



VISUAL DISPLAYS

Winter 2021 Webinar Programme

Using the DISCAS standard to specify image size and to win business

DISPLAYS, LIGHT & ENVIRONMENTAL EXPERTISE
PRODUCTS, SERVICES, SPECIALIST CONSULTANCY

Presenter – Greg Jeffreys



- ▶ Managing Director of Visual Displays (formerly Paradigm AV)
- ▶ Specialist consultant in standards, displays, light & lighting, VC lighting, teaching space & meeting room design
- ▶ 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
- ▶ 2020 Outstanding Contribution Award – AV Technology Awards
- ▶ Proud Associate of AV User Group
- ▶ Keynote speaker at LTSMG @ Home conference



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AVIXA V202.01:2016 (Formerly ANSI/INFOCOMM V202.01:2016), Display Image Size for 2D Content in Audiovisual Systems

Scope



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- ▶ This Standard defines the calculations required to determine minimum image size relative to viewing locations in both new and existing installations
- ▶ This Standard applies to the overall system and not the performance or efficiency of any component.
- ▶ This Standard uses two out of four viewing categories defined in ANSI/INFOCOMM 3M-2011, Projected Image System Contrast Ratio.

Application

Learning objectives

- ▶ Plan and design new displayed image systems
- ▶ Determine image size relative to space and viewing requirements
- ▶ Determine Closest and Farthest Viewer Positions
- ▶ Determine horizontal angles of view
- ▶ Determine required resolution, where applicable
- ▶ Provide metrics for content design

Image size



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- ▶ Image size is determined by image height, not width
- ▶ Image height specification is factored by farthest viewing position
 - ▶ No change there, but brand new metrics

DISCAS viewer categories



- ▶ Only two taken from PISCR's four:
 - ▶ Basic Decision Making (= most systems)
 - ▶ Viewers can make decisions by reading content
 - ▶ Based on 'element' (e.g. character / font height)
 - ▶ We use %Element Height: the height of an element (character / effective font size) in relation to the overall Image Height
 - ▶ Analytical Decision Making (= special systems)
 - ▶ Viewers can make decisions by seeing the finest detail displayed
 - ▶ Based on image resolution

Element height in practice

- ▶ PowerPoint is useful as it scales character height, unlike Word, Excel etc
- ▶ Let's take a look...



12-1% There are many types, sizes, and complexity levels of audiovisual systems. The user should apply this standard as appropriate to fit the particular project circumstances. Two common approaches are described here, although there are many possible variations in contractual agreements and relationships between the design and construction team. For example: Consultant-led projects when the monetary value of the audiovisual systems is high, the building design and construction timeframe is long, or the installation work must be competitively bid. Independent consultants are persons or firms having neither financial interest in the products specified nor obligations or partnerships with equipment integrators, contractors, manufacturers, and their representatives. Design-build projects (also known as turnkey projects) when the construction timeframe is accelerated, the installation systems are proprietary, and/or the project does not require competitive bidding. Professional AV integrator firms are in the business of selling, engineering, installing and providing ongoing service and support for a wide variety of audiovisual and related technologies, systems, and equipment. Equipment manufacturers may also provide turnkey systems design, installation, and service. In addition, owners may choose to have audiovisual systems designed and/or built by their in-house staff. InfoComm International® is the leading non-profit association serving the professional AV communications industry worldwide. Founded in 1939, the association has 5,000 members, including manufacturers, systems integrators, dealers and distributors, independent consultants, programmers, rental and staging companies, end users, and multimedia professionals from more than 80 countries. InfoComm offers industry expertise and market research serving press and others seeking information about the industry. Through activities that include tradeshow, education, certification, government relations, outreach, and information services, InfoComm promotes the industry and enhances members' ability to conduct business successfully and competently. InfoComm International is the ANSI Accredited Standards Developer (ASD) dedicated to the dissemination of the knowledge of audiovisual systems performance parameters. About ANSI The American National Standards Institute, Inc. (ANSI) is the national coordinator of voluntary standards development and the clearinghouse in the United States for information on national and international standards. An American National Standard implies a consensus of those substantially concerned with its scope and provisions. Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered and that a concerted effort be made toward their resolution. The use of an American National Standard is completely voluntary. Its existence does not in any respect preclude anyone, whether he or she has approved the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standard. The purpose of this standard is to provide a description of the methods, procedures, tasks, and deliverables typically recommended or applied by professionals in audiovisual (AV) systems design and integration projects. The intention of the structure outlined in this Standard is to enable clients and other design and construction team members to assess confidently whether the responsible parties are providing the expected services. Modern AV systems have become increasingly complex and interconnected to other building systems such as network, electrical, HVAC and building automation/energy conservation. In many instances, AV systems provide critical operational functions for the owner, warranting a thoughtful and well-organized approach to commonly accepted planning, design, and integration procedures. In addition, the AV systems design and integration process may span and parallel a lengthy design and construction cycle, including input and review by many key personnel from divergent disciplines, trades, and backgrounds. This standard provides a practical guideline for defining the audiovisual system requirements and a clear accountability structure for the development and execution of the system design components. It provides a consistent reference for the project team from the initial design phase through construction, project completion, and building occupancy. This document is a Standard Practice Guide outlining design considerations and accepted procedures for accomplishing the task of integrating audiovisual systems into the design and construction of facilities in the built environment. This guide outlines a comprehensive set of procedures for the design and construction of professional audiovisual systems, and does not suggest a specific course of action. Qualified, experienced professionals are required to interpret,



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24-2% There are many types, sizes, and complexity levels of audiovisual systems. The user should apply this standard as appropriate to fit the particular project circumstances. Two common approaches are described here, although there are many possible variations in contractual agreements and relationships between the design and construction team. For example: Consultant-led projects when the monetary value of the audiovisual systems is high, the building design and construction timeframe is long, or the installation work must be competitively bid. Independent consultants are persons or firms having neither financial interest in the products specified nor obligations or partnerships with equipment integrators, contractors, manufacturers, and their representatives. Design-build projects (also known as turnkey projects) when the construction timeframe is accelerated, the installation systems are proprietary, and/or the project does not require competitive bidding. Professional AV integrator firms are in the business of selling, engineering, installing and providing ongoing service and support for a wide variety of audiovisual and related technologies, systems, and equipment. Equipment manufacturers may also provide



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36-3% There are many types, sizes, and complexity levels of audiovisual systems. The user should apply this standard as appropriate to fit the particular project circumstances. Two common approaches are described here, although there are many possible variations in contractual agreements and relationships between the design and construction team. For example: Consultant-led projects when the monetary value of the audiovisual systems is high, the building design and construction timeframe is long, or the installation work must



