



# VISUAL DISPLAYS

## Autumn 2020 Consultant Webinar Programme

**Effective use of standards to achieve improved and measurable results**  
**An introductory course for consultants**

**DISPLAYS, LIGHT & ENVIRONMENTAL EXPERTISE**

**PRODUCTS, SERVICES, SPECIALIST CONSULTANCY**

# Presenter – Greg Jeffreys

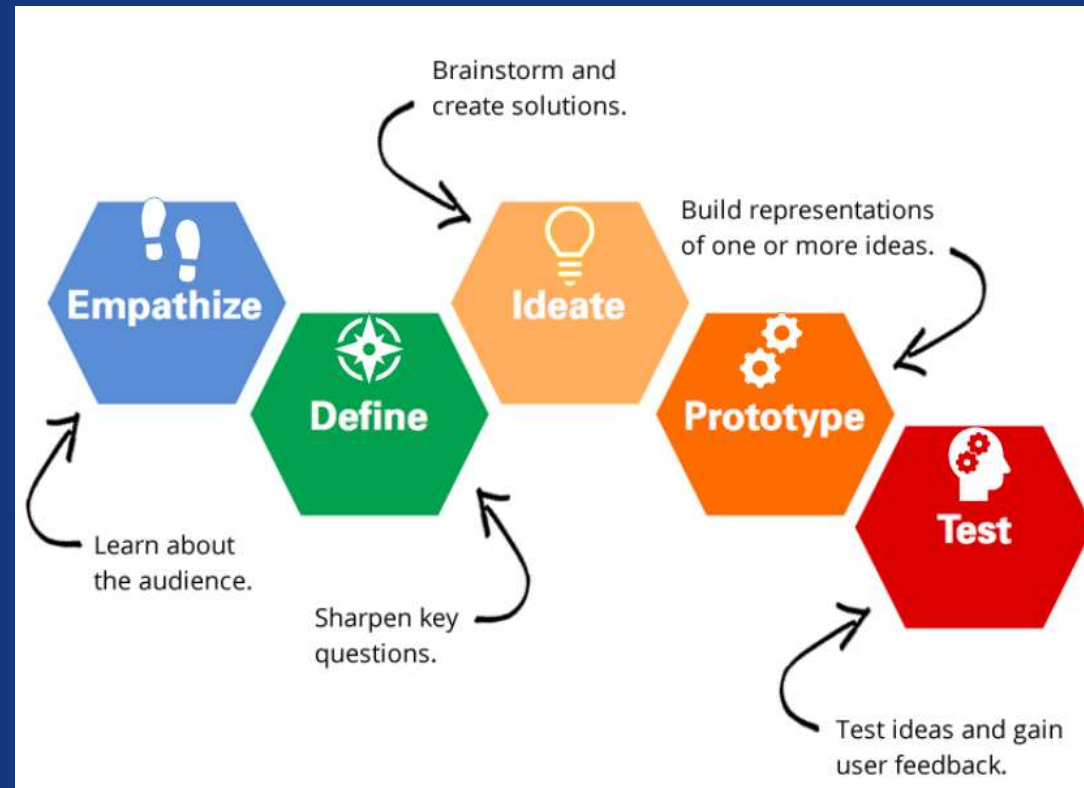


- ▶ Managing Director of Visual Displays (formerly Paradigm AV)
- ▶ Current chair, AVIXA Standards Steering Committee
  - ▶ Lead writer, PISCR image contrast standard – and new ISCR standard task group
  - ▶ Task group chair ANSI/AVIXA DISCAS standard – image size, resolution, viewing positions/angles, content size guidance
  - ▶ Task group working on AVIXA's new UX for AV Design standard
  - ▶ President of InfoComm/AVIXA 2012, board member 2008-13
- ▶ Specialist consultant in standards, displays, light & lighting, VC lighting, teaching space & meeting room design
- ▶ Outstanding Contribution Award – AV Technology Awards 2020

# Start with the end in mind

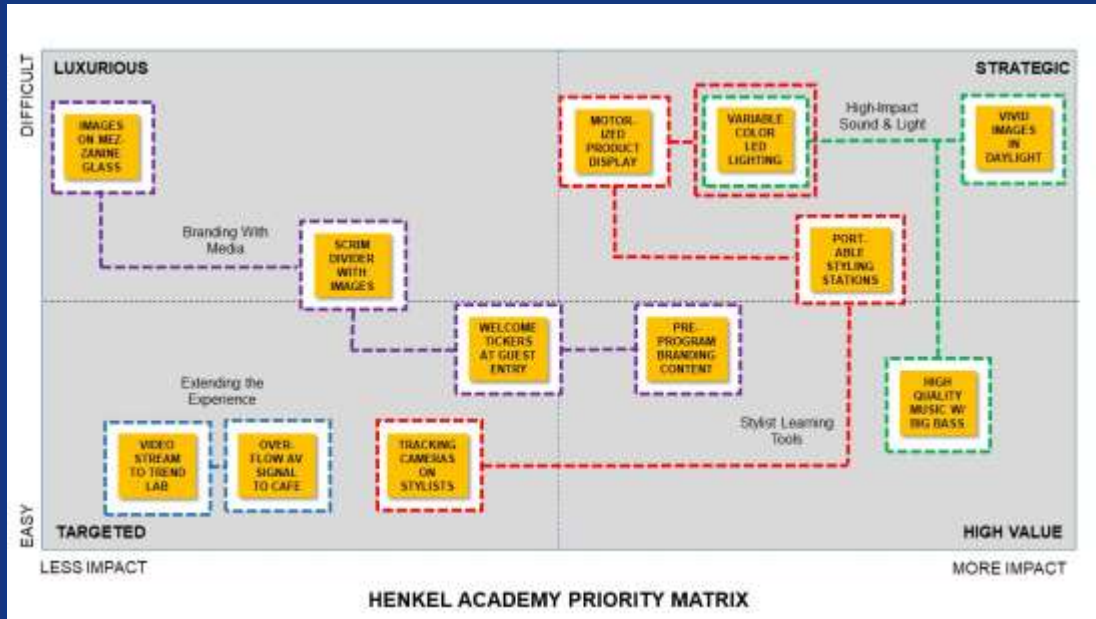
- ▶ Modern application of standards is a form of reverse engineering
- ▶ The primary objective is to define exceptional user experiences and outcomes in the form of hard, measurable metrics

# AVIXA's new UX design standard is based on Human-Centred Design



*It's iterative – not the classic 'waterfall' model.*

# UX processes and techniques to establish user needs



*Let us help you with our comprehensive services*

# UX and use case

## ...knowledge is the key

- ▶ Talk to the users!
- ▶ Don't be afraid of the work 'prototype' here – it's your friend!
- ▶ Start with the end in mind
- ▶ This is a pre-technology approach
- ▶ Know/assume the technology is there to achieve good outcomes – but describe and define those outcomes before
- ▶ Forget technology until key basic issues are 100% scoped
- ▶ Objective: create measurable performance metrics

***A significant opportunity for new consultant services***

**Watch out for public review of new User Experience Design for AV standard!**

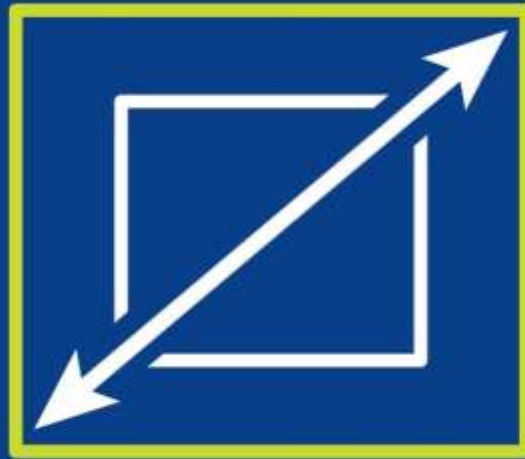
Article in AV Magazine here - <https://www.avinteractive.com/features/its-all-about-the-experience-27-08-2020/>

# Image size

Is it big enough? ...for social distancing?



