

**Tender for Design and Build Project for Off-Campus Co-Working Space for HKCMCL
(Tender Ref. T/2017/017)**

Tender Addendum No. 2

Item No.	Tender Document Ref.	Description
1.	Part D – Specification-preliminaries	<u>Add</u> An Appendix F with design directions is attached.
2.	Part D – Specification-preliminaries	<u>Replace:</u> <ul style="list-style-type: none">• Page 17 of Part D of the Tender Document with• New page 17R as attached
3.	Part E - Specification – Technical Particulars	<u>Replace:</u> <ul style="list-style-type: none">• Pages 43 to 48, 53, 59 to 63, 65, 67, 72 and 75 of Part E of the Tender Document with• New pages 43 to 48, 53, 59 to 63, 65 to 65-11, 67, 72 to 72-1 and 75 as attached
4.	Part G – Schedule of Rates	<u>Replace:</u> <ul style="list-style-type: none">• Pages 13 and 14 of Part G of the Tender Document with• New pages 13R and 14R as attached

Part D

APPENDIX F

Design Directions (for reference only)

Entrance



The Entrance should be

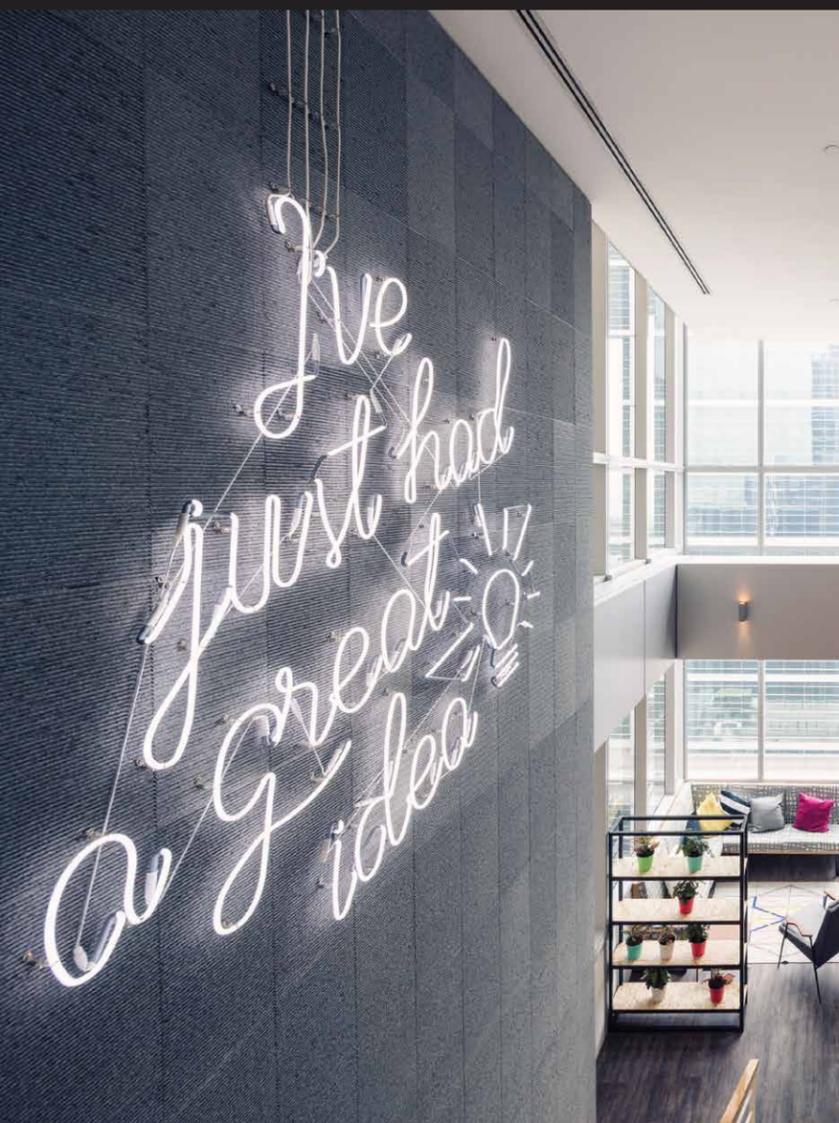
- Cool! Wow effect!
- Stylish and young
- Feel welcome (Could be as simple as a "Hello" on the wall)
- Act as a function to lead visitor to the Multi-purpose Zone
- A simple bar setup at the entrance will be ideal
- Utilise the views at the windows on the left for some decorative elements



Multi Purpose Zone

The MPZ should be

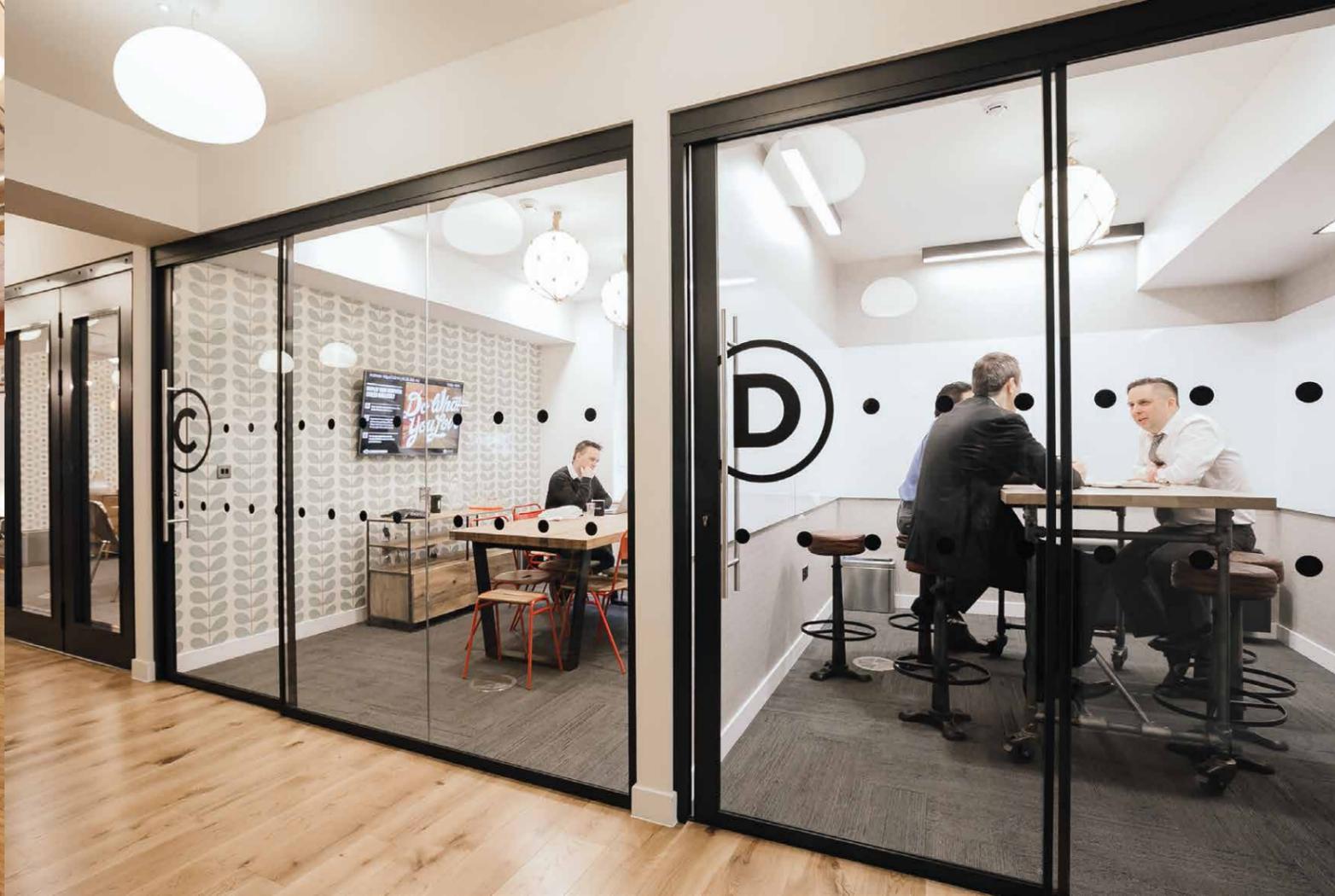
- Ease of use and easy for conversion
- The space needs to be cleverly layout that appeals to all tenants and guests
- Inconventional ways to pit up inspiring quotes
- Avoid using conventional office furnitures



