IDEAlliance
International Digital Enterprise Alliance ®

The G7® Methodology
And Neutral Gray

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Who is IDEAlliance?

- IDEAlliance has 40+ Years of experience as a Non-Profit Industry Association

- Focus on developing technology specifications, guidelines and best practices for the end-to-end digital supply chain

- Broad based membership from across the supply chain

- Publishers, Agencies, Printers, Suppliers

IDEAlliance Members

- Conde Nast
- Forbes Media
- Meredith Corporation
- Hachette Filipacchi Media
- Hearst
- Newsweek
- JCPenney Media
- McGraw-Hill Companies
- Time Inc.
- Rodale
- Hallmark
- National Geographic

- DRAFTFCB
- Ogilvy & Mather
- JWT
- McCann-Erickson
- DDB
- Leo Burnett USA
- Saatchi & Saatchi

- Kodak
- Dalim Software GmbH
- Fujifilm Graphic Systems
- X-Rite
- Techkon
- Eizo Nanao Technologies
- Nazdar Ink
- INX International
- Sun Chemical
- Ink Systems, Inc.
- Color Correct Solutions
- Adstream
- LaCrosse Litho
- Vio/Adsend
- Enfocus Software
- Just Normlich
- Konica Minolta

- Heidelberg
- Manroland
- Mimaki
- Goss International

- Adobe Systems
- Epson
- EFI
- IBM
- Mark Logic Corporation
- Microsoft
- Quark
- Xerox Corporation

- International Paper
- NewPage Corporation
- UPM - Kymmene
- Sappi Fine Paper NA
- Verso Paper

- Quad/Graphics
- WorldColor
- RR Donnelley
- Transcontinental
- Vertis
- Consolidated Graphics

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Alliance Partners

Domains

- **Content Creation, Mgmt & Delivery**
  - ICE
  - PRISM
  - Digital Image Metadata
  - SGML
- **Digital Advertising & Production Workflow**
  - GRACoL ®
  - G7
  - PROSE
  - JIFFI
  - SPACE
  - DISC ®
  - Digital Print
  - Screen Print
  - SWOP®
  - Flexo
  - Gravure

- **Supply Chain Management**
  - papiNet ®
  - EMBARC
  - RFID
  - NARI
- **Mail & Newsstand Distribution**
  - SnL – Newsstand
  - SnL – Newspaper Inserts
  - Mail.dat ®
  - ADIS