VISUAL DISPLAYS





# Social distancing space configurator

## Complete space configuration and management

**TU Delft** TU Delft Education Space Configurator

Welcome Piet van der Zanden  
Delft University of Technology (manager)  
Your license is valid till January 2021

©2019 TU Delft

Space Configuration: Tiered Lecture Hall

**Front View**

Screen 110"  
Board 300  
Board 300  
Smartboard 60"

Readability, Sightlines  
Seat capacity: 300

**Side View**

Screen 1: 32.9" / 19.8"  
LEDs  
Smartboard 1: 7.7" / 4.8"  
2 Chalk Boards

**Top View of Education Space**

**Furniture**

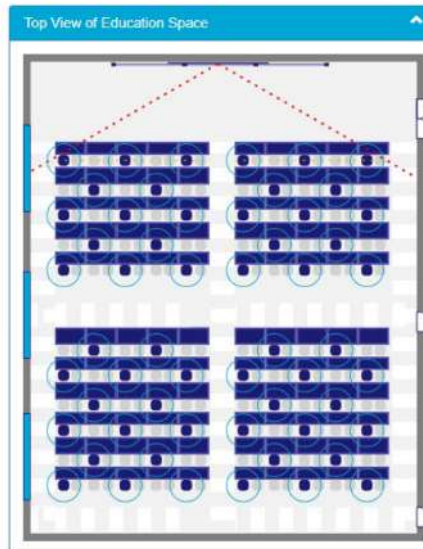
☐ Fold Table ☐ Fold Seating ☐ Show exam chairs

No of rows: 15  
Table depth: 40cm / 15.7"  
Chair Depth: 60cm / 23.6"  
Chair Width: 60cm / 23.6"  
Chair Centre-to-Centre: 65cm / 25.6"  
Row Passage: 5cm / 2.0"

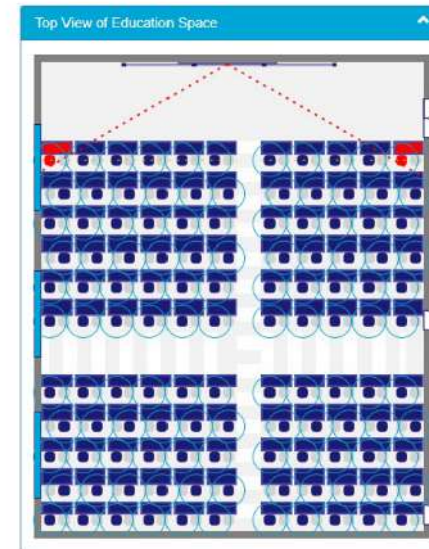
Aisles  
Desk  
3 Doors  
3 Windows

[info@tudesc.com](mailto:info@tudesc.com)

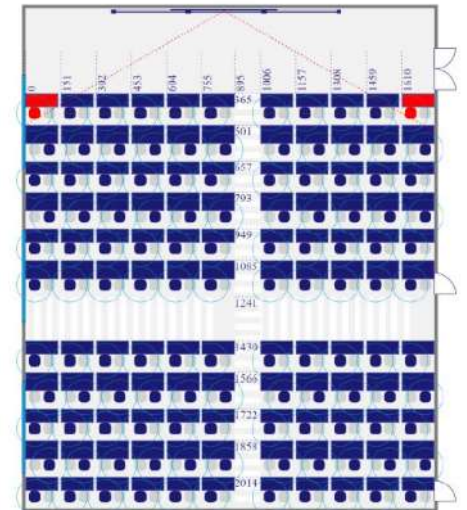
Social Distance with normally generated Seat Capacity (56)



Social Distance with optimized Seat Capacity (121)



Printed detailed Floorplan for facility instructions

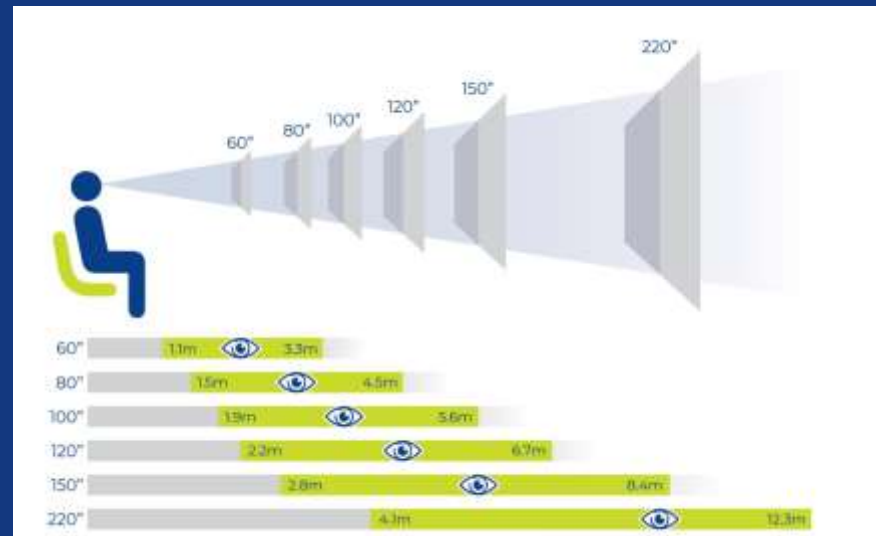




# Use DISCAS!

Take our 1hr webinar (1 CTS Renewal Unit)

- ▶ Use 6:1 rule as baseline metric (relates to 3%ElementHeight in DISCAS)
- ▶ ...but DISCAS is too easy to use not to use it!
- ▶ There are good quick reference guidelines too...



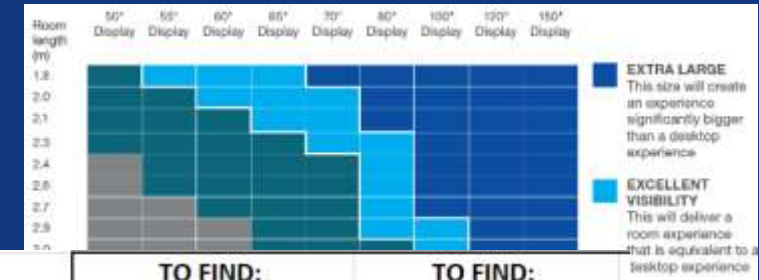
# Start with 6 : 1

## ...because size matters

- ▶ The DISCAS image size standard is globally recognised
- ▶ Content (font size/height) is the 'big new thing'
- ▶ Easy-to-use calculator
- ▶ Recommended starting point = 3%EH
  - ▶ which means...
- ▶ The maximum viewing distance should be no more than 6x the image height
- ▶ Download calculator here - <https://visualdisplaysltd.com/resources/useful-calculator-tools>



