

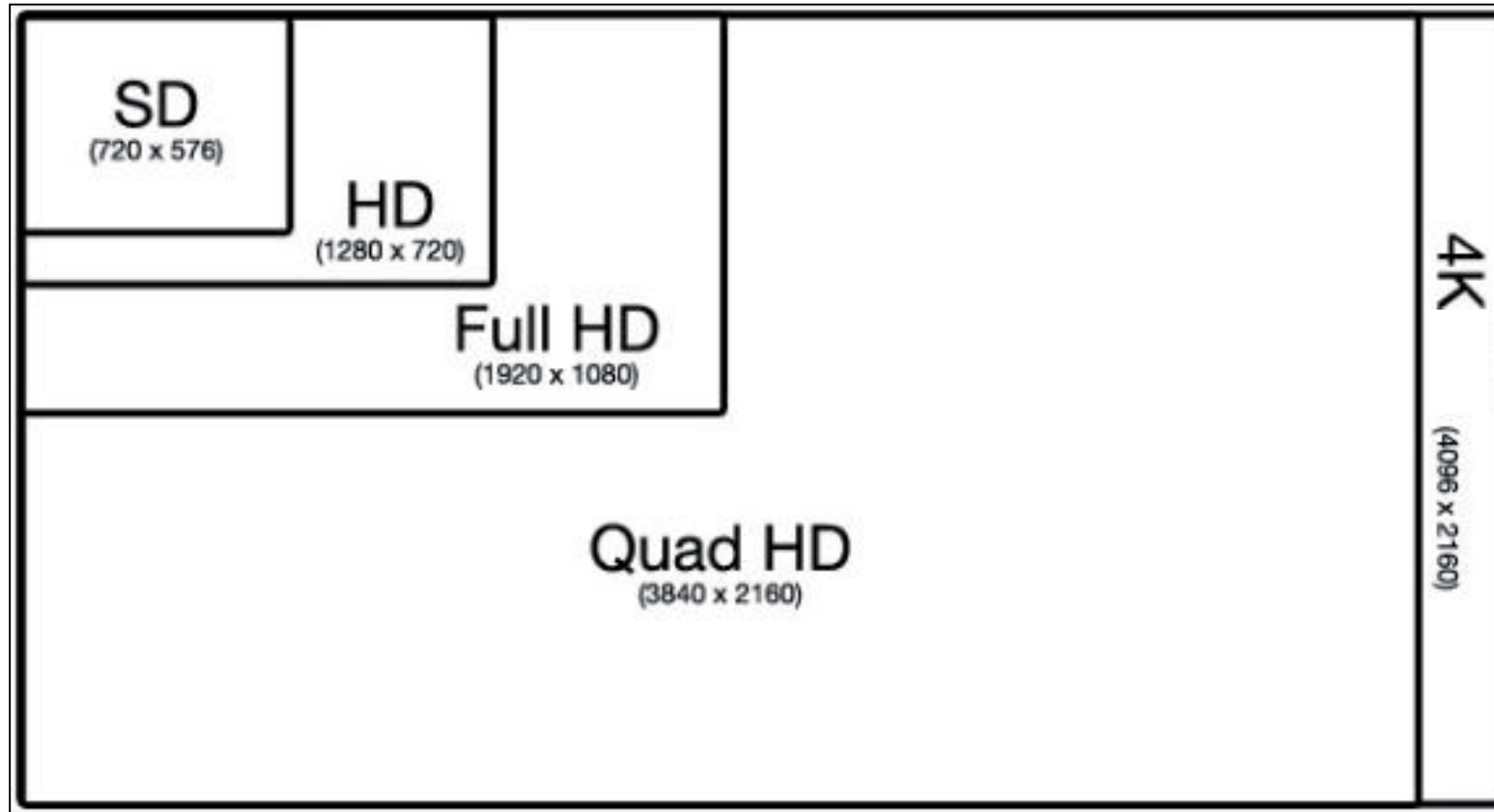
# Tecnología 4K

## Como utilizarlo y las diferencias en calidad de imagen

Jun. 2019

Sony Imaging Products & Solutions Inc.

# Tecnología 4K – Resolución

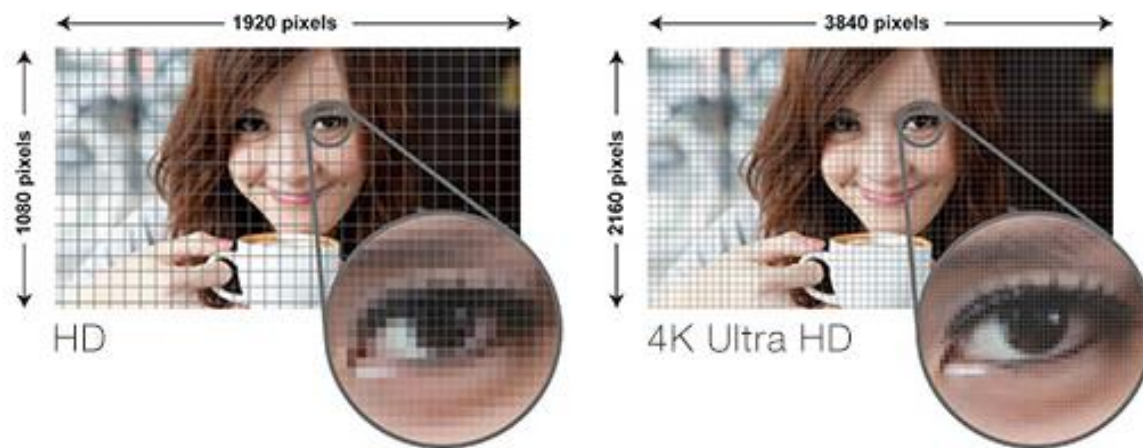


- Mayor cantidad de píxeles permiten ver una imagen más cercana sin evidenciar el píxel (Inmersividad)
- Mejor despliegue de información en displays más grandes