International Activities

Conferences and Summits

G7 Summit
A Conference of IDEAlliance

PRIMEX 2009
Print Media Executive Summit
A Conference of IDEAlliance

PrintDistribution 2009
A Conference of IDEAlliance

Spectrum360 2008
A Conference of IDEAlliance

Publishers' Forum
for Advertising Agencies
An IDEAlliance FOCUS Series

XML-in-Practice 2009
A Conference of IDEAlliance

Proof to Press
Best Practices
An IDEAlliance FOCUS! Series

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Programs

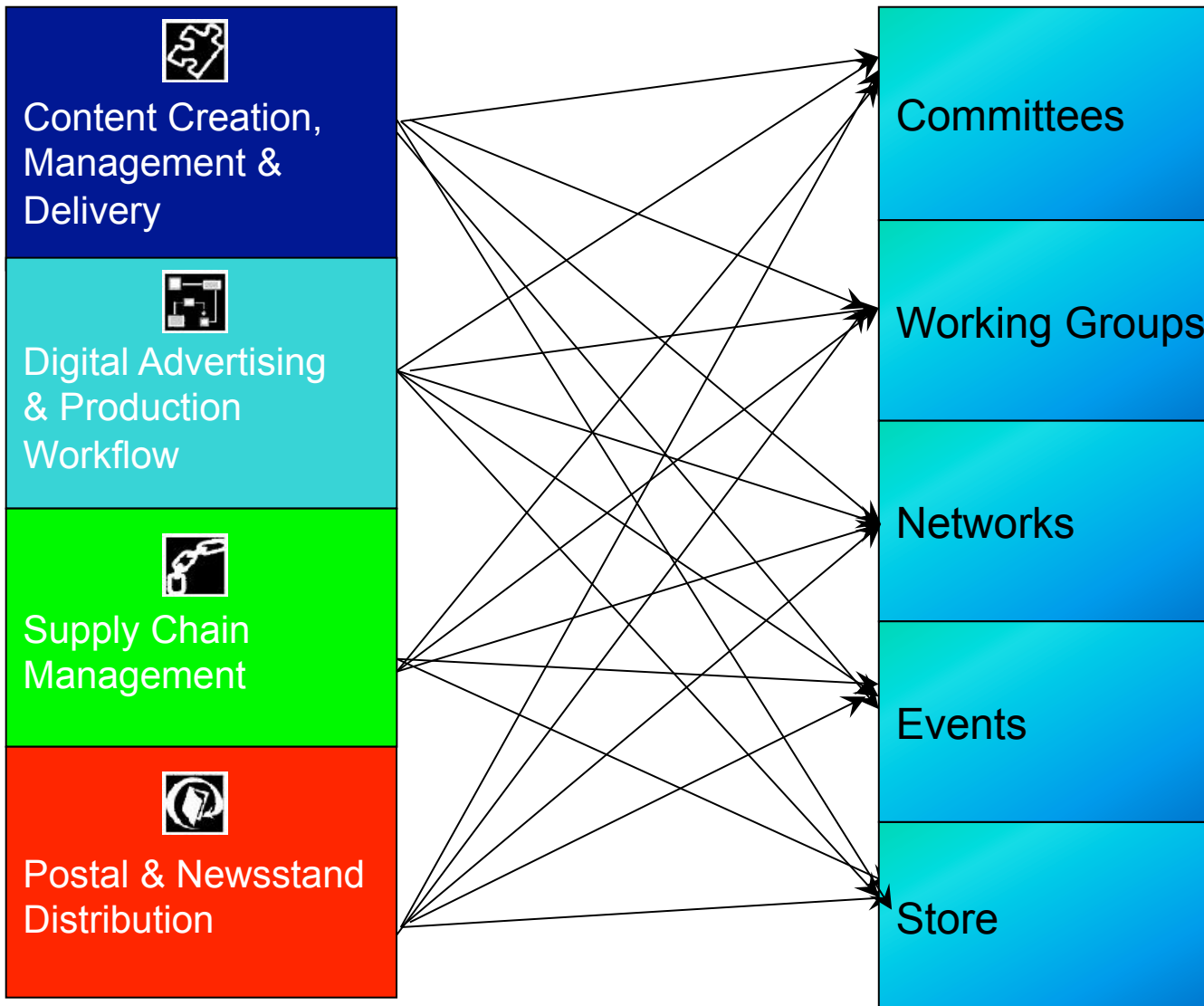|	
Committees	Think Tanks: Strategies & Best Practices
Working Groups	Technical Specifications & Certifications
Networks	Peer Implementation & Support
Events	Innovating, Educating & Networking
Store	Tools & Resources

Programs

Content Creation, Management & Delivery

Digital Advertising & Production Workflow

Supply Chain Management

Postal & Newsstand Distribution

Committees

Working Groups

Networks

Events

Store

Color Printing Stages

- Concept / design

- Creative / art / photography

- Prepress / RGB-CMYK conversion

- Proofing / approval cycle

- Press run

- Consumer

  - Spends on average 0.75 seconds per viewing!

- Trash can

Reproduction Issues

- Communication
    - Hard to put color into words – subjective: "needs more red" or "it's too cool or too warm".
- Does the proof match the product?
- Does the proof <u>predict</u> the press?
- Will the press match the proof?
- Under different lighting?
- Can you do it again next month or next year?

Why Care About Standards?

- Printing standards benefit <u>everyone</u>
  - Client, agency, creative, prepress, pressroom
- Printing is a <u>manufacturing</u> process
- Standardized proofs are <u>always the same</u>
- <u>Standard CMYK files</u> mean <u>consistent color</u>

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ISO 12647 Print Standard

- <u>THE</u> official international printing standard

- Defines ink color, paper color, dot gain etc.

- Written in mid-1990s (before CtP, ICC etc.)

- Limitation: Multiple possible "appearances" while staying within ISO rules

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GRACoL® & SWOP® (2007)

- Based on ISO 12647-2 standard

- GRACoL® = General Requirements for Commercial Offset Lithography

- SWOP ® = Specifications for Web Offset Publications

- Completely revised to reflect new technologies
  - CtP, ICC, digital proofing, etc.

- So, where does G7 ® come in?

What is G7 ®?

