VISUAL DISPLAYS

# Teams Rooms & Hybrid Spaces 2022
## AVIXA's DISCAS STANDARD

Webinar 15 March 2022
Greg Jeffreys

DISPLAYS, LIGHT & ENVIRONMENTAL EXPERTISE

PRODUCTS, SERVICES, SPECIALIST CONSULTANCY

# Presenter – Greg Jeffreys

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- Managing Director of Visual Displays (formerly Paradigm AV)
- Specialist consultant in standards, displays, light & lighting, VC lighting, teaching space & meeting room design
  - Not an AV consultant!
- 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
- Writer and teacher
- 2020 Outstanding Contribution Award – AV Technology Awards
- Proud associate of LTSMG & AV User Group

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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 (PISCR – soon to be ISCR).

# Application
## Learning objectives

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- 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

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- 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

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- 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 tradeshows, 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,

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

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

# Element Height = X-Height

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- PowerPoint content or printed visual = only reliable user guide

# Use 3% Element Height as starting point

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- Where possible, use the PowerPoint slides with the client to help them decide the ideal %EH for each subject / department
  - Otherwise use 3%EH
- 3%ElementHeight = 6 from old 4/6/8 rule
- Farthest viewer to be no farther than 6 x Image Height (IH)
  - e.g. if Image Height = 1m, then farthest viewer should be within 6m
  - e.g. if Farthest Viewer is 12m from screen, then Image Height to be at least 2m high

# DISCAS closest viewing positions
## Vertical viewing angle

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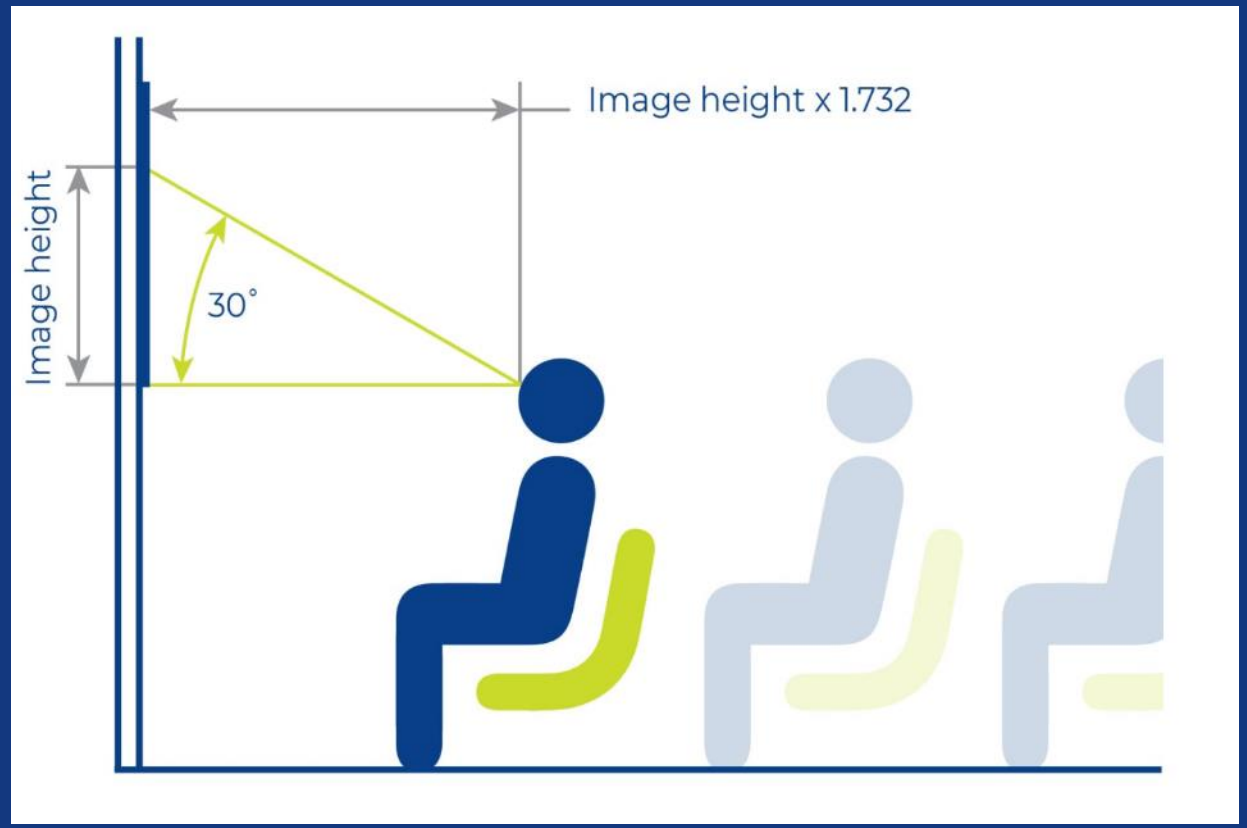
- Top of image < 30 deg° from eye position