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Element Height = X-Height



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- ▶ PowerPoint content or printed visual = only reliable user guide

Use 3% Element Height as starting point

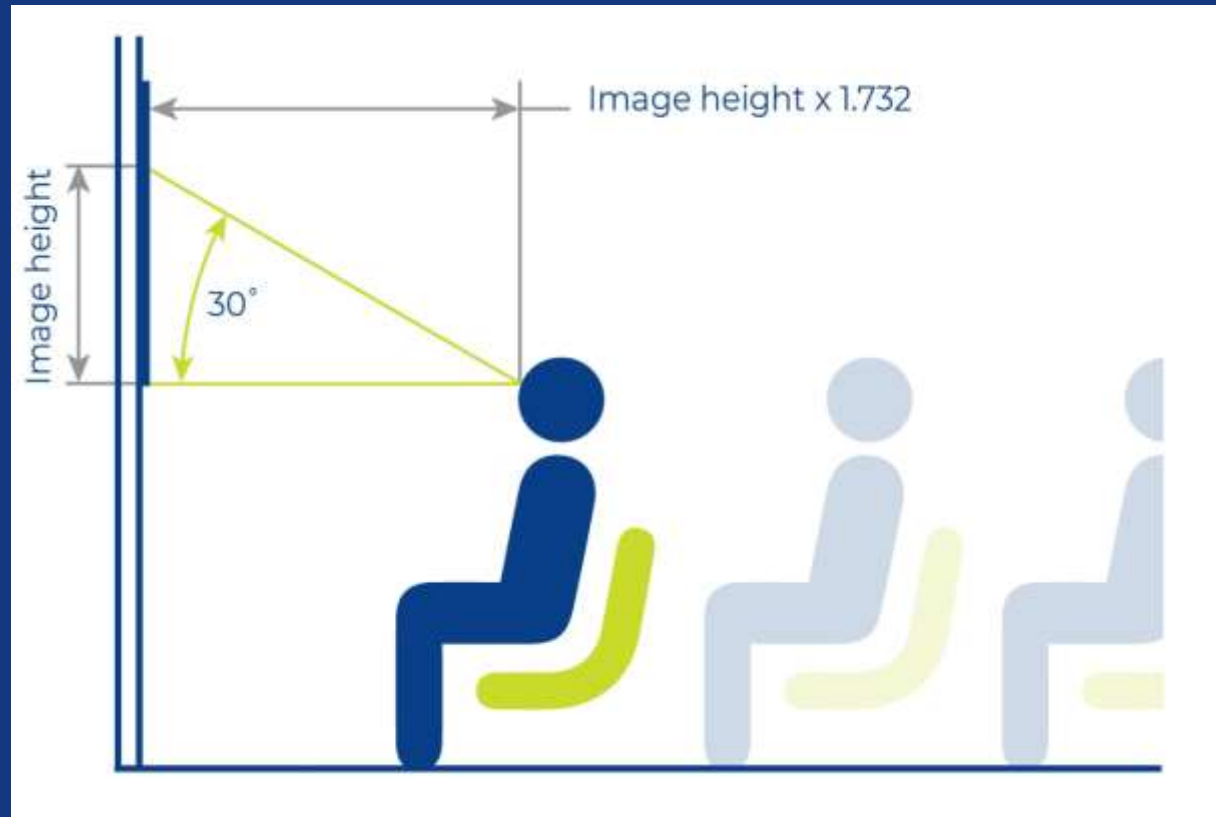


- ▶ Where possible, use the PowerPoint slides with the client to help them decide the ideal %EH for each subject / department

