ICC Colour Management and Graphic Arts Colorimetry Issues

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Why Colour Management

• **Goal of Colour Management**
  — Reliable, predictable reproduction of colour
  — “Seamless” colour across devices and documents

• **Challenge: many variables and uncertainties in workflow**
  — Output is device- and media-dependent
  — Devices require characterization and calibration
  — Gamuts of devices and media are different

With colour management: via a colour exchange space, one transform is required per device, avoiding ‘many-to-many’ transforms.
International Color Consortium

- ICC is a consortium of member companies (approx 50 members)
- ICC maintains the profile format specification
  - Co-published with ISO TC 130
  - ISO 15076-1 published 2005, revised 2010
- ICC publishes White Papers, Technical notes and other information to aid developers and users through its web site
- ICC maintains a number of registries
  - Tag signatures
  - Characterization data
  - Metadata
  - Standard profiles
Achieving ‘seamless colour..’

Predictable reproduction of colour requires:
- Well-defined profile and PCS specification
- Standardized workflows, test targets
- Press characterization data representing standard printing conditions
- Reproduction aims and tolerances that conform to customer requirements

All specifications must be completely unambiguous
- Early implementations were often incorrect, leading to loss of confidence by customers
- All implementors must be able to achieve identical results for colorimetric intents (within precision limits)
ICC relationship with ISO TC 130 and other standards bodies

**ICC has strong links to TC130**

- ICC is a consortium of vendors - TC130 is more broadly based and includes many industry associations
- Many experts attend meetings of both organizations
- ICC proposes new work items to TC130 where ISO standardization is desirable

**Other liaisons**

- ISO TC42 (Photography)
- ISO TC6 (Paper)
- Ghent Work Group (workflow)
- SC28 (office equipment)
- CIE
- ....
Some current ICC work items in Graphic Arts

Spot ink proofing and printing
  — How to carry information on ink reflectance and opacity in PDF
  — How to predict solid and tint overprints

Metrology
  — How to define colorimetry and appearance of non-paper materials

Exchange gamuts
  — How to exchange data between output media with different colour gamuts—especially for large-gamut digital print
  — How to render to and from the ISO 12640 reference gamut

Black point
  — How to unambiguously scale media black points

Media white point
  — How to compensate for differences in substrate colour
Why ICC supports this workshop

Standards are important

— Customers increasingly rely on standards for colour reproduction to deliver predictable colour
— Standards protect both producer and consumer
— Vendors rely on standards to ensure interoperability of hardware and software

Standards must be unambiguous

— Numerical definitions of colour that arise from applying a given transform within different software implementations must give the same results
— Computational robustness is essential
— Inversion must retain accuracy on multiple round trips
Thank You!

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