

Delivery methods are evolving...

Legacy

Rec 709 for TV
sRGB for Web

Rec2020 video (not HDR) for
broadcast / cable / blu-ray

Pro Res / AS11

Today

Rec 2100 PQ or HLG for Netflix /
Amazon / other....

Brighter devices

Rec2100 HDR 10+ for Blu-Ray

Coming...

HDR Internet Video to
Desktop Monitors and Mobile...
(iMac Pro / MBP has 500 nits)
YouTube HDR

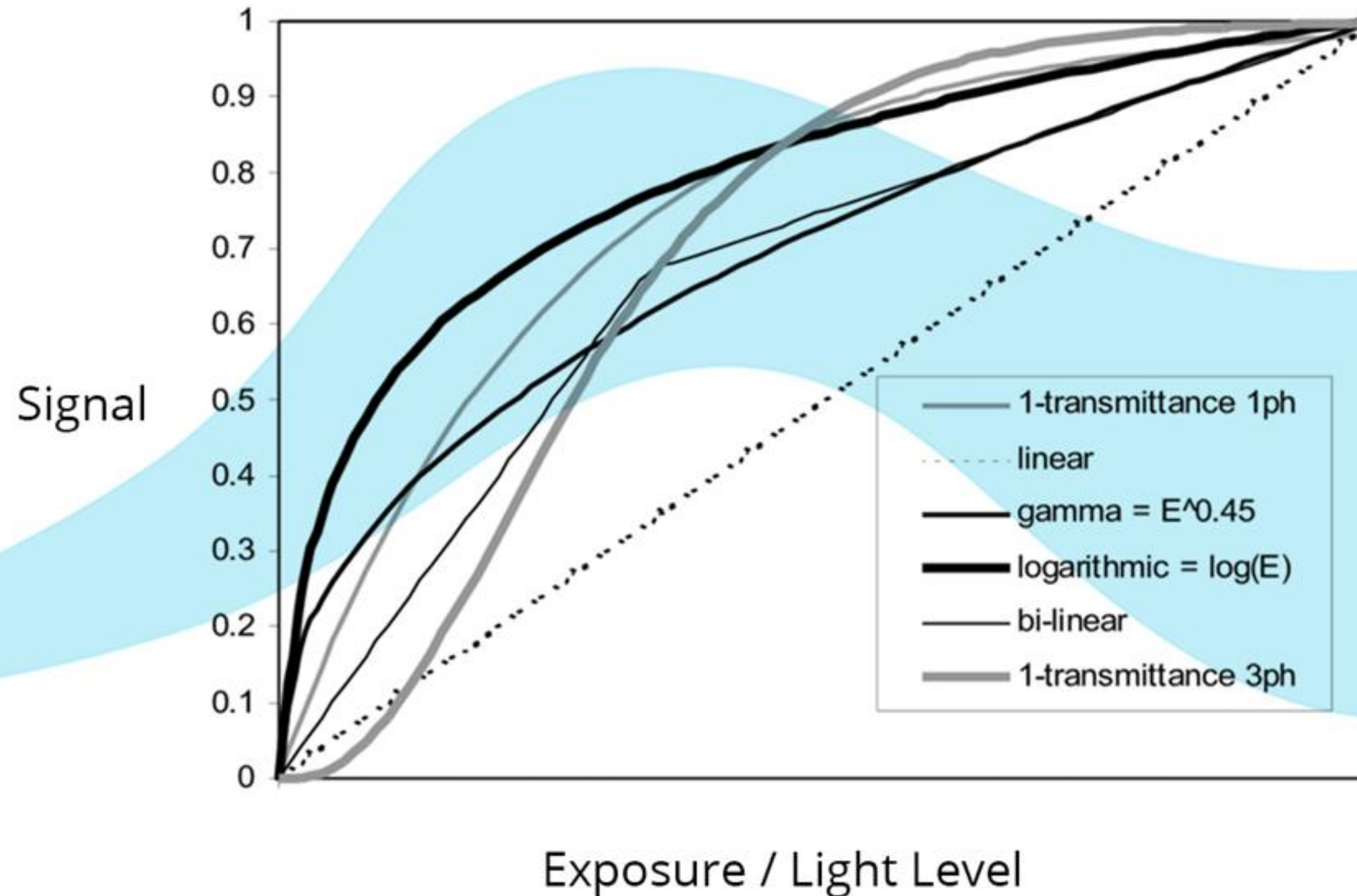
Dynamic standards
Dolby Vision, Samsung?