VISUAL DISPLAYS



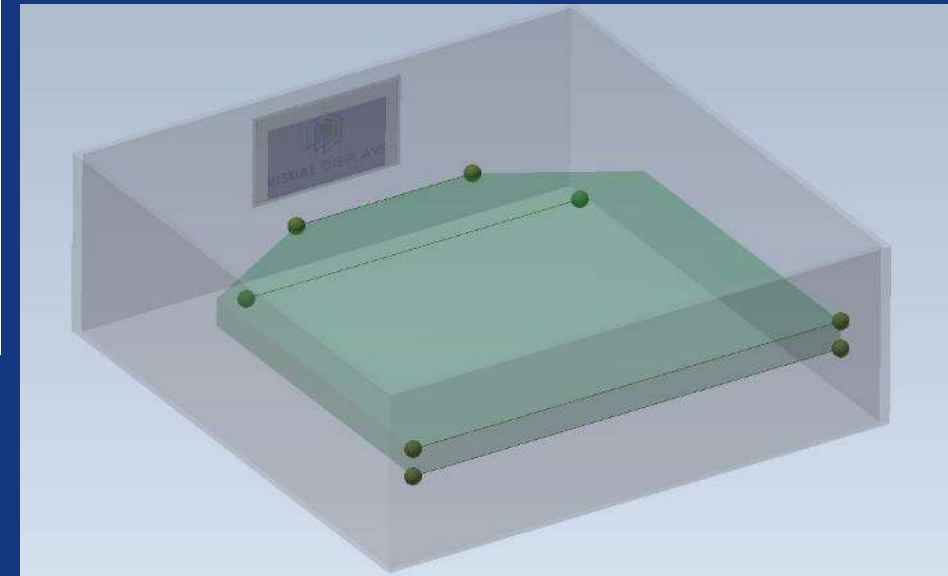
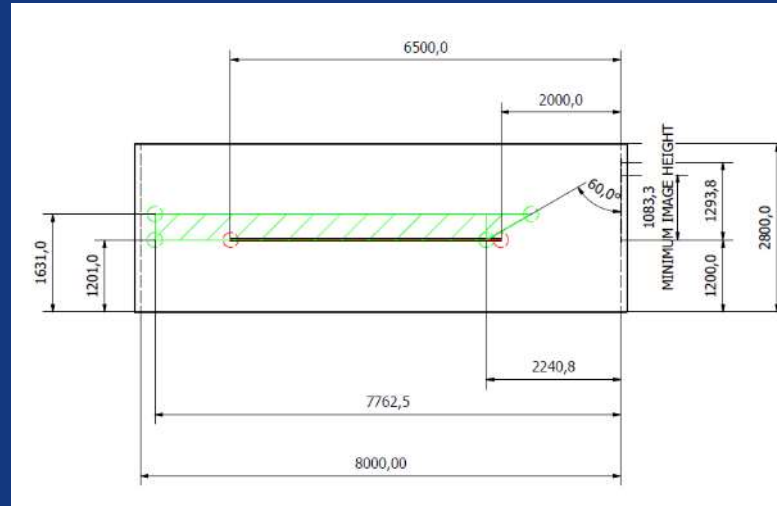
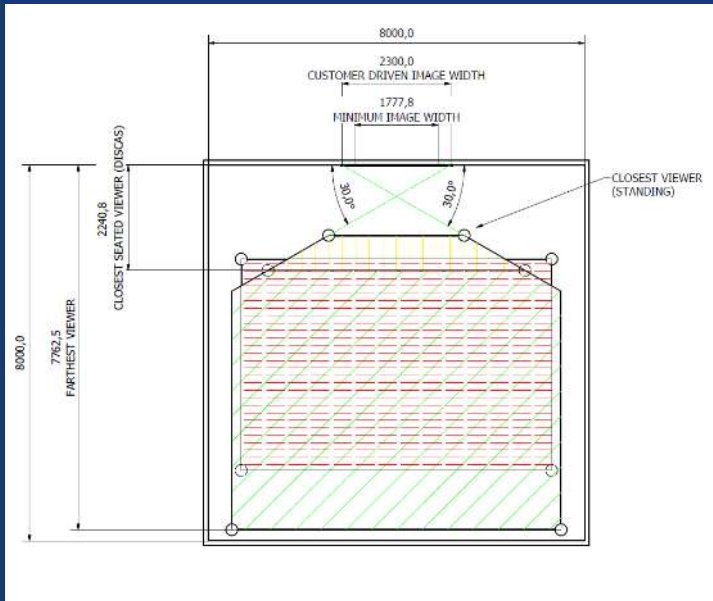
	TO FIND:		
<i>Do not add measurement labels (" , mm)</i>	<b>Farthest Viewer</b>	<b>Minimum Image Height</b>	
Image Height	1000	1000	<b>NOT RECOMMENDED</b> This is a poor experience that does not meet any standards
Distance from floor to bottom of image	1220	1220	
Image Offset	0	0	
Image Width	1780	1780	
Farthest Viewer	6000	6000	<b>ACCEPTABLE</b> This meets minimum standards, but is not equivalent to a desktop experience
Viewing Ratio	6.00	6.00	
Minimum %Element	3.00%	3.00%	
<b>TO FIND</b>	Farthest	Minimum	
<b>CLOSEST VIEWER</b>	Viewer	Image Height	
Vertical Viewing Factor	1000	1000	
Closest Viewer	1732.0	1732.0	
Viewing Ratio	1.73	1.73	
Nominal Viewing Depth	4268.0	4268.0	
Max. Length of CV Plane	4220	4220	

# DISCAS CAD tools

## Formulae in parametric 3D CAD (+ renderings)



VISUAL DISPLAYS



# Displays specification

- ▶ Know and link to the necessary environmental standards eg

- ▶ CIBSE / SLL (Society for Light and Lighting) **Lighting Guide 7**  
(<https://www.cibse.org/knowledge/knowledge-items/detail?id=a0q20000008K5T2AAK>)

- ▶ IES Lighting Guide (US)

- ▶ WELL Building Standard v2™

- ▶ <https://v2.wellcertified.com/v/en/overview>



- ▶ WELL is the breakthrough environmental standard, pulling together all existing standards
- ▶ Provides 'hooks' (hard metric links) to AV standards

# Don't design in asthenopia ...avoiding eye strain

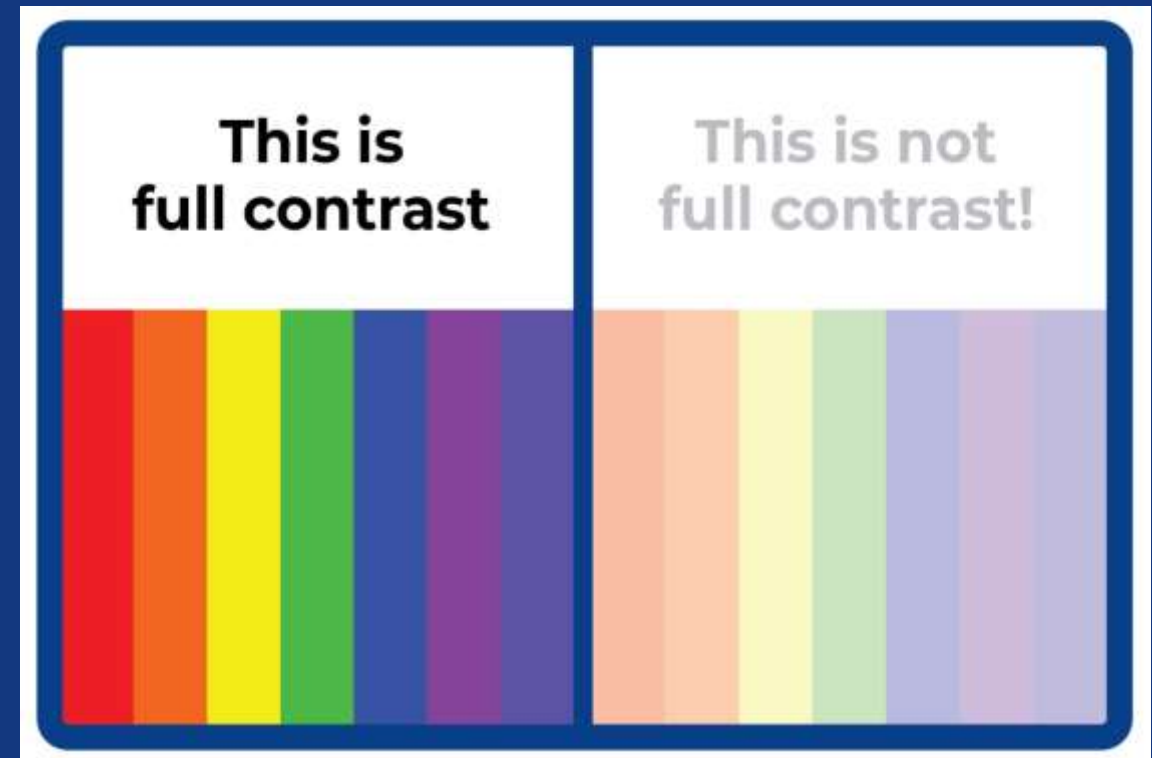
- ▶ Task Luminance Ratio (max 3:1 for key tasks)
- ▶ Keep luminances of everything within prescribed range to avoid eye strain