# DISCAS closest viewing positions
## Horizontal viewing angles

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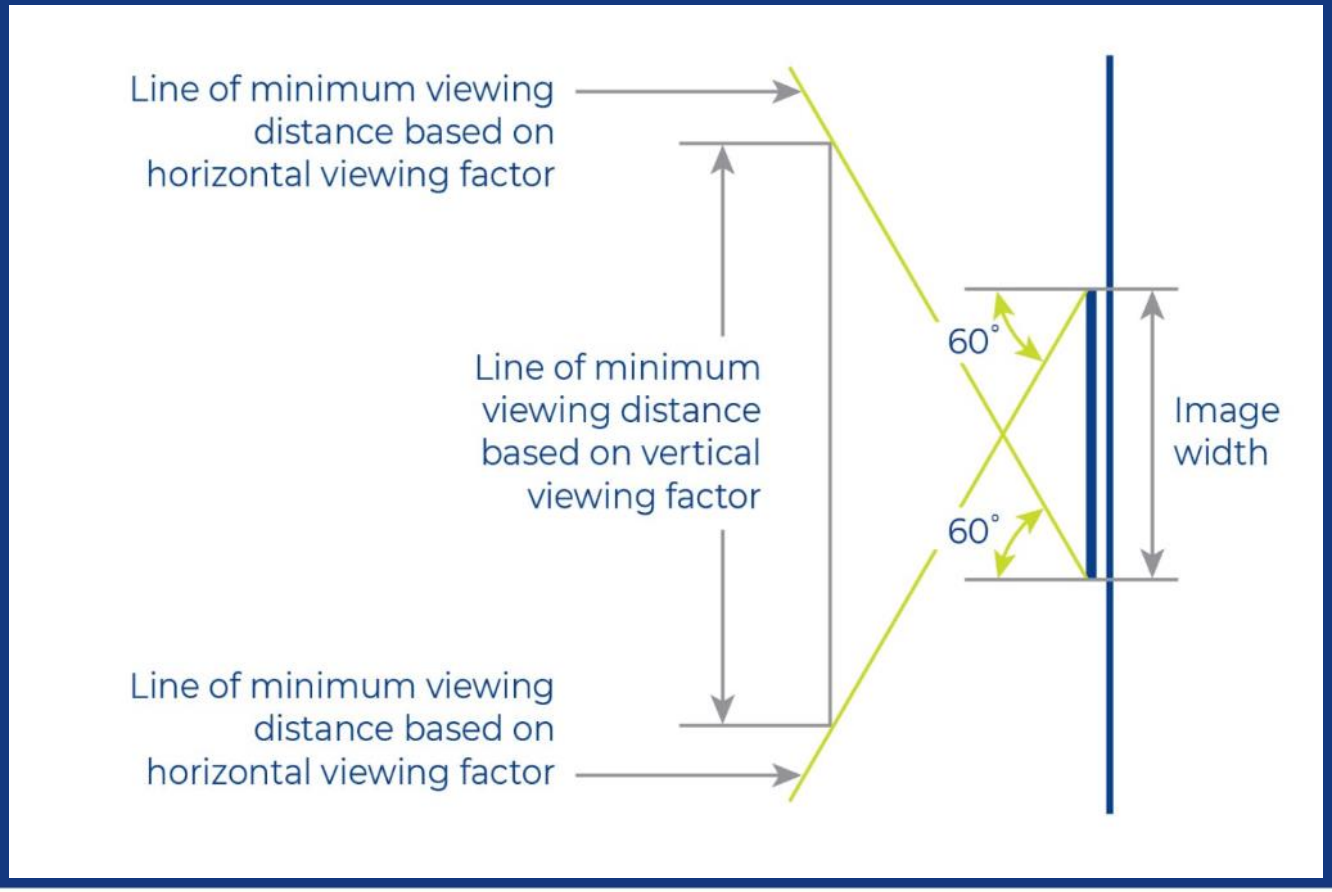
Combine top of image limit with horizontal viewing angle constraints



# DISCAS Viewing Plan Example

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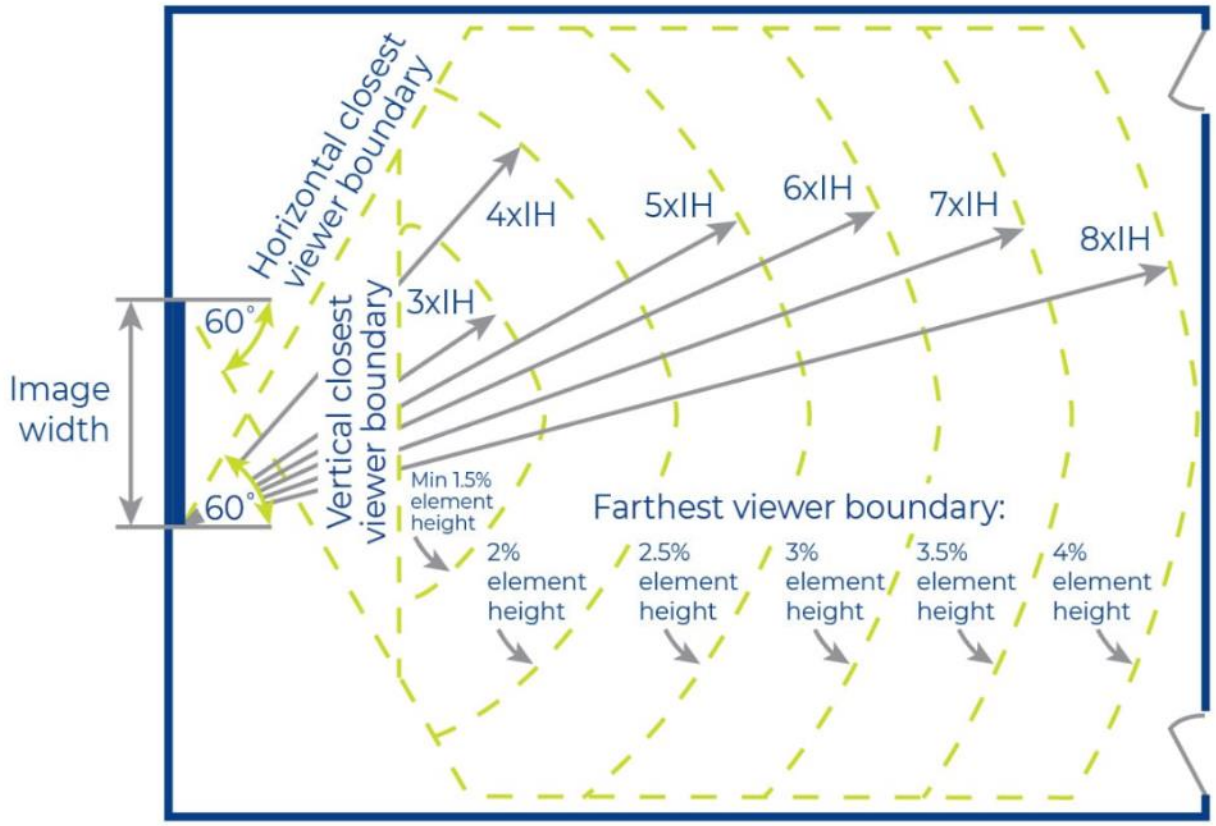