IMF?

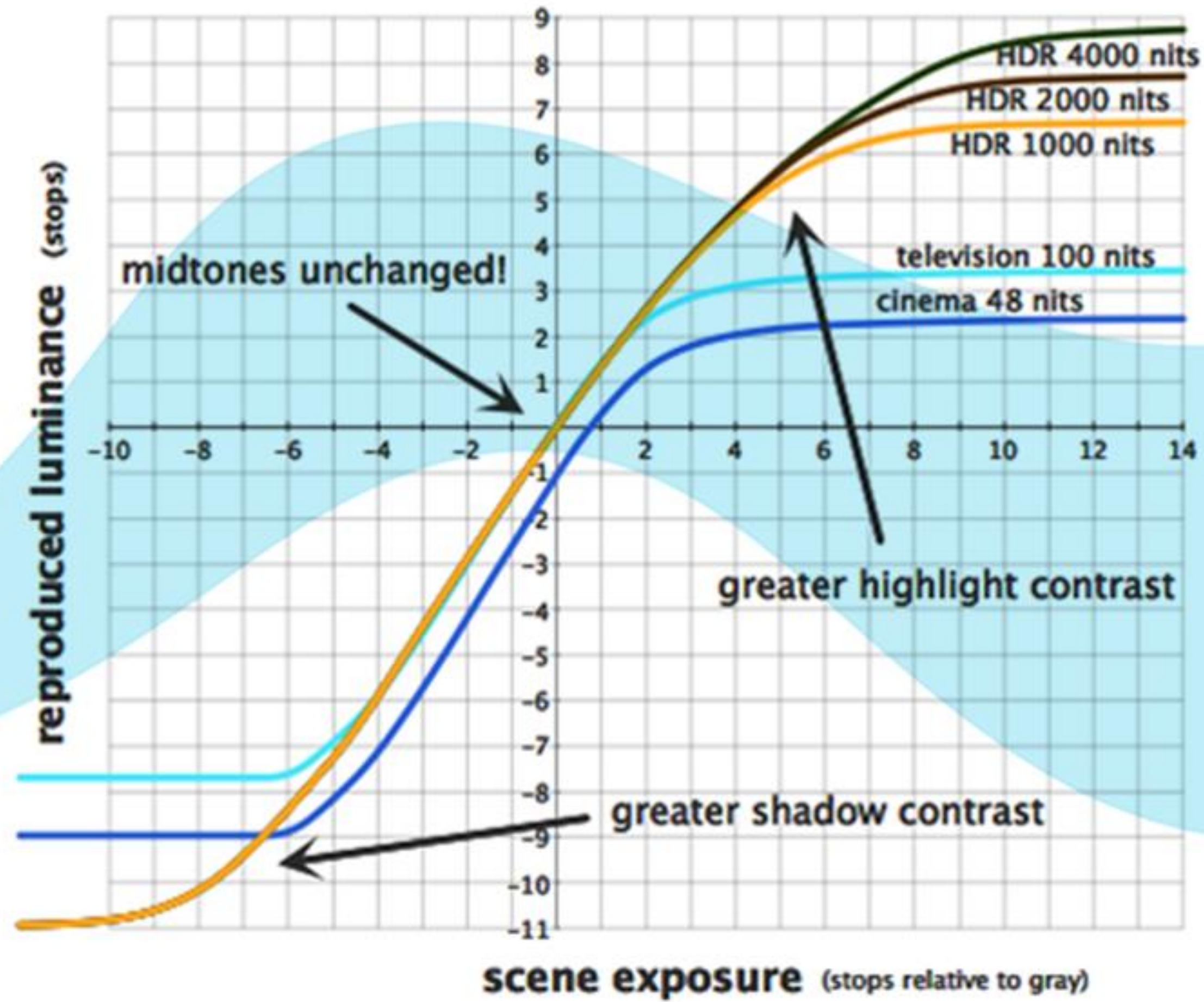
Need to deliver in higher dynamic range and wider colour gamut