# Tecnología 4K



EL TENER MAS PÍXELES NO IMPLICA MEJOR IMAGEN

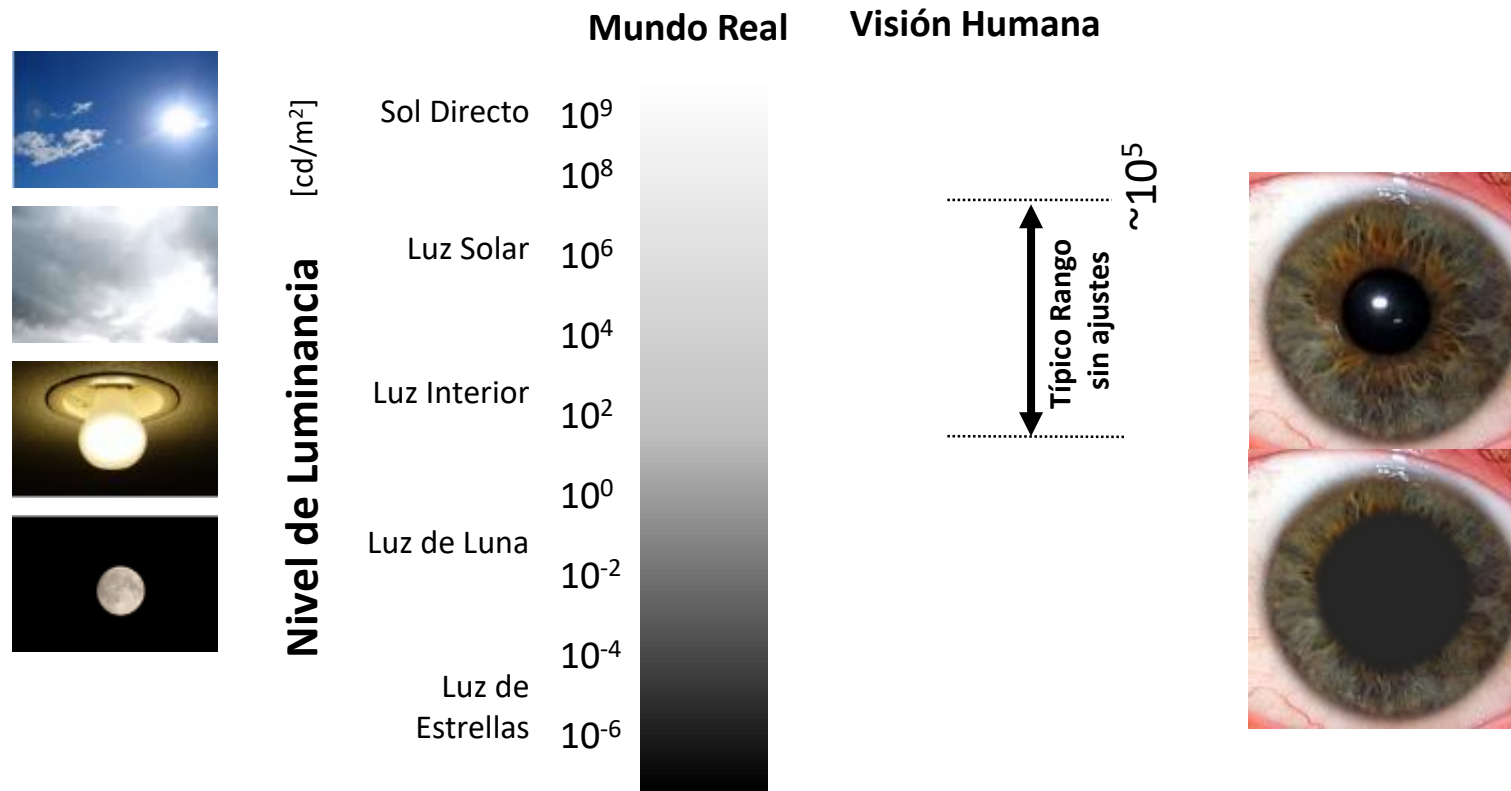


# Tecnologia 4K

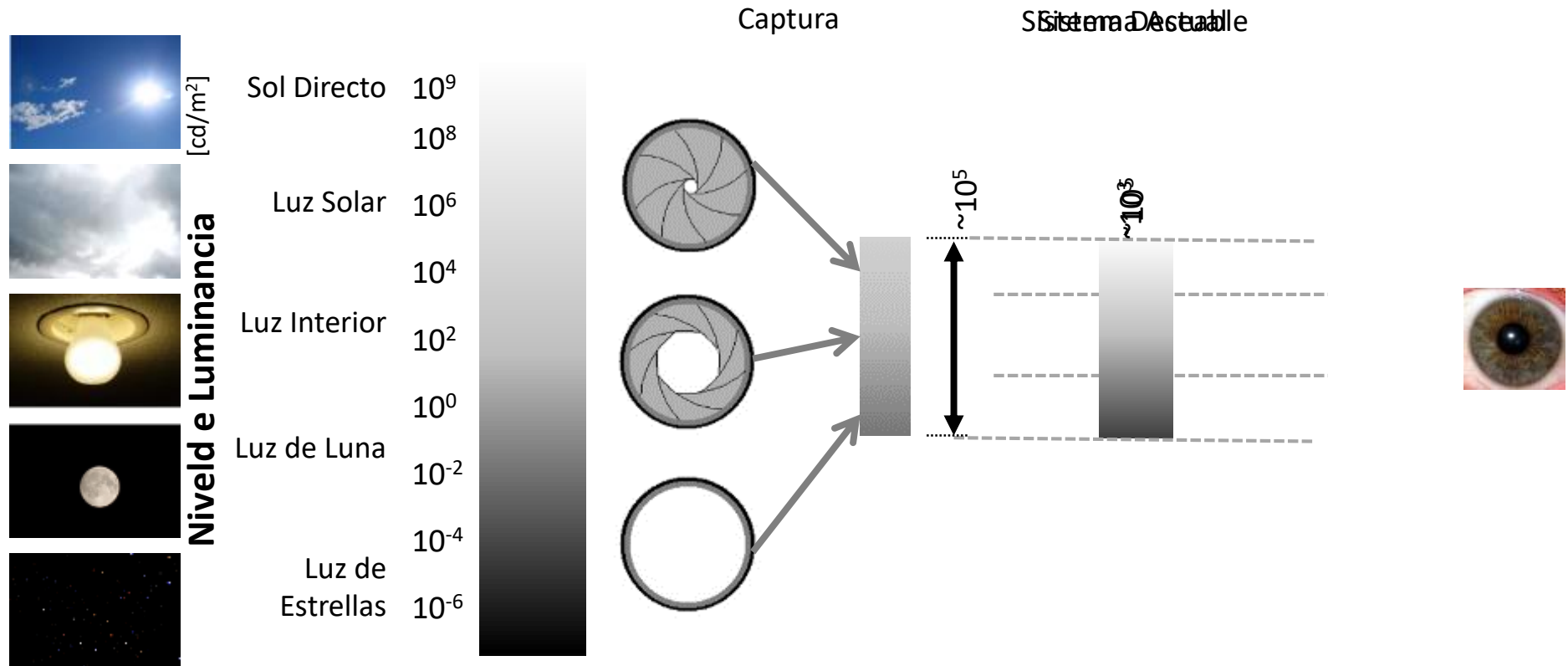


# Tecnología 4K

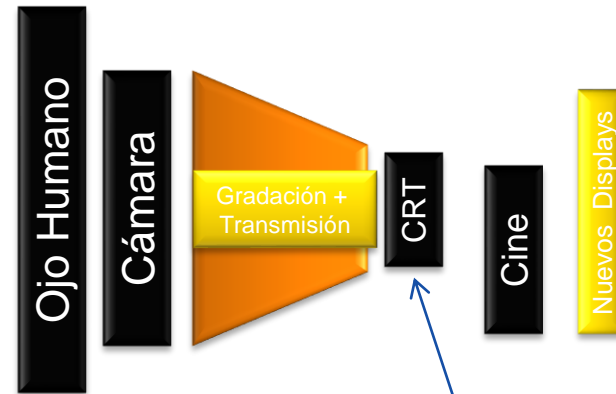
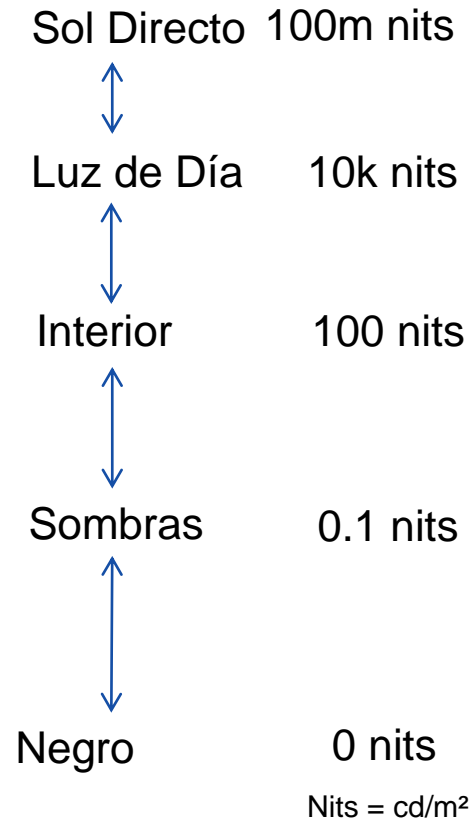
## Rango dinámico de visión



# Tecnologia 4K

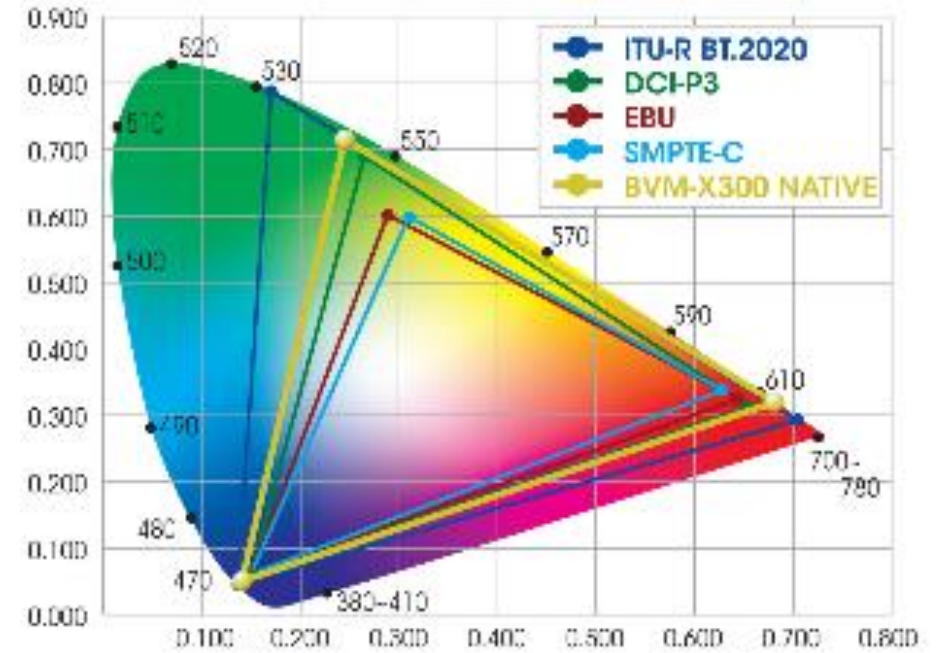


# Tecnología 4K

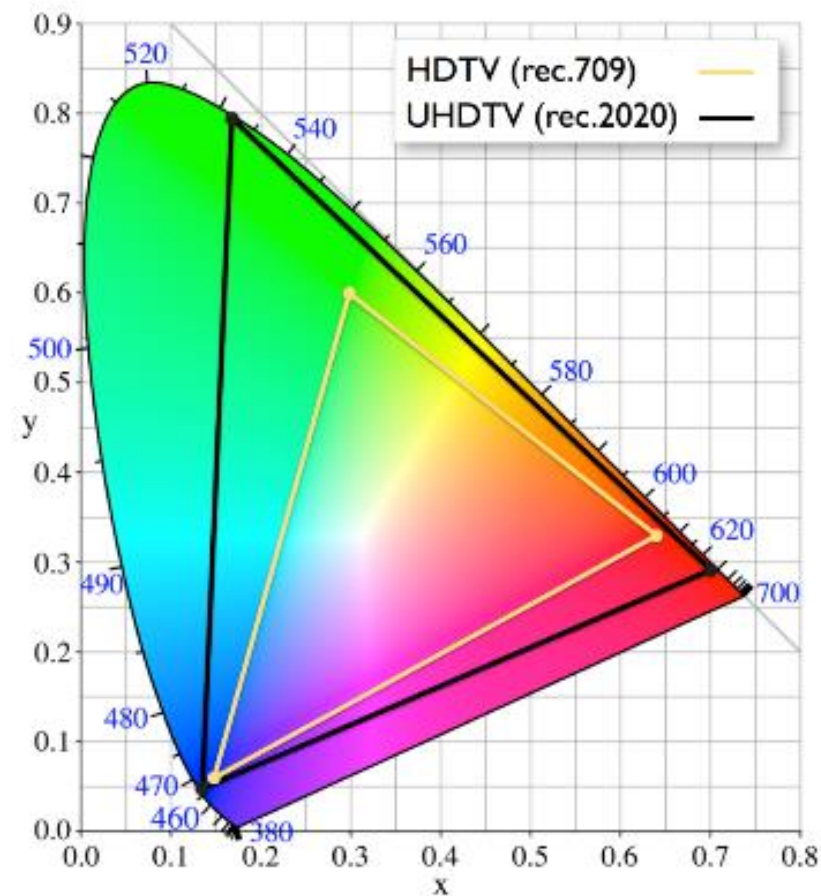
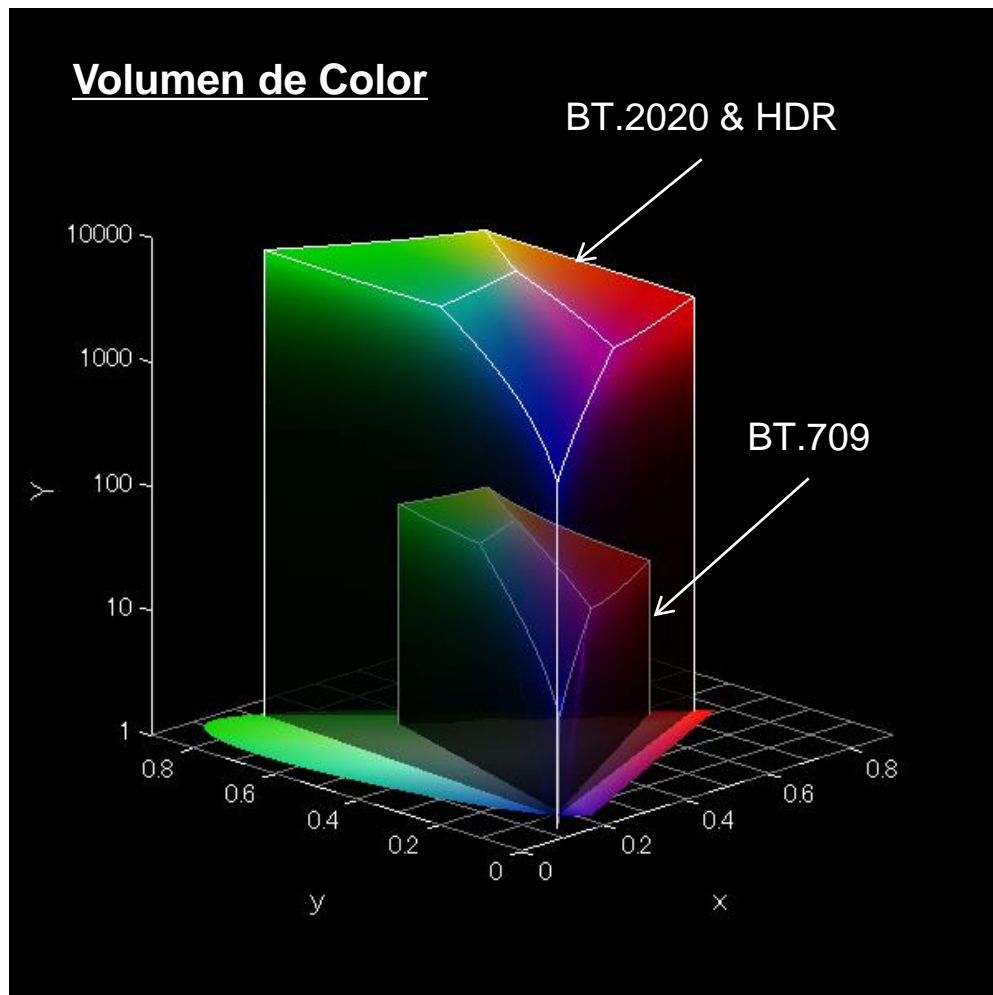