Viewing Parameters for BDM

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

# DISCAS calculator

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- Excel calculator

- Online calculator

# 3D CAD Model

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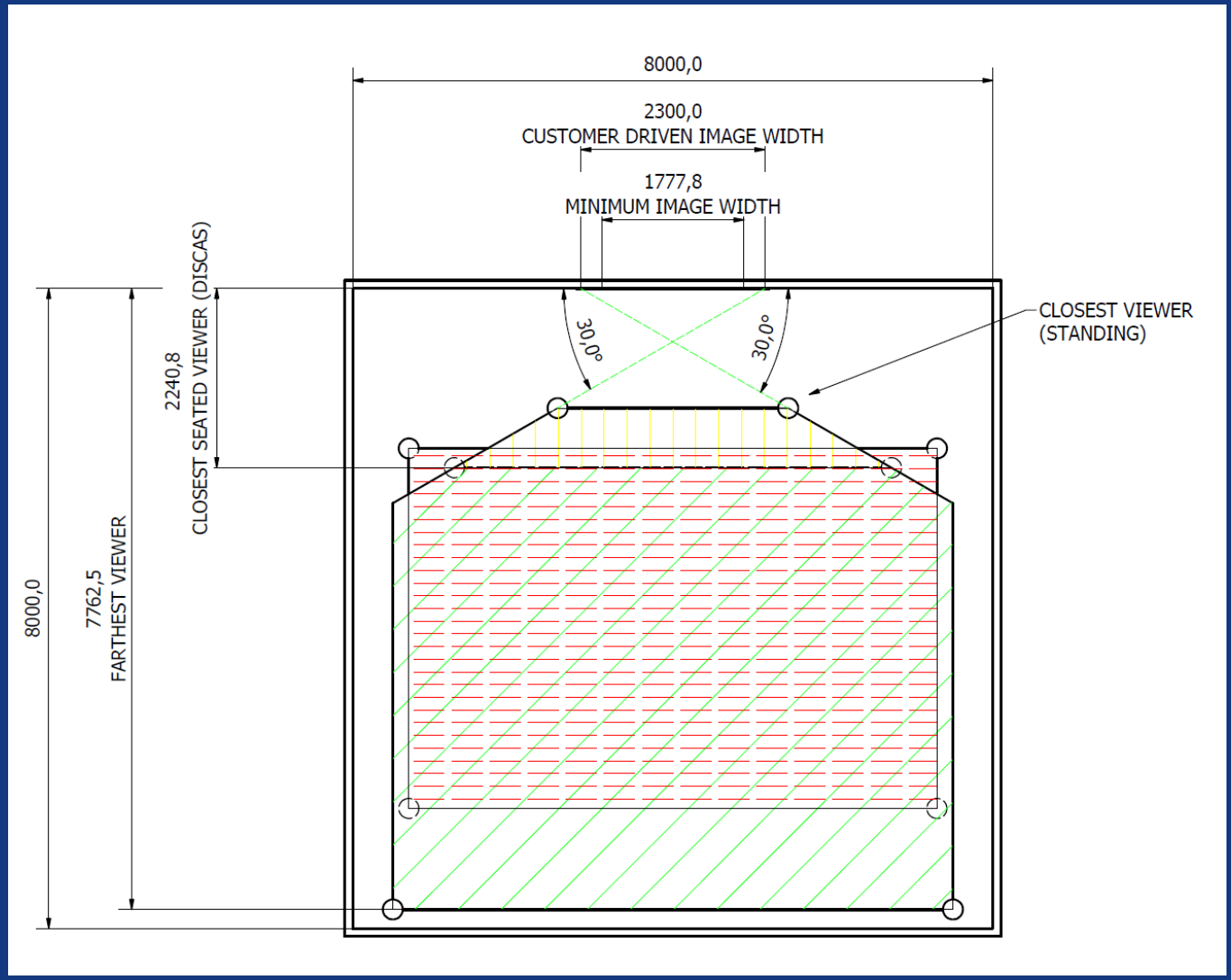