DISCAS closest viewing positions

Vertical viewing angle

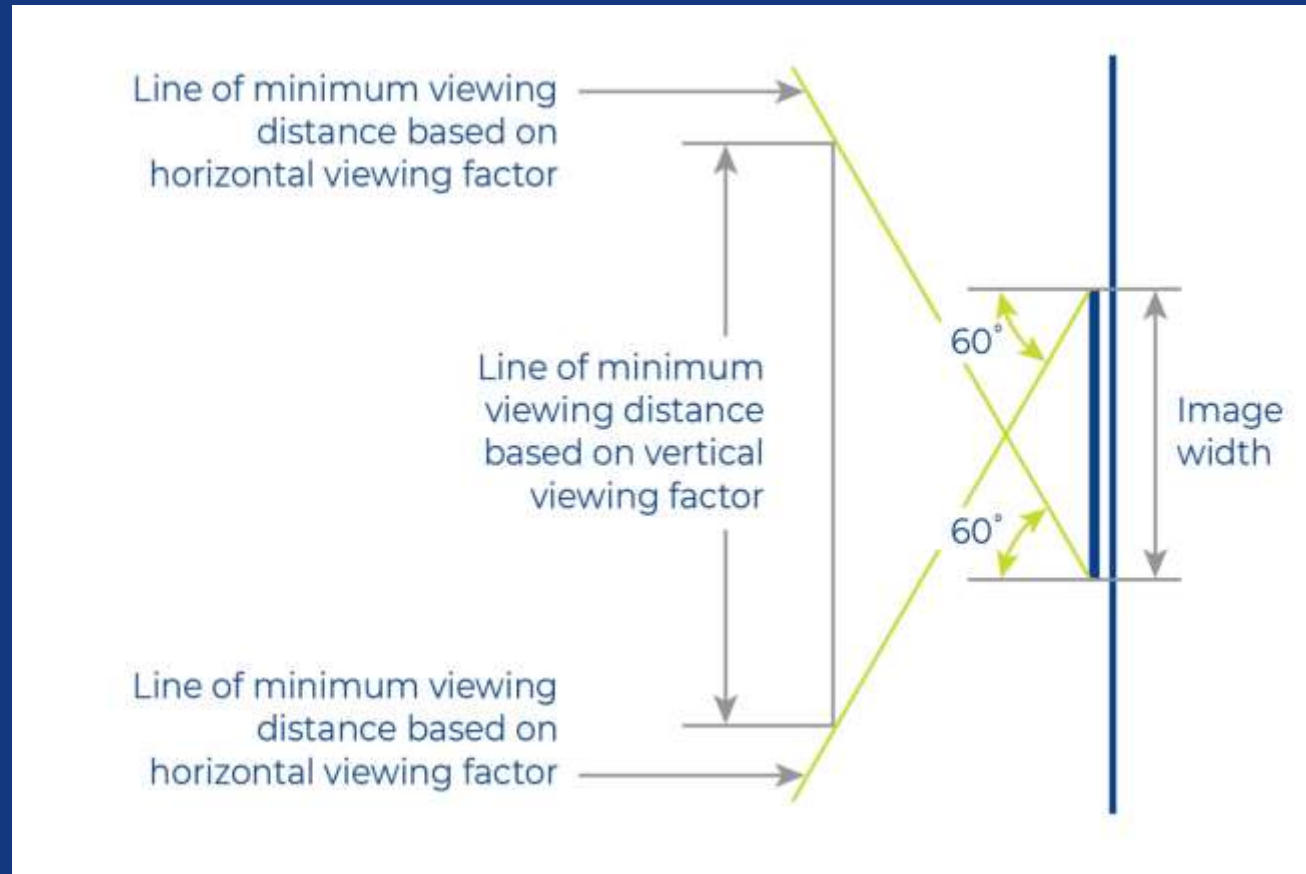
- ▶ Top of image 30° from eye position



DISCAS closest viewing positions

Horizontal viewing angles

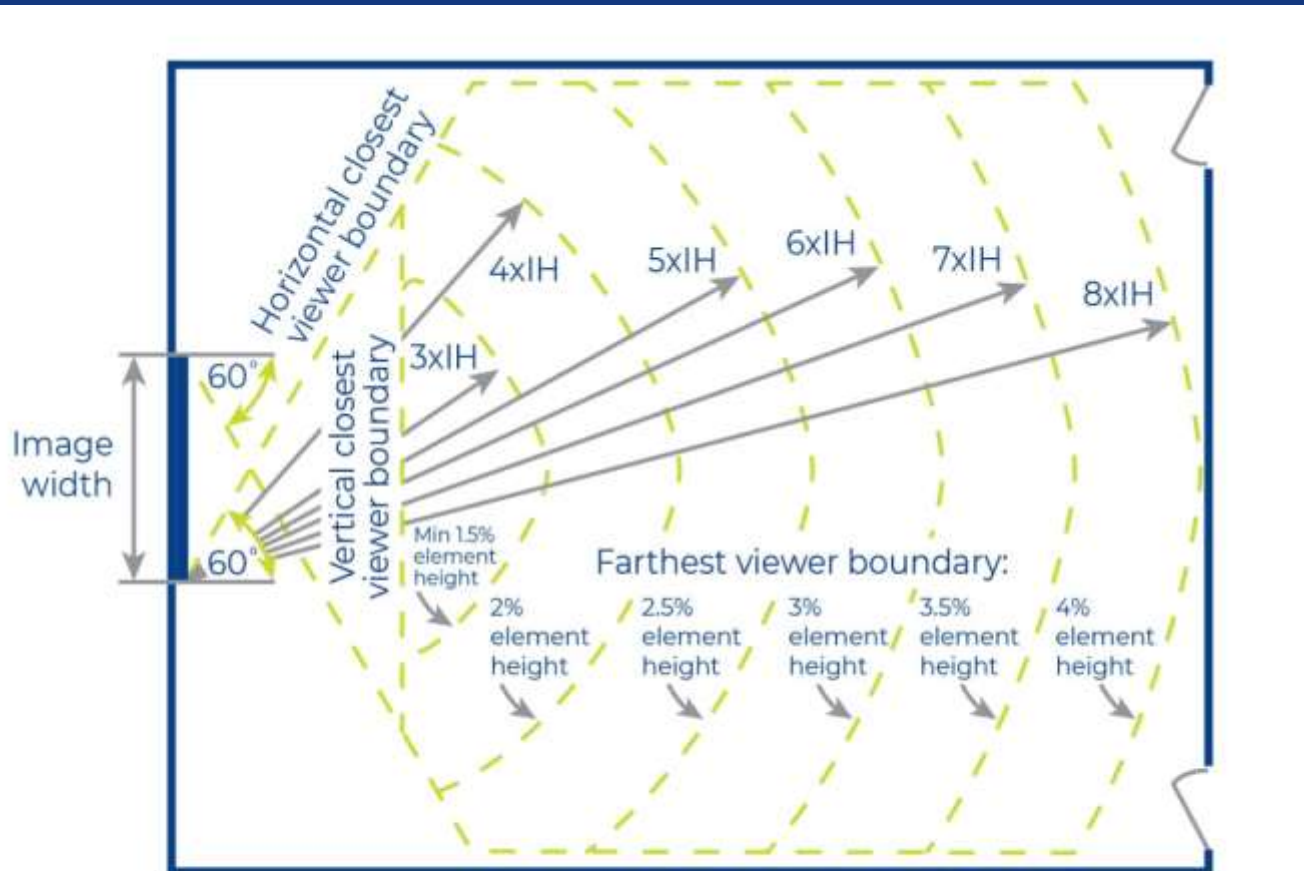
Combine top of image limit with horizontal viewing angle constraints



DISCAS Viewing Plan Example



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Viewing Parameters for BDM

No scale. IH = Image Height. Image Height based on 16:9 (1.78:1) aspect ratio.