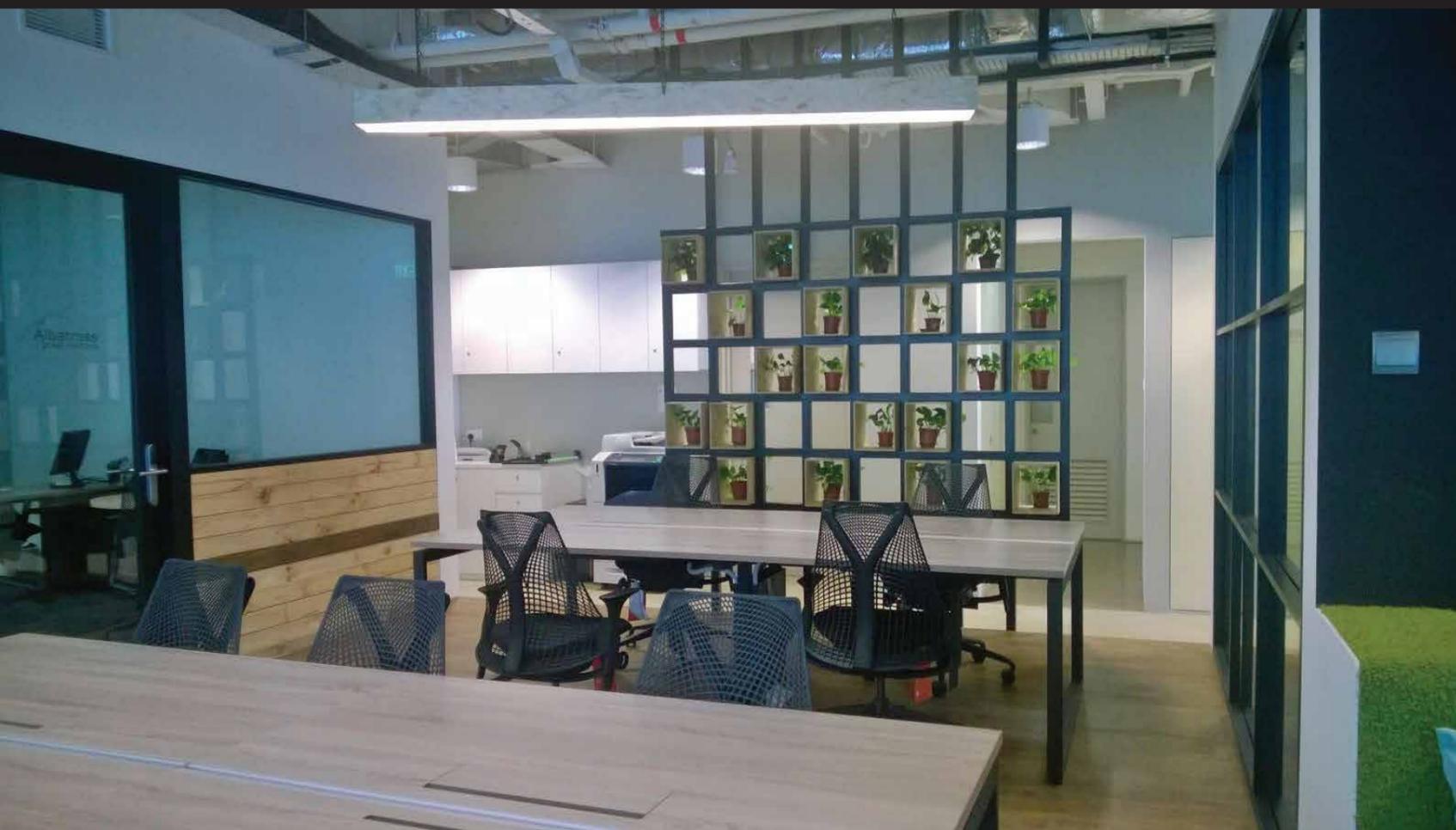
Meeting Rooms

The meeting rooms should be

- Think out of the box
- Engaging
- mega graphics on walls



Flexi-desk



The Flexi-desk should be

- Cool and fun
- Inspirational with lots of creative decorations
- Avoid using conventional furnishing
- Consider storage spaces for Flexi-desk users

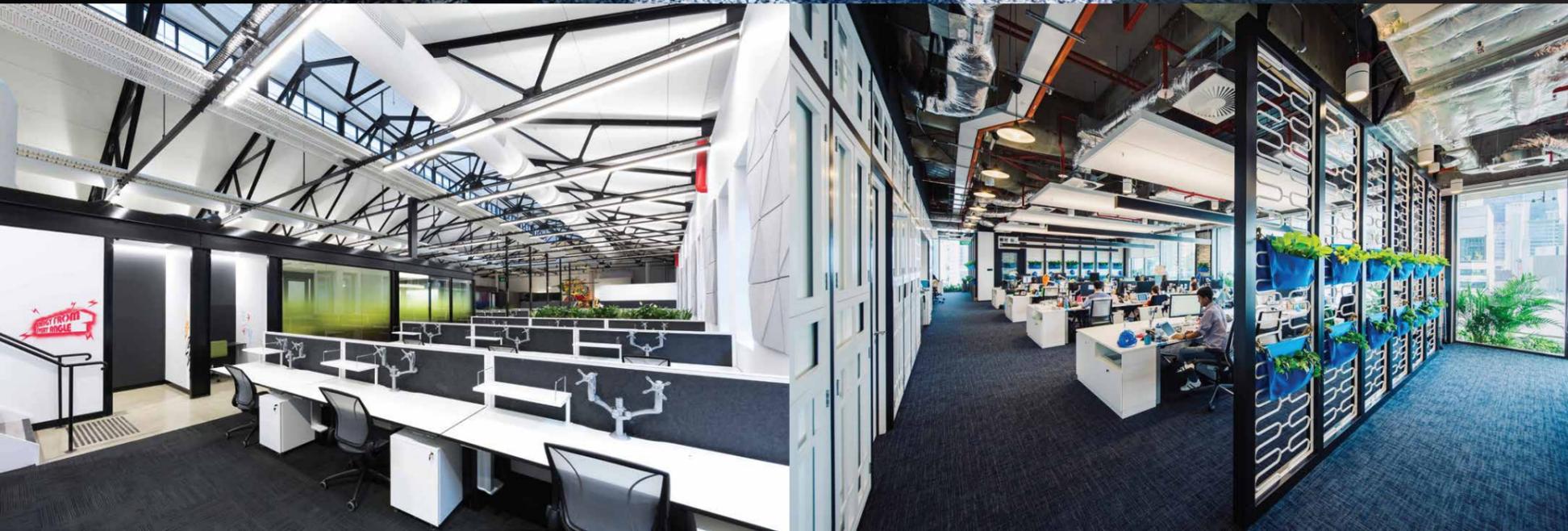


Workstation



The Workstation should be

- Can be wild and fun
- Themed either by colours or comic characters
- Open and spacious with low partition



Rooms



The Rooms should be

- Loft style
- Flexible



Description	Qty	Unit
AV Input Faceplate	2	sets
HDMI Extender - Receiver Side	4	sets
HDMI Extender - Transmitter Side	2	sets
4K Multi-Input Switcher	2	sets
All-in-one 4K Video Matrix and Control Processor	1	set
Portable Control Panel	1	set
Wall Installed Control Panel	1	set
Light Control Interface	1	set
Wireless Sharing system for BYOD, Mac or Laptop	1	set
Speaker	8	sets
Audio DSP	1	set
Audio Amplifier	1	set
Handheld Mic bundle with charging station	4	sets
Clip Mic	2	sets
4K TV Set-Top-Box	1	set
Meeting Room 1 & 2		
4K Display with Built-in Whiteboard	2	sets
AV Input Faceplate	2	sets
HDMI Extender - Receiver Side	4	sets
HDMI Extender - Transmitter Side	4	sets
Speaker	8	sets
TV Trolley	0	sets
Wireless Sharing system for BYOD, Mac or Laptop	2	sets
All-in-one video Matrix and Control Processor	2	sets
Furniture mountable enclosure for Cable management and USB Power	2	sets
Wall Installed Control Panel	2	sets
4K TV Set-Top-Box	2	sets
Three-Input Switcher & Extender – Transmitter	2	sets
A Pair of USB Extender	2	sets
Live Stream from Cyberport Function Room		
HDMI Extender - Receiver Side	3	set
HDMI Extender - Transmitter Side	3	set
Video Encoder	1	set
Video Decoder	1	set
4K Four Output Splitter	1	set
Installation services and 12-month onsite maintenance support services	1	job

b) Provide relevant drawings and/or catalogues for review and approval;

c) Provide complete testing and commissioning record / report with as-fitted drawings (2 printed copies and soft copy in DVD).

The Main Contractor shall perform all system testing and commissioning to the satisfaction of the Employer.