- Media-independent specification for a ***universal grayscale appearance***

- Method of calibrating any printing system to a ***constant gray scale appearance***

- Backbone of SWOP ® & GRACoL ®

- Process control aim points for more consistent printing & proofing "to the numbers"

- G = Gray Scale and the 7 ISO ink colors

G7 ® Definition

- **G7**® is both a definition of grayscale appearance, and a calibration method for adjusting any CMYK imaging device to simulate the G7 grayscale definition. G7 yields a visual match between different imaging systems using simple 1-dimensional curves, and enables shared appearance between different printing devices or specifications when additional color management is not available. G7 is the basis for GRACoL on #1 paper (TR006), SWOP on #3 paper (TR003), SWOP on #5 paper (TR005) and **FIRST's** Flexo on white polyester substrate (TR007). G7 utilizes one of the implementation methods of the new ISO 10128 standard for near-neutral calibration. A key benefit of G7 is that it is device independent. The G7 neutral print density curve (NPDC), gray balance definitions and calibration methodology are the same for any imaging technology, regardless of substrate, colorants, screening technologies, etc. The NPDC at the heart of the G7 grayscale definition was derived by analyzing the neutral tonality of typical ISO Standard commercial offset printing using computer-to-plate technology. G7 should not be confused with GRACoL7, which is the 7th edition of the GRACoL Specification.
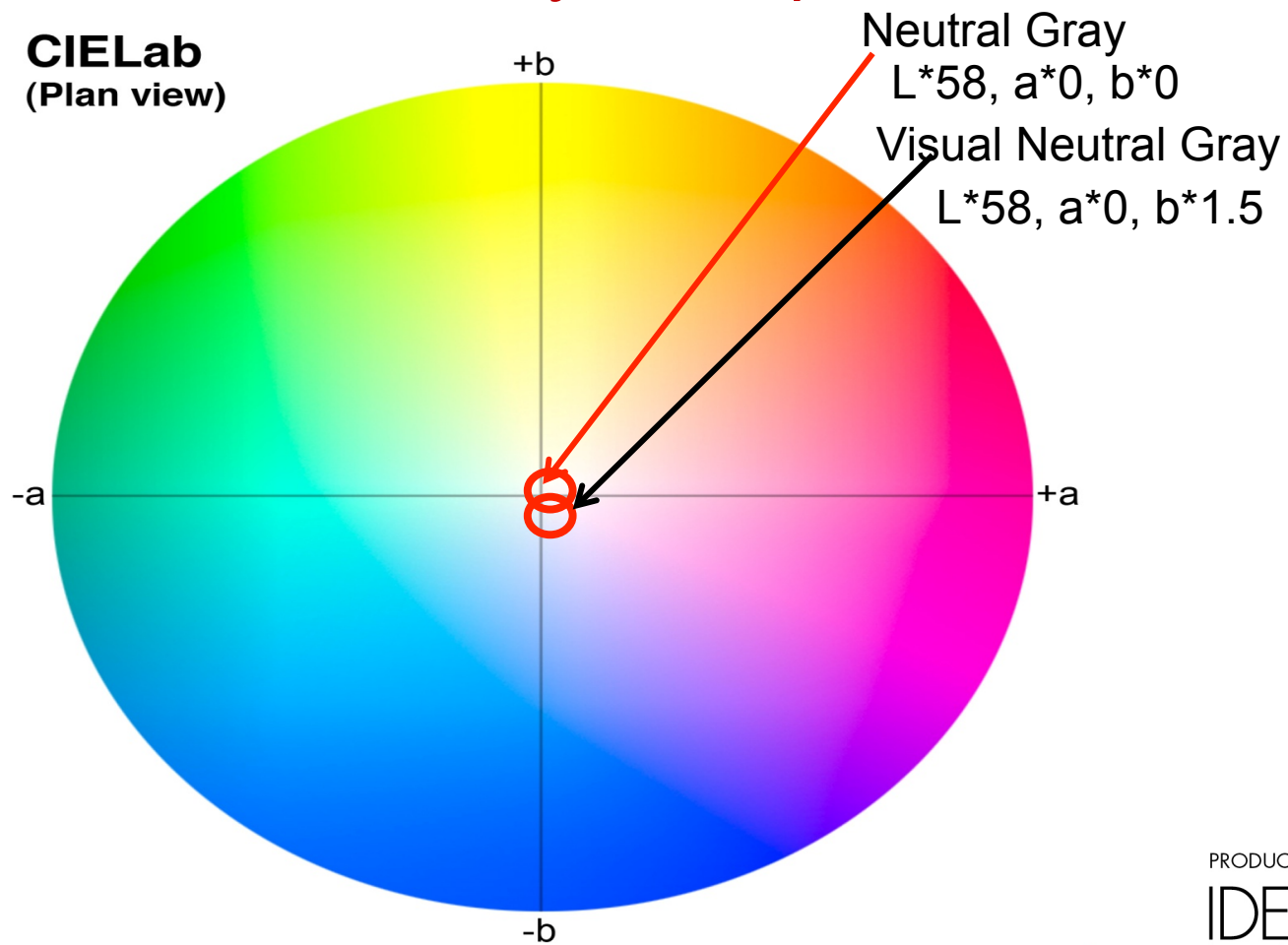
Understanding Neutral Gray