DISCAS calculator

▶ Working calculator



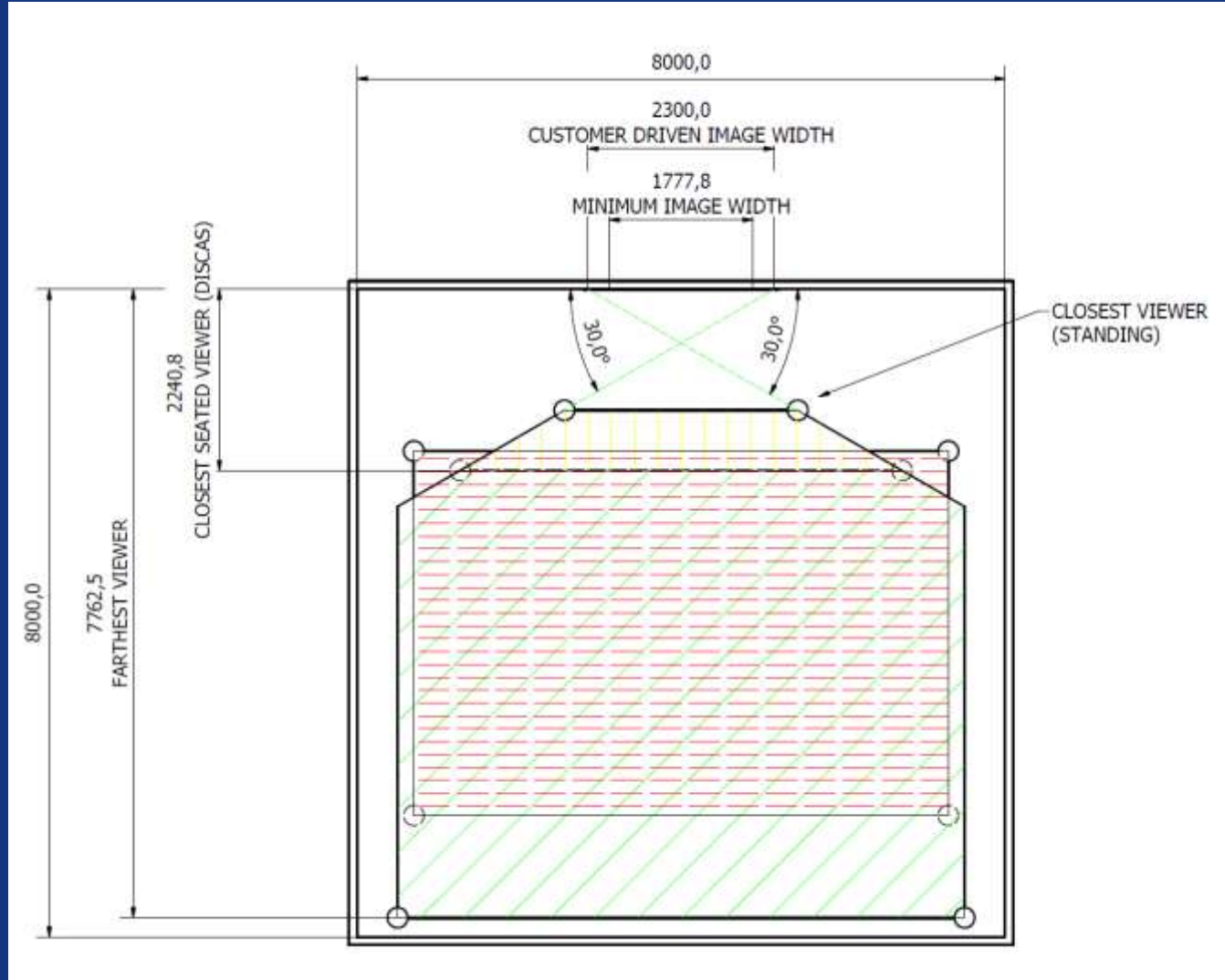
▶ Working calculator



3D CAD Model



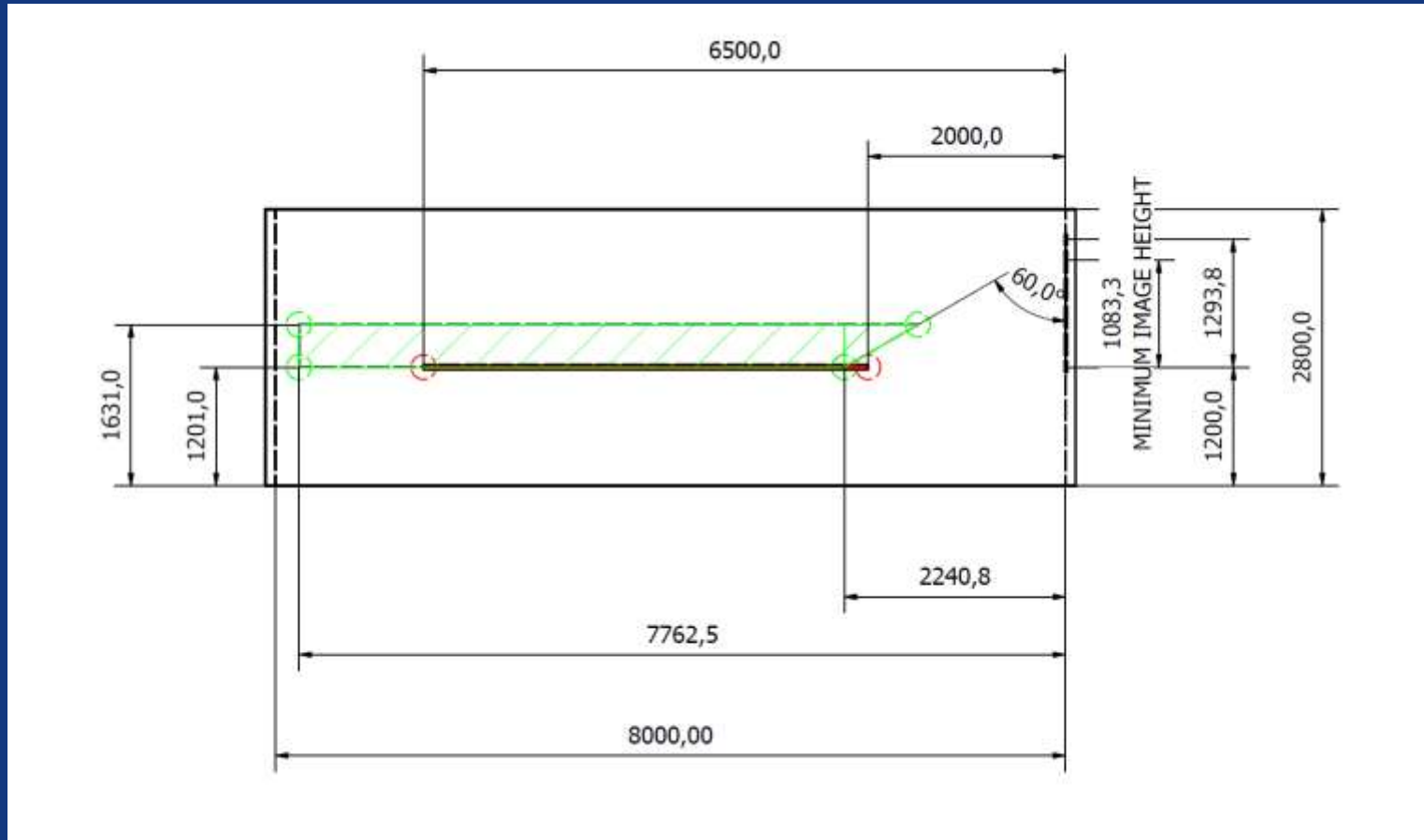
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3D CAD Model