EOTF: Gamma 2,4  
 (Definida en ~1950)

”Electro Optical Transfer Function”  
 (FUNCION DE TRASFERENCIA ELECTRICO-OPTICA)

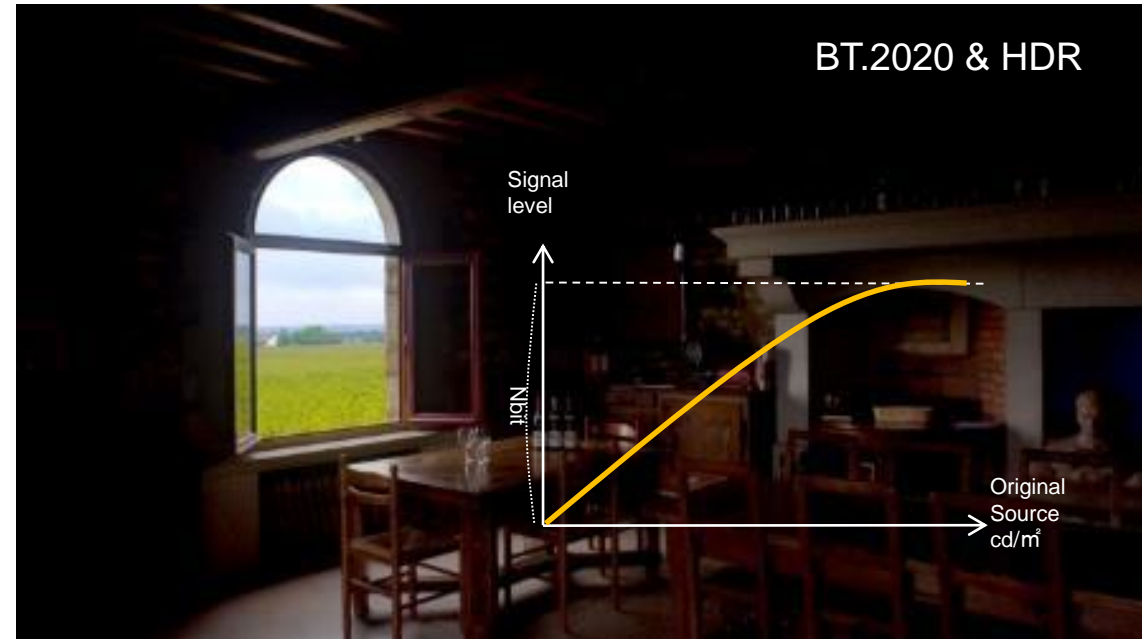
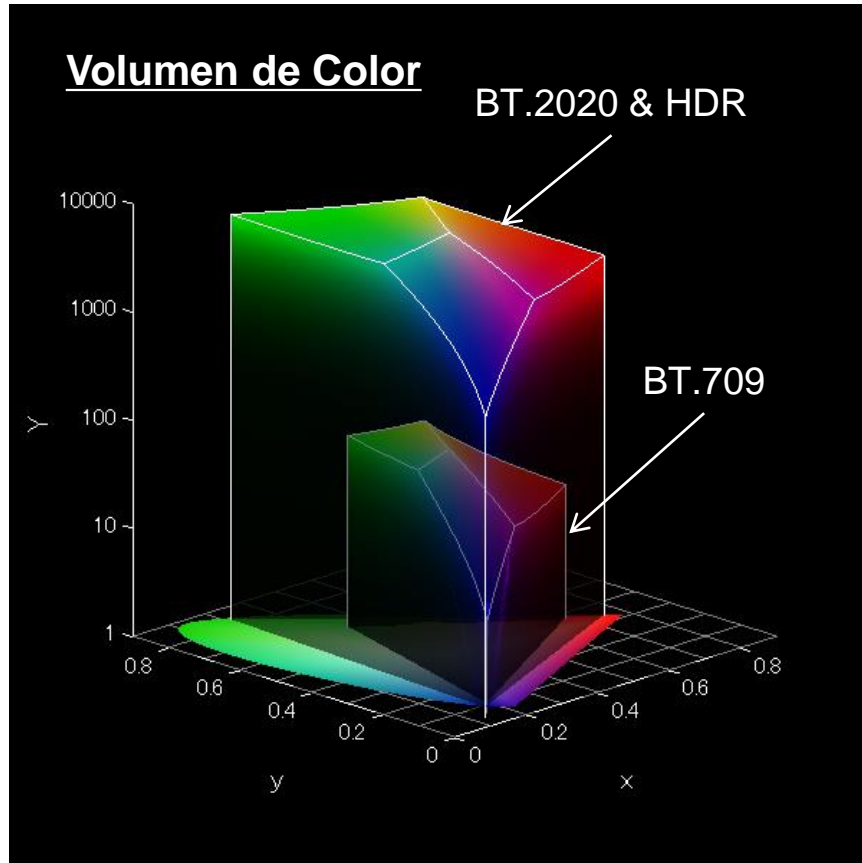


# Tecnologia 4K







# Tecnología 4K



- Curva de gamma convencional (ITU BT.1886)
- HDR = Una nueva curva es requerida con un amplio espacio de color.

# Tecnologia 4K

 Scope of ITU-R BT.2020  
 High Dynamic Range



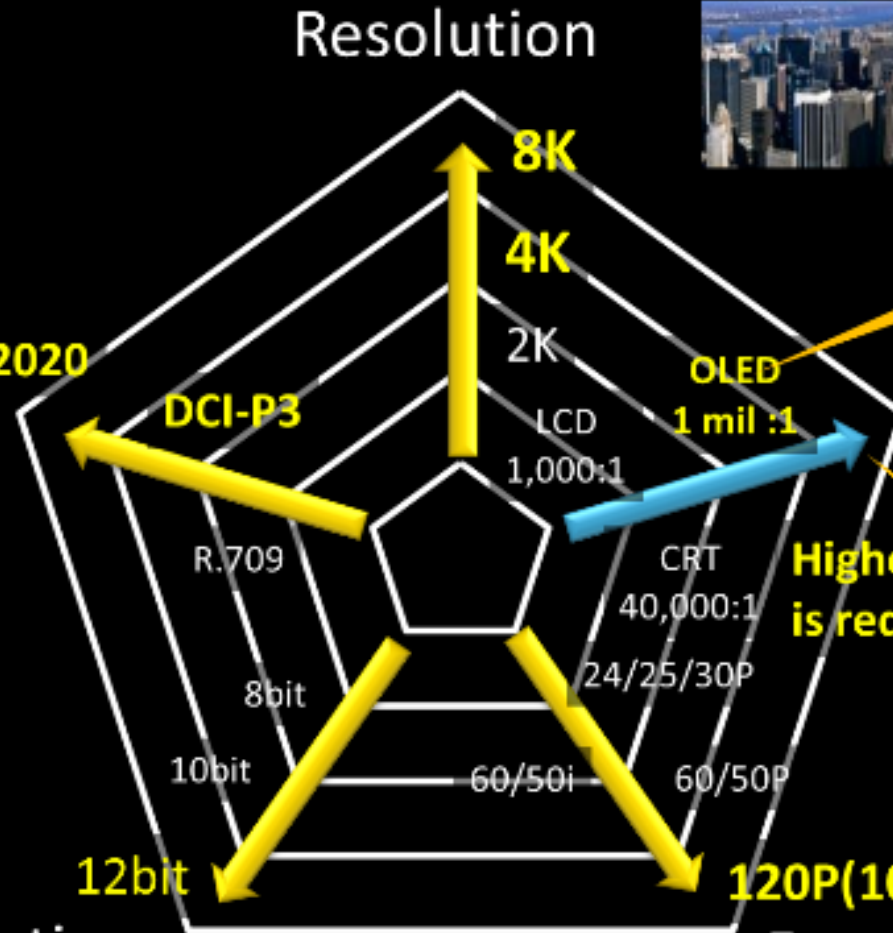
Colour Gamut



Quantization



Resolution



Render True Black



Dynamic Range <Contrast>

Higher brightness is required



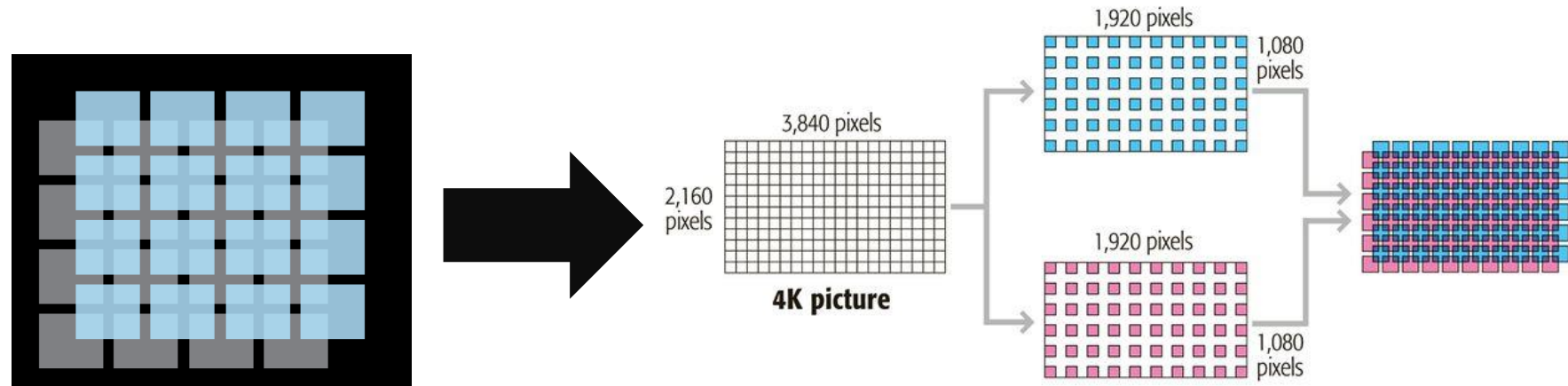
Need High Brightness.

Frame rate



# Tecnología 4K

4K

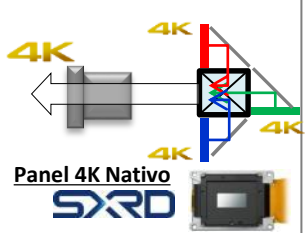
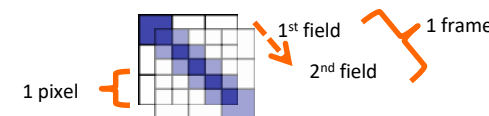
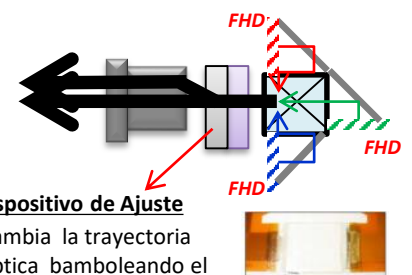
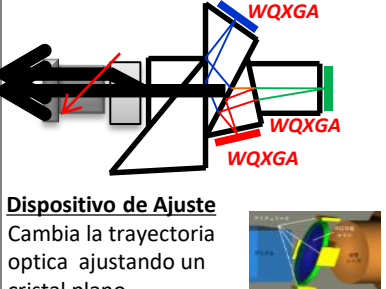
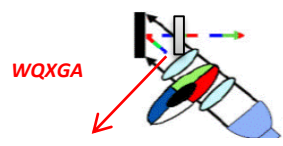


## Resolución 4K 4096 x 2160 pixeles

Con proyectores sin Panel 4K Nativo, la resolución 4K es mediante interpolación ofreciendo 4K SIMULADO, con SONY la resolución 4K es real desde cada Panel SXRD.