- Gray is the center of color space

- Neutral Gray is Dead Center

- Visual neutral Gray is Almost Dead Center

- G7 Neutral Gray:

  - No color cast when viewed in correct lighting

  - No color cast in the absence of an excessive amount of optical brighteners

Neutral Gray Example

CIELab
(Plan view)

+b

+a

-a

-b

Neutral Gray
L*58, a*0, b*0
Visual Neutral Gray
L*58, a*0, b*1.5

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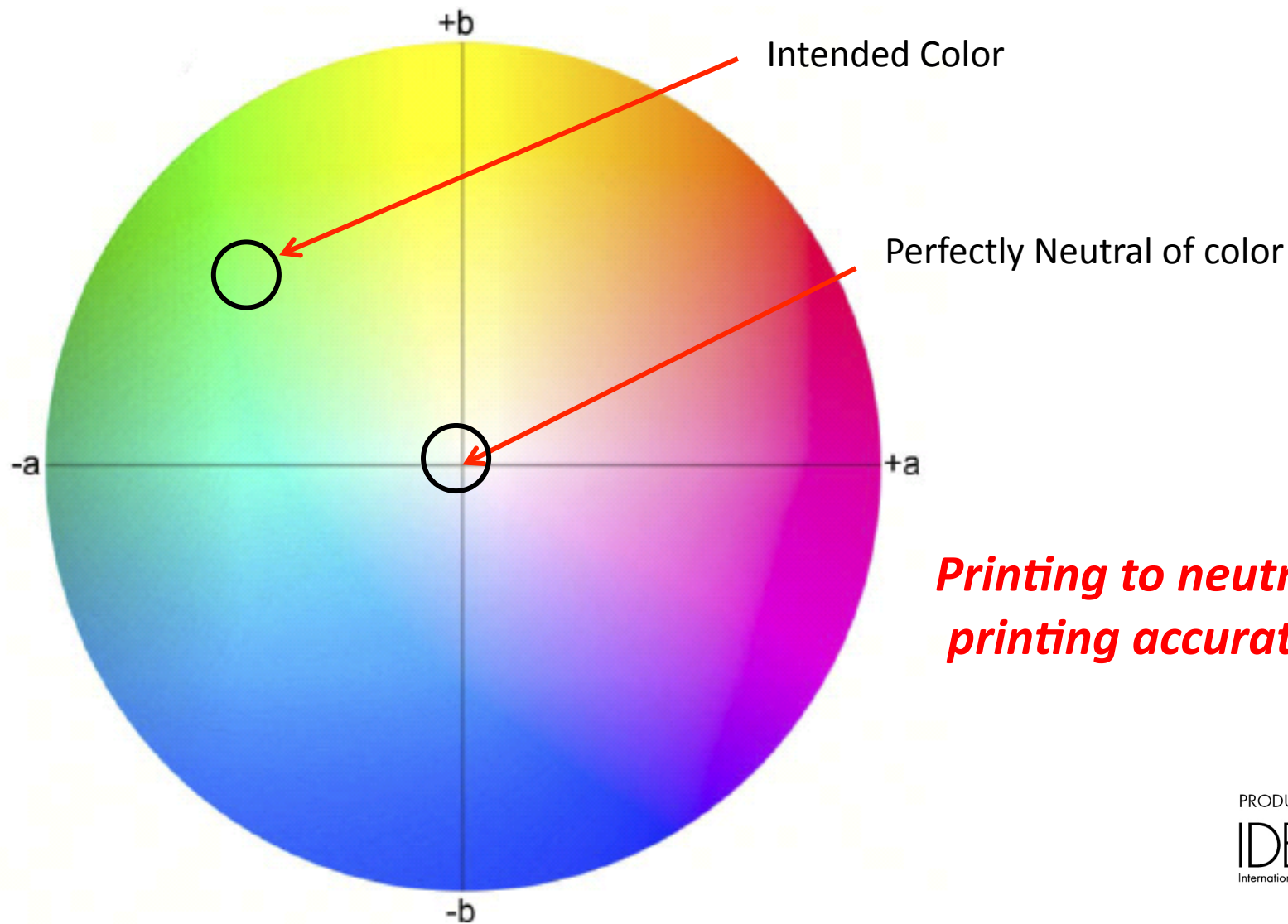International Digital Enterprise Alliance ®

Gray Balance has been used by photography professionals for years.