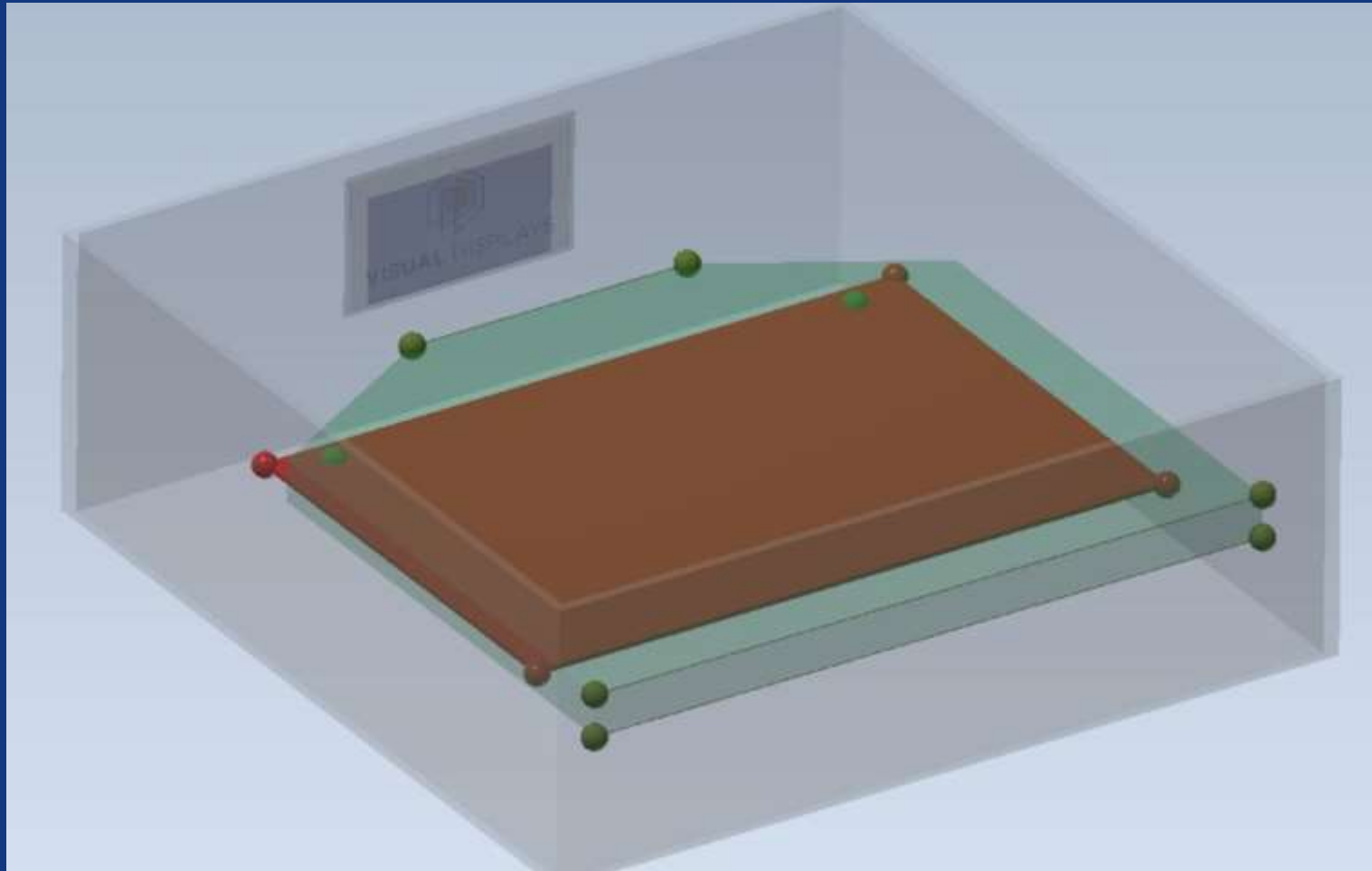
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3D CAD Model



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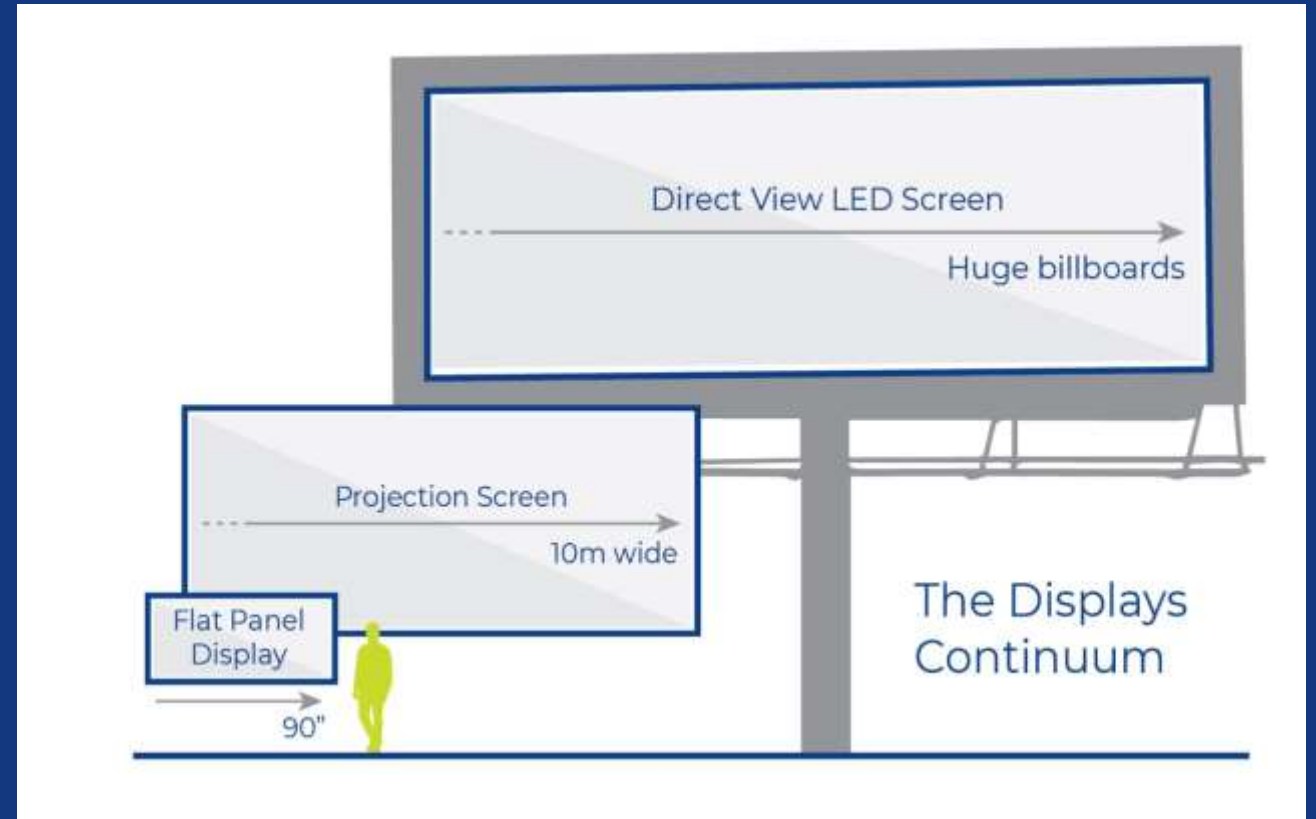


