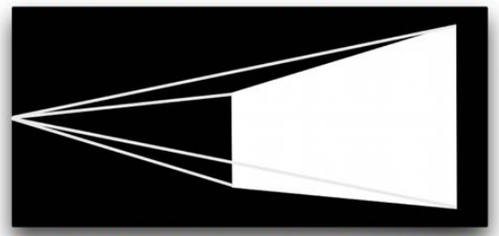
CINEMA D'EUROPA



MEDIA SALLES

Accessibility, Packaging,

and whatever else we have time for

Michael Karagosian

President, MKPE Consulting LLC

Co-Chair, ASC Sub-Committee on Next Generation Cinema Displays

Secretary, SMPTE 21DC Technology Committee on Digital Cinema

Accessibility

Visually-Impaired Narrative aka Descriptive Narration (VI-N)

A narrative dialog track for those who have difficulty with sight

Hearing Impaired Audio (HI)

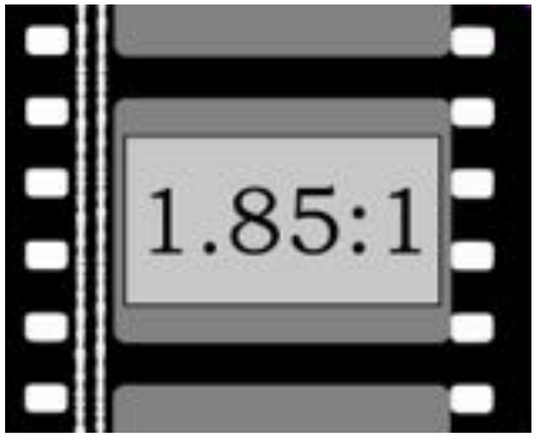
An enhanced sound track for those who have difficulty hearing

Closed Captions (CC)

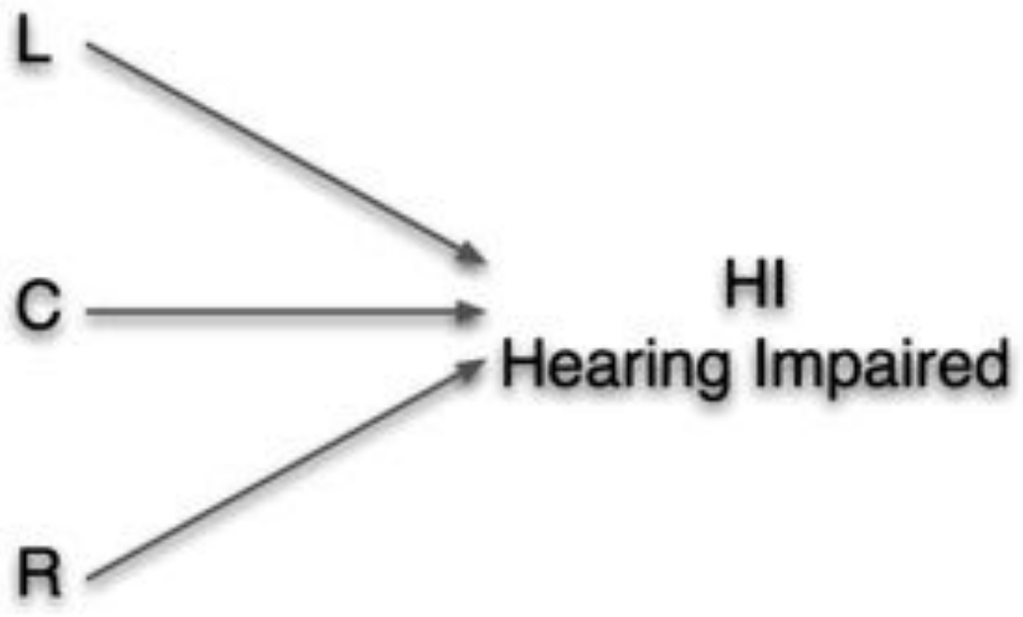
Visual presentation of caption text for those who cannot hear or hear well

Hearing Impaired (HI)

- How It Used To Be



Stereo Sound

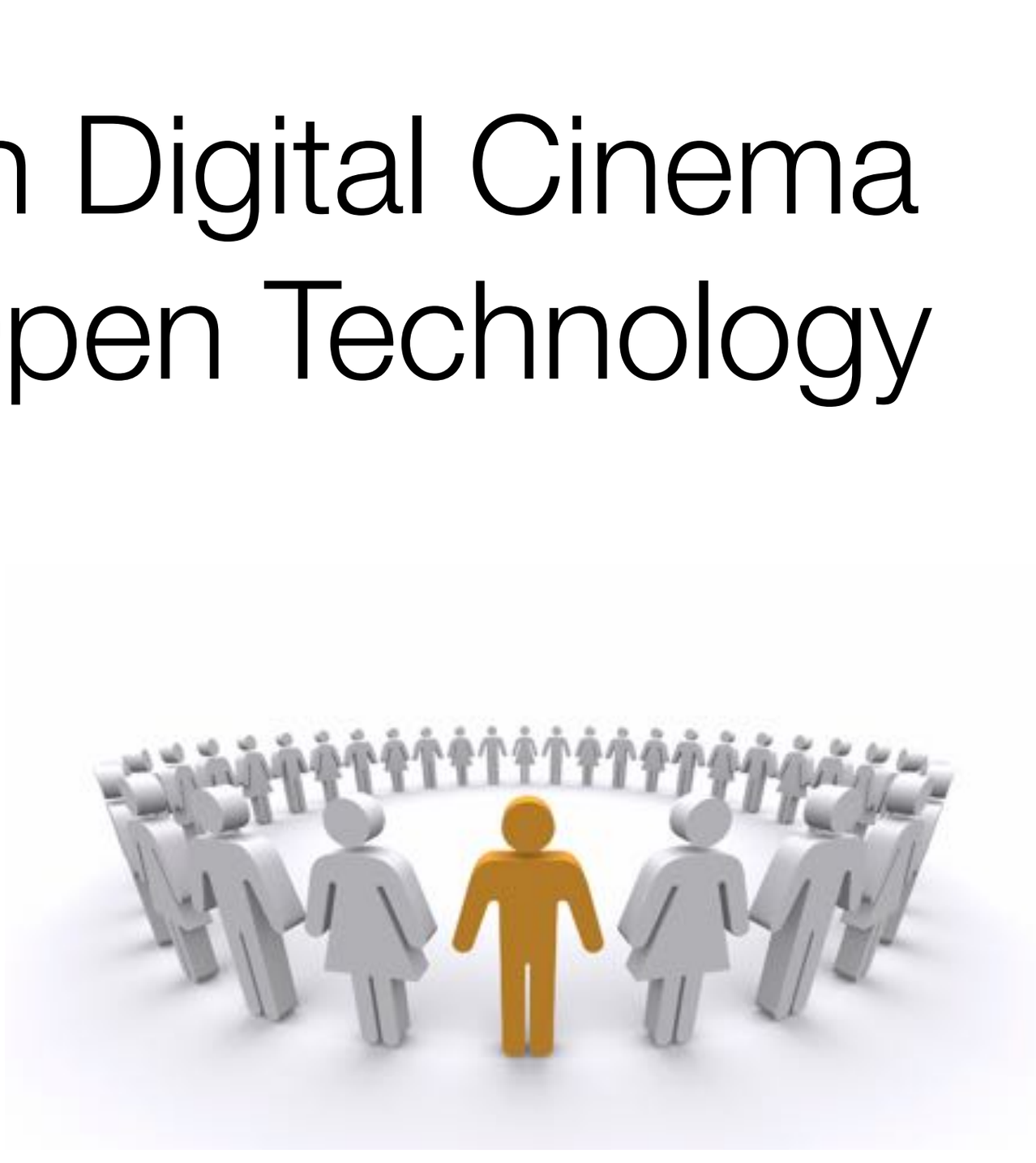


HI for film was generated by the sound processor.

This no longer works with digital cinema.