4.3.5 IT System Installation (including but not limited to the following):

a) Supply and install the following equipment/networking cabling and wireless network system including:

Description	Qty	Unit
Server Rack	4	sets
Structure Cabling System		
48 ports patch panel	8	sets
1U horizontal cable manager	16	sets
CAT 6 Patch Cord (3-5m)	700	sets
Fibre Cables OM3 (24 cores)	2	sets
24-Port Fibre Patch Panel	4	sets
Fibre Patch Cord (5m)	30	sets
Data port:		
Data ports for 33 office room	116	
Voice ports for 33 office room	116	
Data ports for Workstation	49	
Data ports for Reception	2	
Voice ports for Reception	2	
Data ports for Staff Room	3	
Voice ports for Staff Room	3	

Technical Requirements:	
8.1.	Should provide automatic EDID management between connected devices
8.2.	Should provide a set of pre-stored EDID files
8.3.	Should provide capture of EDID from any connected display
8.4.	Should provide users uploading of custom-generated EDID files
8.5.	Should support assignment of any pre-stored, captured or custom uploaded EDID file to any input connection
9.	HDCP
9.1.	Should be HDCP compliant
9.2.	Should provide the option to disable HDCP processing at the Display Port or HDMI input connection when passing
9.3.	Should provide real-time verification of HDCP status for each digital video input
9.4.	Should provide accessible through front panel LEDs
9.5.	Should provide electronically accessible over RS-232 or USB connection
10.	General
10.1.	Should provide real-time verification of signal flow and operation
10.2.	Should provide directly readable on RJ-45 signal and link LEDs
10.3.	Should be HDCP compliant
10.4.	Should be compatible with shielded CATx twisted pair cable
10.5.	Should provide power to connected receiver
10.6.	Should support the use of HDMI to DVI-D cables or adapters for DVI-D signals
10.7.	Should have a low-profile enclosure and versatile mounting capability
10.8.	Should meet regulatory compliance <ul style="list-style-type: none"> • CE, c-UL, UL • CE, C-tick, FCC Class A, ICES, VCCI

Section F – All-in-one Video Matrix and Control Processor

Product	All-in-one 4K Video Matrix and Control Processor
Quantity	1
Minimum Configuration Requirement	1 set, including all necessary software license
Warranty:	Minimum 3 Years with labor and parts

Configuration Requirements:	
1.	General
1.1.	Provide an 4K scaling presentation matrix switcher that support up to eight (8) inputs and four (4) outputs for matrix switching of HDMI sources, one (1) digital audio expansion port, one (1) integrated control processor, plus additional support for signal extension over shielded CATx cable and audio digital signal processing.
1.2.	Should include an license for use of third party devices as primary control interfaces

Technical Requirements:	
1.	Video Input
1.1.	Provides at least six (6) HDMI video input connections

1.2.	Provides at least two (2) RJ-45 for video from twisted pair transmitter
1.3.	Should support 4K and UHD signals at all inputs
1.4.	Should provide image adjustments for the twisted pair outputs, including brightness, contrast, color, tint, detail, H/V positioning, and sizing
1.5.	Should provide storage and recall of video parameters and picture settings when activated for the scaled outputs
1.6.	Should support automatically save video settings and picture adjustments without user intervention
1.7.	Should support automatically recall settings when the same video rate is encountered
1.8.	Should support user selectively enable or disable automatic memories
1.9.	Should support manually save picture adjustments of user presets
1.10.	Should support save and recall user presets using front panel controls
1.11.	Should support save and recall user presets electronically via Ethernet, RS-232 or USB connection
1.12.	Should support manually save video settings and picture adjustments of input presets
1.13.	Should support save and recall input presets electronically via Ethernet, RS-232, or USB connection
1.14.	Should support HDMI specifications including data rates up to 10.2 Gbps, Deep Color up to 12-bit, 3D, and HD lossless audio formats
1.15.	Should provide automatic cable equalization for each digital input to 100 feet (30 meters) at 1080p/60 with 8-bit color
1.16.	Should provide automatic cable equalization for each digital input to 50 feet (15 meters) at 4K/30 and 2560x1600 @ 60 Hz resolutions
1.17.	Should support video transmission over shielded CATx up to 330 feet (100 meters)
2.	Video Output
2.1.	Should provides at least two (2) HDMI video output connections
2.2.	Should provides at least two (2) RJ-45 for video to twisted pair receivers
2.3.	Should be configurable for compatibility with receivers of extender
2.4.	Should be configurable for sending digital video and embedded audio, plus bidirectional RS-232 and IR signals to video matrix switchers
2.5.	Should be configurable for sending digital video and embedded audio, plus bidirectional RS-232 and IR signals to HDBaseT-enabled displays
2.6.	Should provide a range of selectable scaled output rates from 640x480 to 1920x1200, including 1080p/60 and 2048x1080p/60
2.7.	Should support 4K and UHD signals at both HDMI outputs
2.8.	Should provide independent scaling for each twisted pair output
2.9.	Should provide aspect ratio control for each scaled twisted pair output <ul style="list-style-type: none"> When in FILL mode, the video image shall always fill the output screen without letterbox or pillarbox When in FOLLOW mode, the video image shall always preserve the aspect ratio of the input signals without distortion
2.10.	Should provide internal test patterns for the scaled outputs to facilitate system setup and calibration
2.11.	Should support muting of one or all outputs at any time
2.12.	Should support automatic muting of video and sync output when no video signal is present
2.13.	Should provide a choice to generate a blue screen or a black screen before disabling sync
2.14.	Should provide a configurable timeout period before disabling sync
2.15.	Should support user selectively enable or disable automatic muting of sync output
2.16.	Should support the connection of DVI displays that do not recognize HDMI-specific formats
2.17.	Automatically enable or disable embedded TMDS audio and InfoFrames
2.18.	Should automatically set the correct color space
2.19.	Should support video transmission over shielded CATx up to 330 feet (100 meters)
2.20.	Should provide automatic reclocking of HDMI video signals at each HDMI output

2.21.	Should support the connection of DVI displays that do not recognize HDMI-specific formats
3.	Switching
3.1.	Should provide video and audio matrix switching between any input and any output
3.2.	Should support incoming 4K and UHD signals at all HDMI and twisted pair extender inputs
3.3.	Should support routing of 4K and UHD signals to both HDMI outputs
3.4.	Should provide storage and recall of input and output ties
3.5.	Should save video and audio ties between inputs and outputs
3.6.	Global presets should be able to recall using front panel controls
3.7.	Global presets should be able to save and recall electronically via Ethernet, RS-232, or USB connection
3.8.	Should provide the ability to view which inputs and outputs are actively connected
4.	EDID
4.1.	Should provide automatic EDID management between connected devices
4.2.	Should provide a set of pre-stored EDID files
4.3.	Should support capture of EDID from any connected display
4.4.	Should support user uploading of custom-generated EDID files
4.5.	Should support assignment of pre-stored, captured, or custom uploaded EDID file for each input connection
5.	HDCP
5.1.	Should be HDCP compliant
5.2.	Should provide authentication and maintain continuous verification of HDCP key exchange with connected sink devices
5.3.	Should provide authentication and maintain continuous verification of HDCP key exchange with connected source devices
5.4.	Should provide the option to disable HDCP processing at any HDMI input connection when passing unencrypted content
5.5.	Should provide selectable, human-readable visual confirmation of HDCP compliance when encrypted content is routed to a non-HDCP compliant display
5.6.	Should display a solid green color and an on screen message starting "HDCP CONTENT" when enabled the setting with non-HDCP compliant display
5.7.	Should muted the output when disabled the setting with non-HDCP compliant display
5.8.	Should provide real-time verification of HDCP status for each HDMI input and output
5.9.	Should be electronically accessible over Ethernet, RS-232, or USB connection
6.	Audio Input
6.1.	Should support embedded audio on six HDMI connectors
6.2.	Should support embedded audio on two RJ-45 connectors
6.3.	Should support four mono, microphone or line level, balanced or unbalanced signals with +48 volt phantom power on four, 3-pole, 3.5 mm captive screw connectors
7.	Audio Output
7.1.	Should support embedded audio on two HDMI connectors
7.2.	Should support embedded audio on two RJ-45 connectors
7.3.	Should support four stereo line level, balanced or unbalanced signals with independent output level control on four, 5-pole 3.5 mm captive screw connectors
7.4.	Should support S/PDIF digital audio signal on one RCA connector
7.5.	Should support one stereo speaker level signal or two mono speaker level signage on one 4-pole, 5mm screw-lock captive screw connector