DISCAS take-aways

- ▶ Users generally need larger image sizes!
- ▶ Use 'hierarchy of need' in difficult scenarios
 - ▶ EXAMPLE: Need for farthest viewer to see > closest viewer limit
- ▶ Standard based on image height
- ▶ Remember 16:10 (projection) is 8% higher than 16:9 (direct view displays) for any given image diagonal size.
 - ▶ arguments for using projection...
- ▶ Make it work for you
- ▶ Use it to give guidance on existing systems

The displays continuum

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



Products per page: 20

Sort by:

RRP (Low - High)



NEC 98" MULTISYNC C981Q DISPLAY

98", Black, Large Format Display, 4K UHD, 350 cd/m2, 24/7 Operation, 3x HDMI

Compare

RRP: £10,247.00

Your price: £7,029.00

5 in stock

Mfr. Part #: 60004516

Our Part #: NECLDC981Q



IYAMA 98" LH9852UHS-B1 DISPLAY

98", Black, Large Format Display, 4K UHD, 500 cd/m2, 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/m2, 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/m2, 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/m2, 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/m2, 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/m2, 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/m2, 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/m2, 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/m2, 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/m2, 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/m2, 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/m² [nit]



Image size (" diag.)	Image width (m)	Image height (m)	Max room depth m (DISCAS - 3%EH)	Image area m ²	Lumens required for ? Cd/m ² [nit]	Lumens required for ? Cd/m ² [nit]
					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



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Complete Laser Displays

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



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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/m ²)	**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	30
CLD/STL/SNC/120/070	Fixed Screen (semi-rigid)	120	2657 x 1494	EB-L1070U	Standard	7000	4K enhanced *	Core	406	38
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	30
CLD/STL/SNO/120/070	Fixed Screen (with bezel)	120	2657 x 1494	EB-L1070U	Standard	7000	4K enhanced *	One	406	38
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	30
CLD/STL/SNB/120/070	Fixed Screen (borderless image)	120	2657 x 1494	EB-L1070U	Standard	7000	4K enhanced *	Blade	406	38
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)



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Up to **75%**
below the cost
of the same
size LED screen

Complete Laser Displays **XL**

Simply the best large-screen display
solutions for Higher and Further Education



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	Comparative LED product	130" CLD XL Display		180" (4m wide) CLD XL Display	
Features	130" Branded LED Display	130" CLD XL Basic Display	130" CLD XL UST Display	180" CLD XL Basic Display	180" CLD XL UST Display
Image size	2.88 x 1.62m	2.88 x 1.62m	2.88 x 1.62m	4m x 2.2m	4m x 2.2m
Price	£50,000 - £73,000 + VAT	£16,400 + VAT	£26,200 + VAT	£28,700 + VAT	£37,200 + VAT
Resolution	1920 x 1080 (HD)	3860 x 2160 (UHD 4K [pixel shift])	3860 x 2160 (UHD 4K [pixel shift])	3860 x 2160 (UHD 4K [pixel shift])	3860 x 2160 (UHD 4K [pixel shift])
Pixel pitch	1.5mm	0.75mm	0.75mm	1.03mm	1.03mm
Closet viewing distance	3.7m - 4.6m	2.2m	2.2m	2.2m	2.2m
Farthest viewing position	9.7m	9.7m	9.7m	13.4m	13.4m
Max brightness (luminance)	600 nit	383 nit	308 nit	342 nit	267 nit
Max brightness needed under 300-500 lux downlighting	190 - 320 nit	190 - 320 nit	190 - 320 nit	190 - 320 nit	190 - 320 nit
ANSI ISCR/PISCR Contrast (min required 15:1)	not stated	34	35	32	32
Max viewing angle	170 deg	170 deg	170 deg	170 deg	170 deg
Weight	105-125kg	17kg (projector) / 29kg (screen)	24kg (projector) / 55kg (screen)	24kg (projector) / 42kg (screen)	24kg (projector) / 103kg (screen)
Power	3000 W	416 W	626 W	908 W	1024W



At a glance

CLD XL at a glance

COST

High price
£50-£70K

A fraction of the cost of LED equivalents. Suitable for all budgets

WEIGHT

Heavy - walls may require structural reinforcement

Lightweight screens and projectors for trouble-free installation anywhere

POWER

Higher power requirement and running costs

Low power requirements meaning cheaper and environmentally-friendly operation

RESOLUTION

Only HD
1920x1080

UHD 4K - 3860x2160px and use ambient light-rejecting screen technology

VIEWING DISTANCE

Viewers need to sit farther from the screen

Viewers can sit closer to the screen, therefore all of the room is utilised

Specify and buy with single SKUs (order codes)



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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

The DISCAS Standard is free!



- ▶ (To AVIXA members only, naturally!)

<https://avixa.netexam.com/catalog.html?#:cs50547>

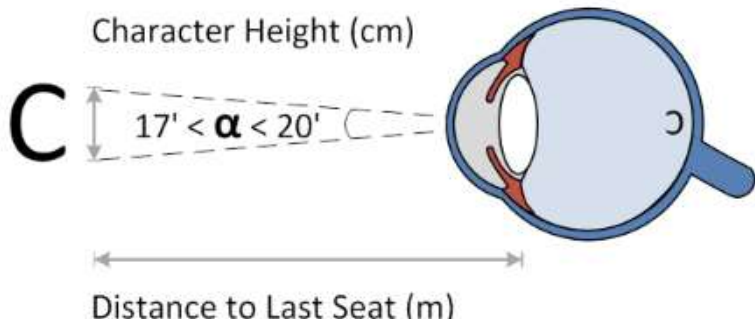
Great things are happening with DISCAS

- ▶ This Dutch professor has made a great online tool
- ▶ <http://homepage.tu-delft.nl/9c41c/Readability/ReadabilityTool4EducationSpaces.htm>

Readability Tool for Education Spaces
Made by dr Piet van der Zanden

Select your Distance from Projection Screen to Last Seat

Lecture Hall	Meeting Room
	4
	5
	6
	7
8	
10	
12	
14	
16	
18	
20	
22	
24	
26	
28	




Character Height (cm)

$17' < \alpha < 20'$

Distance to Last Seat (m)

20' (arcminute) is based on 100% visual acuity (about the size of TV subtitling)
17' is minimal discernible angle for proper reading based on 100% visual acuity
14' lets you just discern the characters when proper luminance and contrast
1' is minimal angle to discern any pixels or lines



One more thing...