Accessibility in Digital Cinema is Based on Open Technology

- Standards-based
- Open distribution
- Open interoperability
- Competitive marketplace
- Lower distribution costs
- Lower cost of ownership

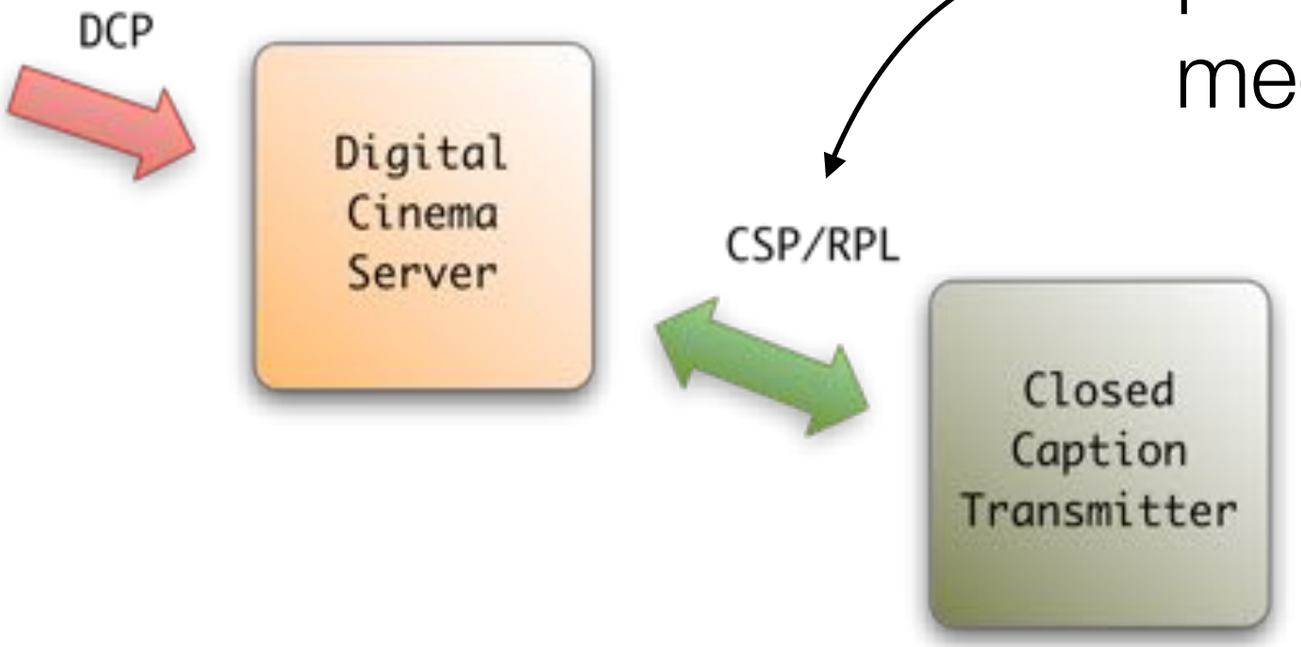


HI & VI-N in the DCP

Container Channel	Configuration 5.1	7.1 SDDS	7.1 DS	General Loudspeaker Position
1	L	L	L	Left
2	R	R	R	Right
3	C	C	C	Center
4	LFE	LFE	LFE	Low frequency effects
5	Ls	Ls	Lss	Left surround (or left side surround)
6	Rs	Rs	Rss	Right surround (or right side surround)
7	HI			Hearing impaired (with emphasis on dialog)
8	VI-N			Visually impaired narrative (audio description)
9	--	Lc	--	Left center
10	--	Rc	--	Right center
11	--	--	Lrs	Left rear surround
12	--	--	Rrs	Right rear surround
13	Motion Data			Synchronous signal (currently used by D-Box)
14	--	--	--	Unused at this time
15	--	--	--	Unused at this time
16	--	--	--	Unused at this time

Interoperability at the Server

Standardized protocol in all media blocks



Closed Caption Display

Eywa Has Heard You...

CC reader set to auditorium 4
Press A to switch auditorium
or C to connect A C L B

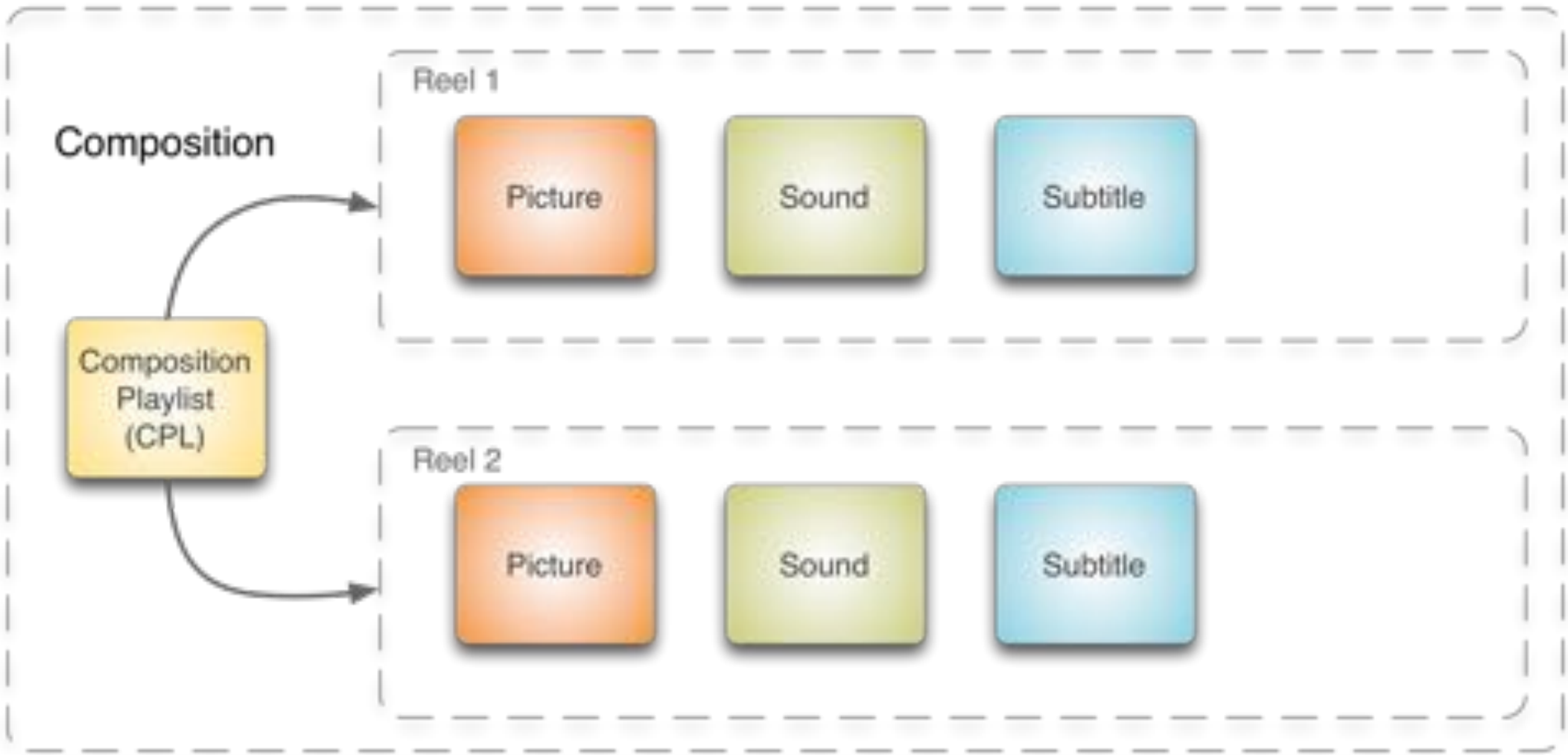
DOLBY.