8.	Amplifier
8.1.	Should support one stereo speaker level signal or two mono speaker level signals on one 4-pole, 5 mm screw-lock captive screw connector
8.2.	Should provide stereo amplification for low impedance speaker systems
8.3.	Should support one stereo speaker level signal or two mono speaker level signals on one 4-pole, 5 mm screw-lock captive screw connector
8.4.	Should provide a total of 100 watts rms output power with 50 watts rms per channel into 4 ohms, or 25 watts rms per channel into 8 ohms measured at 1 kHz with 0.1% THD
8.5.	Should provide a THD+N measurement of less than 0.1% measured at 3 dB below clipping
8.6.	Should provide a signal-to-noise ratio of greater than 90 dB measured from 20 Hz to 20 kHz, unweighted
8.7.	Should utilize an efficient Class D amplifier design
8.8.	Should provide Class D Ripple Suppression technology
8.9.	Should be convection cooled and operate without fans
8.10.	Should provide an automatic clip limiter to detect onset of clipping by comparing input and output waveforms and automatically reduce gain with a slow attack and fast release to eliminate clipping distortion
8.11.	Should provide multiple protection circuits that activate during output shorts, thermal overload, or DC faults
9.	Audio
9.1.	Should provide 64-bit floating point DSP engine
9.2.	Should support 32-bit and 64-bit processing algorithms
9.3.	Should provide a maximum, deterministic latency of 4.5 ms from input to output
9.4.	Should provide additional, deterministic latency of 2 ms when Virtual Path routing is used
9.5.	Should support embedding of any analog audio input signal onto the matrix video outputs
9.6.	Should support extraction of two-channel PCM HDMI audio signals to the analog stereo outputs, or route embedded multi-channel bitstream audio to the HDMI outputs
9.7.	Should support de-embedding, processing, and re-embedding of two-channel PCM HDMI audio signals onto the HDMI outputs
9.8.	Should support mixing of program audio and mic/line audio signals
9.9.	Support mic audio mixed with program audio onto the HDMI/twisted pair extender outputs, variable audio outputs, S/PDIF audio output, and amplified audio output
9.10.	Should provide the capability to break two-channel audio away from its corresponding video signal and route to the audio outputs, allowing the audio and video signals from one source to be switched to different destinations
9.11.	Should provide adjustable, automatic ducking of program audio when a signal is detected on the microphone input
9.12.	Program audio should automatically ramp up to reach the original volume level when audio is no longer detected on the microphone input
9.13.	Should support audio transmission over twisted pair up to 330 feet (100 meters)
10.	Expansion Port
10.1.	Should provide a digital audio expansion port for bidirectional signal routing between the matrix switcher and a connected Digital Matrix Processor
10.2.	Should support 8 incoming signals and 16 outgoing signals
10.3.	Should provide uncompressed digital audio at 48 kHz sampling rate with 24-bit resolution
11.	Digital Sound Processor Configuration Software
11.1.	Should support PC-based DSP configuration software, allowing flexible control of the integrated digital signal processing

11.2.	Should provide a Live mode for real-time control of parameters without compiling and file uploading to matrix switcher
11.3.	Should provide an Emulate mode for offline configuration
11.4.	Shall provide single window view of all inputs and outputs, audio processing blocks, routing, mix points, and virtual routing
11.5.	Should provide setup and configuration of digital signal processing tools including, but not limited to: Filters (high pass, low pass, bass, treble, and parametric EQ); Dynamics processing (AGC, compressor, limiter, noise gate); Delay processing; Ducking processor; Loudness processor; and multiple gain stages
11.6.	Should provide cut and paste editing between processing blocks
11.7.	Should provide matrix routing with integrated mix point gain adjustment between inputs, outputs, virtual sends, virtual returns, expansion inputs, and expansion outputs
11.8.	Should provide a library of pre-designed processor settings for inputs and outputs with user-customizable parameters
11.9.	Should provide 32 Group Master controls for consolidation of up to 28 individual gain or mute control members of the same type into one point of control
11.10.	Should provide Soft Limits settings to define upper and lower control limits on Group Masters for use with external controls
11.11.	Should provide 32 Presets for recall of any processing block setting, level setting, or audio routing; presets shall be saved for the entire system, or any selected partial groups of inputs, outputs, mix points, and DSP blocks
11.12.	Should provide real-time metering of levels within each Input Gain, AGC, Compressor, Limiter, Noise Gate, and Output Volume processing block in Live mode
11.13.	Should provide a Meter Bridge window for real-time metering of all input and output channels with clipping indication in Live mode
11.14.	Should provide keyboard-based navigation of configuration software utilizing directional controls, keyboard shortcuts, and spreadsheet software-style commands
11.15.	Should provide file saving in both Live and Emulate mode
11.16.	Should provide file upload in both Live and Emulate mode
11.17.	Should provide configuration and file saving of the matrix switcher and a linked, compatible digital matrix processor from a single configuration software session
12.	Integrated Control Processor
12.1.	Provides at least three (3) RJ-45 10/100/1000Base-T Ethernet
12.2.	Should support connection of touch panels and other network controlled devices
12.3.	Should act as a three port unmanaged network switch
12.4.	Should have at least two (2) 3-pole captive screw: RS-232, configurable for unidirectional or bidirectional control of AV system components
12.5.	Should have at least one (1) 5-pole captive screw: RS-232/RS-422/RS-485, configurable for unidirectional or bidirectional control of AV system components
12.6.	Should have at least two (2) IR/serial ports on one 5-pole captive screw: IR (using an IR emitter) or unidirectional RS-232 for control of AV system components
12.7.	Should have at least four (4) low voltage relays on one 6-pole captive screw: configurable for controlling lighting, controlling screens, or other device functions
12.8.	Should have at least four (4) digital input/output ports on one 5-pole captive screw: configurable for use as an interface with devices such as sensors, switches, LEDs, and relays
12.9.	Should have at least one (1) eBUS® port on a 4-pole captive screw for connecting to eBUS devices
12.10.	Should support the following protocols: ICMP (ping), IPv4, TCP, UDP, DHCP, DNS, HTTP, HTTPS, NTP, SFTP, SMTP, SNMP, SSH
12.11.	Should support a Web-based AV resource management application that provides a means to manage, monitor, and control AV equipment

12.12.	Should provide an internal real-time clock with a 30-year backup battery that is used to keep track of the date and time
12.13.	Should provide front panel LED activity indicators for RS-232 status, RS-232/RS-422/RS-485 status, IR/serial status, digital I/O status, relay status, eBUS status, and network status
12.14.	Should support control system synchronization to allow users to retain and recover configured endpoints in case of network or power failure
12.15.	Should be configured using software with support for the following: <ul style="list-style-type: none"> • Provide support for up to eight (8) configurable touch panels • Provide support for up to eight (8) configurable eBUS button panels • Provide remote monitoring and control via Ethernet • Provide the ability to create E-mail notifications • Provide multiple levels of password protection • Provide the ability to create schedules and monitors • Support up to 32 Ethernet-controllable AV devices • Support local variables and conditional logic • Support grouping of multiple control processors to function as one when configured with configuration software
13.	Control/Remote – RS-232 and IR Pass-Through Over Shielded CATx
13.1.	Should provide connections for AV device control
13.2.	Should have at least two (2) 5-pole captive screw for RS-232 or IR pass-through to twisted pair transmitters
13.3.	Should have at least two (2) 5-pole captive screw for RS-232 or IR pass-through to twisted pair receivers
13.4.	Should support RS-232 and IR transmission over shielded CATx up to 330 feet (100 meters)
14.	Control/Remote - Matrix Switcher
14.1.	Should provide connections for remote matrix switcher control
14.2.	Should have at least one (1) RJ-45 10/100Base-T Ethernet
14.3.	Should have at least one (1) 3-pole captive screw for RS-232
14.4.	Should have at least one (1) Mini USB Type B 2.0
14.5.	Should provide alternatives for configuration and operation
14.6.	Should allow front panel controls
14.7.	Should have built-in Web pages accessible using a standard Web browser via Ethernet connection
14.8.	Should provide product configuration software connected via Ethernet or USB
14.9.	Should support serial commands sent over Ethernet, RS-232, or USB connection
14.10.	Should support disabling of front panel controls to prevent inadvertent or unauthorized changes to configuration settings
15.	General
15.1.	Should provide real-time verification of signal flow and operation from transmitter or receiver
15.2.	Should directly readable on RJ-45 signal and link LEDs
15.3.	Should be compatible with CATx shielded twisted pair cable, and shielded twisted pair cable
15.4.	Should provide remote power to two (2) transmitters and two (2) receivers over the shielded CATx connections
15.5.	Should provide power to external peripheral devices on each HDMI output
15.6.	Enclosure should be rack-mountable, full rack width, and 2RU in height

Section G – Portable Control Panel

Product	Portable Control Panel
Warranty:	Minimum 1 Year with labour and parts

Technical Requirements:	
8.8.	Should provide an on-screen display – OSD menu for content presentation from a USB mass storage device
8.9.	Should provide WebShare technology to enable attendees to view slide images on personal devices via a wireless connection and a Web browser
9.	Power requirements
9.1.	Should provide connection for 5 VDC power on one coaxial connector
9.2.	Should be equipped with an external, universal AC power supply capable of supporting 100 - 240 VAC, 50/60 Hz power
9.3.	Should be PoE IEEE 802.3at, class 20 (type I), Power over Ethernet compliant
10.	General requirements
10.1.	Should support the use of HDMI to DVI-D cables or adapters for DVI-D signals
10.2.	Should provide an LED indicator on the front panel for visual indication of power
10.3.	Should have a 1" (2.5 cm) high, three-eighths rack width metal enclosure
10.4.	Should have two (2) front-mounted antennas that pivot
10.5.	Should be rack mountable with optional rack shelf
10.6.	Should be furniture or wall mountable with optional mounting kits
10.7.	Should meet regulatory compliance: <ul style="list-style-type: none"> • CE, c-UL, UL • UL Listed for use in plenum air handling spaces: UL 2043 for heat and smoke release • CE, C-tick, FCC Class A, ICES, VCCI • Appropriate requirements of RoHS, WEEE