	Ambient light in lux			
	300	400	500	<i>You should have 300-500 lux on a meeting room table</i>
Peak Gain of task (eg paper)	1	1	1	
<i>TASK LUMINANCE =</i>	<i>96</i>	<i>127</i>	<i>159</i>	cd/m <sup>2</sup> [nit]
Task luminance ratio	2.5	2.5	2.5	: 1
<i>MAX DESIRED IMAGE LUMINANCE =</i>	<i>239</i>	<i>318</i>	<i>398</i>	cd/m <sup>2</sup> [nit]
ISCR contrast ratio required	15	15	15	: 1
<i>MAX PERMITTED BLACK LEVEL (relative to the max white level permitted on your image)</i>	<i>16</i>	<i>21</i>	<i>27</i>	cd/m <sup>2</sup> [nit]
<i>MAX PERMITTED LUX ON SCREEN (ambient light must be at or below this level onscreen to achieve the 15:1 required for PISCR Basic Decision Making category)</i>	<i>50</i>	<i>67</i>	<i>83</i>	lux



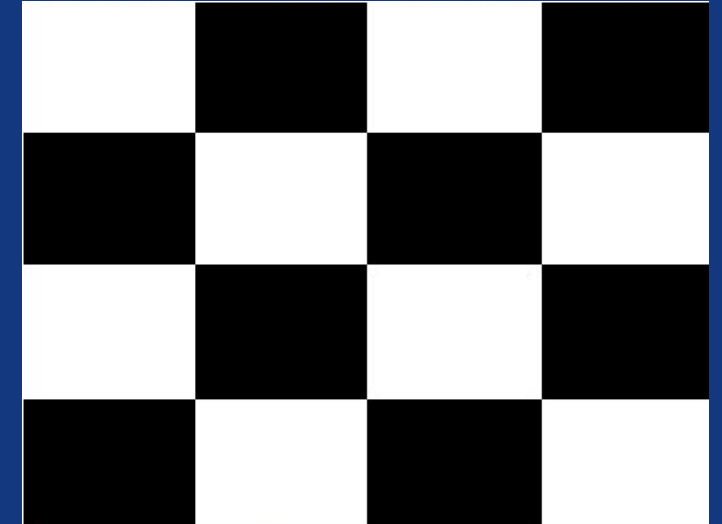
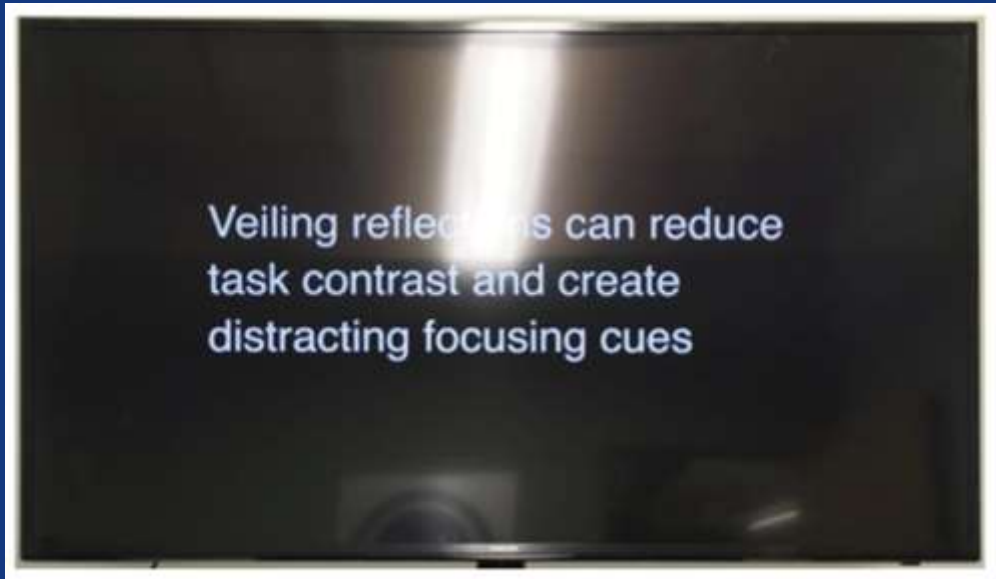
# Contrast is key driver

- ▶ Contrast = perceived 'brightness'
- ▶ 'Brightness' is 'weasel word'
  - ▶ describes perception of light, not measurable properties
- ▶ Low contrast = low perceived 'brightness' and resolution
- ▶ Objectives:
  - ▶ Set (limit) display's peak white level (luminance [ $\text{cd/m}^2$  – 'nit']
  - ▶ Black levels to be at least 15 x less



# 15:1 contrast ratio – PISCR / ISCR standards

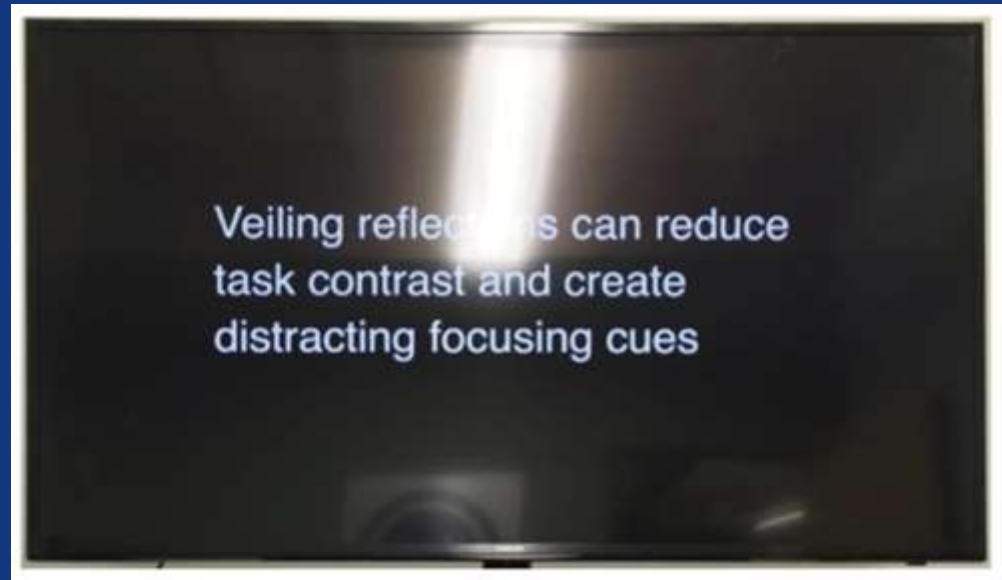
- ▶ New ISCR standard applies to projection all panel / emissive technologies
- ▶ Use ALR (ambient light rejecting) projection screens
- ▶ Ambient light affects LFD (large format displays) too