What is Colour Space?

1. Tone Curve (eg, Gamma / Log / Linear)

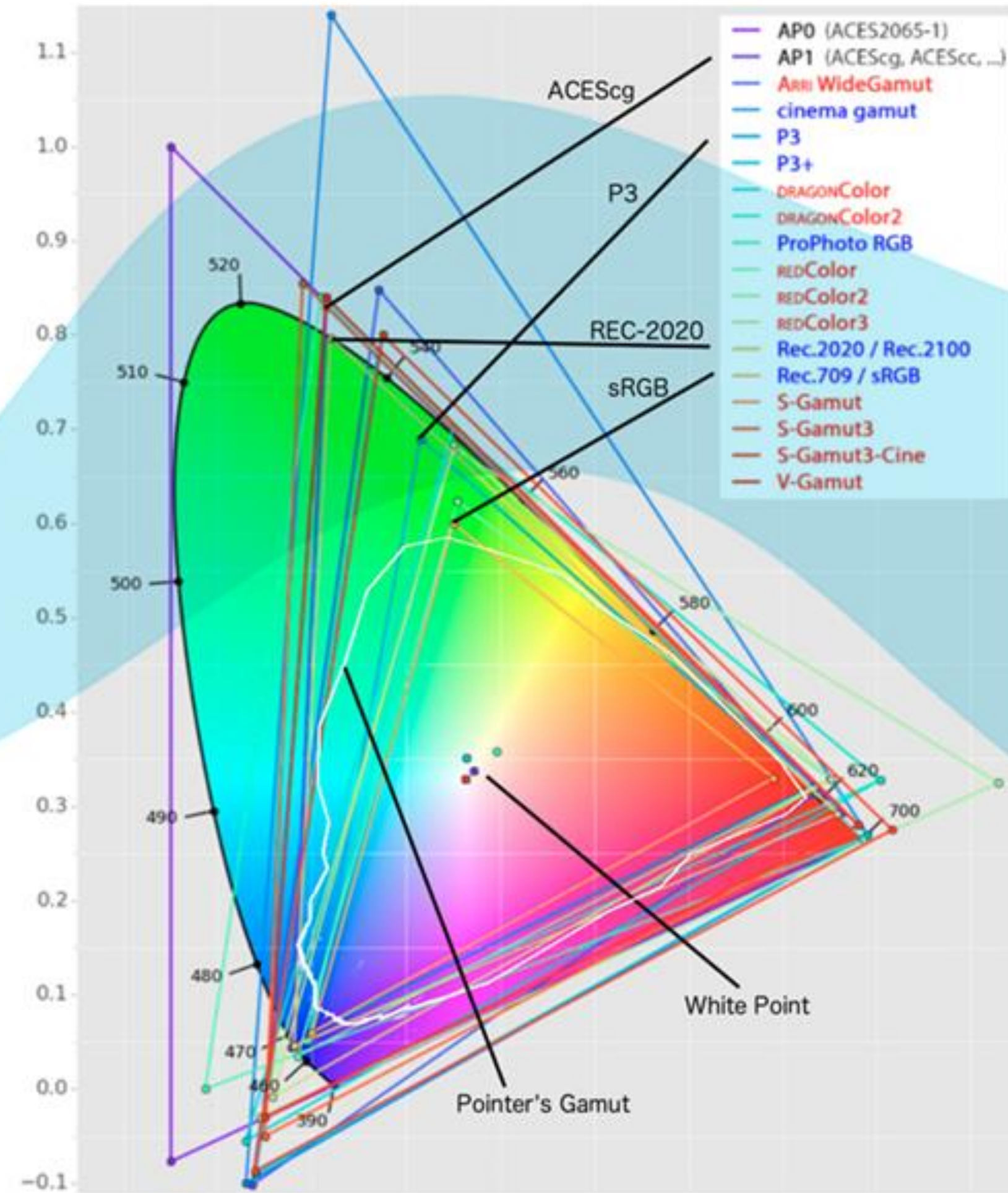


HDR Tone Scales



What is Colour Space?

1. Tone Curve (eg, Gamma / Log / Linear)



Types of Colour Space

Scene Referred

Based on acquisition colourspace, eg, ARRI Log C **Wide Gamut** (Camera)

Scene Linear Rec 709 (CG)