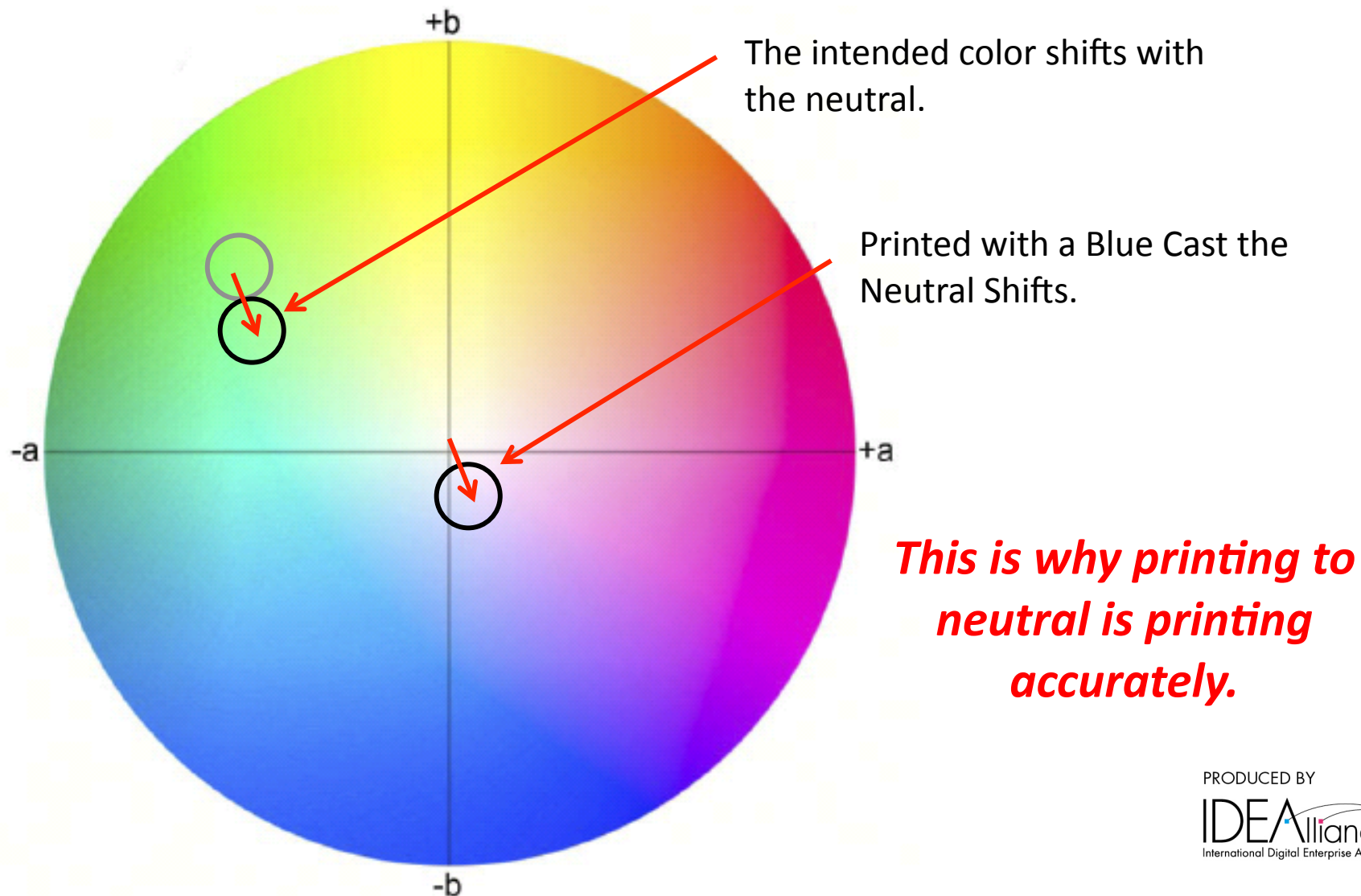*In the 1970's Gray Balance Cards were used to confirm gray balance in photography.*

Gray Balance is not a new concept, but just a forgotten one.