*The white squares' average luminance (brightness) must be 15 x more than the black squares.*

# FPD/LFD display contrast also driven by ambient light

- ▶ Ambient light affects LFD (large format displays) too



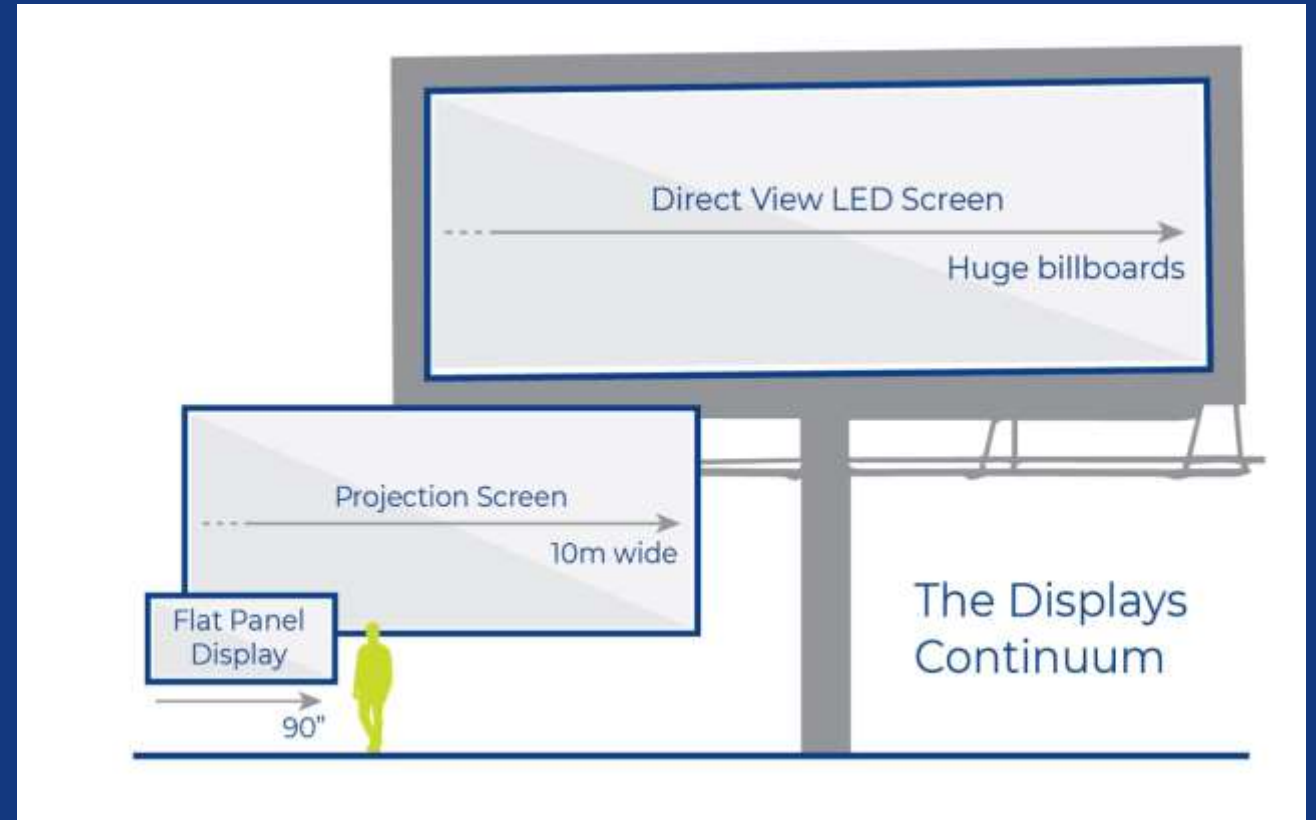
*ALR projection screens are matt and do not suffer from these issues*

# The black level paradox

- ▶ Task Luminance Ratio (WELL, SLL, IES etc building codes) must fall within 3:1 ratio
  - ▶ <https://v2.wellcertified.com/v/en/light/feature/6>
- ▶ **Focus on image black levels** to ensure display white levels are not too high
  - ▶ Download essential calculators here - <https://visualdisplaysltd.com/resources/useful-calculator-tools>

# The displays continuum

- ▶ Up to 90" – flat panels (LFD, FPD)
- ▶ Above 90" – ALR projection
- ▶ Variable entry point for dvLED
  - ▶ Best used for signage





Products  
per page: 20

Sort by:

RRP (Low - High)



### NEC 98" MULTISYNC C981Q DISPLAY

98", Black, Large Format Display, 4K  
UHD, 350 cd/m<sup>2</sup>, 24/7 Operation, 3x  
HDMI

☐ Compare

RRP: £10,247.00

Your price: £7,029.00

5 in stock

Mfr. Part #: 60004516

Our Part #: NECLDC981Q



### Iiyama 98" LH9852UHS-B1 DISPLAY

98", Black, Large Format Display, 4K  
UHD, 500 cd/m<sup>2</sup>, 24/7 Operation, 3x  
HDMI

☐ Compare

RRP: £10,904.00

Your price: £5,900.00

2 in stock

Mfr. Part #: LH9852UHS-B1

Our Part #: IYLCD9852UHS



### LG 98" 98UM3E DISPLAY

98", Black, Large Format Display, 4K  
UHD, 350 cd/m<sup>2</sup>, 24/7 Operation, 3x  
HDMI

☐ Compare

RRP: £10,995.00

Your price: £5,999.00

32 in stock

Mfr. Part #: 98UM3E

Our Part #: LG98UM3E



### PHILIPS 98" 98BDL4150D/00 DI ...

98", Black, Large Format Display, 4K  
UHD, 500 cd/m<sup>2</sup>, 3x HDMI and 3x  
VGA

☐ Compare

RRP: £11,149.00

Your price: £8,299.00

1 in stock

Mfr. Part #: 98BDL4150D/00

Our Part #: PH98BDL4150D



### SAMSUNG 98" QB98R DISPLAY

98", Black, Large Format Display, 4K  
UHD, 350 cd/m<sup>2</sup>, 24/7 Operation, 2x  
HDMI

☐ Compare

RRP: £11,769.00

Your price: £8,616.67

23 in stock

Mfr. Part #: LH98QBREBGCXEN

Our Part #: SMOB98R



### LG 98" 98UH5F-B COMMERCIAL D ...

98", Black, Large Format Display, 4K  
UHD, 500 cd/m<sup>2</sup>, 24/7 Operation, 3x  
HDMI

☐ Compare

RRP: £11,999.00

Your price: £8,250.00

30 in stock

Mfr. Part #: 98UH5F-B

Our Part #: LG98UH5F



### PLANAR 98" ULTRARES UR9851 D ...

98", Black, Large Format Display, 4K  
UHD, 24/7 Operation, 500 cd/m<sup>2</sup>, 3x  
HDMI

☐ Compare

RRP: £12,489.47

Your price: £10,824.21

0 in stock

Mfr. Part #: 997-7960-00

Our Part #: PLAUR9851



### SAMSUNG 98" QM98N DISPLAY

98", Black, Large Format Display, 4K  
UHD, 500 cd/m<sup>2</sup>, 24/7 Operation, 2x  
HDMI

☐ Compare

RRP: £13,500.00

Your price: £9,239.13

43 in stock

Mfr. Part #: LH98QMNEBGC/EN

Our Part #: SMQM98N



### PLANAR 98" ULTRARES UR9851-E ...

98", Black, Large Format Display, 4K  
UHD, 500 cd/m<sup>2</sup>, 24/7 Operation, 4x  
HDMI