Section K- Speaker

Product	Speaker
Quantity	8
Warranty:	Minimum 1 Year with labour and parts

Technical Requirements:	
1	Functional
1.1	It shall be a full-range loudspeaker with a single 2.25" (57mm) full-range driver in a ported enclosure designed for surface mounting in background music and paging applications
1.2	It should Mounting hardware allows for horizontal and vertical orientation with adjustable pitch or yaw
1.3	It should be integrated multi-tap transformer with innovative thumb wheel adjustment for easy-to-change tap settings from under front end cap
1.4	It should support a suite of accessories, including wall-mount bracket, ceiling-mount bracket, pole-mount bracket and junction boxes
2.	Technical Specification
2.1	Frequency Response (+/-3 dB) should between 95 Hz – 17kHz
2.2	Frequency Range (-10 dB) should between 80 Hz - 19 kHz
2.3	Nominal Impedance should be greater than 8 Ω (transformer bypassed)
3	Dimension

Technical Requirements:	
7.5.	Should have at least one (1) x RS-232 Input
7.6.	Should have at least one (1) x USB 2.0 Type A
7.7.	Should have at least one (1) x RJ45
7.8.	Should have at least one (1) x DisplayPort Input
7.9.	The dimension including pallet should not exceed the following: <ul style="list-style-type: none"> • Width: 142.8cm • Height: 97.8cm • Depth: 12cm • Weight: 60.9kg (134lb)
7.10.	Should be Standard VESA 300mm x 400mm compatible
7.11.	Should meet regulatory compliance: <ul style="list-style-type: none"> • UL (US/Canada), FCC, IC, CE Mark, RCM Mark

Section B – AV Input Faceplate

Product	AV Input Faceplate
Warranty:	Minimum 1 Year with labour and parts

AV Input Faceplate – Technical Specifications Requirement	
1.	Input
1.1	All Digital input have with HDCP and at least below, <ul style="list-style-type: none"> • HDMI x1 • VGA x1 • Display Port x1

Section C – HDMI Extender – Receiver Side

Product	HDMI Extender – Receiver Side
Quantity	4
Warranty:	Minimum 1 Year with labour and parts

Technical Specifications Requirement	
1.	HDMI Extender – Transceiver Technical Specification Requirement
1.1.	Rack-mountable receiver for HDMI, audio, and control
2.	Video output requirements
2.1.	Provide one (1) video output for digital video signals <ul style="list-style-type: none"> • Supported HDMI specifications include data rates up to 10.2 Gbps, Deep Colour up to 12-bit, 3D, HD lossless audio formats, and CEC pass-through
3.	Audio output requirements
3.1.	Support embedded digital audio on HDMI output
3.2.	Provide a dedicated analog audio output connection <ul style="list-style-type: none"> • One (1) stereo analog audio
4.	Control output requirements
4.1.	Provide communication connections for AV device control <ul style="list-style-type: none"> • One bidirectional RS-232 pass-through • One bidirectional IR pass-through
5.	Interconnection requirements

Technical Specifications Requirement	
5.1.	Support interconnection between receiver and transmitter all matrix and HDMI extender as specified in this tender <ul style="list-style-type: none"> One RJ-45 twisted pair connection
6.	Transmission requirements
6.1.	Provide signal transmission distance capability of 330 feet (100 m) at 1920x1200, including 1080p @ 60 Hz and 2K using a shielded CATx cable
6.2.	Support signal transmission distance capability of 4K @ 30 Hz, UHD, and 2560x1600 up to 130 feet (40 m) using a shielded CATx cable
6.3.	Support video, audio, and control over a single shielded CATx cable
6.4.	Support embedded HD lossless audio formats
6.5.	Actively buffer DDC channels
7.	Resolution requirements
7.1.	Support computer and video resolutions up to 4K, including 1080p/60 Deep Colour
7.2.	Support RGB and YCbCr digital video formats
8.	Audio requirements
8.1.	The unit shall support analog stereo audio pass-through signals
8.2.	The unit shall support multiple embedded audio formats
8.3.	The unit shall support embedded HD lossless audio formats
9.	HDCP requirements
9.1.	The unit shall be HDCP compliant
10.	Communication requirements
10.1.	The unit shall support bidirectional RS-232 communication pass-through up to 115200 baud
10.2.	The unit shall support bidirectional IR pass-through
10.3.	The unit shall support EDID and HDCP transmission
11.	Power requirements
11.1.	The unit shall support remote power capability
11.2.	The unit shall support being locally powered
12.	General requirements
12.1.	The unit shall be HDCP 2.2 compliant with backward compatibility with earlier HDCP versions
12.2.	The unit shall be compatible with CATx shielded twisted pair cable
12.3.	The unit shall support HDMI specifications including data rates up to 10.2 Gbps, Deep Colour, 3D, HD lossless audio formats, and CEC pass-through
12.4.	The unit shall support being locally or remotely powered
12.5.	The unit shall support embedded HD lossless audio formats
12.6.	The unit shall support the use of HDMI to DVI-D cables or adapters for DVI-D
12.7.	The unit shall have a low-profile enclosure and versatile mounting capability
12.8.	Shall provide visual indication for signal presence and power
12.9.	shall meet regulatory compliances <ul style="list-style-type: none"> CE, c-UL, UL CE, C-tick, FCC Class A, ICES, VCCI

Section D – HDMI Extender – Transmitter Side

Product	HDMI Extender - Transceiver
Quantity	4
Warranty:	Minimum 1 Year with labour and parts

Technical Specifications Requirement	
1.	HDMI Extender – Transceiver Technical Specification Requirement
1.1.	Rack-mountable transmitter for the transmission of HDMI, audio, and control
2.	Video input requirements
2.1.	Provide one (1) video input for digital video signals <ul style="list-style-type: none"> Supported HDMI specifications include data rates up to 10.2 Gbps, Deep Colour up to 12-bit, 3D, HD lossless audio formats, and CEC pass-through
3.	Audio input requirements
3.1.	Support embedded digital audio on HDMI input
3.2.	Provide a dedicated analog audio input connection <ul style="list-style-type: none"> One (1) stereo analog audio
4.	Control input requirements
4.1.	Provide communication connections for AV device control <ul style="list-style-type: none"> One bidirectional RS-232 pass-through One bidirectional IR pass-through
5.	Interconnection requirements
5.1.	Support interconnection between receiver and transmitter all matrix and HDMI extender as specified in this tender <ul style="list-style-type: none"> One RJ-45 twisted pair connection
6.	Transmission requirements
6.1.	Provide signal transmission distance capability of 230 feet (70 m) at 1920x1200, including 1080p @ 60 Hz and 2K using a shielded CATx cable
6.2.	Support signal transmission distance capability of 4K @ 30 Hz, UHD, and 2560x1600 up to 130 feet (40 m) using a shielded CATx cable
6.3.	Support video, audio, and control over a single shielded CATx cable
6.4.	Support embedded HD lossless audio formats
6.5.	Actively buffer DDC channels
7.	Resolution requirements
7.1.	Support computer and video resolutions up to 4K, including 1080p/60 Deep Colour
7.2.	Support RGB and YCbCr digital video formats
8.	Audio requirements
8.1.	The unit shall accept additional analog stereo audio signals for simultaneous transmission with HDMI embedded audio
8.2.	The unit shall support multiple embedded audio formats
8.3.	The unit shall support embedded HD lossless audio formats
9.	HDCP requirements
9.1.	The unit shall be HDCP compliant
10.	Communication requirements
10.1.	The unit shall support bidirectional RS-232 communication pass-through up to 115200 baud
10.2.	The unit shall support bidirectional IR pass-through

Technical Specifications Requirement	
10.3.	The unit shall support EDID and HDCP transmission
11.	Power requirements
11.1.	The unit shall support remote power capability
11.2.	The unit shall support being locally powered
12.	General requirements
12.1.	The unit shall be HDCP compliant
12.2.	The unit shall support HDMI specifications including data rates up to 10.2 Gbps, Deep Colour, 3D, HD lossless audio formats, and CEC pass-through
12.3.	The unit shall support being locally or remotely powered
12.4.	The unit shall support embedded HD lossless audio formats
12.5.	The unit shall support the use of HDMI to DVI-D cables or adapters for DVI-D
12.6.	The unit shall have a low-profile enclosure and versatile mounting capability
12.7.	Shall provide visual indication for signal presence and power
12.8.	Shall meet regulatory compliances <ul style="list-style-type: none"> • CE, c-UL, UL • CE, C-tick, FCC Class A, ICES, VCCI
12.9.	Shall provide at least 1 year parts and labour warranty

Section E – Speaker

Product	4K Multi-Input Switcher - Transmitter
Quantity	8
Warranty:	Minimum 1 Year with labour and parts