# Tecnología 4K

## Resolucion 4K nativa y Tecnologias de ajuste de pixel

		Resolucion 4K Nativa	Tecnologias de Ajuste de Pixel				
Dispositivo	Pixels	4K (4096 x 2160)	FHD (1920 x 1080)		WUXGA (1920x1200)	WQXGA (2,560x1,600)	WQXGA (2,560x1,600)
	Tamaño	0.74"	0.7"	0.74"	0.76", 1.03"	0.9"	0.9"
	Tipo	3LCOS	3LCOS	Reflectivo/ Transmisivo HTPS	Transmisivo HTPS	3DLP	1DLP
Projector Brand		<b>SONY</b>	<b>JVC</b>	<b>EPSON</b>		<b>Panasonic</b>	<b>BARCO</b>
Metodo		Native 4K Panel	4K e-shift	4K Enhancement		Pixel Quadrupling	TI's Pixel Shifting
Mecanismo		 <p>Panel 4K Nativo <b>SXRD</b></p>	 <p>1 pixel</p>	 <p>Dispositivo de Ajuste Cambia la trayectoria optica bamboleando el dispositivo</p>		 <p>Dispositivo de Ajuste Cambia la trayectoria optica ajustando un cristal plano</p>	 <p>Dispositivo de Ajuste Cambia la trayectoria optica a traves de un actuador optico</p>

# Tecnología 4K

## Test pattern / displayed images

		1dot Pitch 3840x2160					2dot Pitch 1920x1080				
		Test Pattern	SONY	JVC	EPSON	Panasonic	Test Pattern	SONY	JVC	EPSON	Panasonic
Stripe	Horizontal										
	Vertical										
Checker	-										
Diagonal	Left 45°	Same as Checker									
	Right 45°										

# Tecnología 4K

## Test pattern / displayed images

		1dot Pitch 3840x2160					2dot Pitch 1920x1080				
		Test Pattern	SONY	JVC	EPSON	Panasonic	Test Pattern	SONY	JVC	EPSON	Panasonic
Stripe	Horizontal										
	Vertical										
Checker	-										
Diagonal	Left 45°	Same as Checker									
	Right 45°										