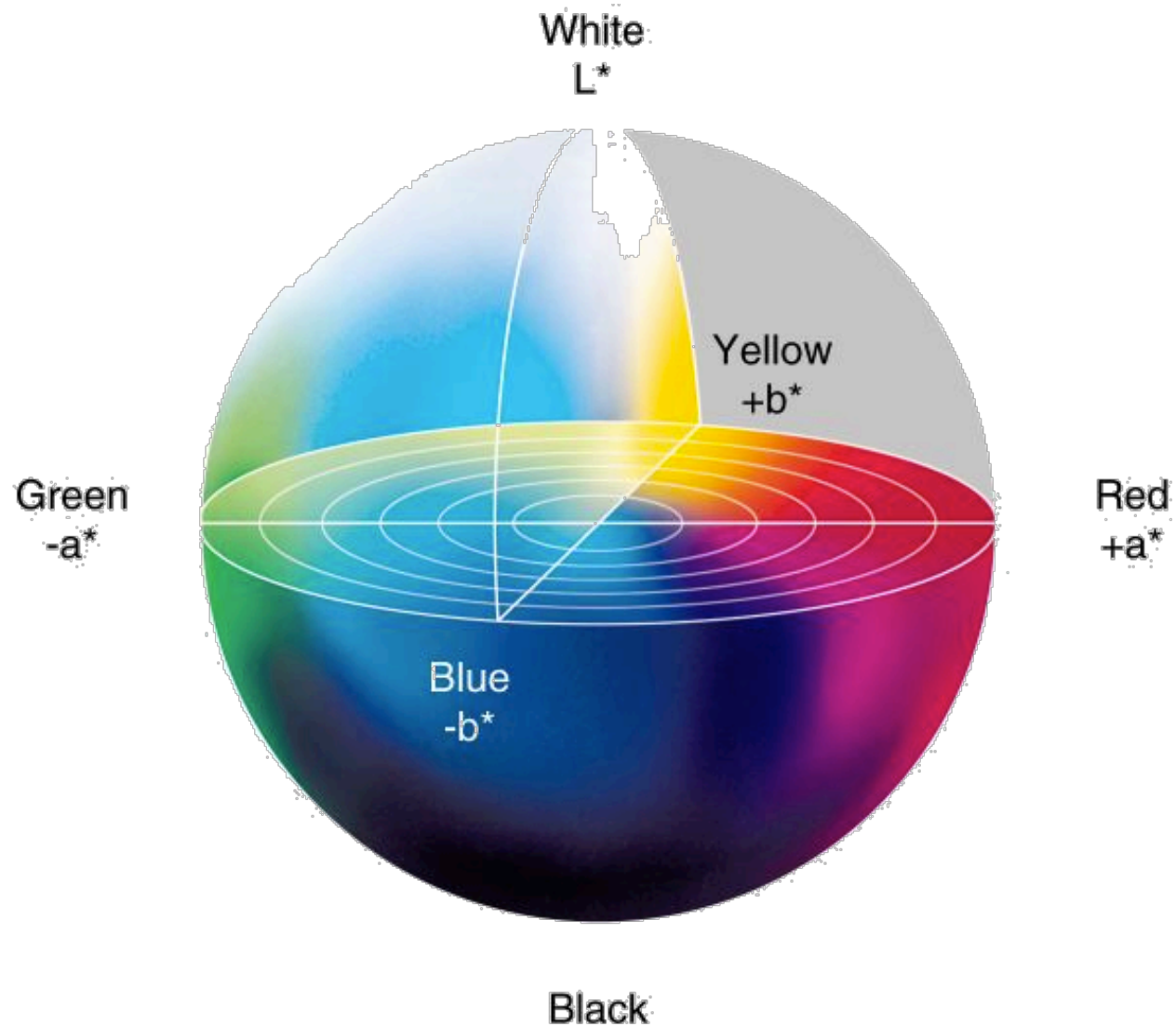# Example of How Not Printing to Neutral Will Affect Color

+b

Intended Color

Perfectly Neutral of color

-a

+a

Printing to neutral is printing accurately.

-b

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Example of How Not Printing to Neutral Will Affect Color

The intended color shifts with the neutral.

Printed with a Blue Cast the Neutral Shifts.

This is why printing to neutral is printing accurately.

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G7 Does Not Specify the Elements of Neutral Gray

G7 Specifies the Color!
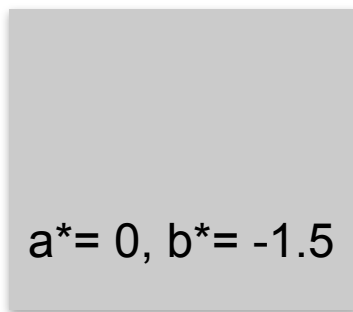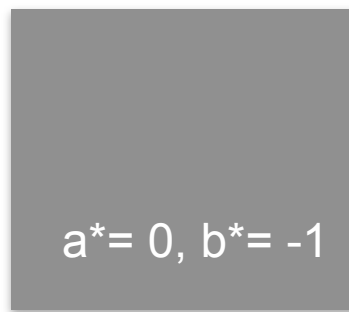
a*= 0, b*= -1.5	a*= 0, b*= -1	a*= 0, b*= 0.5
25C, 19M, 19Y	**50C, 40M, 40Y**	**75C, 66M, 66Y**
HC (Highlight Contrast)	**HR** (Highlight Range)	**SC** (Shadow Contrast)
25% (Quartertone)	**50% (Midtone)**	**75% (Threequarter tone)**
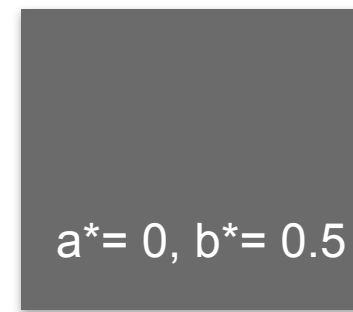
NPDC = Neutral Print Density Curve