Technical Requirements:	
1.	Functional
1.1	It shall be a full-range loudspeaker with a single 2.25" (57mm) full-range driver in a ported enclosure designed for surface mounting in background music and paging applications
1.2	It should Mounting hardware allows for horizontal and vertical orientation with adjustable pitch or yaw
1.3	It should be integrated multi-tap transformer with innovative thumb wheel adjustment for easy-to-change tap settings from under front end cap
1.4	It should support a suite of accessories, including wall-mount bracket, ceiling-mount bracket, pole-mount bracket and junction boxes
2.	Technical Specification
2.1	Frequency Response (+/-3 dB) should between 95 Hz – 17kHz
2.2	Frequency Range (-10 dB) should between 80 Hz - 19 kHz
2.3	Nominal Impedance should be greater than 8 Ω (transformer bypassed)
3.	Dimension
3.1	Should not greater than: <ul style="list-style-type: none"> • Height: 124 mm • Width: 250 mm • Depth: 117 mm • Net Weight: 1.8kg

Section F – Display Trolley [No Use]

Product:	Display Trolley
Warranty:	Minimum 1 Year with labour and parts

Configuration Requirements:	
1.—	General
1.1.—	Continuous vertical adjustment for perfect viewing height
1.2.—	Incremental tilt: at least -2 degree, 0 degree and +5 degree locks in the ideal viewing angle
1.3.—	Internal cable management for clean, clutter free look
1.4.—	Manoeuvres easily on 4" (102mm) swivel casters, two locking
1.5.—	At least 1 metal shelf should be included

Technical Requirements:	
1.—	Specifications
1.1.—	Supported screen size: Between 32" to 75"
1.2.—	Mounting pattern: from 200mm x 200mm to 600mm x 400mm
1.3.—	Weight Capability: at least 68 kg
1.4.—	Tilt: at least -5 degree
1.5.—	Swivel: 360 degree
1.6.—	Certifications: UL
1.7.—	Dimension: not larger than (W)864 x (H) 1520 x (D)697mm
1.8.—	Product weight: not heavier than 30kg

Section G – Wireless Sharing system for BYOD, Mac and Laptop

Product:	Wireless Sharing for system BYOD, Mac and Laptop
Warranty:	Minimum 1 Year labour and parts

Technical Requirements:	
1.	Functional
1.1	Should provide a wireless connection for personal devices to enable BYOD content presentation on a shared display or displays
1.2	Support Wireless content sharing from Microsoft Windows® and OS X® computers as well as Apple® and Android® smartphones, and tablets
1.3	Support operation systems up to Windows® 7/8/10, Mac® OS X (10.7-10.11), Apple® iOS 7.0 or later, Android 4.0 or later
1.4	Support Airplay by Apple
2.	Digital video output requirements
2.1	Should provide one (1) HDMI Type A connector for digital video signals with embedded audio
2.2	Should support 720p, 1080i, and 1080p resolutions
3.	Analog video output requirements

Technical Requirements:	
8.8	Should provide an on-screen display – OSD menu for content presentation from a USB mass storage device
8.9	Should provide WebShare technology to enable attendees to view slide images on personal devices via a wireless connection and a Web browser
9.	Power requirements
9.1	Should provide connection for 5 VDC power on one coaxial connector
9.2	Should be equipped with an external, universal AC power supply capable of supporting 100 - 240 VAC, 50/60 Hz power
9.3	Should be PoE IEEE 802.3at, class 20 (type I), Power over Ethernet compliant
10.	General requirements
10.1	Should support the use of HDMI to DVI-D cables or adapters for DVI-D signals
10.2	Should provide an LED indicator on the front panel for visual indication of power
10.3	Should have a 1" (2.5 cm) high, three-eighths rack width metal enclosure
10.4	Should have two (2) front-mounted antennas that pivot
10.5	Should be rack mountable with optional rack shelf
10.6	Should be furniture or wall mountable with optional mounting kits
10.7	Should meet regulatory compliance: <ul style="list-style-type: none"> • CE, c-UL, UL • UL Listed for use in plenum air handling spaces: UL 2043 for heat and smoke release • CE, C-tick, FCC Class A, ICES, VCCI • Appropriate requirements of RoHS, WEEE

Section G - All-in-one Video Matrix and Control Processor

Product	All-in-one video matrix and control processor
Quantity	2 sets
Warranty	Minimum 3 years including labor and parts

Technical Requirements:	
1.	Functional Description
1.1.	Scaling presentation matrix that at least up to EIGHT ("8") inputs and FOUR ("4") output for matrix switching of HDMI sources, at least one digital audio expansion port, 4K upscaling and downscaling
1.2.	Support signal extension over shielded CATx cable and audio digital signal processing with AEC
2.	Video Input

2.1.	At least SIX ("6") HDMI inputs
2.2.	At least TWO ("2") RJ-45 for video from the HDMI Extender (transceiver) as specified in this tender specifications
2.3.	Support 4K and UHD signals at all inputs
2.4.	Provide image adjustments for the twisted pair outputs, including brightness, contrast, color, tint, detail, H/V positioning, and sizing
2.5.	Provide storage and recall of video parameters and picture settings when activated for the scaled RJ-45 output
2.6.	Automatic memories for each video input <ul style="list-style-type: none"> 1 Save video settings and picture adjustments without user intervention 2 Automatically recall settings when the same video rate is encountered 3 The user may selectively enable or disable automatic memories
2.7.	Manual user preset <ul style="list-style-type: none"> • Save picture adjustments • User presets may be saved and recalled using front panel controls • User presets may be saved and recalled electronically via Ethernet, RS-232, or USB connection
2.8.	Manual Input Preset <ul style="list-style-type: none"> • Save video settings and picture adjustments • Input presets may be saved and recalled electronically via Ethernet, RS-232, or USB connection
2.9.	Support HDMI specifications including data rates up to 10.2 Gbps, Deep Color up to 12-bit, 3D, and HD lossless audio formats
2.10.	Support video transmission over shielded CATx up to 330 feet (100 meters)
3.	Video Output Requirement
3.1.	Support at least TWO ("2") HDMI Output
3.2.	Support at least TWO ("2") RJ-45 for video output
3.3.	The RJ-45 video output should be compatible with the HDMI Extender (receiver) as specified in this tender
3.4.	Shall be configurable for sending digital video and embedded audio, plus bidirectional RS-232 and IR signals to HDBaseT-enabled displays
3.5.	Shall support mirrored content between at least two of the the RJ-45 outputs and the two corresponding HDMI outputs for local monitoring
3.6.	Provide a range of selectable scaled RJ-45 output rates from 640x480 to 4K, including 2560x1600 and 1080p/60
3.7.	Support 4K and UHD signals at the four HDMI outputs
3.8.	Provide independent scaling for each RJ-45 video output <ul style="list-style-type: none"> • Provide image scaling and video format conversion at 30-bit precision for signals up to 4K • Support motion-adaptive deinterlacing for signals up to 1080i
3.9.	Provide internal test patterns for the scaled RJ-45 video outputs to facilitate system setup and calibration
3.10.	Support upload and placement of custom logo graphics at any position on any of the scaled outputs <ul style="list-style-type: none"> • Support logo placement as a foreground image • Shall support uploading logo graphics in BMP, JPG, PNG, or TIFF format • Shall support displaying full screen images up to 4096x2400 resolution • Shall support up to 16 logo presets
3.11.	Support muting of one or all video outputs at any time
3.12.	Support automatic muting of video and sync output when no video signal is present <ul style="list-style-type: none"> • Provide a choice to generate a blue screen or a black screen before disabling sync • Provide a configurable timeout period before disabling sync • The user may selectively enable or disable automatic muting of sync output
3.13.	Support the connection of DVI displays that do not recognize HDMI-specific formats <ul style="list-style-type: none"> • Automatically enable or disable embedded TMDS audio and InfoFrames • Automatically set the correct color space
3.14.	Support video transmission over shielded CATx up to 330 feet (100 meters)
3.15.	Provide automatic relocking of HDMI video signals at each HDMI output
4.	Switching Requirement
4.1.	Provide video and audio matrix switching between any input and any output