Limitation: Unsuitable for viewing

Display Referred

Based on monitoring colourspace, eg, **Rec 709**

Limitation: Limited dynamic range and colour gamut

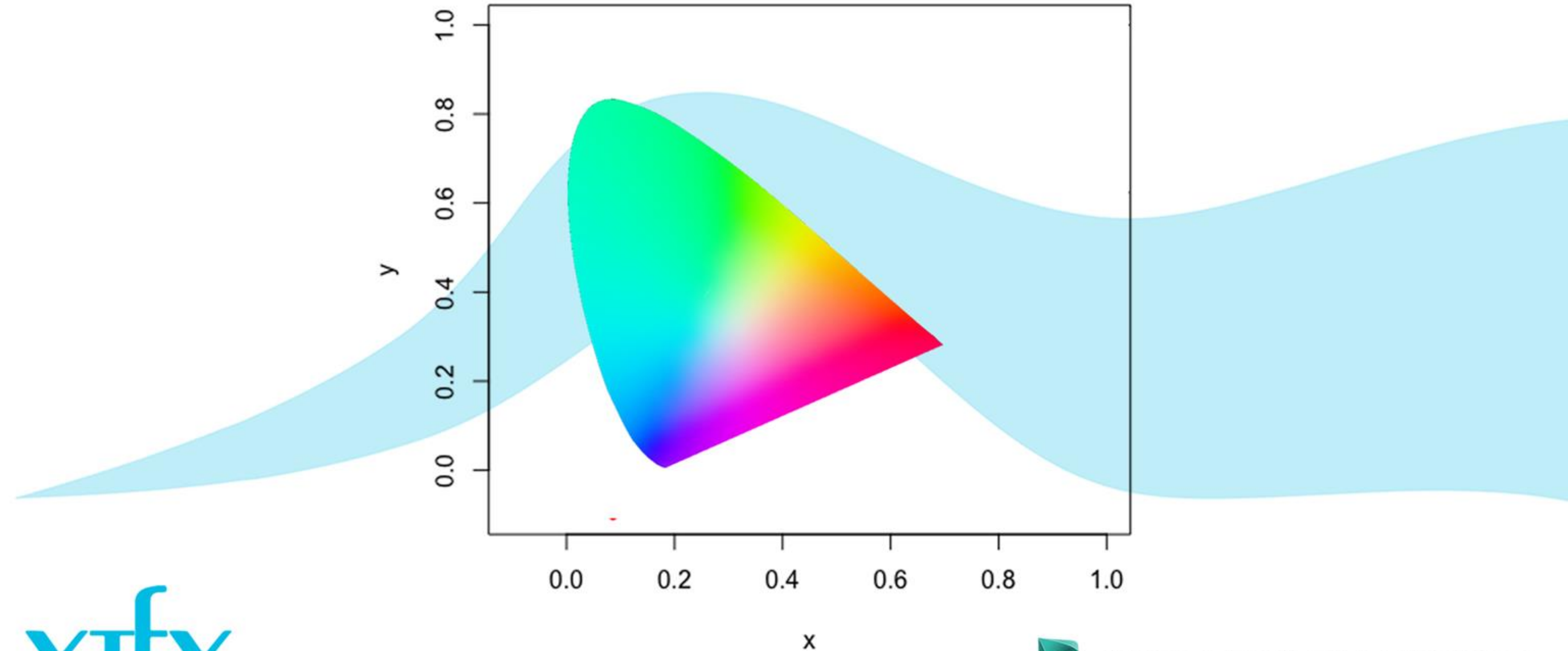
Generalised Working Colourspace

eg, ACES CG (for CG & compositing), ACES CCT (for Colour Grading)