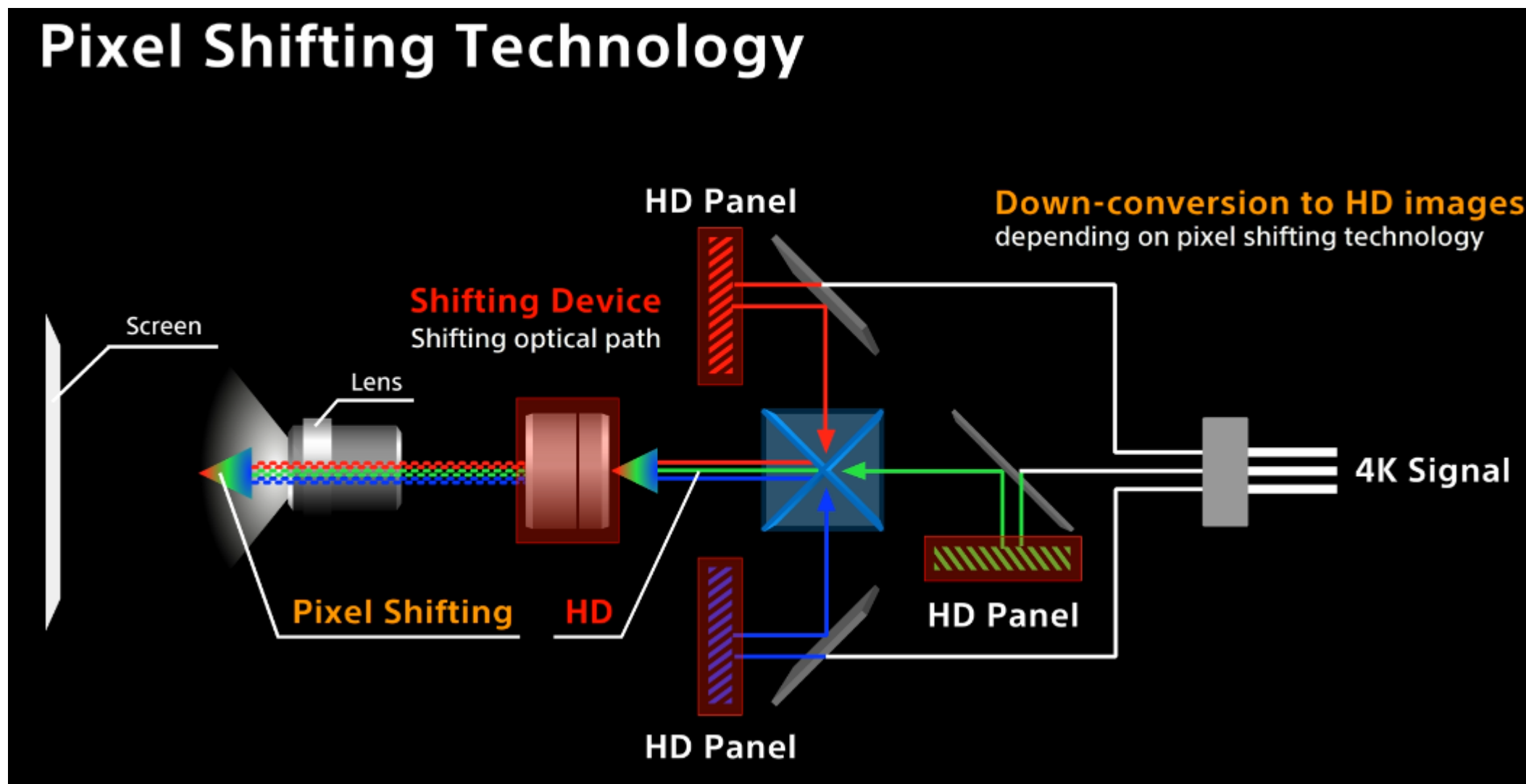
No 4K resolution displayed

Strange pattern

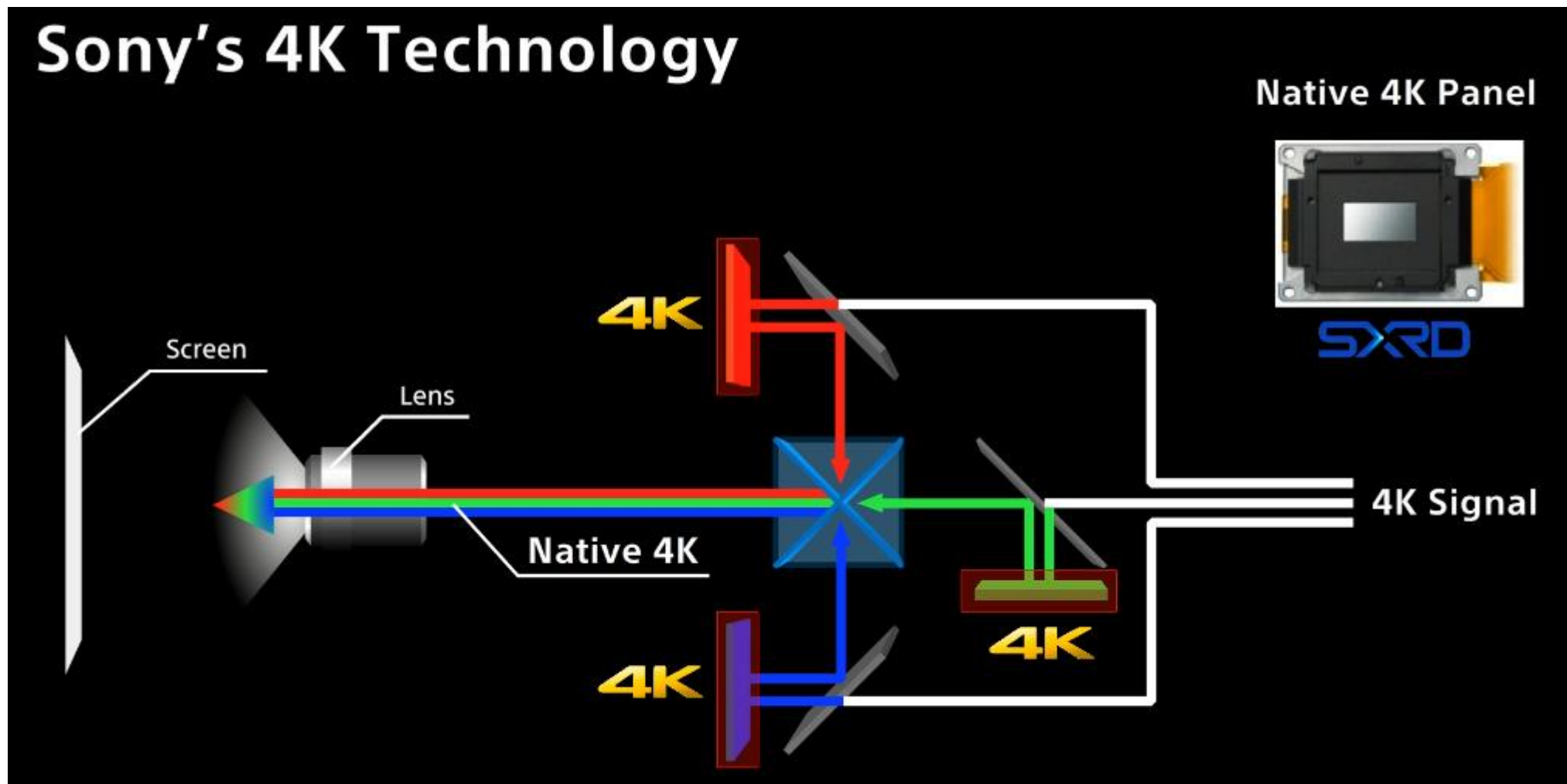
Strange pattern

Strange pattern

# Tecnología 4K



# Tecnología 4K





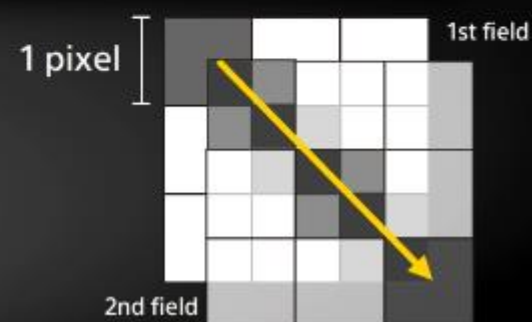
# Tecnología 4K

## Sony's 4K Technology



Native 4K Panel

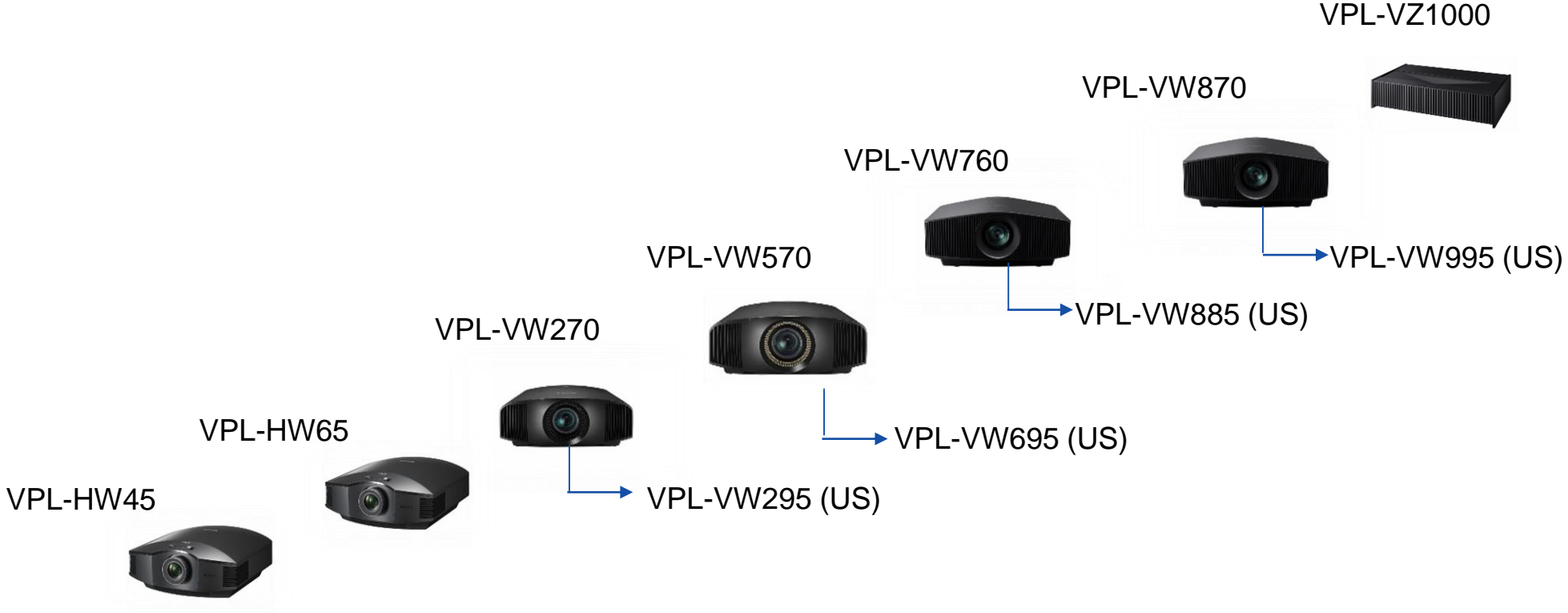
## Pixel Shifting Technology



Pixel shifting technologies

1 frame

# Linea de Proyectores de "Home Theater" SONY



# SONY - Projector Simulator



<For PC>

**SONY**  
make.believe

VPL-FH500L  
WUXGA/7000lm

Select How to Use  
 Input Basic Data  
 Projection Distance  
 Shift Range Simulation  
 Simulation Result  
 Print Out

**Input Basic Data**

Projector: VPL-F Series, VPL-FH500L

Screen size: Aspect ratio 16:10, Screen size 100 inch, Diagonal

Projection image size: Aspect ratio 16:10, Type: Type1: Screen and image are same size

Dimensions

	Screen size			Projection image size		
	Diagonal	Width	Height	Diagonal	Width	Height
	100 inch	85 inch	53 inch	100 inch	85 inch	53 inch
	2.54 m	2.15 m	1.35 m	2.54 m	2.15 m	1.35 m
	8.3 feet	7.1 feet	4.4 feet	8.3 feet	7.1 feet	4.4 feet

\*There might be a tolerance in the simulation result.

BACK NEXT

<For Android/i-OS>

**Simulation Result**

Lens select: VPLL-FM22, VPLL-ZM32, VPLL-ZM42, VPLL-ZP41

Lens adapter: PK-F500LA2

Result:

- Ceiling - Top of the projected image: 1 m
- Ceiling - Center of the projected image: 2.34 m
- Ceiling - Center of the lens: 2.34 m
- Projection distance: 3.79 m
- Center of the projected image - Center of the lens: 0 m

\*There might be a tolerance in the simulation result.

**Projection Distance**

Ceiling - Top of the projected image: 1 [Inch m Feet]

Projection Distance	Lens	Vertical shift range	Horizontal shift range
3.79	VPLL-FM22	2.34	0
6.3 to 6.95	VPLL-ZM32	0.75 to 3.93	-1.33 to 1.33
8.01 to 10.03	VPLL-ZM42	0.75 to 3.93	-1.33 to 1.33
10.8 to 12.11	VPLL-ZP41	-0.69 to 5.38	-2.71 to 2.71
14.31 to 21.09	VPLL-ZM102	0.75 to 3.93	-1.33 to 1.33
4.61	VPLL-4008	1.24 to 3.45	-0.81 to 0.81
8.55 to 11.2	VPLL-Z4015	-0.58 to 5.28	-2.45 to 2.45
11.09 to 14.1	VPLL-Z4019	-0.69 to 5.38	-2.71 to 2.71

\*There might be a tolerance in the simulation result.

# Tecnología SONY 4K

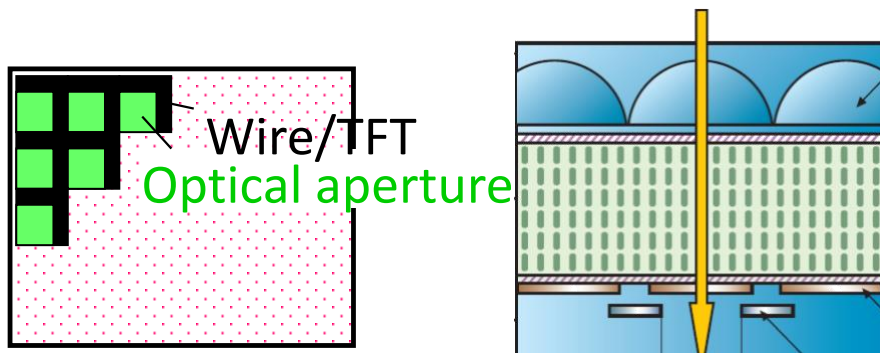
Con las tecnologías utilizadas en nuestros proyectores de cine profesionales, se sirve de los avanzados paneles SXRD para ofrecer una imagen 4K nativa, sin necesidad de manipular los píxeles de forma artificial. Las áreas rojas, azules y verdes de cada píxel se han alineado con precisión y a una velocidad de 2.5 milisegundos, lo que garantiza una imagen impecable y sin puntos

## SXR D



### Convencional

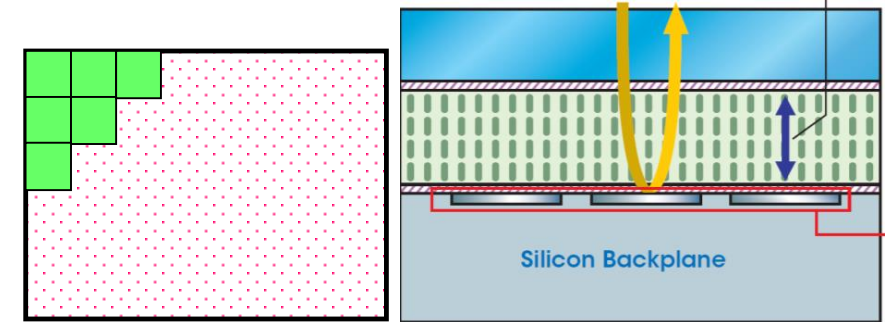
(Espacios y Perdida de Contraste)



Aperture Ratio  $\cong$  70%

### Sony SXR D

(Sin espacios y Mejor Contraste)



Aperture Ratio  $>$  90%

# Tecnologia SONY 4K

## Native 4K Resolution

More than 4x Full HD images

Full HD  
1080

FULL HD  
1920 X 1080  
(2.1 million pixels)

4K  
4096 X 2160  
(8.8 million pixels)

4K



Less screen door and jagged edges for a truly immersive experience

Sony's 4K  
SXR™ Panels  
Dynamic Contrast  
HDR Compatible  
Reality Creation  
TRILUMINOS™ Display  
Motionflow

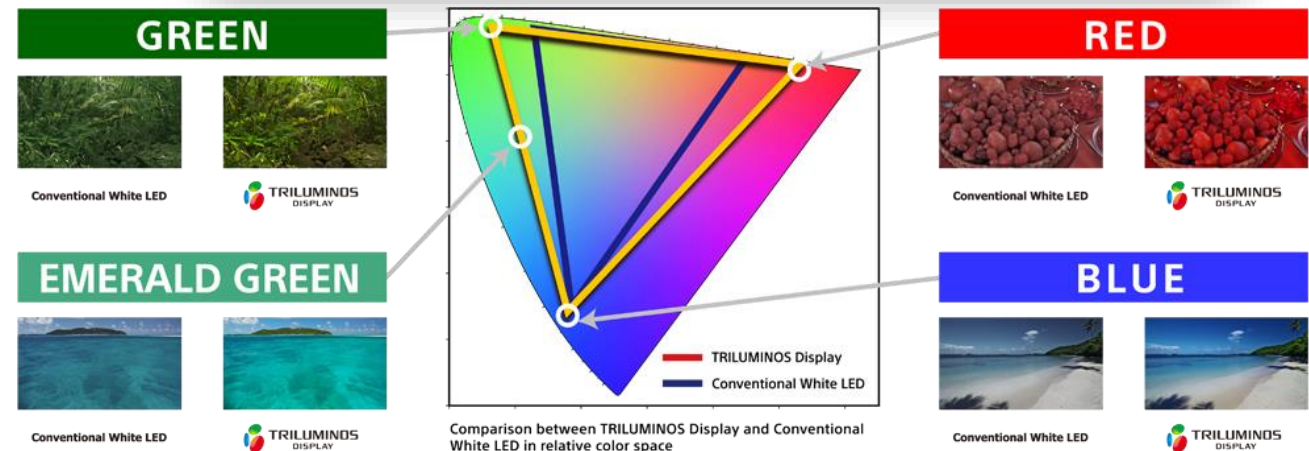
# Tecnologías SONY

## Motionflow DFI Dark Frame Insertion

Da vida a sus imágenes con una fluidez asombrosa, introduciendo un cuadro negro entre cada dos cuadros de imagen, logrando elevar el contraste aparente, la definición y reducir el efecto estela en las imágenes en movimiento



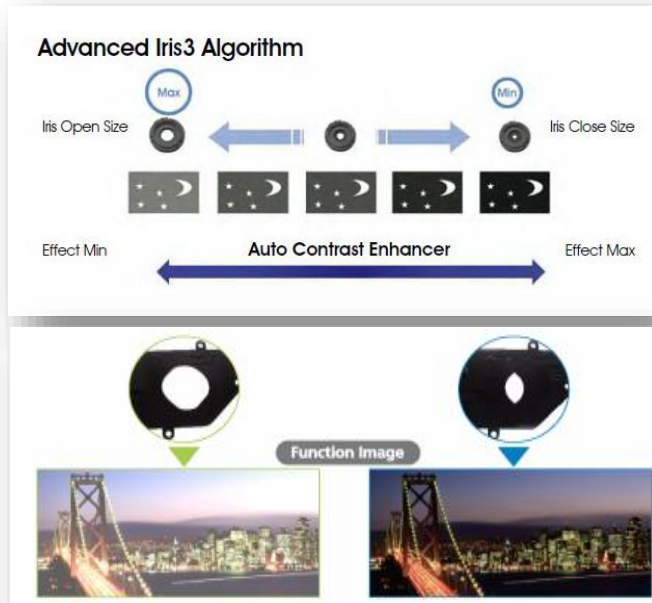
Reproduce una gamma de colores en un espacio extendido, capaz de mostrar mas tonos y texturas, dándonos un mayor nivel de pureza, profundidad y realismo.