- ▶ How bright should my image be?





VISUAL DISPLAYS

Specialist manufacture, distribution, services.
Supporting resellers and integrators to excel for their clients

DISPLAYS, LIGHT, ENVIRONMENTAL & STANDARDS EXPERTISE

Visual Displays Ltd



Specialist manufacture, distribution & services

Working in partnership with & through the channel

▶ Products

- ▶ dnp Supernova ALR (ambient light-rejecting) projection screens
- ▶ Complete Epson laser 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

Ambient light rejecting screens

...best known for dnp Supernova



VISUAL DISPLAYS



dnp
Supernova
08-85

dnp
Supernova
20-25

Standard white
Da-Lite
gain 1

See full Gary
Kaye ISE
video here -

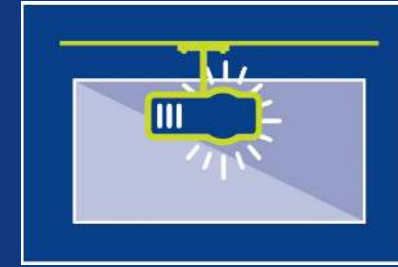
<https://www.dnp-screens.com/en/video/dnp-ambient-light-rejecting-screens-at-ise-2015/>

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

Complete Laser Displays

Standards-compliant large screen displays

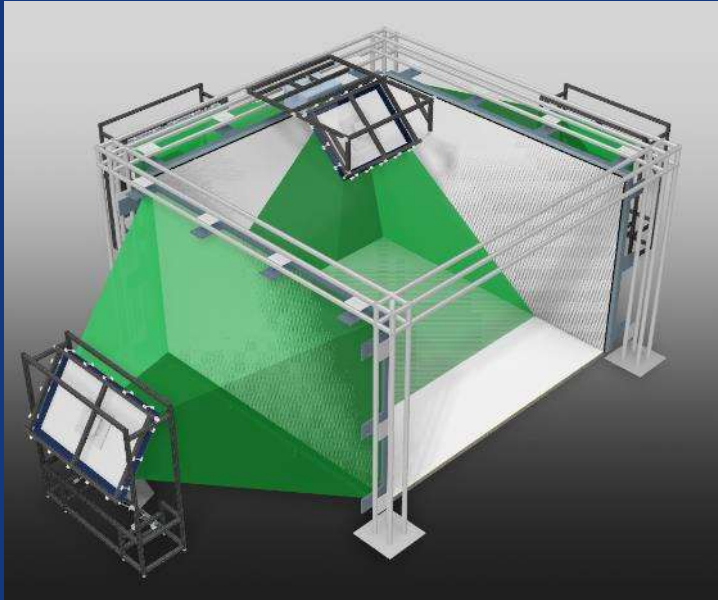
- ▶ Complete bundled packages, Epson projector (with warranty), dnp screen & Epson mount.
 - ▶ 100", 110" & 120" with UST (e.g. EB-700U)
 - ▶ Furniture & bespoke options available
- ▶ Option to buy complete displays as single SKUs
- ▶ Fraction of £cost/m² compared with LFD, dvLED etc
- ▶ *Available through all framework integrators*



Specialising in the difficult!



VISUAL DISPLAYS



CAVES



MULTI-PROJECTION



CURVED SCREENS



LARGE SCREEN
INTERACTIVE



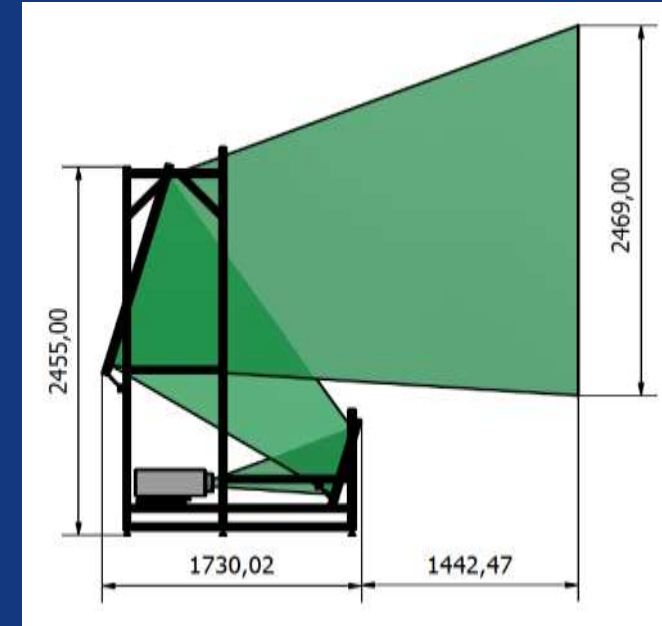
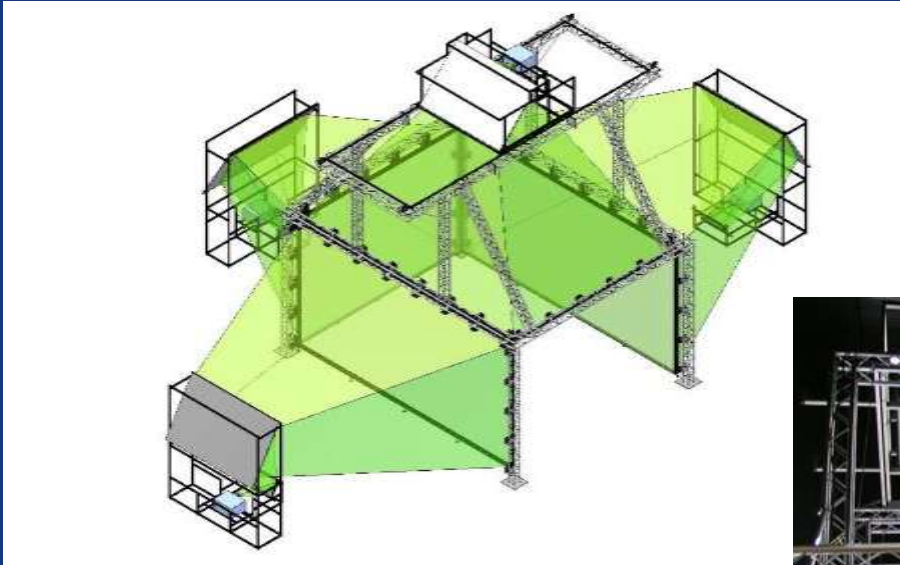
IMMERSIVE, SIMULATION, AR,
VR, CR etc