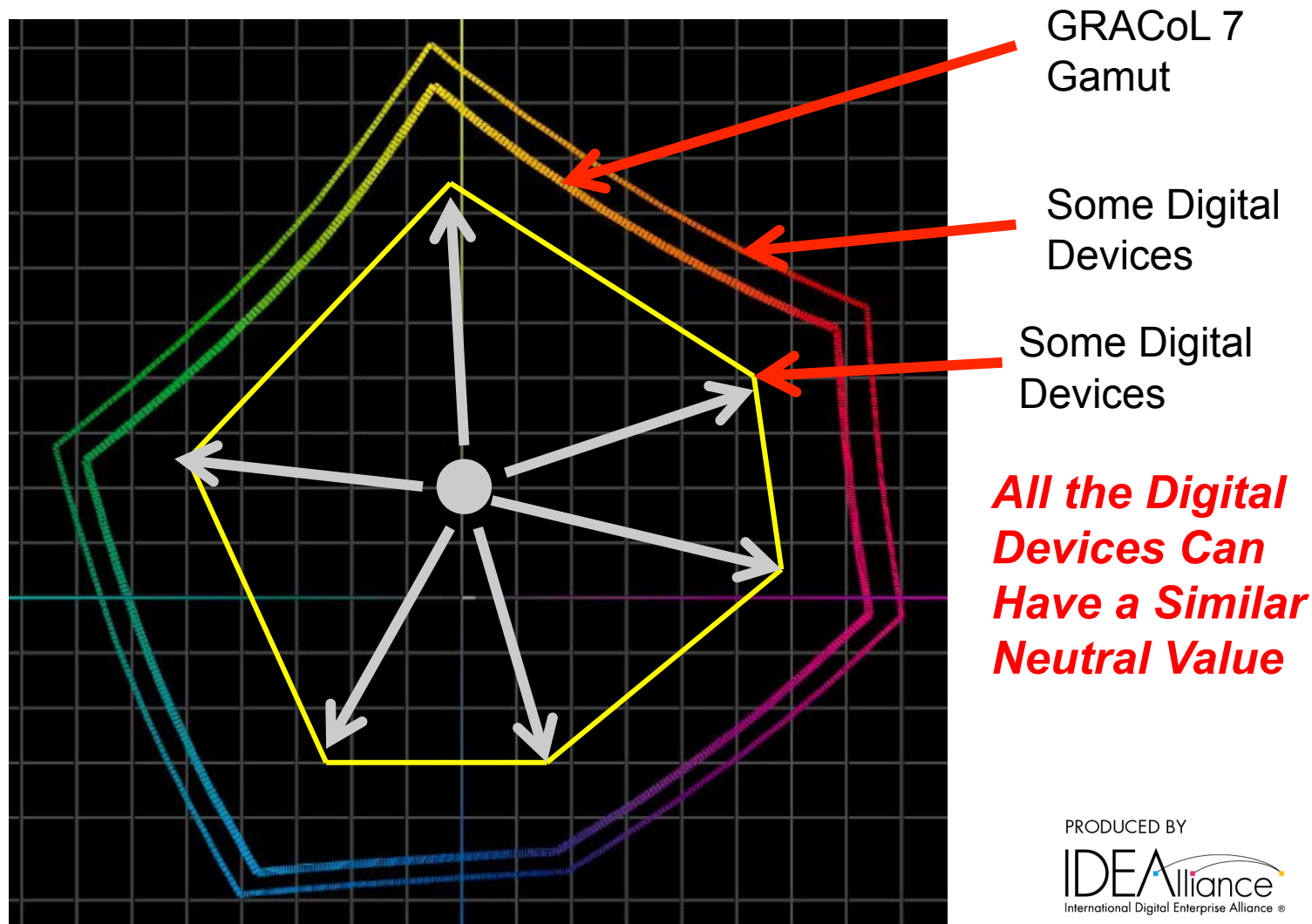# How does a digital printer know they have accurately output a file?

Yellow Cast

Balanced Grays

If we print to "Neutral" we have not added a "color cast" to the original file values.

