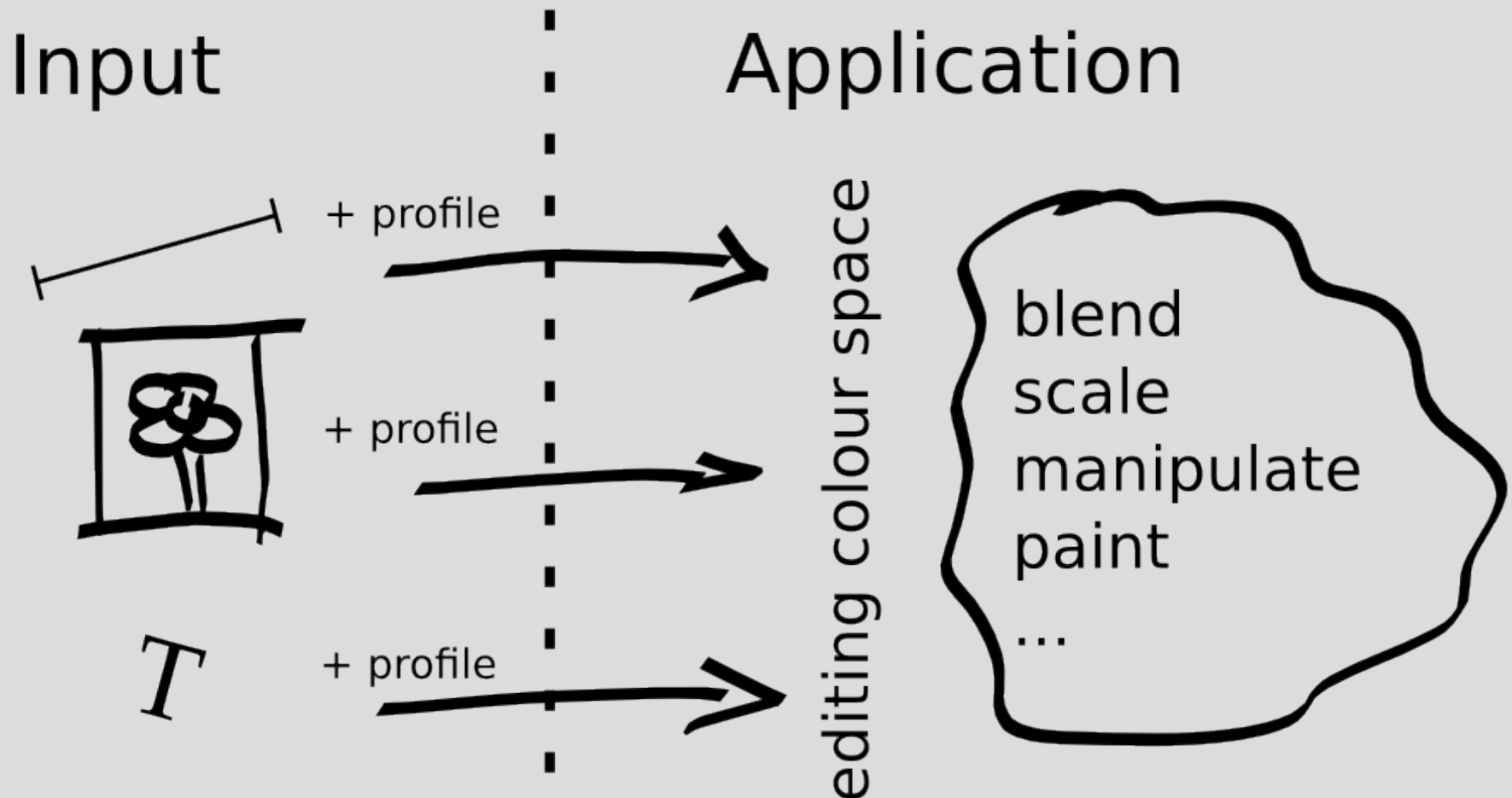
Goals

- What colour spaces?
 - AdobeRGB
 - Camera RGBs (customising ProPhoto primaries)
 - wide gamut displays
- Compositing with linear gamma
- HDR Displays
 - exceeds dynamic range of sRGB and scRGB
 - linear floats or logarithmic integers

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Goals

Mixed colour spaces



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Goals

- Blending
 - gamma determines blending results
 - various three channel colour spaces possible
 - still mixing of colour spaces makes no sense

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Goals

Colour binding

editing colour space

Application

tag with
editing profile

colour match to
output space



Output

colour match
to output



dont touch
colours

late

early

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Goals

- sRGB most important input space
- Device Space
 - clients want to do things we never thought of
 - calibration/profiling
- Server side colour correction
 - easily utilise GPU
 - better caching
 - smaller memory footprint

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Approaches

- Simply assume one source space - sRGB
 - fast to implement
 - very limited use
- Scene Graph
 - display screen content like one document
 - most flexible

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Approaches

- Per Window Colour Spaces
 - reasonably fast to implement
 - needs much work in all toolkits
- Per Rectangle Colour Spaces
 - no scene graph
 - almost sufficient
 - much work in compositor
 - share functionality in separate library?

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Thanks

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