☐ Compare

RRP: £15,444.82

Your price: £13,385.51

0 in stock

Mfr. Part #: 997-8091-00

Our Part #: PLAUR9851ERO



### NEC 98" MULTISYNC V984Q DISPLAY

98", Black, Large Format Display, 4K  
UHD, 500 cd/m<sup>2</sup>, 24/7 Operation, 3x  
HDMI

☐ Compare

RRP: £15,525.00

Your price: £12,569.00

5 in stock

Mfr. Part #: 60004318

Our Part #: NECLCDV984Q



### PANASONIC 98" TH-98SQ1W COMM ...

98", Black, Large Format Display, 4K  
UHD, 500 cd/m<sup>2</sup>, 24/7 Operation, 2x  
HDMI

☐ Compare

RRP: £15,550.00

Your price: £7,999.00

4 in stock

Mfr. Part #: TH-98SQ1W

Our Part #: PPDTH98SQ1W



### LG 98" 98UH5E DISPLAY

98", Black, Large Format Display, 4K  
UHD, 500 cd/m<sup>2</sup>, 24/7 Operation, 3x  
HDMI

☐ Compare

RRP: £16,000.00

Your price: £7,795.00

8 in stock

Mfr. Part #: 98UH5E

Our Part #: LG98UH5E

# Complete laser display packages – 350 & 500 cd/m<sup>2</sup> [nit]



					Lumens required for ? Cd/m <sup>2</sup> [nit]	Lumens required for ? Cd/m <sup>2</sup> [nit]
Image size (" diag.)	Image width (m)	Image height (m)	Max room depth m (DISCAS - 3%EH)	Image area m <sup>2</sup>	350	500
100	2.21	1.25	7.5	2.76	3,787	5,410
110	2.44	1.37	8.2	3.34	4,582	6,546
120	2.66	1.49	9.0	3.97	5,453	7,791
130	2.88	1.62	9.7	4.66	6,400	9,143
140	3.10	1.74	10.5	5.40	7,423	10,604
	3.5	1.97	11.8	6.89	9,466	13,523
	4	2.25	13.5	9.00	12,364	17,663
	5	2.81	16.9	14.06	19,318	27,598
	6	3.38	20.3	20.25	27,818	39,741
	7	3.94	23.6	27.56	37,864	54,091
	8	4.50	27.0	36.00	49,455	70,650
	9	5.06	30.4	45.56	62,591	89,416
	10	5.63	33.8	56.25	77,273	110,391



**VISUAL** DISPLAYS



## Complete Laser Displays

- Premium ALR laser projection displays  
- the ultimate all-in-one large screen display solution
- 100" to any size
- Optimised viewing from everywhere in the room and in brightly lit conditions



# Specified by *image* performance



VISUAL DISPLAYS

Bundle code	Complete Laser Bundle Description	Image size (inches diagonal)	Image size (mm width x mm height)	Epson Projector Model (mount included)	Lens type	Projector lumens (max)	Installed Image Resolution (can also be installed as 1920 x 1200)	dnp Supernova ALR Screen Model	Image Brightness (max, cd/m²)	**ISCR Image Contrast
CLD/UST/STW/100/700	Compact Footprint, Fixed Screen	100	2214 x 1245	EB-700U	UST	4000	1920 x 1080 HD	STW	231	29
CLD/UST/STW/110/700	Compact Footprint, Fixed Screen	110	2435 x 1370	EB-700U	UST	4000	1920 x 1080 HD	STW	191	25
CLD/UST/STW/120/700	Compact Footprint, Fixed Screen	120	2651 x 1491	EB-700U	UST	4000	1920 x 1080 HD	STW	161	22
CLD/STL/SNC/100/510	Fixed Screen (semi-rigid)	100	2214 x 1245	EB-L510U	Standard	5000	1920 x 1080 HD	Core	462	39
CLD/STL/SNC/100/070	Fixed Screen (semi-rigid)	100	2214 x 1245	EB-L1070U	Standard	7000	4K enhanced *	Core	647	47
CLD/STL/SNC/110/510	Fixed Screen (semi-rigid)	110	2435 x 1370	EB-L510U	Standard	5000	1920 x 1080 HD	Core	382	34
CLD/STL/SNC/110/070	Fixed Screen (semi-rigid)	110	2435 x 1370	EB-L1070U	Standard	7000	4K enhanced *	Core	542	42
CLD/STL/SNC/120/510	Fixed Screen (semi-rigid)	120	2657 x 1494	EB-L510U	Standard	5000	1920 x 1080 HD	Core	290	31
CLD/STL/SNC/120/070	Fixed Screen (semi-rigid)	120	2657 x 1494	EB-L1070U	Standard	7000	4K enhanced *	Core	406	39
CLD/STL/SNO/100/510	Fixed Screen (with bezel)	100	2214 x 1245	EB-L510U	Standard	5000	1920 x 1080 HD	One	462	39
CLD/STL/SNO/100/070	Fixed Screen (with bezel)	100	2214 x 1245	EB-L1070U	Standard	7000	4K enhanced *	One	647	47
CLD/STL/SNO/110/510	Fixed Screen (with bezel)	110	2435 x 1370	EB-L510U	Standard	5000	1920 x 1080 HD	One	382	34
CLD/STL/SNO/110/070	Fixed Screen (with bezel)	110	2435 x 1370	EB-L1070U	Standard	7000	4K enhanced *	One	542	42
CLD/STL/SNO/120/510	Fixed Screen (with bezel)	120	2657 x 1494	EB-L510U	Standard	5000	1920 x 1080 HD	One	290	31
CLD/STL/SNO/120/070	Fixed Screen (with bezel)	120	2657 x 1494	EB-L1070U	Standard	7000	4K enhanced *	One	406	39
CLD/STL/SNB/100/510	Fixed Screen (borderless image)	100	2214 x 1245	EB-L510U	Standard	5000	1920 x 1080 HD	Blade	462	39
CLD/STL/SNB/100/070	Fixed Screen (borderless image)	100	2214 x 1245	EB-L1070U	Standard	7000	4K enhanced *	Blade	647	47
CLD/STL/SNB/110/510	Fixed Screen (borderless image)	110	2435 x 1370	EB-L510U	Standard	5000	1920 x 1080 HD	Blade	382	34
CLD/STL/SNB/110/070	Fixed Screen (borderless image)	110	2435 x 1370	EB-L1070U	Standard	7000	4K enhanced *	Blade	542	42
CLD/STL/SNB/120/510	Fixed Screen (borderless image)	120	2657 x 1494	EB-L510U	Standard	5000	1920 x 1080 HD	Blade	290	31
CLD/STL/SNB/120/070	Fixed Screen (borderless image)	120	2657 x 1494	EB-L1070U	Standard	7000	4K enhanced *	Blade	406	39
CLD/STL/SNF/100/510	Electric Drop-Down Screen	100	2214 x 1245	EB-L510U	Standard	5000	1920 x 1080 HD	Flex Classic	462	39
CLD/STL/SNF/100/070	Electric Drop-Down Screen	100	2214 x 1245	EB-L1070U	Standard	7000	4K enhanced *	Flex Classic	647	47
CLD/STL/SNF/120/510	Electric Drop-Down Screen	120	2612 x 1469	EB-L510U	Standard	5000	1920 x 1080 HD	Flex Classic	332	31
CLD/STL/SNF/120/070	Electric Drop-Down Screen	120	2612 x 1469	EB-L1070U	Standard	7000	4K enhanced *	Flex Classic	467	39

What size should my screen be? [Click here](#) for our 3-Step Guide to Display Success



\* 4K pixel resolution, pixel shift technology.  
 \*\*Notional, at 150 lux downlight on-screen.  
 (Min for BDM category = 15 : 1)