# 3D CAD Model

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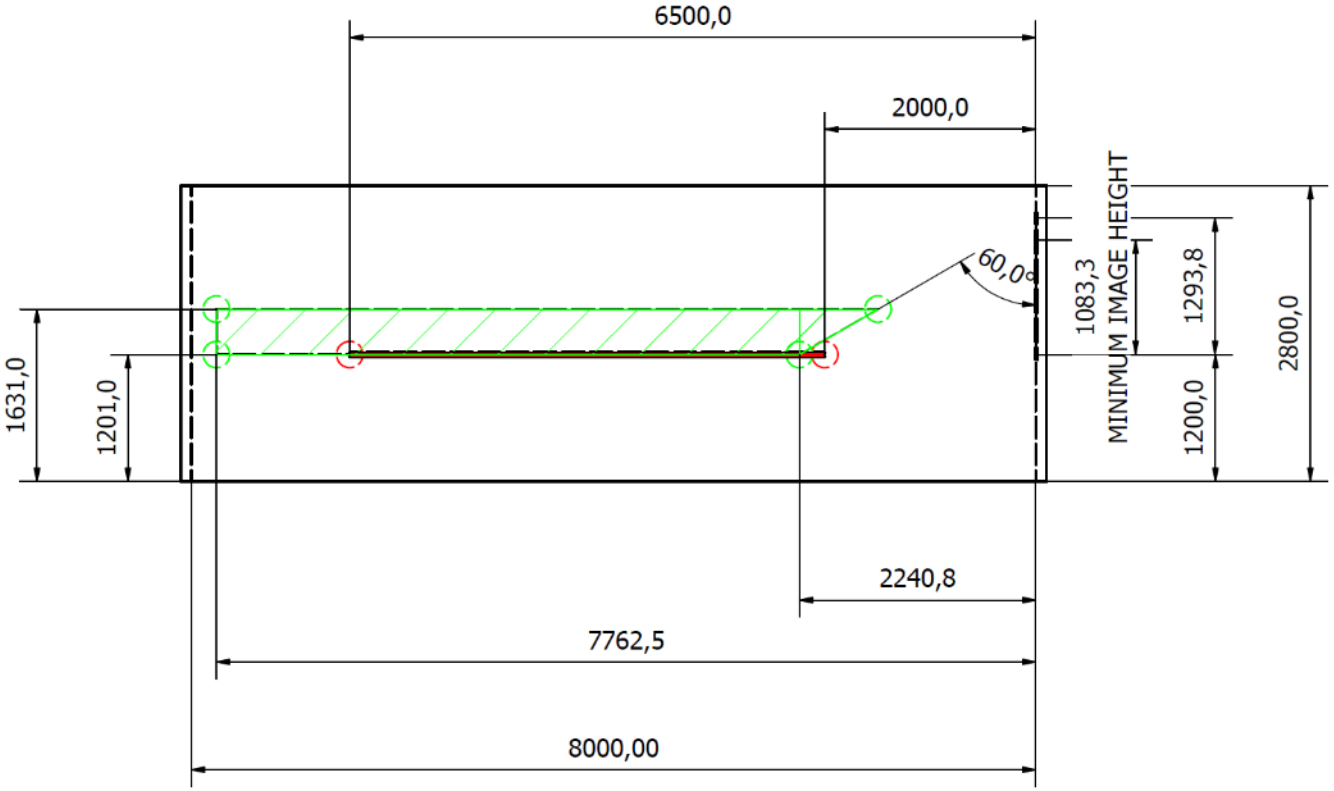

# 3D CAD Model

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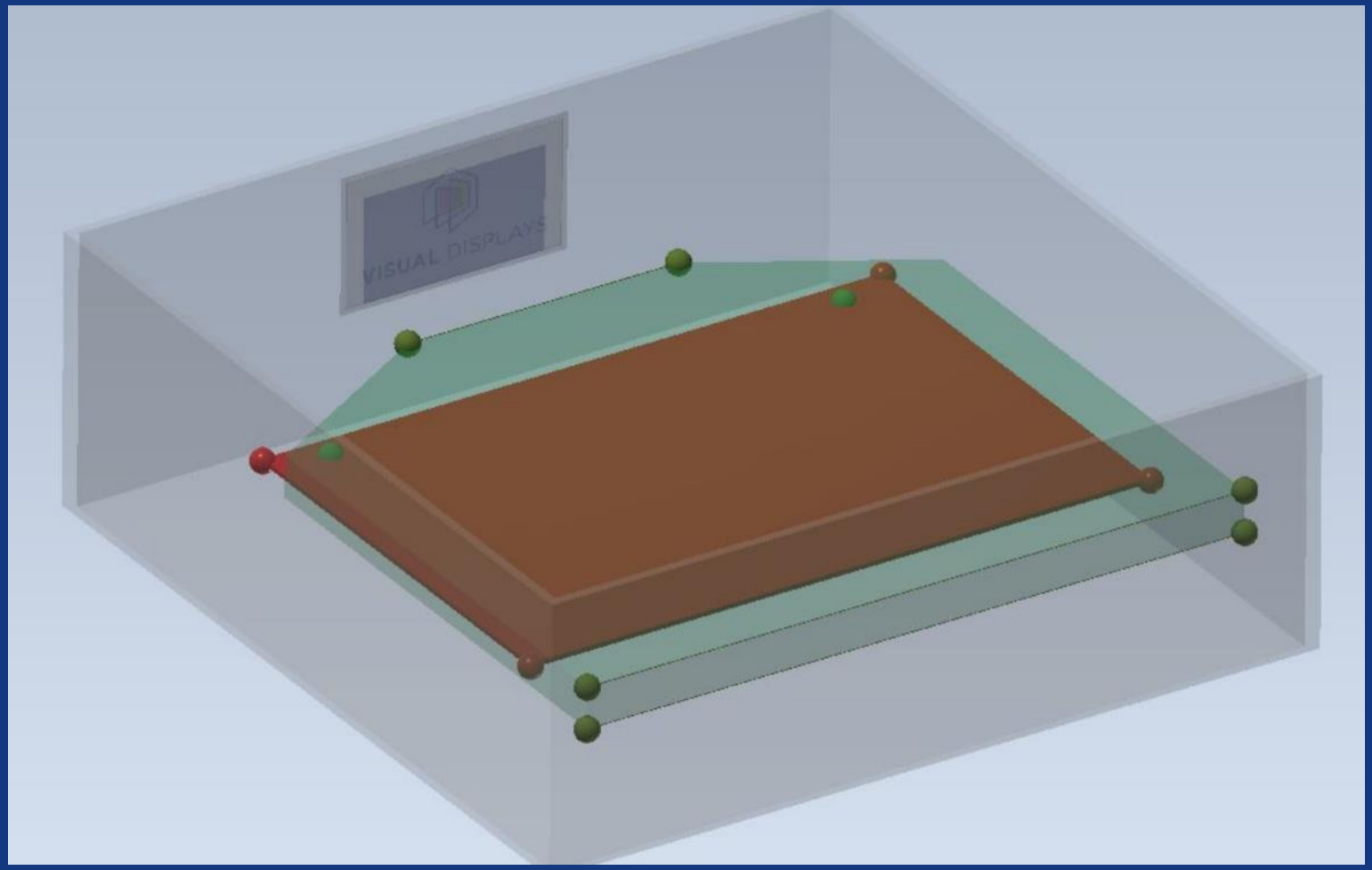