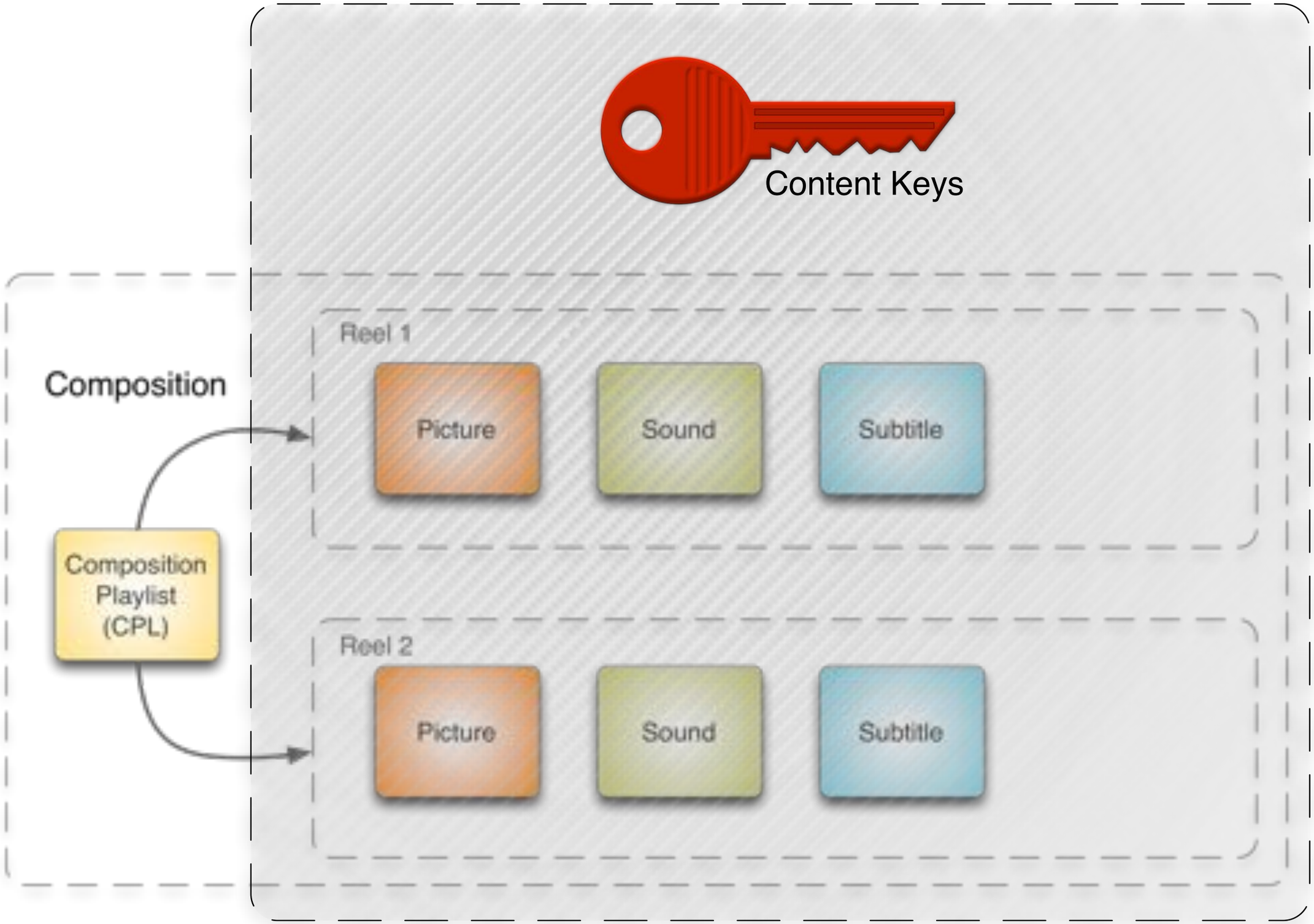
DOLBY
Fidelio
Fidelio
Fidelio

SONY

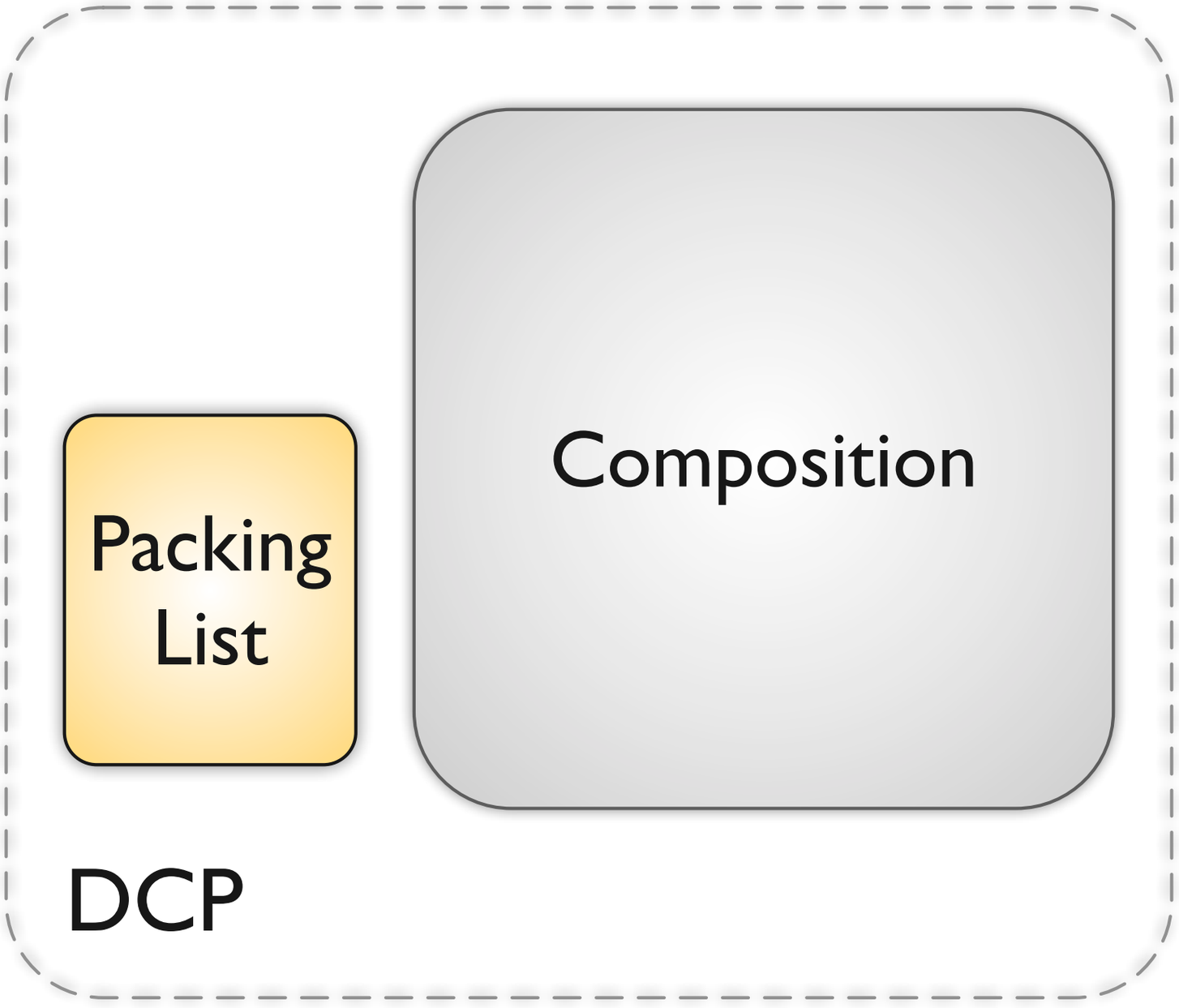
Packaging

It Starts With The Composition

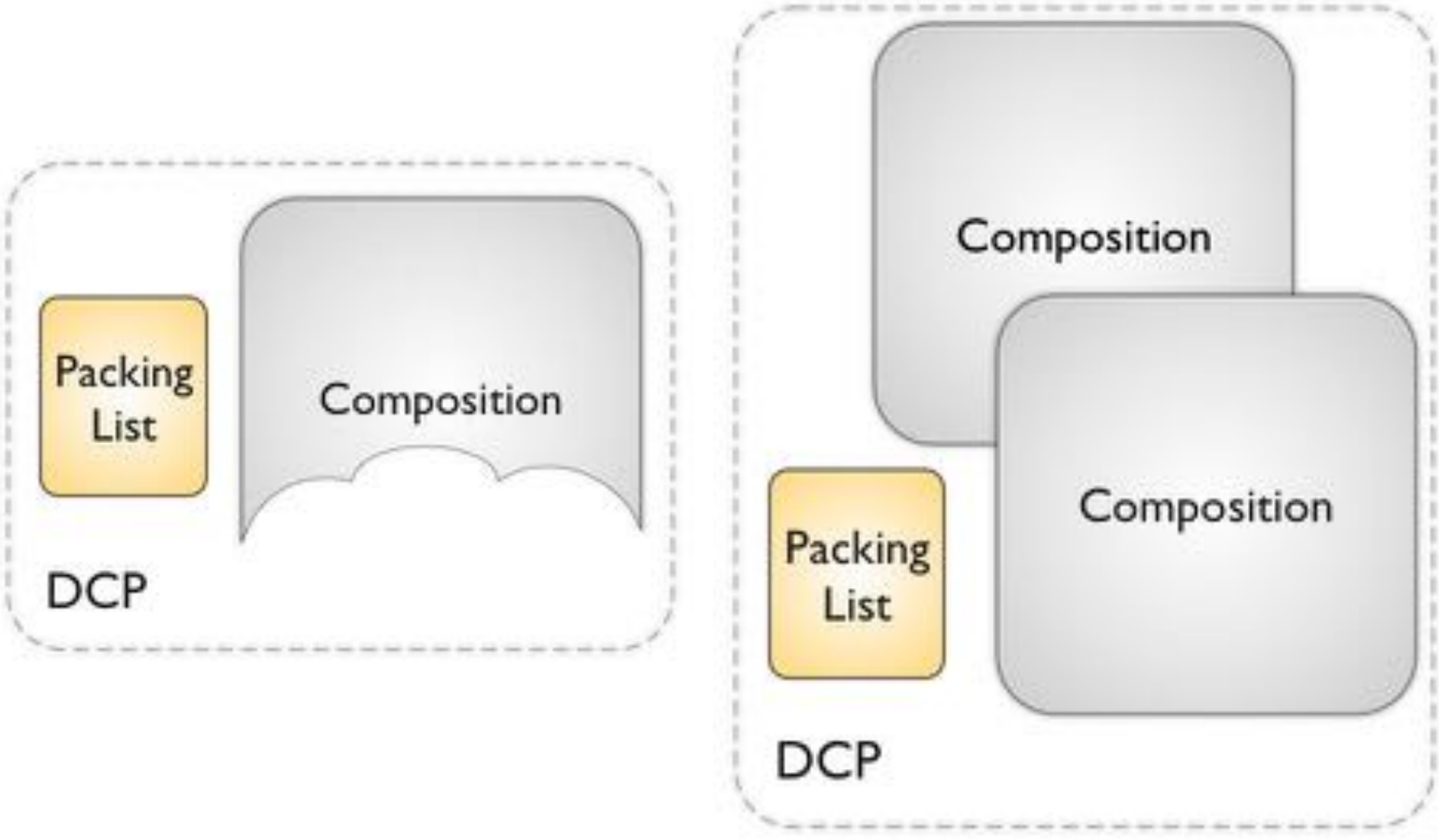



Content Keys
Composition
Reel 1
Picture
Sound
Subtitle
Composition Playlist (CPL)
Reel 2
Picture
Sound
Subtitle