	<ul style="list-style-type: none"> Support incoming 4K and UHD signals at all inputs Support routing of 4K and UHD signals to the two HDMI outputs Support routing of scaled 4K or UHD video signals to the four RJ-45 video outputs
4.2.	<p>Provide storage and recall of input and output ties</p> <ul style="list-style-type: none"> Save video and audio ties between inputs and outputs Presets may be recalled using front panel controls Presets may be saved and recalled electronically via Ethernet, RS-232, or USB connection
4.3.	Provide the ability to view which inputs and outputs are actively connected
4.4.	<p>Provide selectable transition effects when switching inputs</p> <ul style="list-style-type: none"> Freeze/Fade: video output shall fade out a final frozen frame of the previous input source as the newly selected input source fades in Cut: video output shall cut to black, then cut to the newly selected input source Fade: video output shall fade to black, then fade into the newly selected input source
5.	EDID Requirements
5.1.	<p>Provide automatic EDID management between connected devices</p> <ul style="list-style-type: none"> Provide a set of pre-stored EDID files Support capture of EDID from any connected display Support user uploading of custom-generated EDID files Support assignment of pre-stored, captured, or custom uploaded EDID files for each input connection
6.	HDCP Requirements
6.1.	The unit shall be HDCP Compliant
6.2.	Provide authentication and maintain continuous verification of HDCP key exchange with connected sink devices
6.3.	Provide authentication and maintain continuous verification of HDCP key exchange with connected source devices
6.4.	Provide the option to disable HDCP processing at any HDMI input connection when passing unencrypted content
6.5.	<p>Provide selectable, human-readable visual confirmation of HDCP compliance when encrypted content is routed to a non-HDCP compliant display</p> <ul style="list-style-type: none"> When enabled, the video output shall be a solid green color and an on-screen message stating "HDCP CONTENT" shall be displayed When disabled, the output shall be muted
6.6.	<p>Provide real-time verification of HDCP status for each HDMI input and output</p> <ul style="list-style-type: none"> Electronically accessible over Ethernet, RS-232, or USB connection
7.	Audio Requirements
7.1.	<p>Provide audio input connections</p> <ul style="list-style-type: none"> Support embedded audio on six HDMI connectors Support embedded and analog audio on two RJ-45 connectors Support six stereo line level, balanced or unbalanced signals on six 5-pole, 3.5 mm captive screw connectors Support four mono, microphone or line level, balanced or unbalanced signals with +48 volt phantom power on four 3-pole, 3.5 mm captive screw connectors
7.2.	<p>Provide audio output connections</p> <ul style="list-style-type: none"> Support embedded audio on two HDMI connectors Support embedded and analog audio on four RJ-45 connectors Support four stereo line level, balanced or unbalanced signals with independent output level control on four 5-pole, 3.5 mm captive screw connectors Support S/PDIF digital audio signal on one RCA connector Support one stereo speaker level signal or two mono speaker level signals on one 4-pole, 5 mm captive screw connector
7.3.	<p>Provide stereo amplification for low impedance speaker systems</p> <ul style="list-style-type: none"> Support one stereo speaker level signal or two mono speaker level signals on one 4-pole, 5 mm screw-lock captive screw connector Provide a total of 100 watts rms output power with 50 watts rms per channel into 4 ohms, or 25 watts rms per channel into 8 ohms measured at 1 kHz with 0.1% THD Provide a THD+N measurement of less than 0.1 % measured at 3 dB below clipping Provide a signal-to-noise ratio of greater than 90 dB measured from 20 Hz to 20 kHz, unweighted

	<ul style="list-style-type: none"> Utilize an efficient Class D amplifier design Provide Class D Ripple Suppression technology Provide an automatic clip limiter to detect onset of clipping by comparing input and output waveforms and automatically reduce gain with a slow attack and fast release to eliminate clipping distortion Provide multiple protection circuits that activate during output shorts, thermal overload, or DC faults
7.4.	Provide 64-bit floating point DSP engine <ul style="list-style-type: none"> Support 32-bit and 64-bit processing algorithms Provide a deterministic latency from input to output Provide additional, deterministic latency when Virtual Path routing is used Provide additional, deterministic latency when Automixing is used Provide additional, deterministic latency when AEC is used
7.5.	Support embedding of any analog audio input signal onto the matrix video outputs
7.6.	Support extraction of two-channel PCM HDMI audio signals to the analog stereo outputs, or route embedded multi-channel bitstream audio to the HDMI outputs
7.7.	Support de-embedding, processing, and re-embedding of two-channel PCM HDMI audio signals onto the HDMI outputs
7.8.	Support mixing of program audio and mic/line audio signals
7.9.	Support mic audio mixed with program audio onto the HDMI/twisted pair extender outputs, variable audio outputs, S/PDIF audio output, and amplified audio output
7.10.	Provide the capability to break two-channel audio away from its corresponding video signal and route to the audio outputs, allowing the audio and video signals from one source to be switched to different destinations
7.11.	Provide adjustable, automatic ducking of program audio when a signal is detected on the microphone input
7.12.	Program audio shall automatically ramp up to reach the original volume level when audio is no longer detected on the microphone input
8.	Expansion Port Requirements
8.1.	Support 16 incoming signals and 16 outgoing signals
8.2.	Provide uncompressed digital audio at 48 kHz sampling rate with 24-bit resolution
9.	Automixer Requirements
9.1.	Shall provide Automixer Group selection for optional channel assignment into any of eight groups
9.2.	Shall provide gated and gain sharing automixer types
9.3.	Shall provide Last Mic Open Priority and Chairman Priority modes
9.4.	Shall provide Number of Open Microphone parameter from 0 to 12 microphones
9.5.	Shall provide Gate Threshold level and adjustable Off Reduction level for gated channels
9.6.	Shall provide adjustable parameters for Attack, Hold, and Release times
9.7.	Shall provide real-time metering of Signal Level, Gate Status, and Gate Threshold target from within the Automix parameter setup window in the DSP Configuration software
9.8.	Shall provide global view with Gate Status indication of all channels assigned to an automixer group, within the DSP Configuration software
10.	AEC - Acoustic Echo Cancellation Processing Requirements
10.1.	Shall provide four independent channels of AEC
10.2.	Shall provide real-time software-based metering of Echo Return Loss, Echo Return Loss Enhancement, and Total Echo Reduction levels
10.3.	Shall provide real-time indication of remote site activity, local site activity, and AEC processor reconverging
10.4.	Shall provide up to 20 dB of selectable noise cancellation for each AEC channel
10.5.	Shall provide advanced controls and adjustable parameters for Non-Linear Processing, Double Talk Echo Reduction, and Comfort Noise for each AEC channel
10.6.	Shall provide greater than 200 milliseconds of AEC tail length
10.7.	Shall provide up to 60 dB per second AEC convergence rate
11.	DSP Configuration Software Requirement
11.1.	Shall support PC-based DSP configuration software, allowing flexible control of the integrated digital signal processing
11.2.	Shall provide a Live mode for real-time control of parameters without compiling and file uploading to matrix switcher
11.3.	Shall provide an Emulate mode for offline configuration
11.4.	Shall provide single window view of all inputs and outputs, audio processing blocks, routing, mix

	points, and virtual routing
11.5.	Shall provide setup and configuration of digital signal processing tools including, but not limited to: Filters (high pass, low pass, bass, treble, and parametric EQ); AEC; Dynamics processing (AGC, compressor, limiter, noise gate); Delay processing; Ducking processor; Automixing; Loudness processor; and multiple gain stages
11.6.	Shall provide cut and paste editing between processing blocks
11.7.	Shall provide matrix routing with integrated mix point gain adjustment between inputs, outputs, virtual sends, virtual returns, expansion inputs, and expansion outputs
11.8.	Shall provide a library of pre-designed processor settings for inputs and outputs with user-customizable parameters
11.9.	Shall provide 32 Group Master controls for consolidation of up to 28 individual gain or mute control members of the same type into one point of control
11.10.	Shall provide Soft Limits settings to define upper and lower control limits on Group Masters for use with external controls
11.11.	Shall provide 32 Presets for recall of any processing block setting, level setting, or audio routing; presets shall be saved for the entire system, or any selected partial groups of inputs, outputs, mix points, and DSP blocks
11.12.	Shall provide real-time metering of levels within each Input Gain, AEC, AGC, Compressor, Limiter, Noise Gate, Automixer, and Output Volume processing block in Live mode
11.13.	Shall provide a Meter Bridge window for real-time metering of all input and output channels with clipping indication in Live mode
11.14.	Shall provide keyboard-based navigation of configuration software utilizing directional controls, keyboard shortcuts, and spreadsheet software-style commands
11.15.	Shall provide file saving in both Live and Emulate mode
11.16.	Shall provide file upload in both Live and Emulate mode
12.	Integrated Control Processor Requirements
12.1.	Provide AV system control connections
12.2.	At least Three RJ-45: 10/100/1000Base-T Ethernet <ul style="list-style-type: none"> • Shall support connection of the touchpanels specified in this specification and other network controlled devices • Shall act as a three port unmanaged network switch
12.3.	At least Two 3-pole captive screw: RS-232, configurable for unidirectional or bidirectional control of AV system components
12.4.	At least One 5-pole captive screw: RS-232/RS-422/RS-485, configurable for unidirectional or bidirectional control of AV system components
12.5.	At least Two IR/serial ports on one 5-pole captive screw: IR (using an IR emitter) or unidirectional RS-232 for control of AV system components
12.6.	At least Four low voltage relays on one 6-pole captive screw: configurable for controlling lighting, controlling screens, or other device functions
12.7.	At least Four digital input/output ports on one 5-pole captive screw: configurable for use as an interface with devices such as sensors, switches, LEDs, and relays
12.8.	Shall support the following protocols: ICMP (ping), IPv4, TCP, UDP, DHCP, DNS, HTTP, HTTPS, NTP, SFTP, SMTP, SNMP, SSH
12.9.	Shall support a Web-based AV resource management application that provides a means to manage, monitor, and control AV equipment
12.10.	Provide an internal real-time clock with a 30-year backup battery that is used to keep track of the date and time
12.11.	Provide front panel LED activity indicators for RS-232 status, RS-232/RS-422/RS-485 status, IR/serial status, digital I/O status, relay status, eBUS status, and network status
12.12.	Shall support control system synchronization to allow users to retain and recover configured endpoints in case of network or power failure
13.	Control/remote - RS-232 and IR Pass-Through Over Shielded CATx Requirements
13.1.	Provide connections for AV device control <ul style="list-style-type: none"> • Two 5-pole captive screw: RS-232 or IR pass-through to twisted pair transmitters • Four 5-pole captive screw: RS-232 or IR pass-through to twisted pair receivers
13.2.	Support RS-232 and IR transmission over shielded CATx up to 330 feet (100 meters)
14.	Control/Remote - Matrix Switcher Requirements
14.1.	Provide connections for remote matrix switcher control <ul style="list-style-type: none"> • RJ-45: 10/100Base-T Ethernet • 3-pole captive screw: RS-232 • Mini USB-B: USB 2.0
14.2.	Provide alternatives for configuration and operation