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# What resolution?

HD, 4K, UHD, WUXGA

or...?

# DISCAS take-aways

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- 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 DISCAS Standard is free!

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- (To AVIXA members only, naturally!)

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

# 16:9 or 16:10?

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## New white paper

https://visualdisplaysltd.com/resources/resources/16-9-or-16-10-aspect-ratio-made-easy

**We did the maths!**

# Microsoft Teams Rooms – Front Row Feb ‘22 release – 21:9

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Aspect ratio 16:9 with 1920 x 1080 resolution or

21:9 with 2560x1080 resolution

# New aspect ratios

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- Aspect ratio 16:9 with 1920 x 1080 resolution or 21:9 with 2560x1080 resolution

**16:9**

**21:9**

**28:9**

*Example of 2 projector blended display – infinite options available*

# Apply DISCAS to main content window height – not image height

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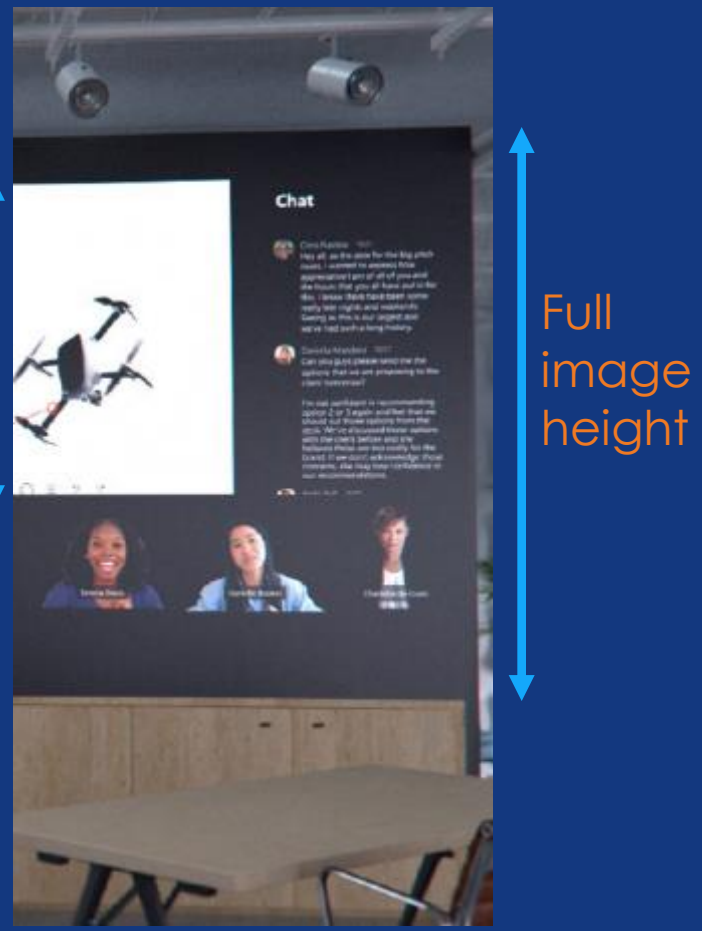
- DISCAS %ElementHeight (%EH) default = 3%
- 3%EH = 6 : 1
  - (Farthest viewer no more than 6 x image height)
- If content window = 60% of image height
- Then ratio becomes 3.6 : 1
  - (0.6 x 6 = 3.6)