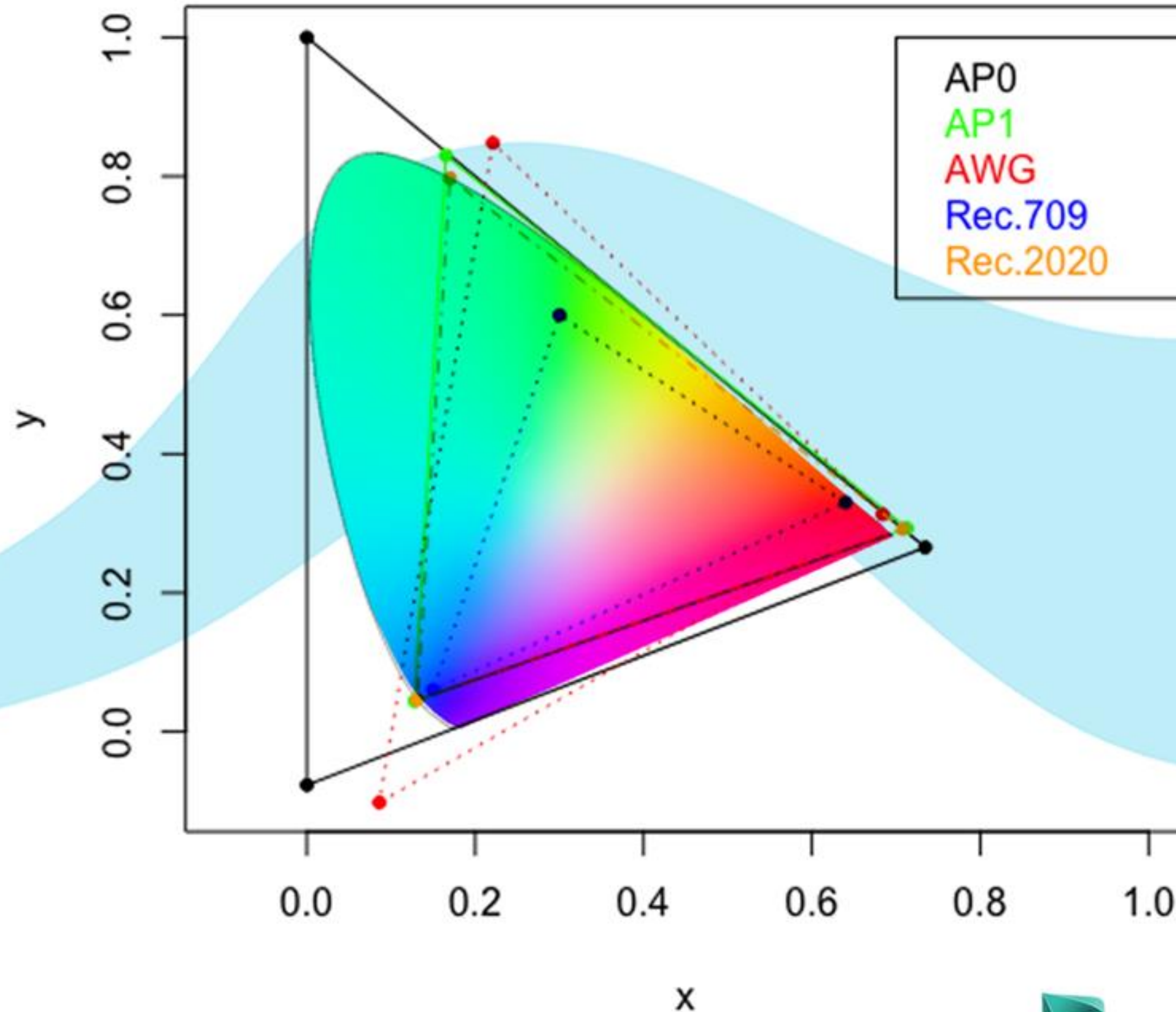
Container Colourspace

eg, ACES 2065-1, large enough for future-proof interchange and archival

CIE 1931 Spectral Locus (All visible colour)



Colour Gamut Comparison



Colour Space Standards: Nomenclature

Rec 709 2.4 Gamma
Scene Linear sRGB / Rec709

ACES 2065-1 Linear
ACEScg Linear AP1
ACEScct Log AP1

P3 D65 Dcinema
Rec 2100 Rec2020 PQ
Rec 2100 Rec2020 HLG

Choosing Colour Primaries

Use your main Camera Gamut

Advantage: no conversion to working colourspace required

Use your display gamut

Advantage: No display conversion required*

Use ACES CG / CCT (Similar to Rec 2020)

Advantage: Flexible

***Don't** use Rec 709 for WCG delivery!

Which Colourspace?

Input



Working



Viewing



Archive



Which Colourspace?

Input

ARRI Log C
Wide Gamut

Scene Linear
sRGB/Rec 709

Rec 709
Video

Working

ARRI Log C
Wide Gamut

Viewing

HDR10

Rec 2100 PQ

P3

Rec 709 Video

Archive

ARRI Log C
Wide Gamut
(Graded)

Preserves acquisition colourspace
Unsuitable for compositing

Which Colourspace?

Input

ARRI Log C
Wide Gamut

Scene Linear
sRGB/Rec 709

Rec 709 Video

sRGB Graphics

Working

Scene Linear ✓

Rec 709 / sRGB ✗

Viewing

Rec 2100 PQ

Rec 2100 HLG

P3

Rec 709 Video

Archive

Scene linear
Rec 709/sRGB

Colour fidelity lost from acquisition
Not as much colour detail as display

Which Colourspace?