# Tecnologías SONY

## Advanced Iris 3

Es una tecnología que incorpora un obturador que controla la luz mediante un algoritmo exclusivo de SONY que ayudan a alcanzar una increíble relación de contraste dinámico, maximizando los blancos y negros sin reducir el brillo, para que no te pierdas ningún detalle incluso en escenas oscuras.

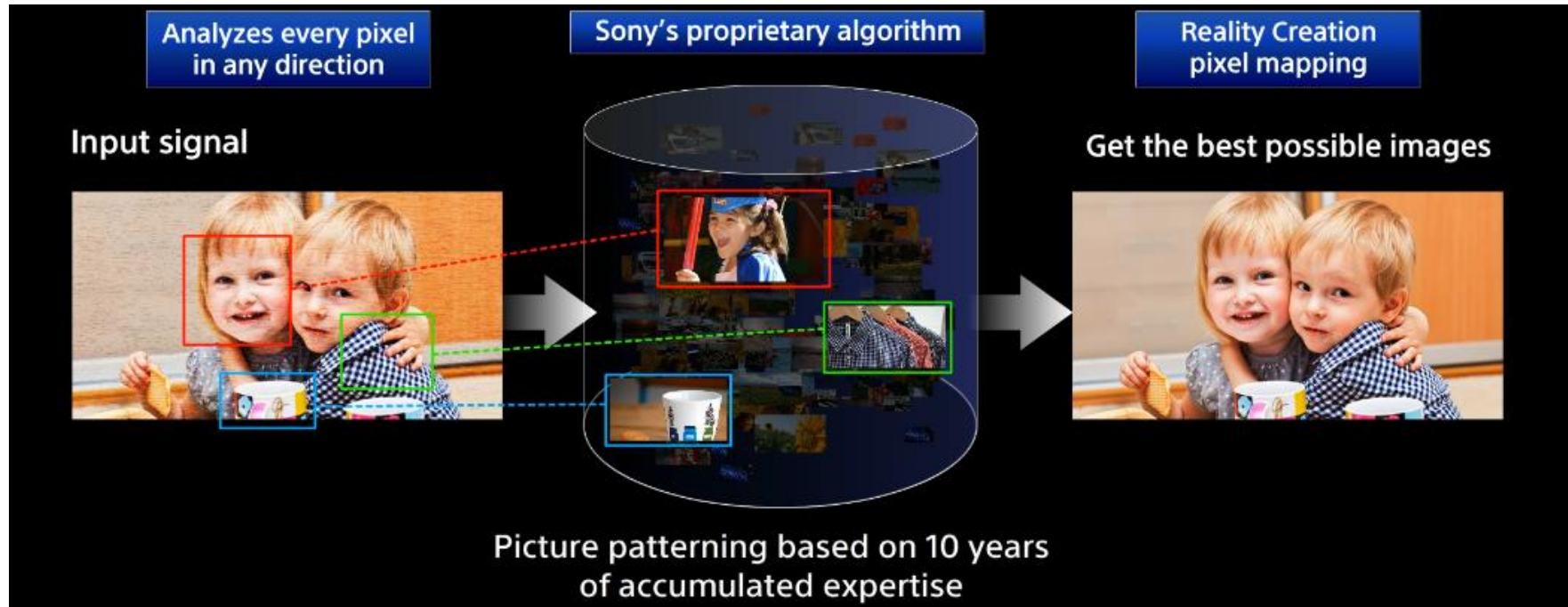


# Tecnologías SONY

## Reality Creation

Es una tecnología exclusiva de SONY que masteriza la resolución de contenidos, mediante un algoritmo y un procesador que mejora radicalmente las señales de video en texturas, contorno y color.

Permite aumentar la calidad de cualquier contenido en video hasta el equivalente a 4K\*.



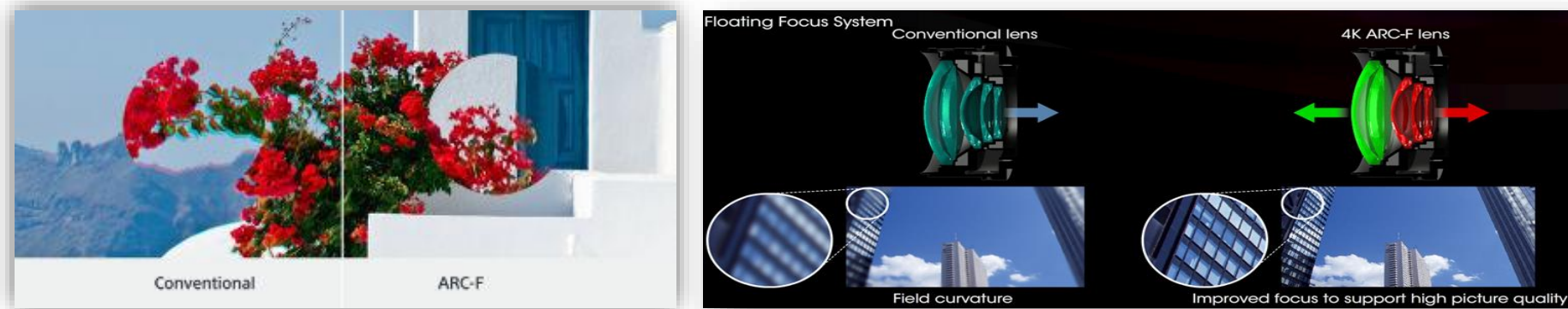
\*Solo en modelos con resolución 4K (4096 X 2160 pixeles)



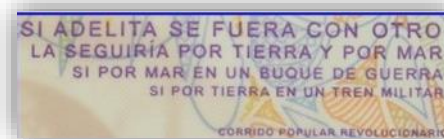
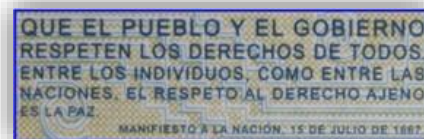
# Tecnologías SONY

## Lentes ARC-F

El conjunto de lentes que tiene el equipo le permite tener mayor enfoque en todas las escenas tanto en películas como en fotografías, evitando imágenes borrosas.



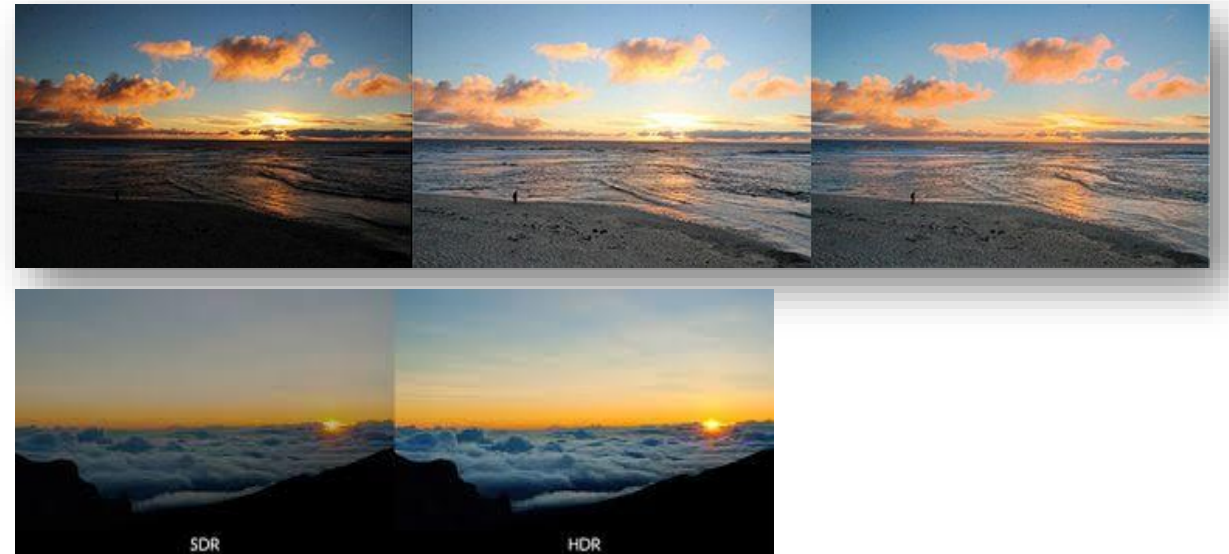
Ejemplos de visualización en conjunto con una cámara 7S y un proyector VPL-VW550 Sony.



# Tecnologías SONY

## HDR

Aprovecha al máximo los servicios de streaming y UHD Blu-ray con el alto rango dinámico. El vídeo HDR ofrece una mayor gama de brillo que proporciona imágenes de alto contraste más realistas y colores brillantes. Compatible con los formatos HDR10 y HLG (Hybrid Log-Gamma). Los proyectores de Home Cinema de Sony reproducen colores y contrastes totalmente fieles a las intenciones de sus creadores.



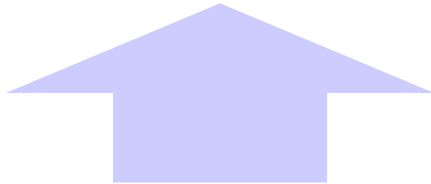
# Comparación de Modelos

# Step up value | VW270ES to VW570ES

## VW570ES



- ✓ 1,800lm
- ✓ Advanced Iris
- ✓ Picture Position



## VW270ES



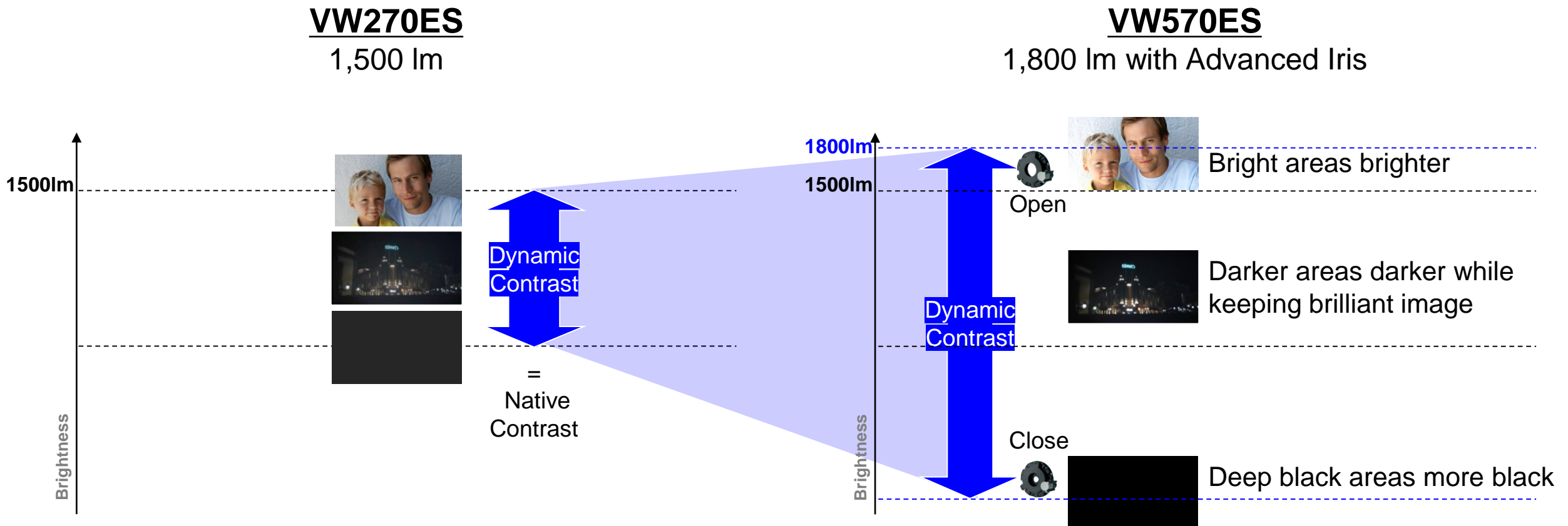
- ✓ 1,500lm

There are 2 important step up value

1. **More dynamic and brilliant 4K HDR**
  - ✓ By “1,800 lm brightness” and “Advanced Iris”
2. **Switch lens position between Cinema scope (2.35:1) and TV(16:9) contents**
  - ✓ By “Picture Position memory”