# 21:9 – the practical specification call today

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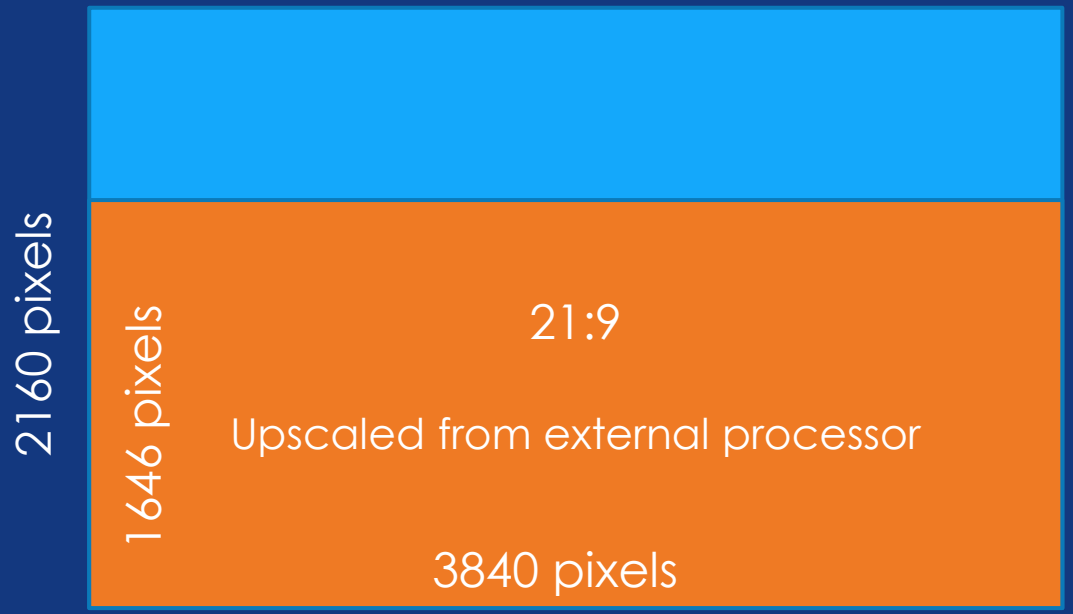
Aspect ratio 16:9 with 1920 x 1080 resolution or

21:9 with 2560x1080 resolution




SOURCE(S)

External processor

Single 4K UHD projector

# 2022 – Year of Projection Done Properly

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ALR (ambient light rejecting screen + 3LCD laser projection

Matt white screen + doesn't matter which projector!

# Projection done properly = select screen first, projector last

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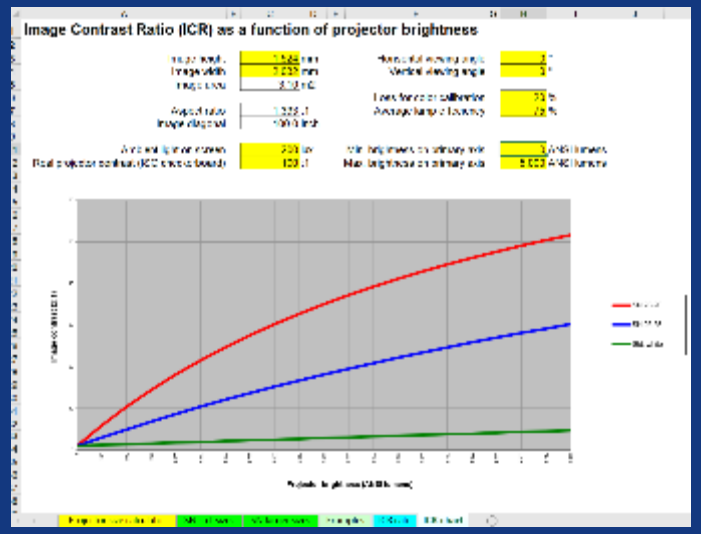
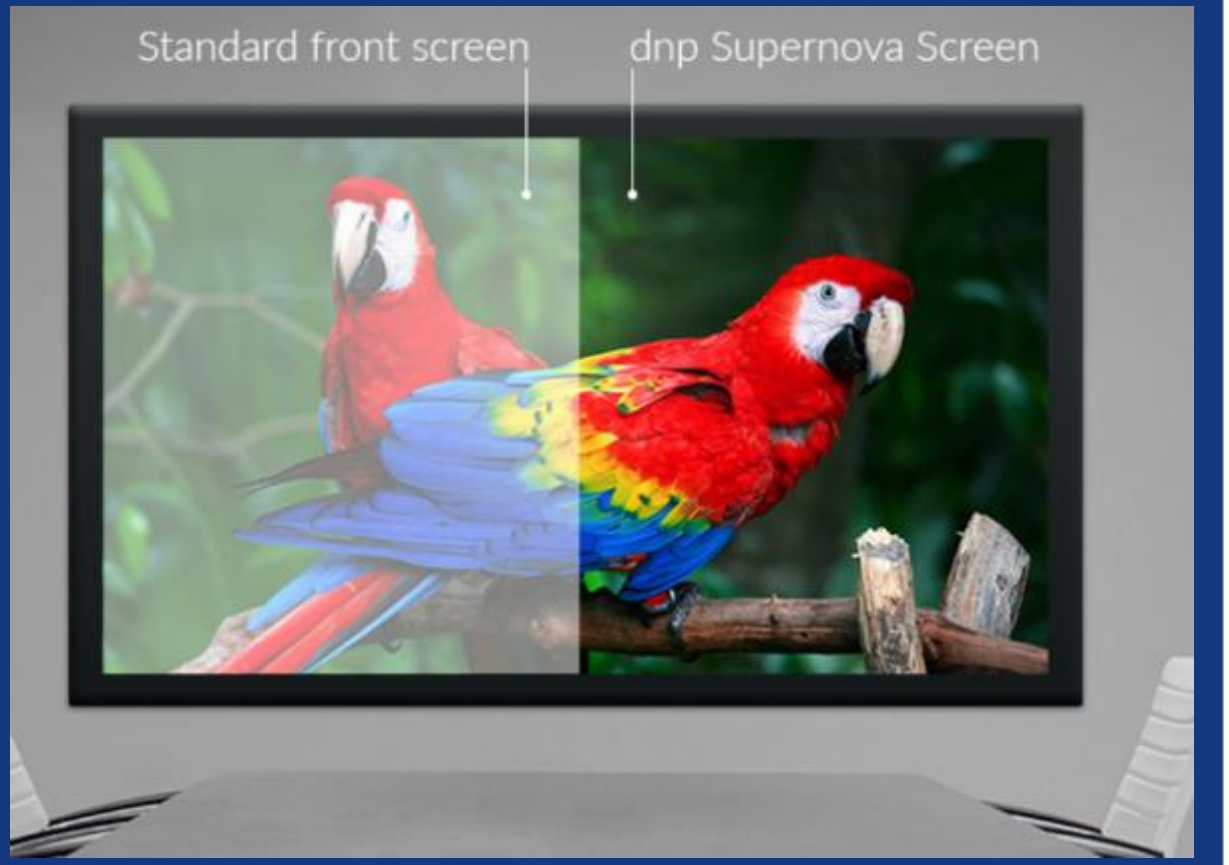
- Choose the correct ALR (ambient light rejecting) projection surface for each space
- Do the maths for correct projector lumens & contrast