World-leading 3D CAD design and bespoke manufacture



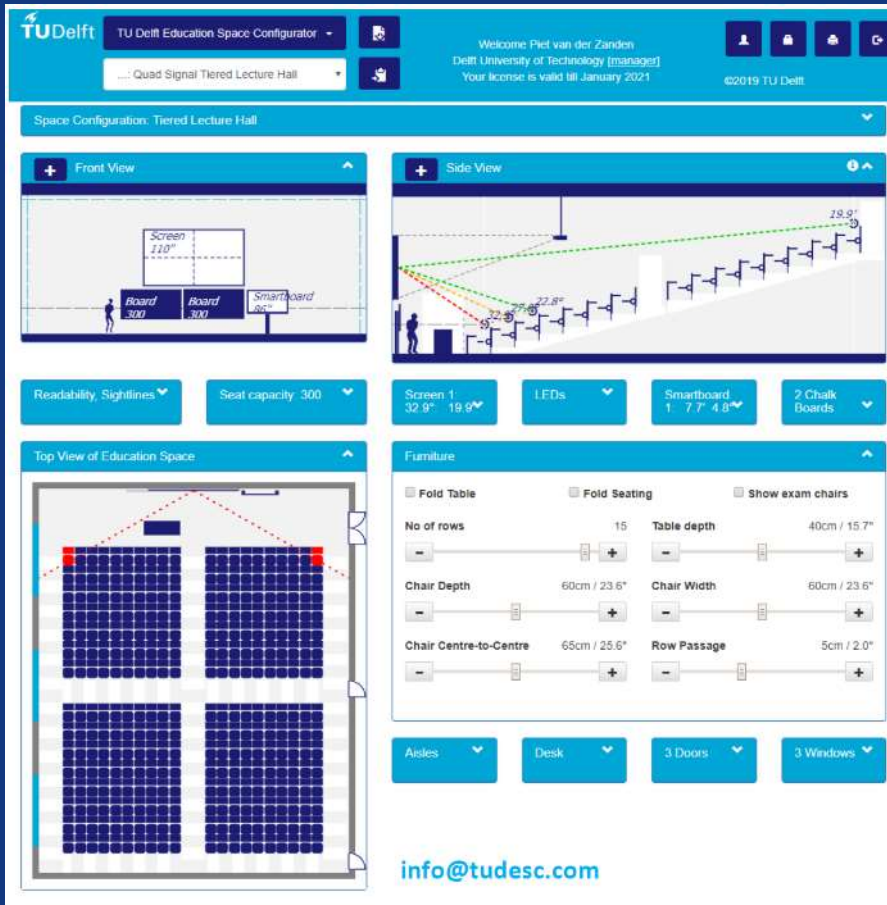
VISUAL DISPLAYS

- ▶ We solve problems



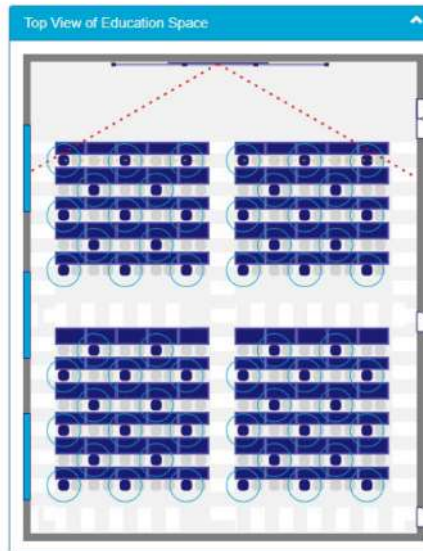
Social distancing space configurator

Complete space configuration and management

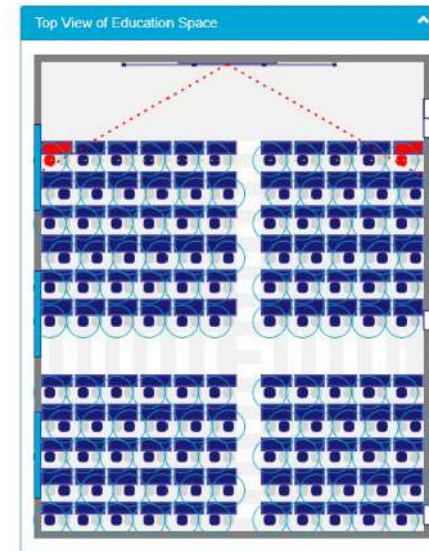


The screenshot shows the TU Delft Education Space Configurator interface. At the top, it displays the TU Delft logo, the application name, and user information for Piet van der Zanden. The main area is divided into several sections: 'Front View' and 'Side View' showing 3D renderings of the lecture hall with a screen and seating; 'Top View of Education Space' showing a grid of seats; and a 'Furniture' control panel with sliders for '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"), and 'Row Passage' (5cm / 2.0"). Other controls include 'Readability, Sightlines', 'Seat capacity 300', 'Screen 1', 'LEDs', 'Smartboard 1', '2 Chalk Boards', 'Aisles', 'Desk', '3 Doors', and '3 Windows'. The email info@tudesc.com is visible at the bottom.

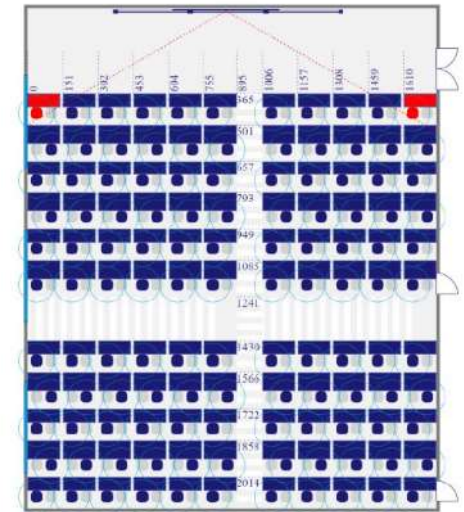
Social Distance with normally generated Seat Capacity (56)



Social Distance with optimized Seat Capacity (121)



Printed detailed Floorplan for facility instructions



Q & A



VISUAL DISPLAYS



Visual Displays Ltd



Specialist manufacture, distribution & services

Working in partnership with & through the channel

▶ Products

- ▶ dnp Supernova ALR (ambient light-rejecting) projection screens
- ▶ Complete Epson laser 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