# 1. More dynamic and brilliant 4K HDR | 1,800lm + Advanced Iris

- ✓ Brightness is increase 20% from VW270ES.
- ✓ The combination of "1,800 lm brightness" and "Advanced Iris" makes dark scenes darker and brighter in bright spots. It provides more immersive 4K HDR experience.



# 1. More dynamic and brilliant 4K HDR | 1,800lm + Advanced Iris

## Lighting on



“1800lm” makes high bright Sports/Game experience

## Lighting off



“Advanced Iris” makes more deeper black while keeping 4K HDR brilliant sense

## 2. Switch lens position between Cinema scope and TV(16:9) contents

- ✓ You can switch lens position between Cinemascope(2.35:1) and TV(16:9) contents by just pushing one button

### VW270ES

No Picture Position/16:9 Screen

16:9  
Contents



2.35:1  
Contents



Your movie picture gets small

### VW570ES

With Picture Position/2.35:1 Screen

16:9  
Contents



Just push "Position" button

2.35:1  
Contents



Perfect for movies!



# Step up value | VW570ES to VW760ES

## VW760ES



- ✓ 2,000lm
- ✓ Laser light Source
- ✓ Laser light Control



## VW570ES



- ✓ 1,800lm
- ✓ Lamp
- ✓ Advanced Iris

There are 3 important step up value

1. Upgrade to Laser with same size as Lamp
2. Long life high-bright picture
  - ✓ By “Laser light source”
3. Quick switching between bright and dark scenes
  - ✓ By “Laser light control”



# 1. Upgrade to Laser with same size as Lamp

- ✓ Compact and lightweight even with Laser light source.
- ✓ Replaceable without changing the installation environment from your own lamp model.

## VW570ES

14Kg



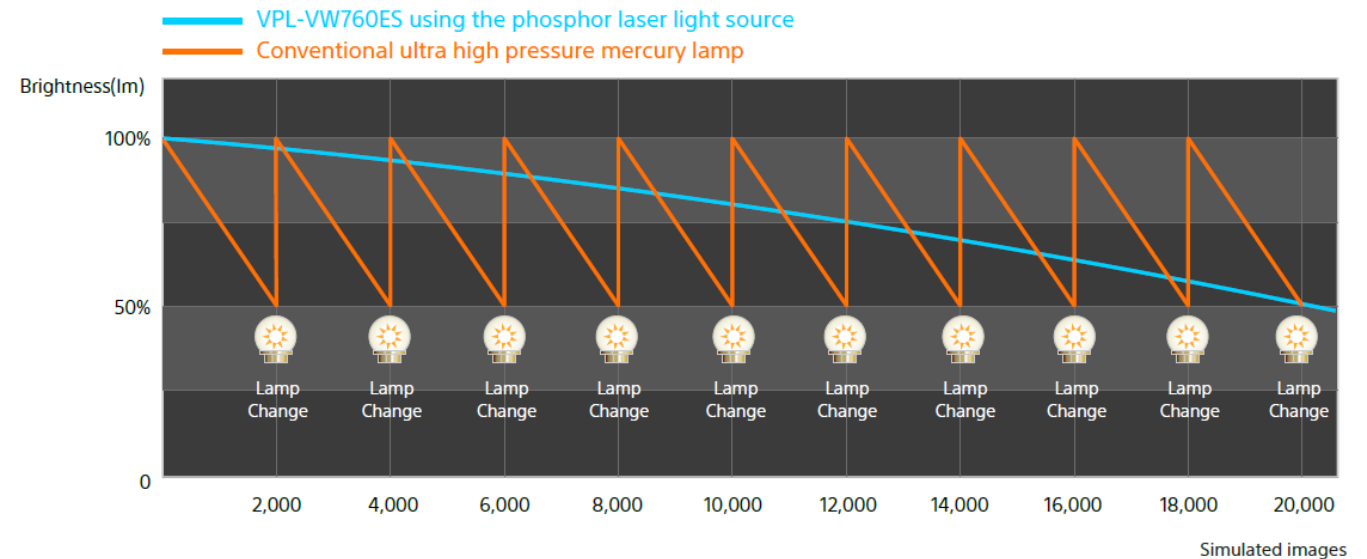
## VW760ES

20Kg



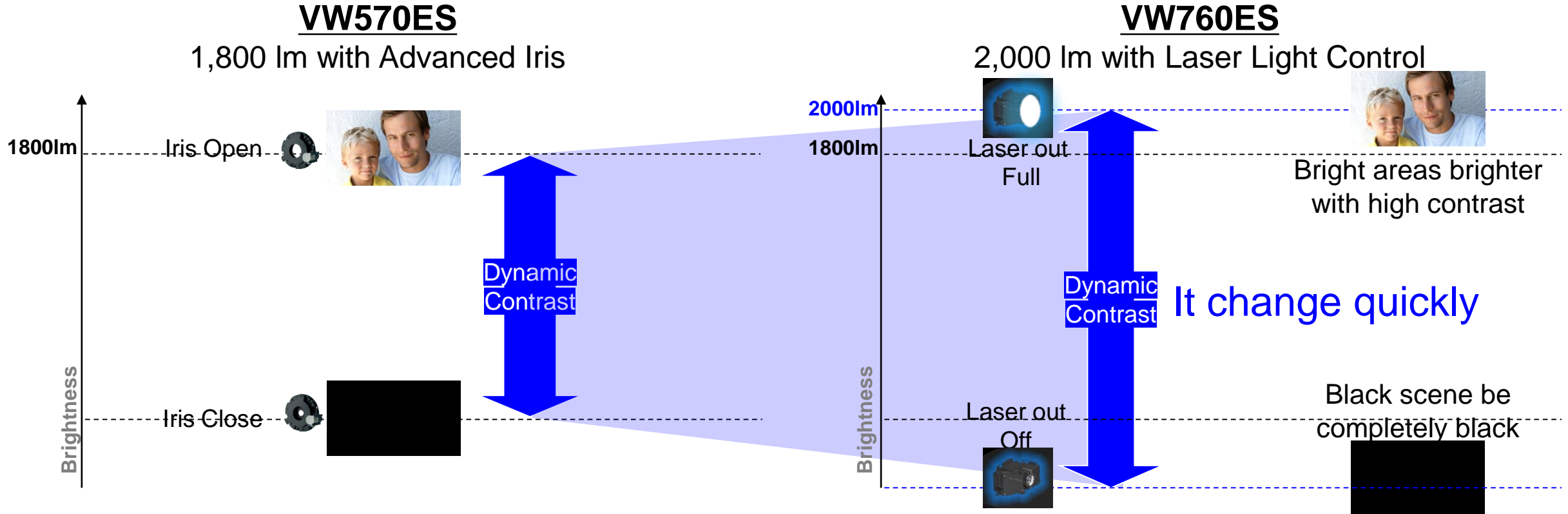
## 2. Long life high-bright picture

- ✓ Laser light source enable you to enjoy perfectly clear 4K HDR pictures with the right brightness level for a very long time.
- ✓ It offers bright images for up to 20,000 hours of uninterrupted operation, with no lamp replacement.



### 3. Quick switching between bright and dark scenes

- ✓ VW760ES provides more dynamic contrast than VW570ES because it's a laser projector.
- ✓ VW760ES changes laser output much quicker than VW570ES opens or closes iris depending on scene. It provides more dramatic and powerful picture experience.

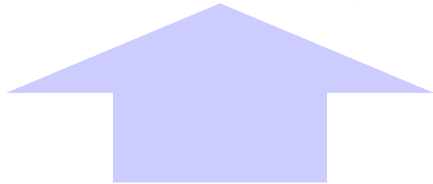


# Step up value | VW760ES to VW870ES

## VW870ES



- ✓ 2,200lm
- ✓ ARC-F "Premium 4K" Lens
- ✓ Digital Focus Optimizer
- ✓ Dual Contrast Engine