DCP = Digital Cinema Package



The DCP Has Flavors



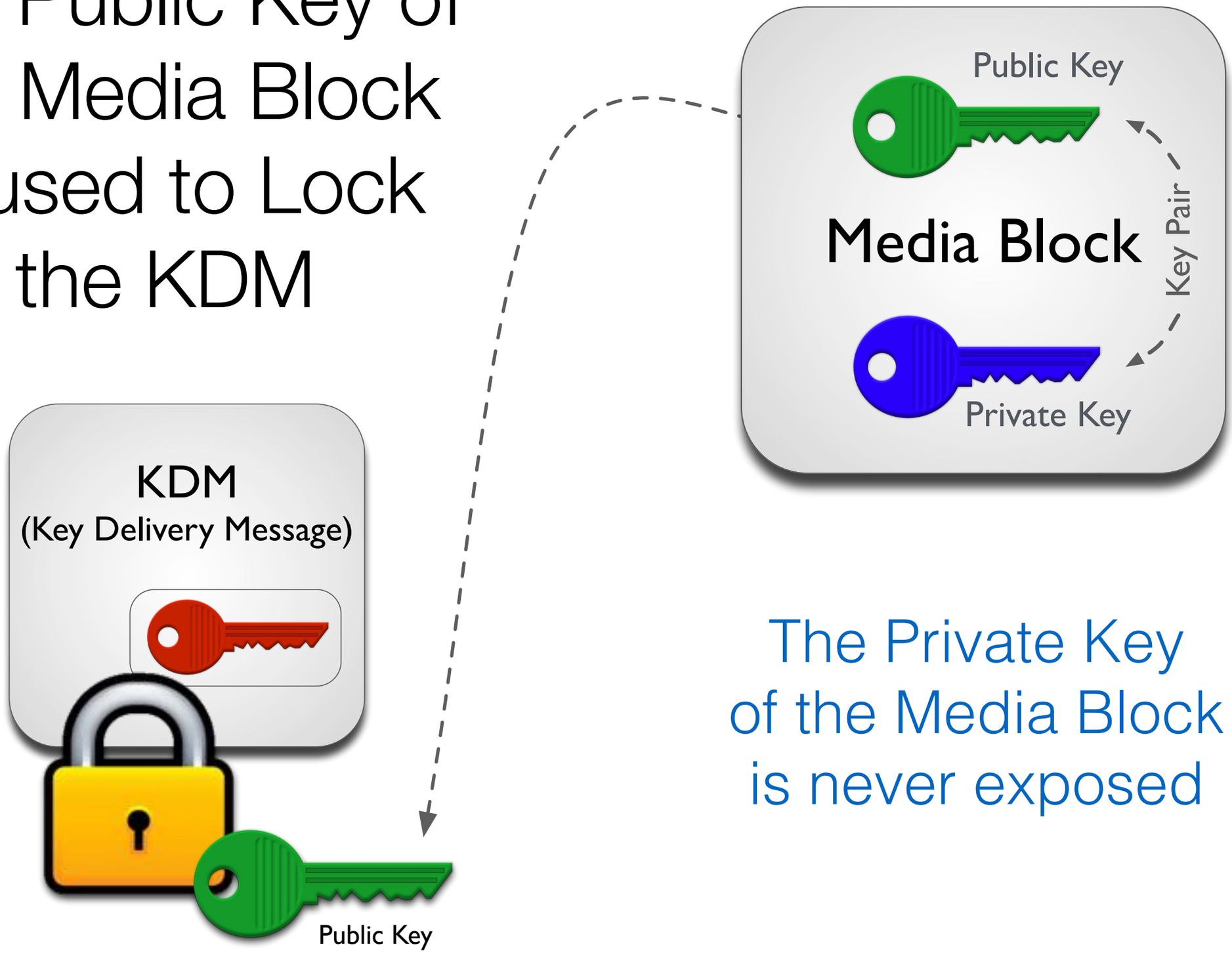
Composition

Content Key

KDM
(Key Delivery Message)