# The split screen technology demonstration



dnp  
Supernova  
08-85

dnp  
Supernova  
20-25

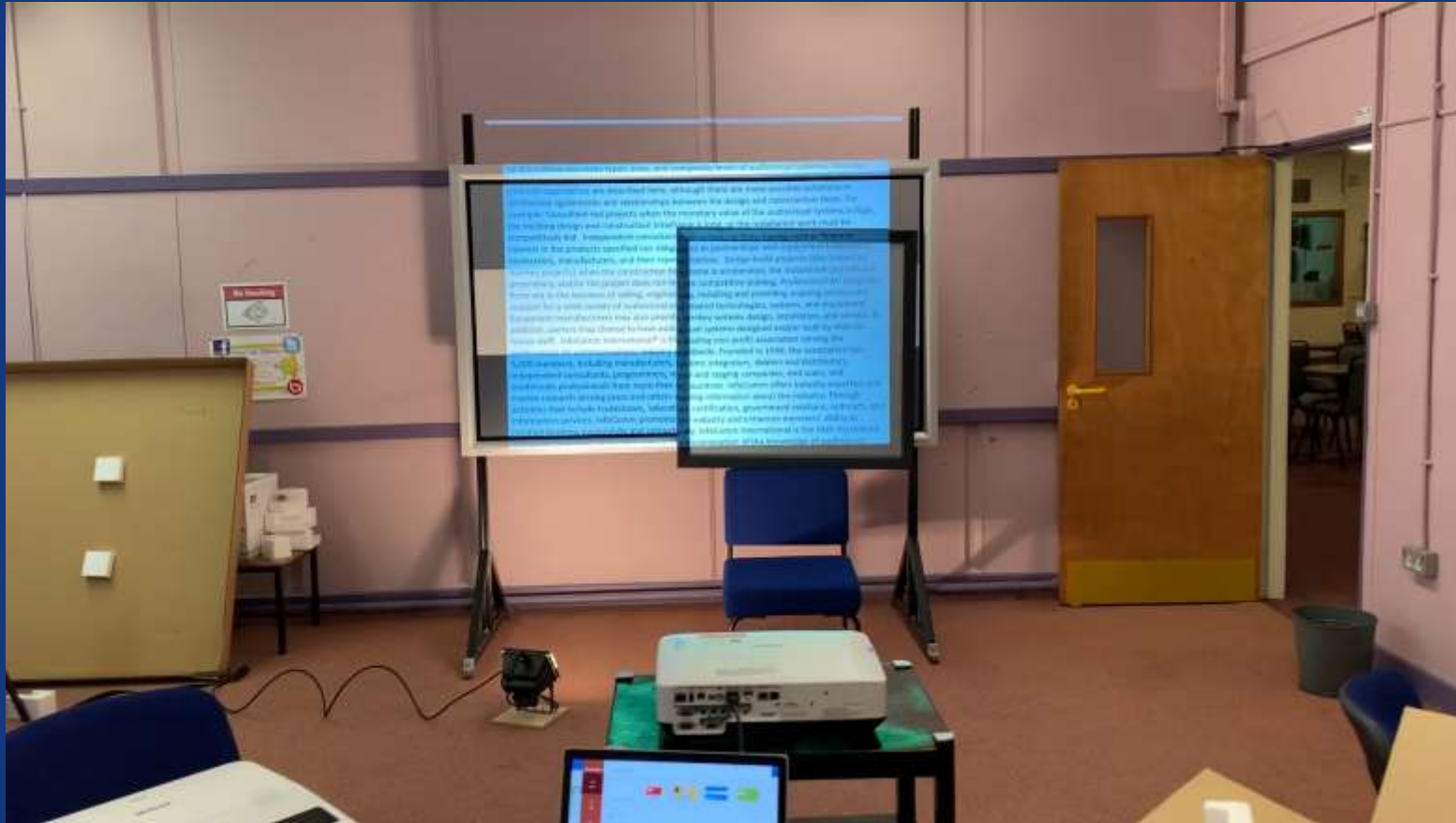
Standard white  
Da-Lite  
gain 1

See full Gary  
Kayye ISE  
video here -

<https://www.dnp-screens.com/en/video/dnp-ambient-light-rejecting-screens-at-ise-2015/>



# The split screen technology demonstration



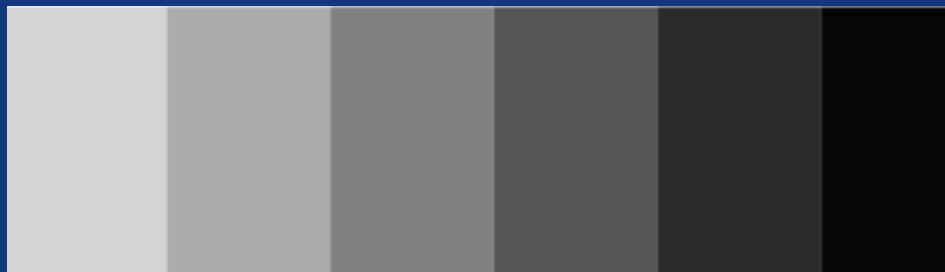
Play video here -  
<https://www.youtube.com/watch?v=i82O9xYxRxk>

# Sign-off

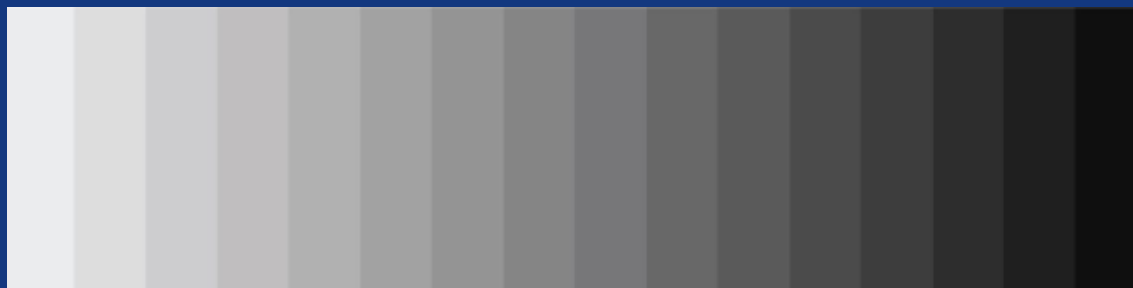
Inspect what you expect!



# Use the grey scale!



The more grey 'chips' you can render and see, the bigger the contrast, the better the image quality. It's that simple.



*Attend our system auditing and certification webinar!*

<https://visualdisplaysltd.com/resources/webinars>

# Use the numbers – and charge for it!



- ▶ We will do all the number crunching for you to design and specify every size and type of display
- ▶ We will do this free of charge when our solutions fit the bill and you can specify them
- ▶ We take full responsibility for the displays' performance when we supply
- ▶ We have the meters and the expertise to measure and certify

# Our consultant offering



- ▶ We offer full displays design – all types and sizes
- ▶ Parametric 3D CAD design
- ▶ All systems designed to latest AVIXA, WELL, CIBSE standards and recognised best practices
- ▶ All systems designed and documented without charge if we are specified
- ▶ We take 100% responsibility for delivered result where we provide complete displays
- ▶ All projectors are bench-tested and report provided before installation
- ▶ Site measurements provided, where agreed
- ▶ Lighting and VC lighting design





**VISUAL DISPLAYS**

Trusted partners –  
*supporting AV consultants & specifiers*

# Visual Displays Ltd



Specialist manufacture, distribution & services

*Working in partnership with & through the channel*

## ▶ Products

- ▶ dnp Supernova ALR (ambient light-rejecting) projection screens
- ▶ Complete laser projection display bundles – from 100" to any size
- ▶ Comprehensive projection screens, materials
- ▶ Immersive displays
- ▶ Bespoke display & mounting solutions
- ▶ Bespoke interactive displays
- ▶ Daylight control (blinds)