## VW760ES



- ✓ 2,000lm
- ✓ Laser Light Control

There are 2 important step up value

### 1. More clarity

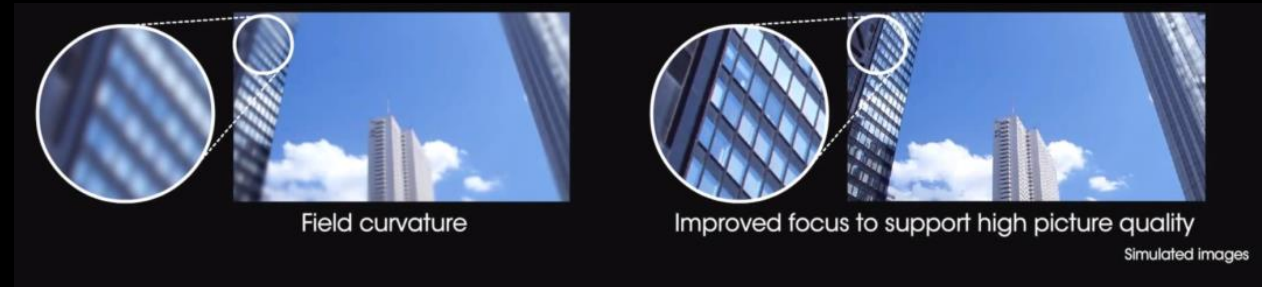
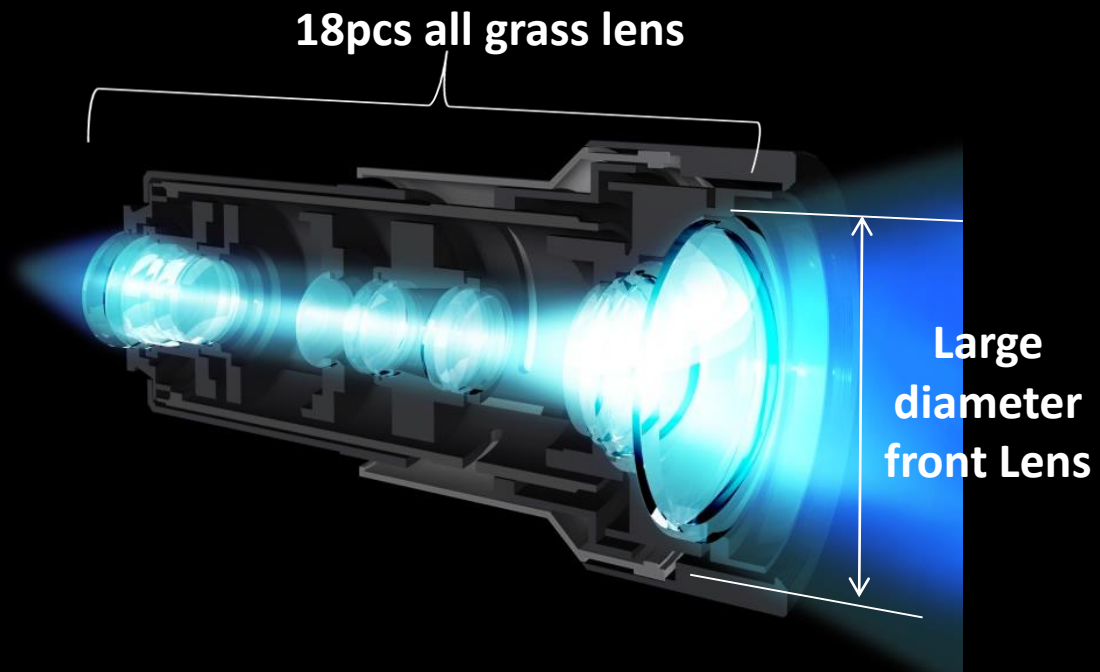
- ✓ By "ARC-F Lens" and "Digital Focus Optimizer"

### 2. Deep black in dark scenes

- ✓ By "Dual Contrast Control Engine"

# 1. More clarity | All-Range Crisp Focus (ARC-F) lens

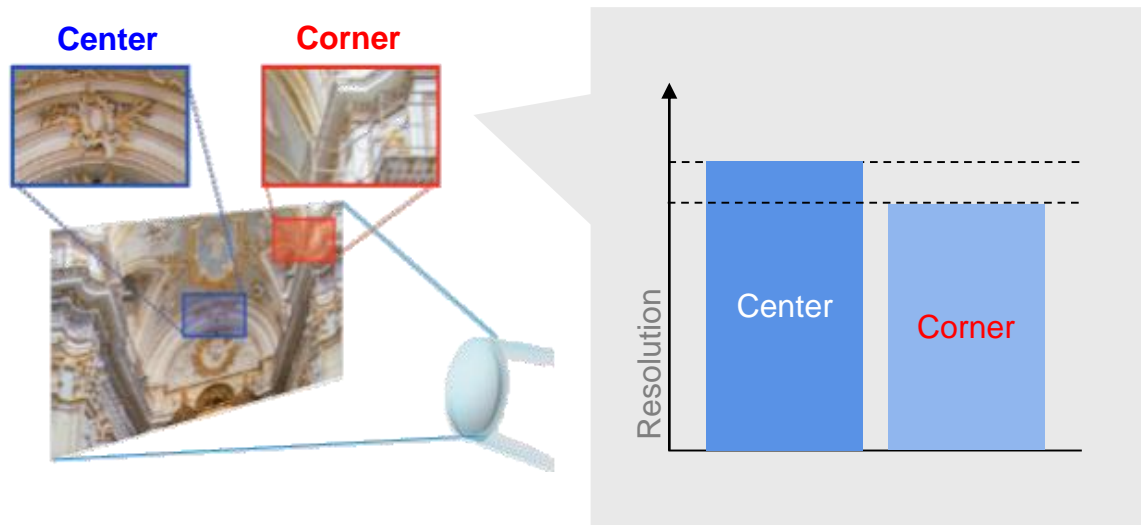
- ✓ This large-aperture lens adopts an all-glass design for its 18 elements, including six extra low dispersion (ELD) elements.
- ✓ It deliver pristine image quality across the entire screen.



# 1. More clarity | Digital Focus Optimizer

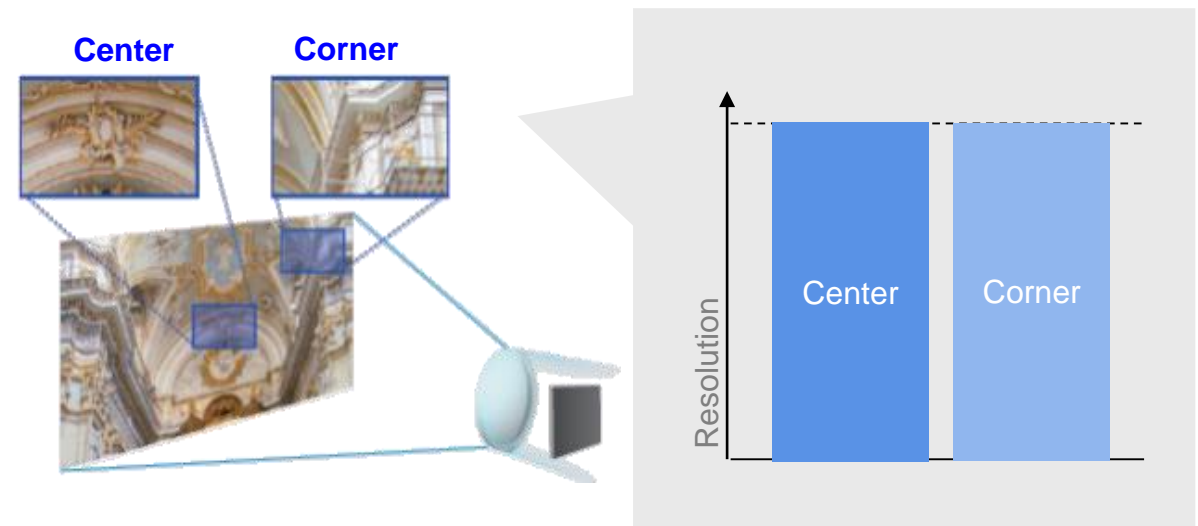
- ✓ Improve focus level by compensating optical degradation of lens.
- ✓ You can see difference especially at corners.

## Digital Focus Optimizer “Off”



Corner images are blurry

## Digital Focus Optimizer “On”



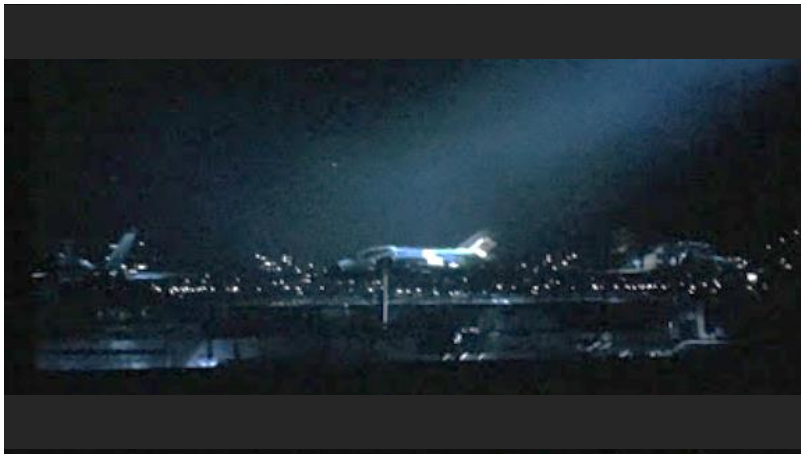
Corner and Center images are both crisp

## 2. Deep black in dark scenes | Dual Contrast Engine

- ✓ This is a feature for customers who loves BLACK.
- ✓ Adding Advanced Iris on top of the Laser Control, you can get deep black in dark scenes.

### VW760ES

Laser light control



### VW870ES

Laser light control + Advanced Iris



Provide deeper black especially in top and bottom black bar

\*Above pictures are simulated image.

\*Recommend scene for demo : "Sully" (Ch:5 | 00:40:20)

# 1. More clarity | Lens

Top

Sony  
HD lens

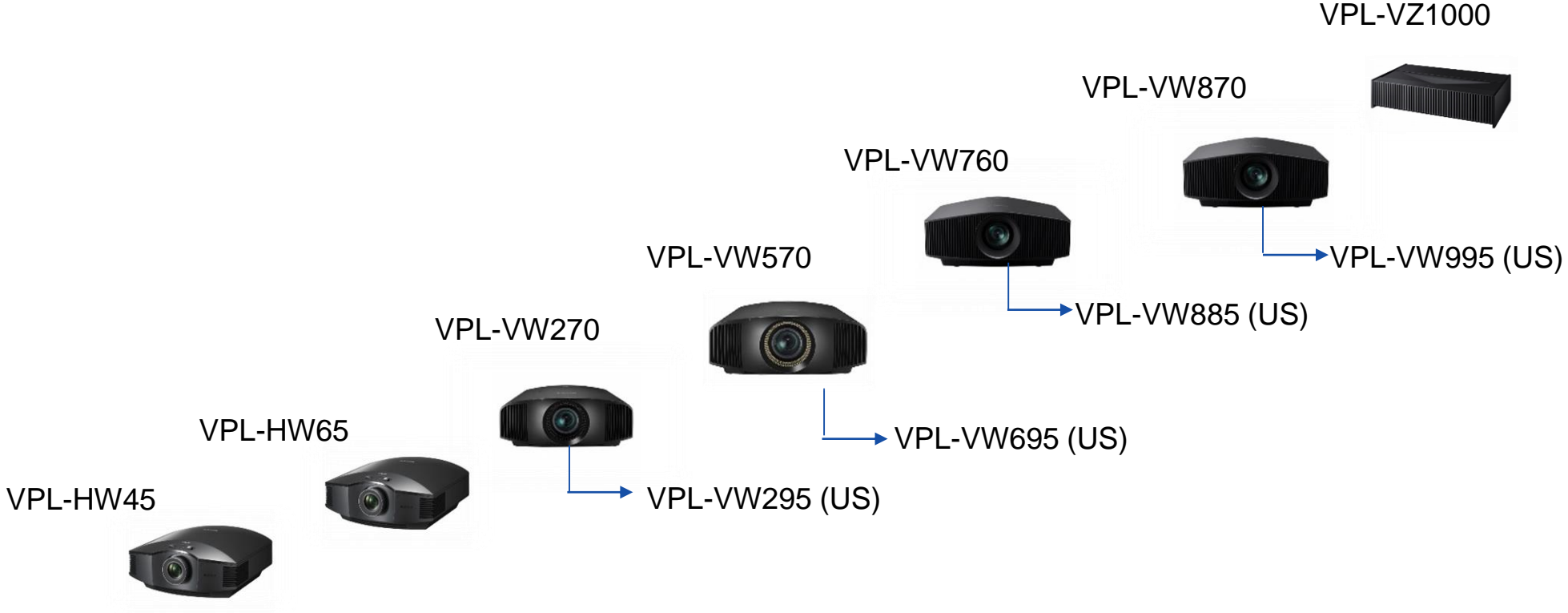
Sony  
4K lens

Sony  
ARC-F lens





# Linea de Proyectores de "Home Theater" SONY



**Gracias!!**

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