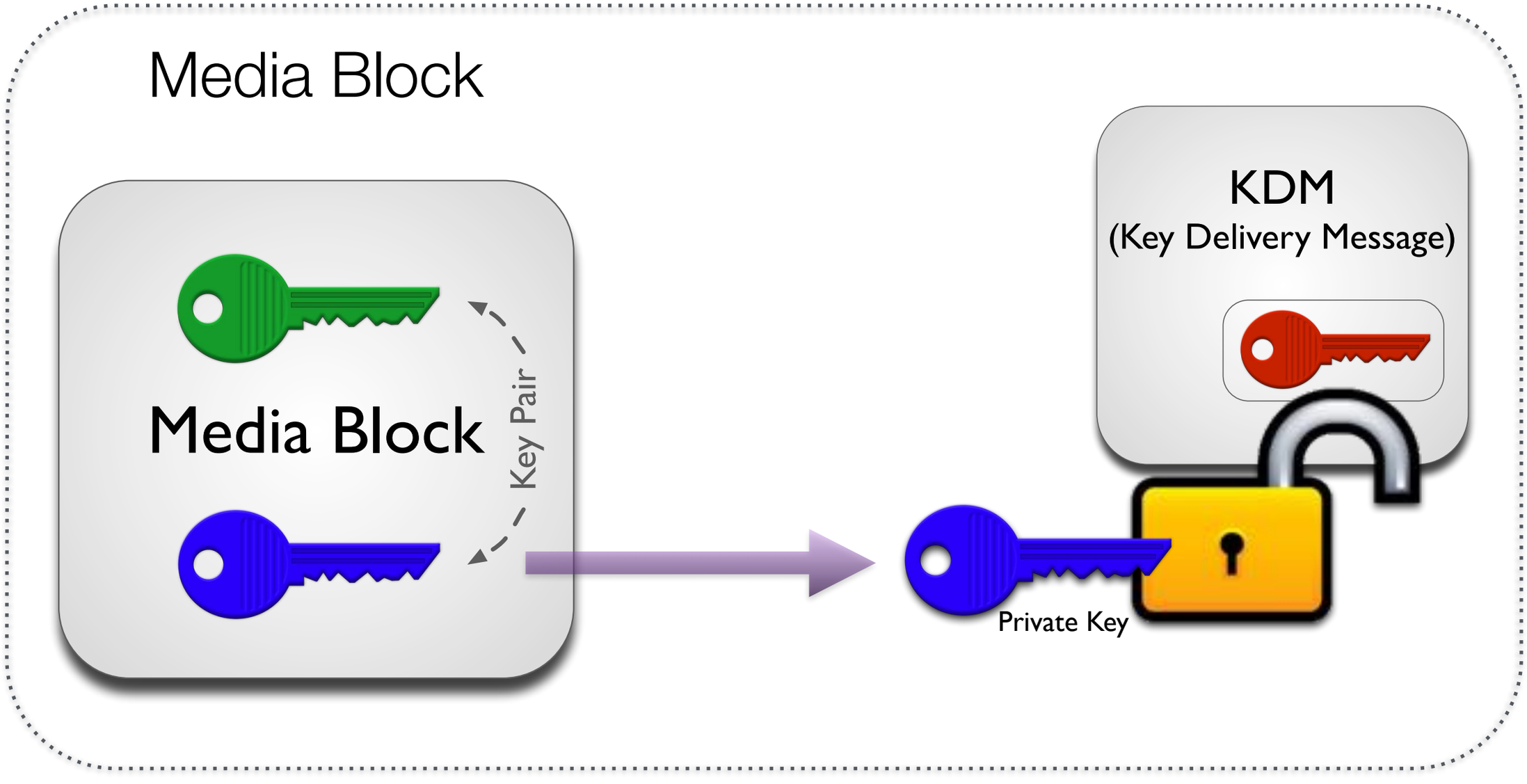
Public Key

The Public Key of the Media Block is used to Lock the KDM

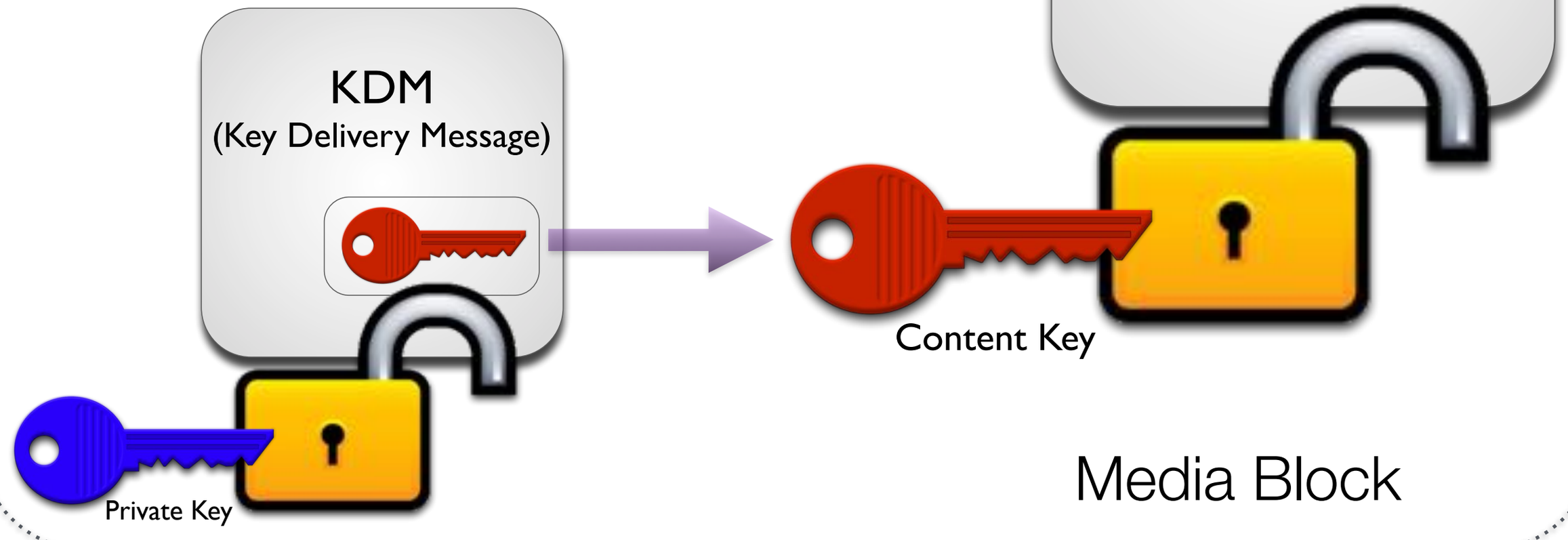


The Private Key of the Media Block is never exposed

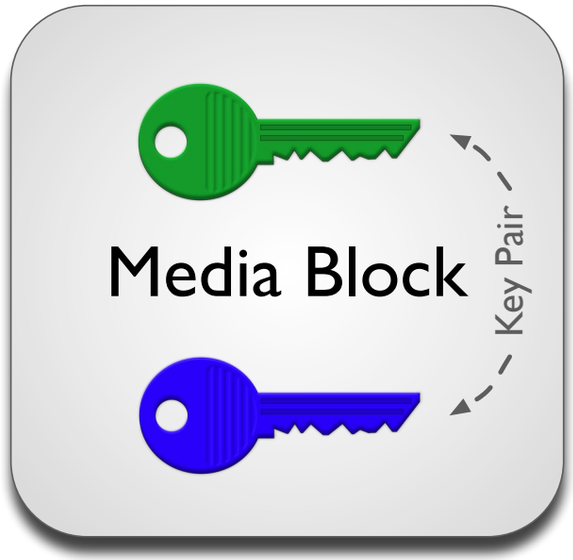
The KDM is Unlocked Inside the Secure Media Block



The Composition is Unlocked and Played Inside the Secure Media Block



- The Distributor must learn the Public Key of the Media Block.



- There must also be a mechanism for sending the KDM to the cinema.