## ▶ Services

- ▶ Display design and specification
- ▶ Parametric 3D CAD design
- ▶ Expert tender response support and consultant liaison
- ▶ Space redeployment design for social distancing
- ▶ System troubleshooting
- ▶ Room surveys and audits (using meters & reporting to standards)
- ▶ Proof of concept
- ▶ Specialist consultancy

# Specify and buy with single SKUs (order codes)

## Each CLD bundle includes

- **Epson laser projector**  
(with 5 year warranty)
- **dnp Supernova ALR (ambient light rejecting) screen**
- **Complete mounting solution**

## Optional Extras:

- Free installation CAD drawings
- Site survey
- Installation
- 16:10 aspect ratio available
- Furniture
- Bespoke framework
- High-gain screen option (for limited field of view) no additional charge



- ▶ Hassle-free, single-SKU complete solution
- ▶ Multiple screen, projector and mount options to suit any space
- ▶ Large custom-size displays for optimised viewing from everywhere in the room
- ▶ Laser projection and ALR screen technology for flawless image quality at a fraction of the cost of FPD and dvLED
- ▶ Seamless single images - no visible joins (as with videowalls)
- ▶ Completely non-reflective screen - no 'cheap seats' created by distracting reflections from lighting and daylight
- ▶ High resolution HD video and graphics for detailed content viewing – exceeds AVIXA DISCAS resolution requirement
- ▶ Conforms to AVIXA DISCAS image size standard for all room sizes
- ▶ Exceeds AVIXA ISCR image contrast requirement – for all viewers
- ▶ Optimised image brightness, designed for all-day viewing without eye strain (in conformance with the new WELL v2 Building Standard)
- ▶ Lightweight – can mount on any wall, even the largest sizes
- ▶ Reliable & easy to use
- ▶ Maintenance free

# Ambient light rejecting screens

...best known for dnp Supernova



dnp  
Supernova  
08-85

dnp  
Supernova  
20-25

Standard white  
Da-Lite  
gain 1

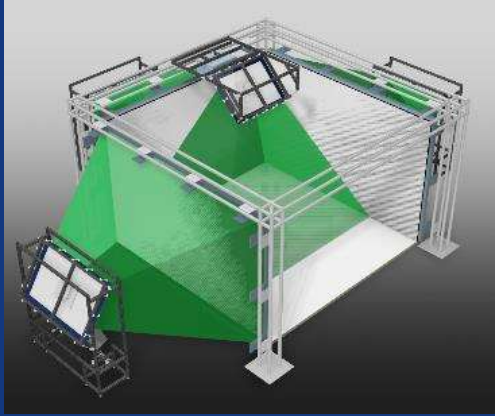
See full Gary  
Kaye ISE  
video here -

<https://www.dnp-screens.com/en/video/dnp-ambient-light-rejecting-screens-at-ise-2015/>

<https://www.dnp-screens.com/>



# We do some really cool things with projectors



CAVES



RETAIL & SIGNAGE



CURVED SCREENS



MULTI-PROJECTION



INTERACTIVE DISPLAYS, FLOORS – ANYTHING!



AIR TRAFFIC CONTROL

# We do some really cool things with projectors



VISUAL DISPLAYS



MIRROR RIGS,  
FLOOR PROJECTION



PEPPER'S GHOST



CURVED REAR PROJECTION



TV STUDIOS



SHOPPING  
MALLS



# Example projects



VISUAL DISPLAYS



Kings Cross – 5.5m w dnp  
Supernova (10K lumen projector)



Home cinema



Universities, Colleges, Schools



Interactive floors, walls, windows – anything to any surface!

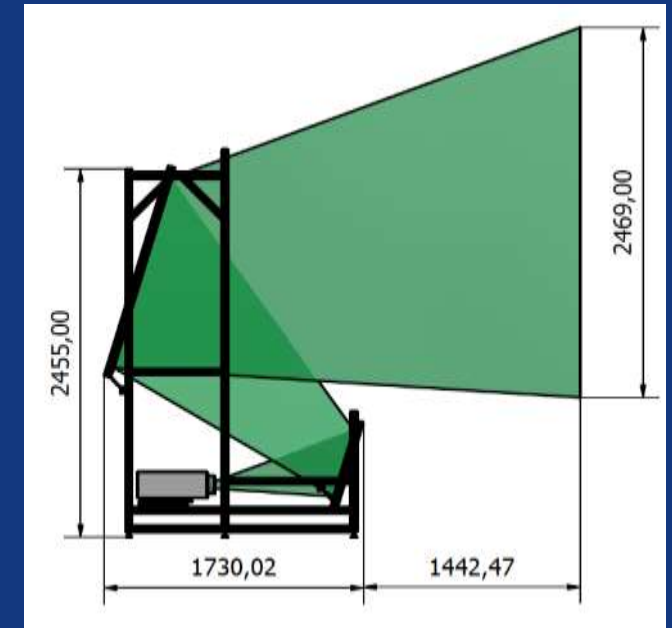
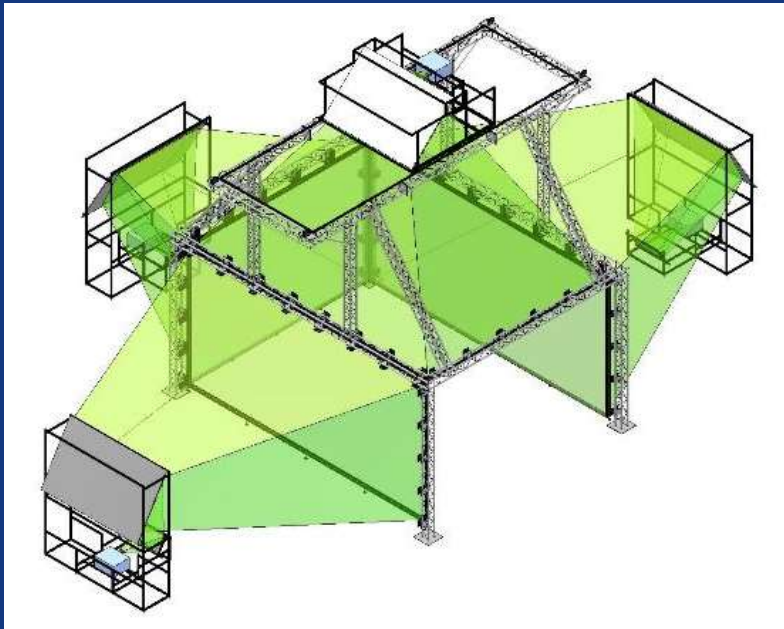


Corporate

# Adding value to projectors with world-leading 3D CAD design and bespoke manufacture



- ▶ We turn your opportunities into success stories



- ▶ You and your channel partners can offer expert and unique solutions

# Our website is packed with essential info, tools & content

- ▶ Case studies
  - ▶ Corporate – <https://visualdisplaysltd.com/case-studies/corporate>
  - ▶ Retail & signage – <https://visualdisplaysltd.com/case-studies/retail-signage>
  - ▶ Education – <https://visualdisplaysltd.com/case-studies/education>
  - ▶ Leisure – <https://visualdisplaysltd.com/case-studies/leisure>
- ▶ Displays expertise, advice and knowledge bank – <https://visualdisplaysltd.com/resources/tools/specifying>
- ▶ Tools, resource bank, essential easy-to-use calculators – <https://visualdisplaysltd.com/resources>

[www.visualdisplaysltd.com](https://www.visualdisplaysltd.com)



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