Input

ARRI Log C **AWG**
Sony S-Log 3
Red Log **Dragon Colour**

ACEScg **AP1**
Scene Linear **sRGB**

Working

Linear ✓
ACEScg Linear (Comp) ✓
ACEScct Log (Grade) ✓

Viewing

Rec 2100 PQ
Rec 2100 HLG
P3
Rec 709 Video

Archive

ACES 2065-1
Linear **AP0**

Colour fidelity maintained through post to delivery
Lossless archive

Where is Colour Management in Flame?

- Project Management
- MediaHub / Import Options
- Desktop / Media Panel - Edit Colour Space
- Viewing
- Conform
- Timeline; Pre-processing and FX
- Action
- Batch; Colour Mgt. node, Clip Options, Render / Write File Options
- Export; Advanced Options / Use Lut

Colour Management in Flame Family SynColor

- Applies to Flame Family & Maya
- A Collection of Colour Transforms for viewing and conversion
- A Collection of Colour Policies comprising;
 - Overall policy defining working colourspace for project
 - File import rules
 - Viewing Rules
- Preset policies stored in...
/opt/Autodesk/presets/<Flame version>/colourmgt
- User modified / exported policies stored in...
/Applications/Autodesk/Synergy/SynColor/Shared

Resources

Flame

- area.autodesk.com/flame-central
- knowledge.autodesk.com/support/flame-products
- feedback.autodesk.com
- youtube.com/user/FlameHowTos
- Facebook 'LOGIK' Flame user group

General

- Netflix delivery specs - help.prodicle.com
- ACES - <https://acescentral.com/>