3D &

New Screen Technology

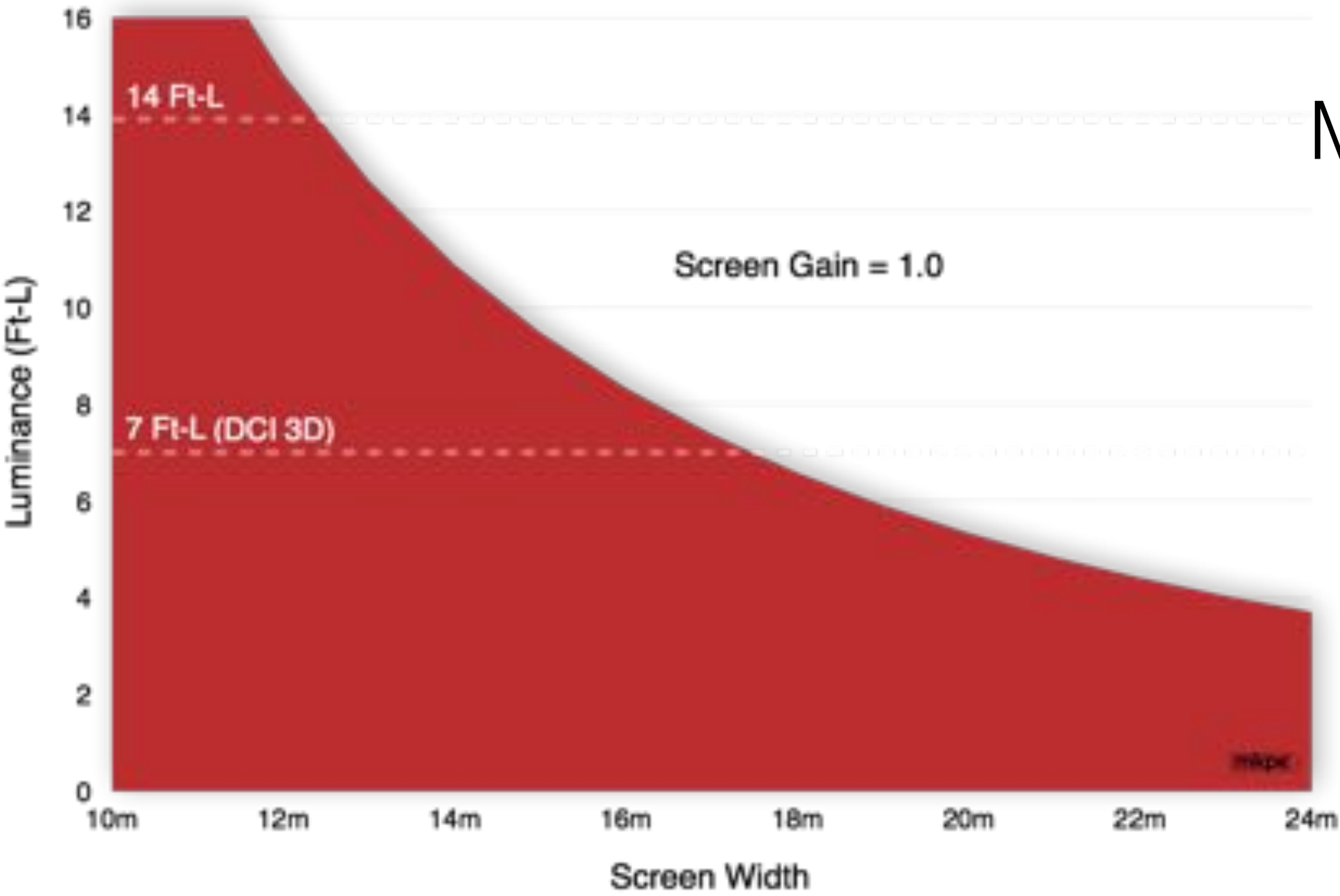
Brighter 3D

28% Efficient

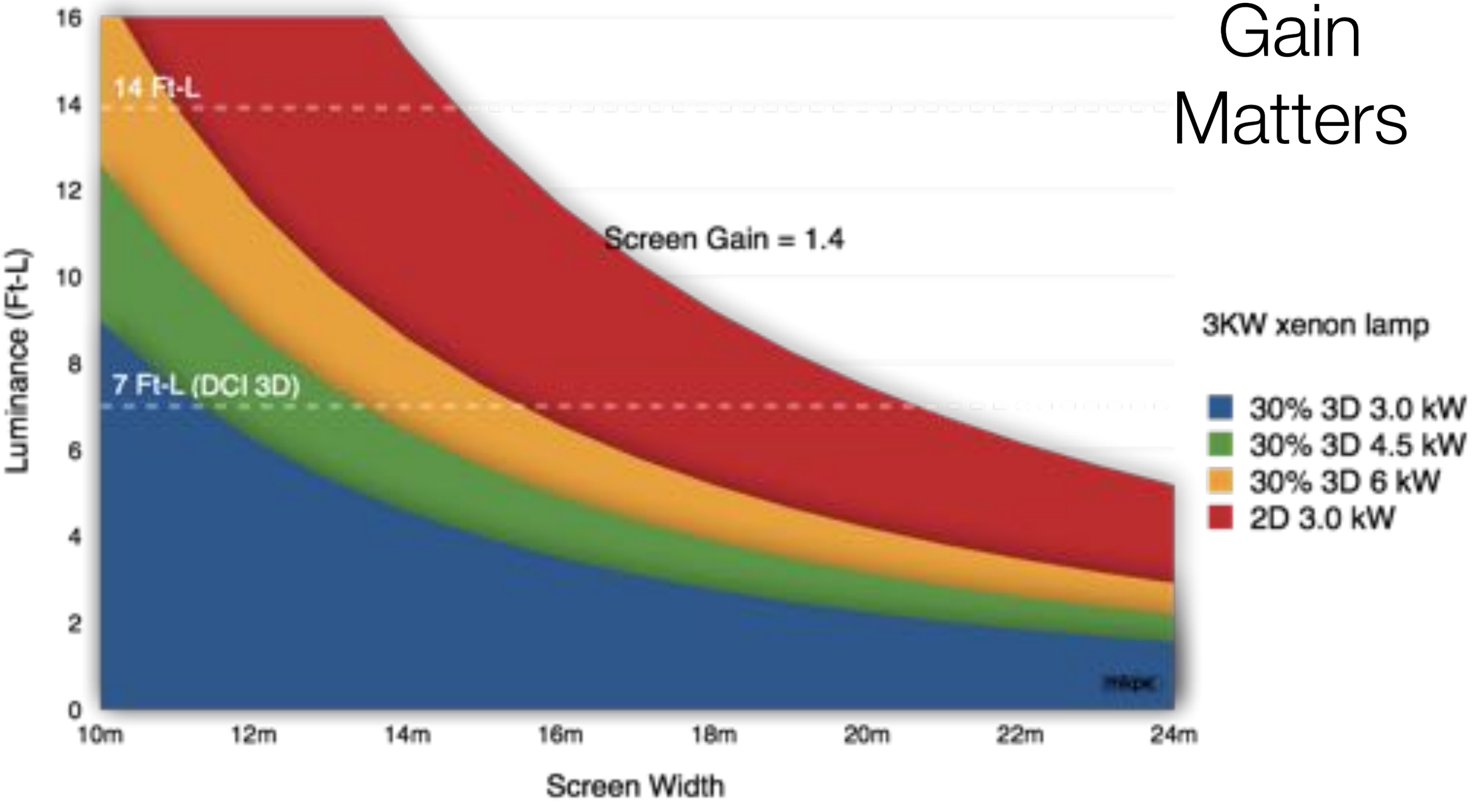
Laser Color Separation

45% Efficient

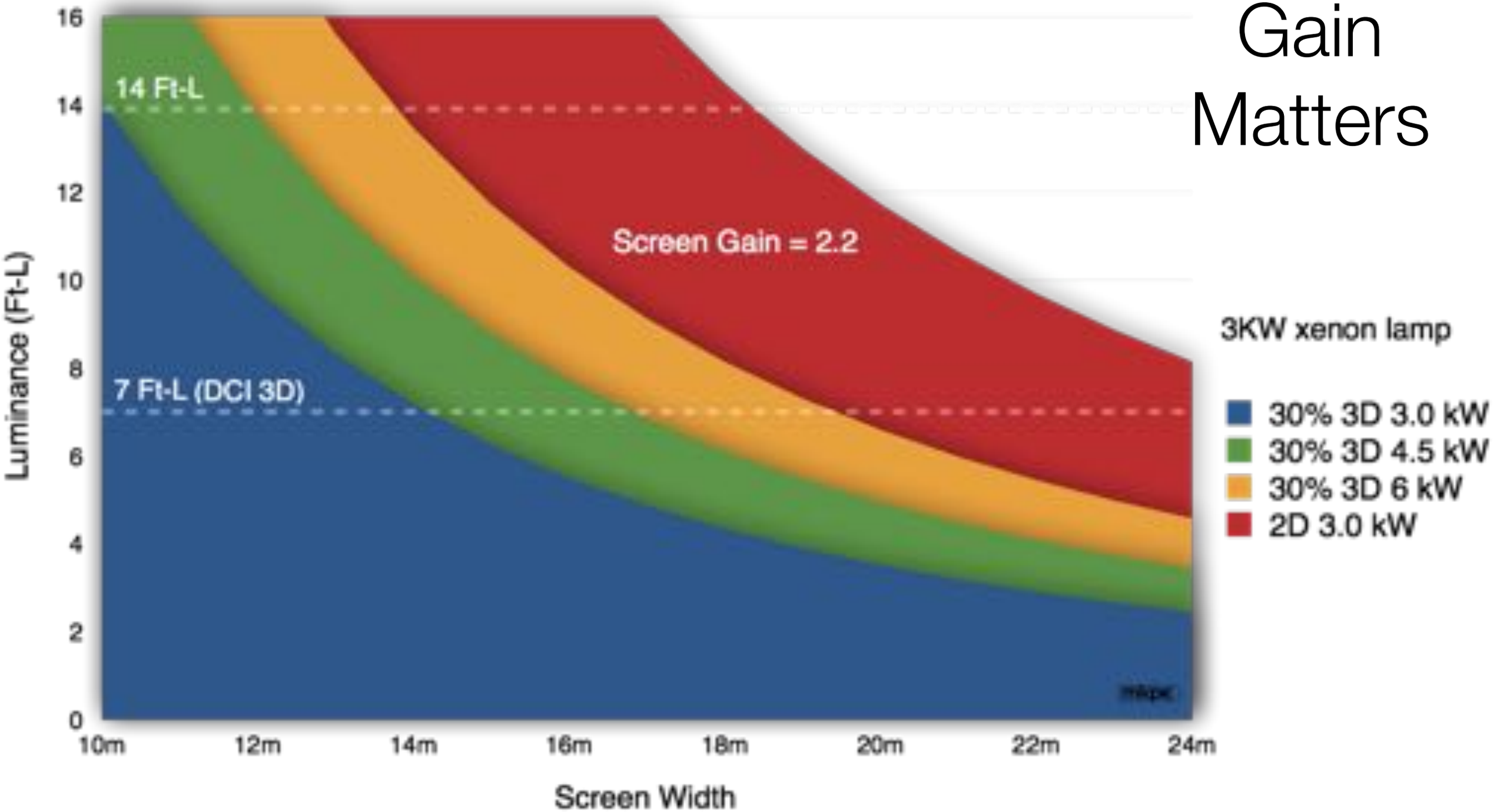
Why Gain Matters



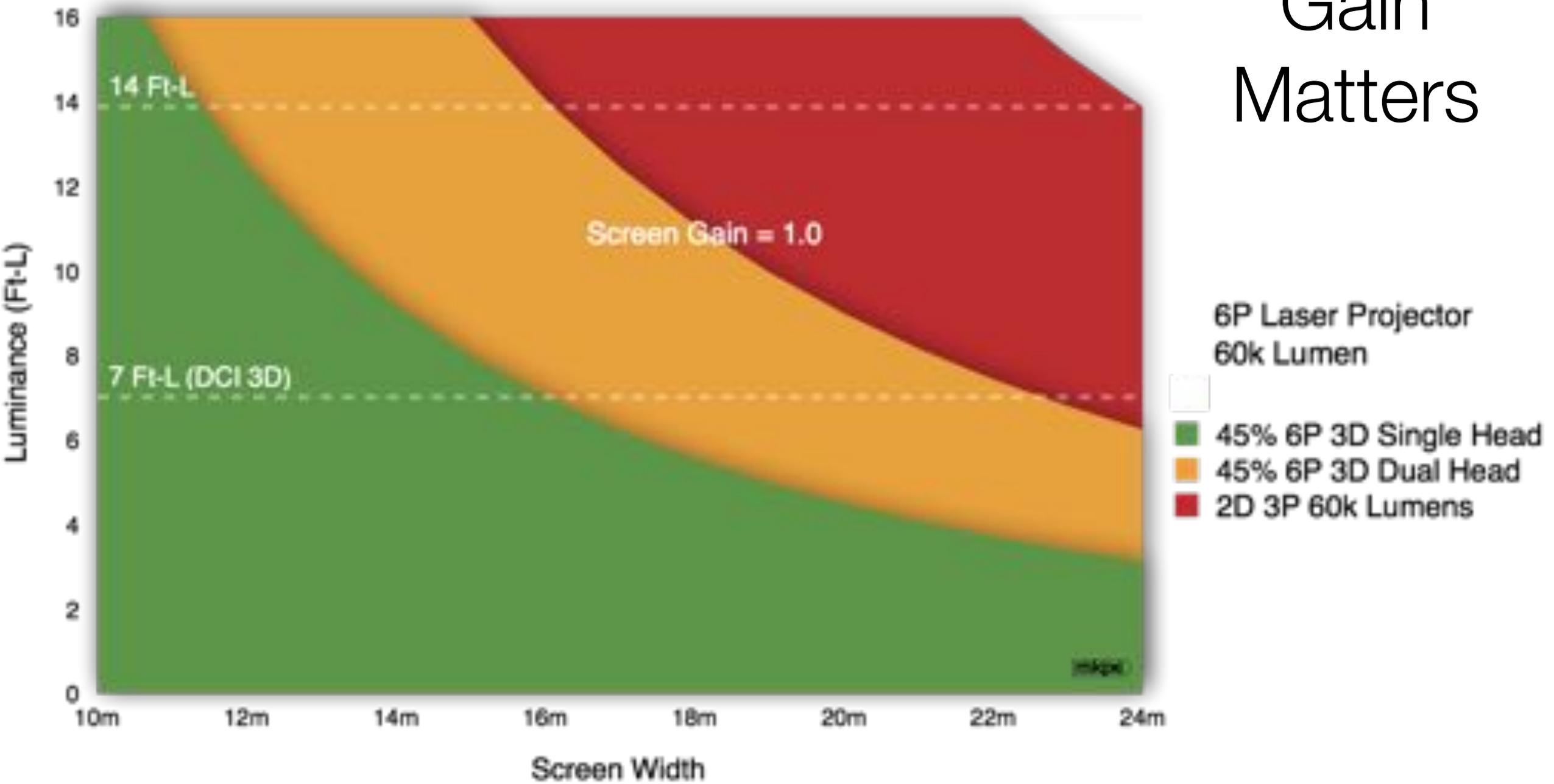
Why Gain Matters



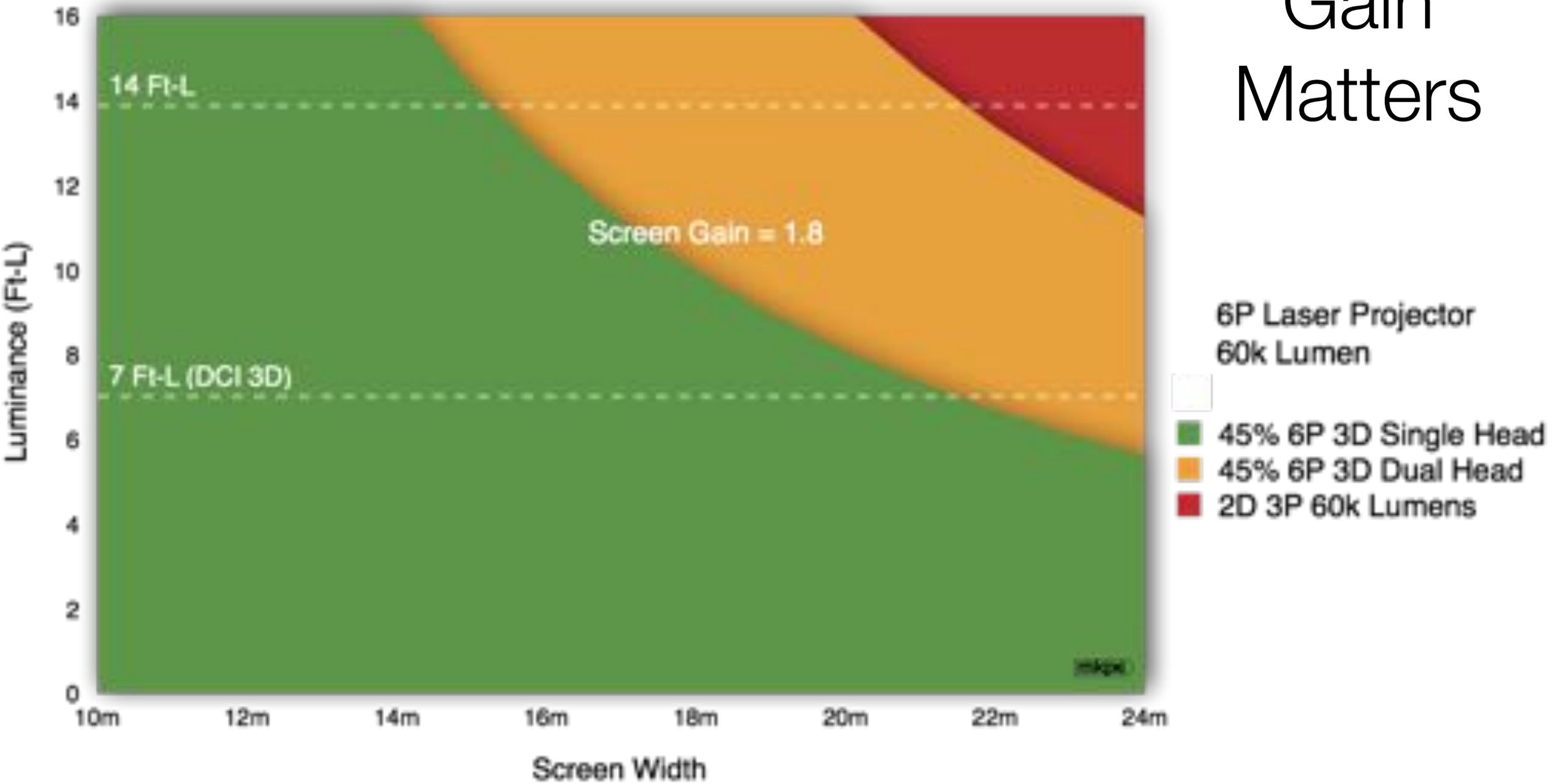
Why Gain Matters



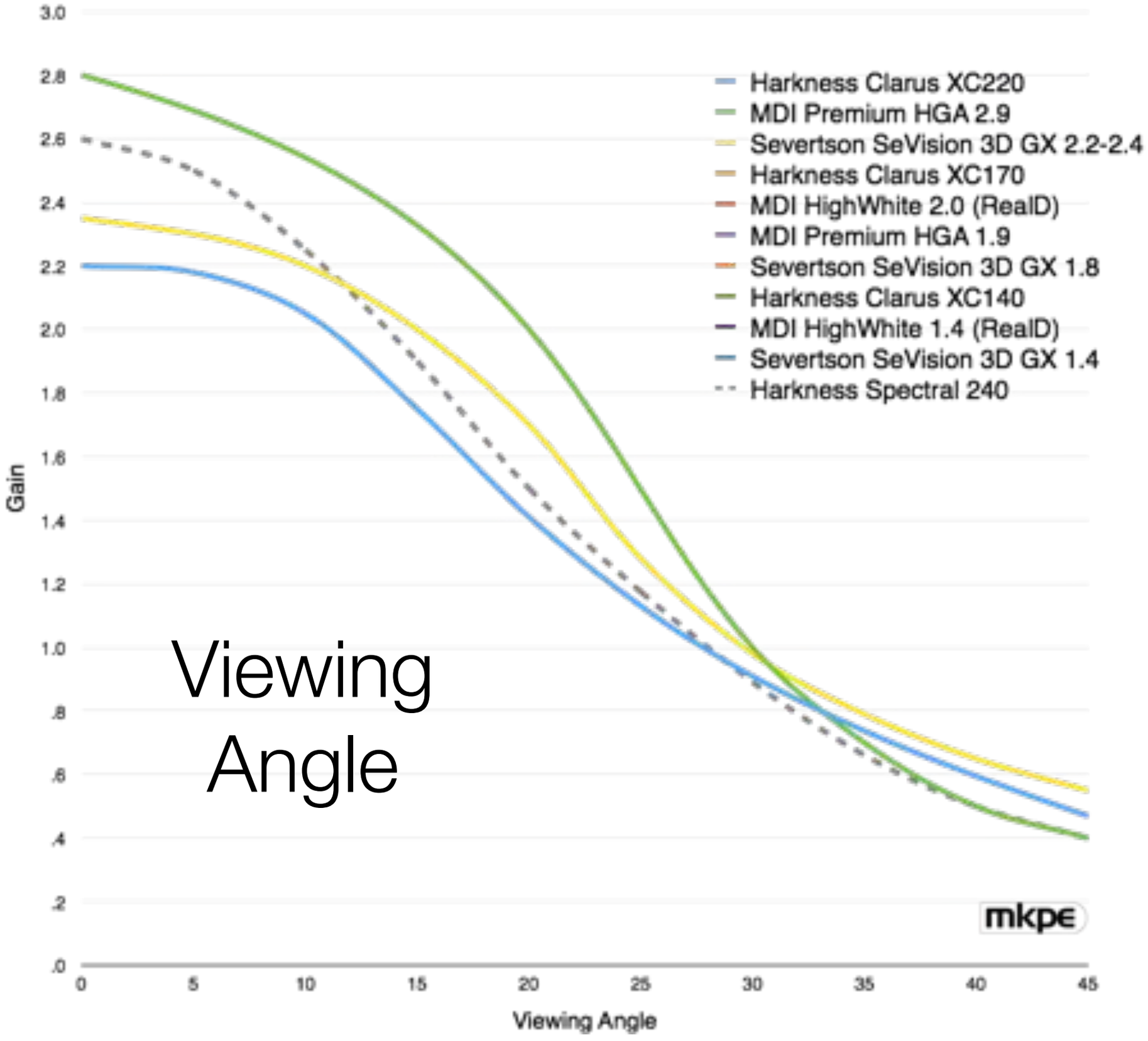
Why Gain Matters