| | | |
|---|---|---|
| Image width (mm) | 2500 | mm |
| Image height (mm) | 1406 | mm |
| Screen area ($m^2$) | 3.515 | $m^2$ |
| Image brightness required | 350 | $cd/m^2$ (nit) |
| Screen gain | 1 | |
| LUMENS (lm) = | 4029 | These are the 'real' lumens required from the projector, once you have applied some kind of reality check factor to the brochure lumens |



# The VDL Digital Canvas

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## Display systems for Teams/Zoom/hybrid meeting and teaching spaces

Next-generation display solutions for the best possible hybrid meeting experience. The VDL Digital Canvas is the ultimate hybrid meeting display designed to deliver an authentic and inclusive user experience to bridge the gap between in-person and remote attendees and facilitate more effective collaboration.

**Find out more visit:**

www.visualdisplaysltd.com/meeting-board-room-screens/teams-rooms

zoom

www.visualdisplaysltd.com

# VDL Digital Canvas – 120”, 140” & bespoke sizes

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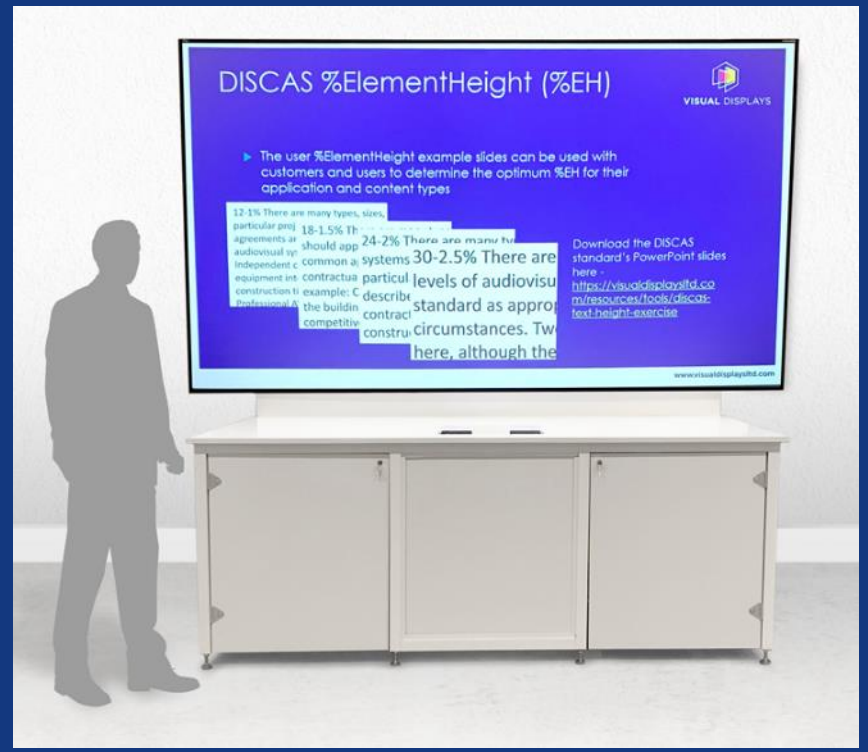


**Find out more visit:**
www.visualdisplaysltd.com/meeting-board-room-screens/teams-rooms

# Curved screen
# VDL Digital Canvas

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- Reciprocity – remote & in-person are more equal
- Organic, human-friendly configuration
- UST vs standard lens
  - Impact on camera position
- Wide range of aspect ratios and resolutions
- IP and tools based on our simulation & immersive display modelling tools
- Part of our design consultancy