How can a printer make very different print devices with very different ink sets print similar color?

GRACoL 7 Gamut

Some Digital Devices

Some Digital Devices

All the Digital Devices Can Have a Similar Neutral Value

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G7 Benefits For Print Buyers

- Better match between proof & press

- All proofing systems look very similar

- Similar printed appearance regardless of…

  - … who does the printing

  - … with what technology

  - … where & when

- Promotes awareness of standardized printing & proofing

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G7 Benefits For Printers

- Proofs that match "natural" press conditions
- Easier matching between different presses, technologies, substrates, etc.
- Faster make-ready
- Makes standardized printing & proofing a little easier
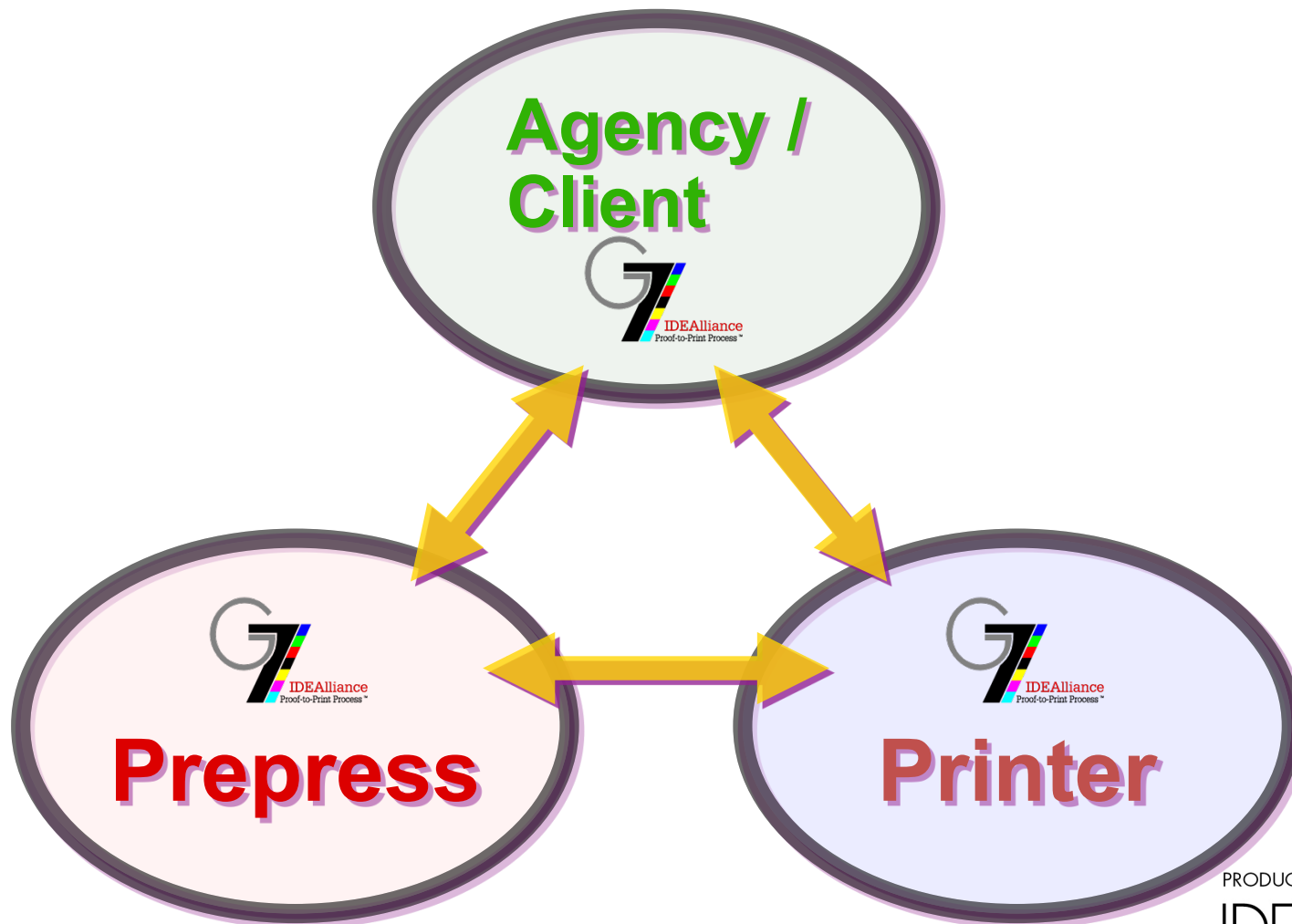
Thank You for your time

QUESTIONS?