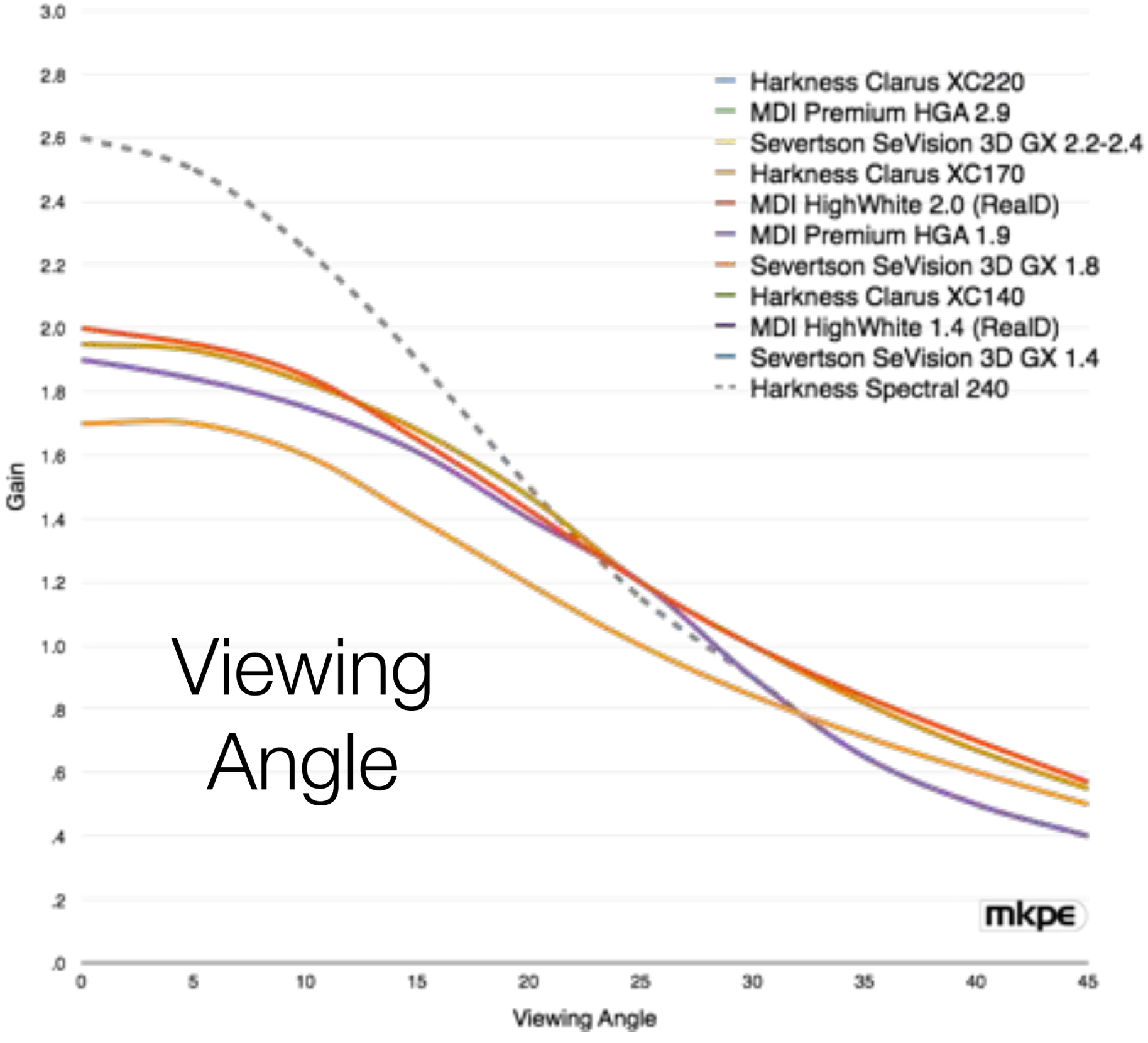
Why Gain Matters

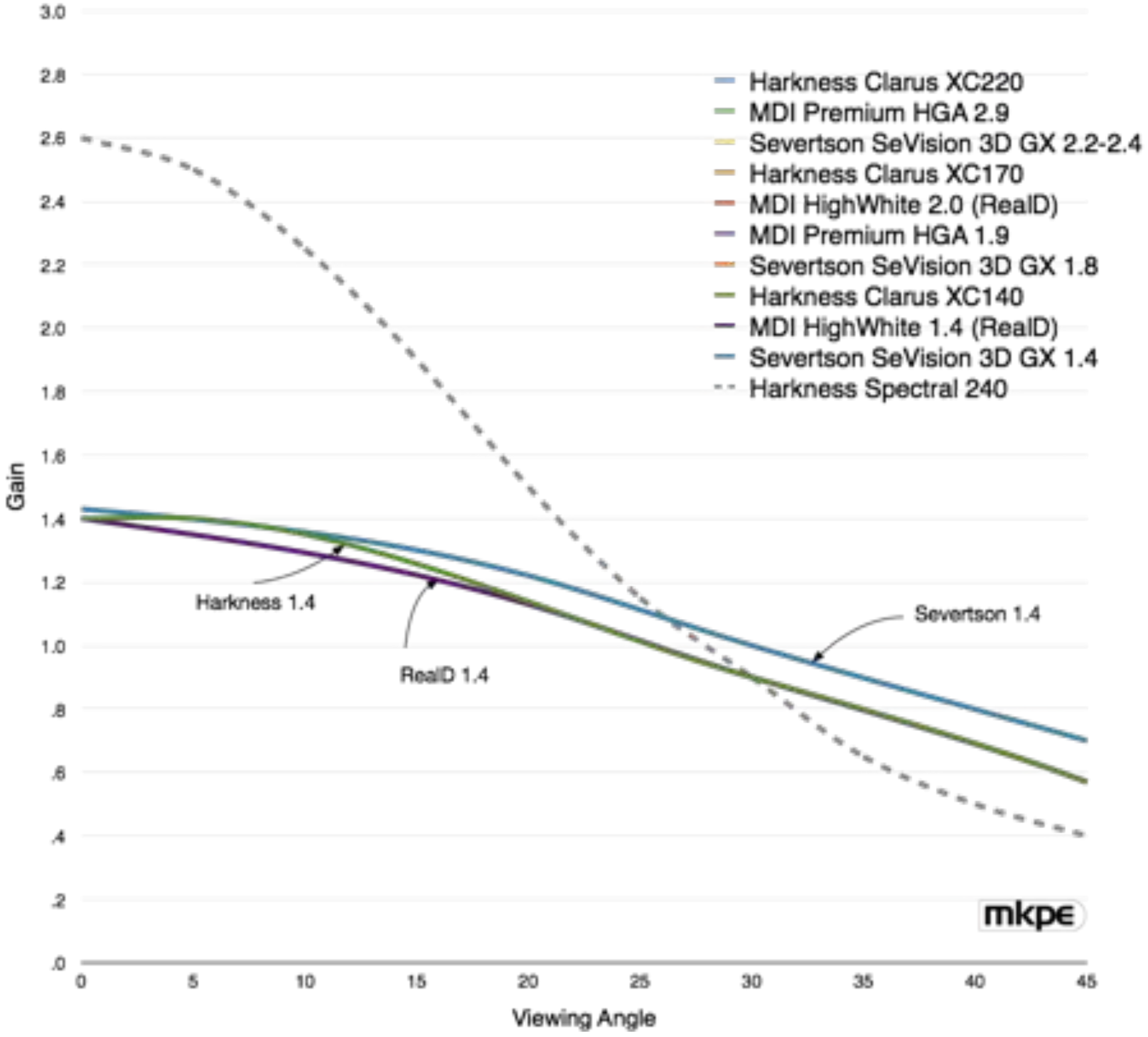


Viewing Angle



Viewing Angle




Gain
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
.8
.6
.4
.2
.0
0
5
10
15
20
25
30
35
40
45
Viewing Angle
Harkness Clarus XC220
MDI Premium HGA 2.9
Severtson SeVision 3D GX 2.2-2.4
Harkness Clarus XC170
MDI HighWhite 2.0 (RealD)
MDI Premium HGA 1.9
Severtson SeVision 3D GX 1.8
Harkness Clarus XC140
MDI HighWhite 1.4 (RealD)
Severtson SeVision 3D GX 1.4
Harkness Spectral 240
Harkness 1.4
RealD 1.4
Severtson 1.4
mkpe

Summing It Up

- How Accessibility Works
  and The Devices Now Available

- How Packaging
  and Security Keys Work

- 3D Brightness
  and New Screen Technologies

Michael Karagosian

MKPE Consulting LLC

http://mkpe.com

michael.karagosian@mkpe.com