# Our background in immersive brought us here

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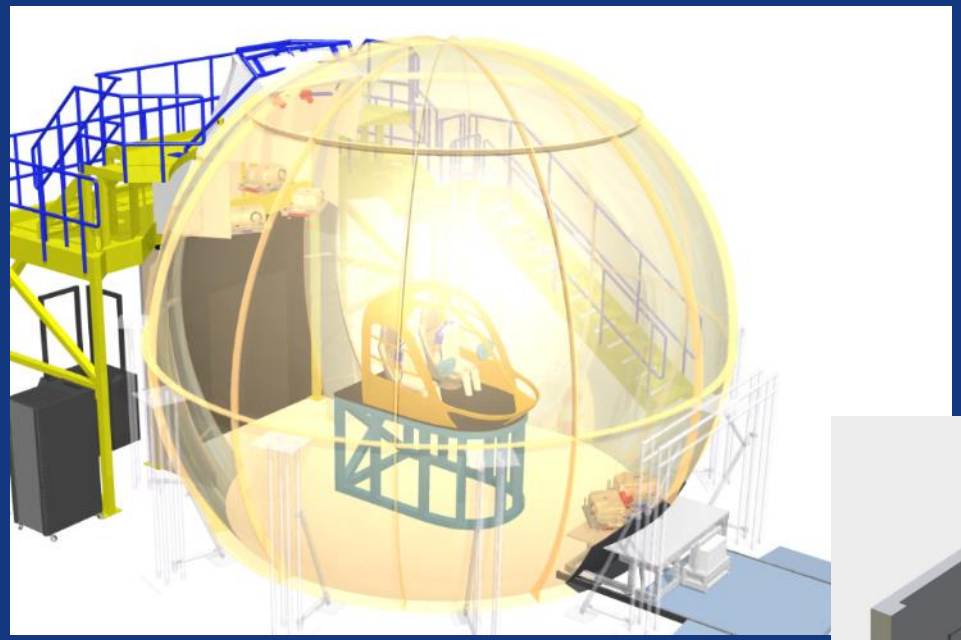

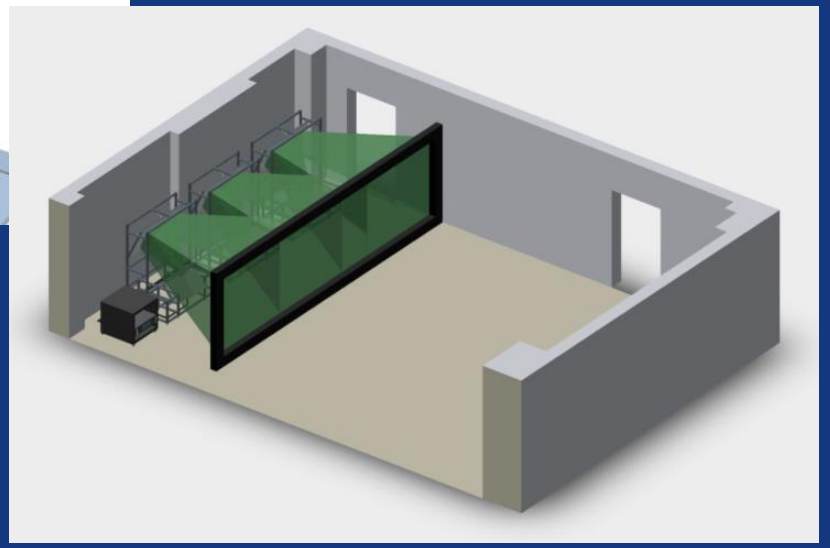

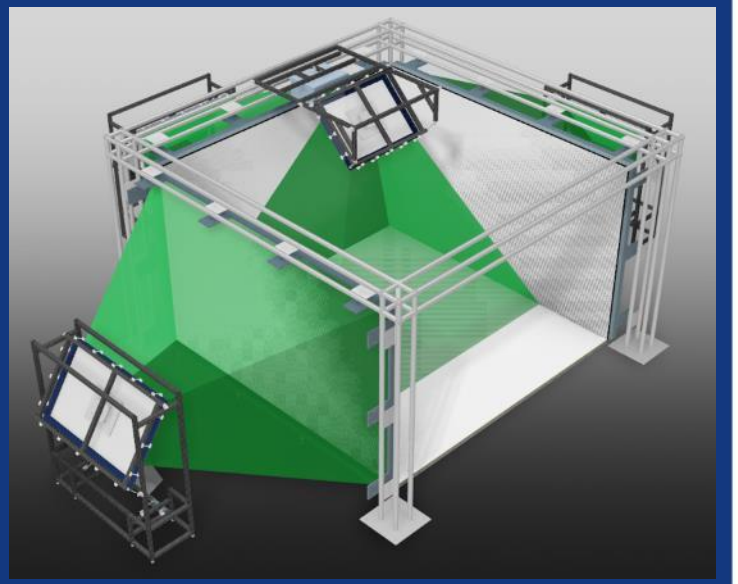

# Do you have an evaluation space?

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- Speed of change and development very rapid
- Workflows = work in progress
- Display layouts – how many new versions in 2022?!
  - User-created layouts
  - Multiple sessions/codecs for multi-point sessions with display running at high resolution?

# AV User Group

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- https://www.avusergroup.com/

# LTSMG – Learning and Teaching Spaces Management Group

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HE & FE campus technology managers association

LTSMG

https://ltsmg.co.uk/

# What we can do for you

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## Use any or all of our services

- Specialist consultancy
  - (not AV consultancy!!)
- Design
- Manufacture
- Solutions & technology
  - VDL Digital Canvas Displays
  - Projection screens of all types
  - Immersive displays
- Proof of concept, product development, system troubleshooting
- Advanced laser tools

- We work actively with all parts of the channel - from end user through to reseller
- All hardware and solutions supplied through reseller/integrator channel

# VISUAL DISPLAYS

www.VisualDisplaysLtd.com

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