	<ul style="list-style-type: none"> • Front panel controls • Built-in Web pages accessible using a standard Web browser via Ethernet connection • Product configuration software connected via Ethernet or USB • Serial commands sent over Ethernet, RS-232, or USB connection
14.3.	Support disabling of front panel controls to prevent inadvertent or unauthorized changes to configuration settings
15.	General Requirements
15.1.	Provide real-time verification of signal flow and operation from the HDMI transmitter or HDMI receiver as specified in this tender <ul style="list-style-type: none"> • Directly readable on RJ-45 signal and link LEDs
15.2.	Shall be compatible with CATx shielded twisted pair cable,
15.3.	Shall provide remote power to two HDMI transmitters and four HDMI receivers over the shielded CATx connections
15.4.	Shall provide power to external peripheral devices on each HDMI output
15.5.	Enclosure shall be rack-mountable, full rack width, and 3RU in height
15.6.	Shall be equipped with an internal 100-240 VAC, 50/60 Hz universal power supply

Section H - Furniture mountable enclosure with Touch Panel for Room Control, Cable management and AC Power

Product	Furniture mountable enclosure with Touch Panel for Room Control, Cable management and AC Power
Quantity	2 Sets
Warranty	Minimum 3 years with labor and parts.

Configuration Requirements:	
1.	General
1.1.	Should include at least two (2) HDMI
1.2.	Should include at least two (2) VGA Female and stereo audio
1.3.	Should include at least two (2) Mini Display Port
1.4.	The retractor cable length should at least five (5) feet (152cm)
1.5.	Should include proper cover and filler module filling those empty slot in the enclosure

Technical Requirements:	
1.	General
1.1.	Furniture-mountable flip-up touchscreen user interface for AV and control systems.
1.2.	Should provide a flip-up color touchscreen of at least 7' in size, that supports up to 256k colors and 800x480 resolution
1.3.	Should support the Central Control Processor Unit as specified in this tender
1.4.	Should provide built-in speaker located in the center of the cable cubby portion of the touch panel which can be configured to provide button feedback
1.5.	Should have a female RJ-45 jack located on the back of the enclosure that supports 10/100Base-T, half/full duplex with auto-detect for connection to a LAN or WAN and includes link and activity LED indicators located on the left and right of the jack for troubleshooting network issues as well as supports PoE- Power over Ethernet, 802.3af
1.6.	Should support the following protocols: DHCP, DNS, HTTP, HTTPS, ICMP, SFTP, SMTP, SSH, TCP/IP, UDP/IP
1.7.	Should provide a light sensor located on the top bezel of the touch panels that automatically adjusts the LCD screen's backlight based on available ambient light
1.8.	Should provide a front panel network status LED that blinks red if the touch panel loses network connectivity with the control processor
1.9.	Should have a menu button located under the on the front bezel of the touch panel for setup of items such as IP address and sound volume at minimum
1.10.	Should have the following memory available, at minimum: <ul style="list-style-type: none"> • SDRAM: 512MB

	<ul style="list-style-type: none"> Flash: 512MB
1.11.	Should have an optional 12 volt captive screw connection located on the bottom of the enclosure should PoE not be available
1.12.	Should include a multi-function button that allows for the reset of the device or its communication properties at minimum
1.13.	Should have the ability to be controlled by an Apple iPad as a secondary point of control
1.14.	Should have a top surface black in color
1.15.	Should provide an integrated lid switch which can be configured to automatically wake the touch panel when open and can trigger any other system functions
1.16.	Should include a cable cubby design for AV, data, and power connections <ul style="list-style-type: none"> <input type="checkbox"/> Should support AV cable retraction systems <input type="checkbox"/> Should support AAP's – Architectural Adapter Plates
1.17.	Should provide LED lighting located which illuminates the cable cubby portion of the panel
1.18.	Should support power modules from the US, Europe, and other world markets
2.	Mounting Requirements
2.1.	Should have the ability to be mounted in a flat surface such table or other piece of furniture
3.	Software Requirements
3.1.	User interface should be created using a software configurator for GUI design instead of programming
3.2.	Touch panel may be configured using a software configurator instead of programming
3.3.	Shall meet regulatory compliances: <ul style="list-style-type: none"> CE UL c-UL C-tick FCC Class A ICES VCCI RoHS WEEE
4.	Product Warranty
4.1.	Should provide at least 3 years parts and labor
4.2.	Should provide 1 year touchscreen and overlay components

Section I – Wall Installed Touch Control Panel

Product	Wall Installed Touch Control Panel
Quantity	2 sets
Warranty:	Minimum 3 Years with labor and parts

Technical Requirements:	
1.	General Requirement
1.1.	Provide an LCD color touchscreen (Wall Mounted) that supports up to 256k colors and minimum 800 x 480 resolution. Minimum screen size: 5"
1.2.	Device shall support central control processor specified in this tender
1.3.	Provide built-in speakers located in the bottom left and right corners of the touchpanel which can be configured to provide button feedback
1.4.	Device shall have a female RJ-45 jack located on the back of the enclosure that supports 10/100Base-T, half/full duplex with auto-detect for connection to a LAN or WAN and includes link and activity LED indicators located on the left and right of the jack for troubleshooting network issues as well as supports PoE- Power over Ethernet, 802.3af
1.5.	Device shall support the following protocols: DHCP, DNS, HTTP, HTTPS, ICMP, SFTP, SMTP, SSH, TCP/IP, UDP/IP
1.6.	Provide integrated and configurable red/green led status lights located on the upper left and right corners of the touchpanel
1.7.	Provide a built-in configurable motion sensor located below the center of the touch surface allowing the panel to be woken from a sleep state or configured via software to trigger any number of actions

1.8.	Provide a light sensor located on the top bezel of the touchpanels that automatically adjusts the LCD screen's backlight based on available ambient light
1.9.	Provide a front panel network status LED that blinks red if the touchpanel loses network connectivity with the control processor
1.10.	Device shall have a menu button located on the back of the touchpanel for setup of items such as IP address and sound volume at minimum
1.11.	Device shall have the following memory available, at minimum: SDRAM: 512MB Flash: 512MB
1.12.	Device shall have an optional 12 volt captive screw connection located on the back of the panel should PoE not be available
1.13.	Device shall include a multi-function button that allows for the reset of the device or its communication properties at minimum
1.14.	Device shall have the ability to be controlled by an Apple iPad as a secondary point of control
1.15.	Device shall be black in color
2.	Mounting Requirement
2.1.	Device shall have the ability to be mounted directly in a wall, lectern, or other flat surface and shall be able to be secured using the built-in four locking arms located on the top and bottom of the panel respectively or by using an optional back box
2.2.	Device shall have the ability to be mounted to the surface of a wall using an optional wall box
2.3.	Device shall have the ability to be mounted to a glass surface using an optional glass mounting kit
2.4.	Device shall have the ability to be mounted into a rack using an optional rack mount kit
3.	Software Requirement
3.1.	User interface shall be created using GUI-based designer software
3.2.	Touchpanel may be configured using the GUI-based designer software
4.	Regulatory Compliance
4.1.	CE
4.2.	UL
4.3.	c-UL
4.4.	C-tick
4.5.	FCC Class A
4.6.	ICES
4.7.	VCCI
4.8.	RoHS
4.9.	WEEE
5.	Regulatory Compliance
5.1.	Shall provide at least 3 years parts and labor
5.2.	Shall provide 1 year touchscreen and overlay components
5.3.	The clamps shall be permanently affixed to the enclosure body
5.4.	The clamps shall utilize a lever-and-cam mechanism
5.5.	The clamps shall secure the enclosure to the furniture without the need for tools or additional parts
5.6.	The clamps shall allow for removal of the enclosure from the furniture without the need for specialized tools
6	An Internet-accessible application for enclosure configuration and visualization shall be available
6.1	Application shall provide for selection of the enclosure, AC power modules, AV cables, AV connectivity plates, and cable retraction modules
6.2	Application shall provide accurate depiction of power and connectivity selections
6.3	Application shall provide a method of saving a representation of the configured enclosure and corresponding bill of materials
6.4	Application shall provide market-specific pricing of the configured enclosure for budgetary purposes

Section J – 4K TV Set-Top-Box

Product	4K TV Set-Top-Box
Quantity	1 set

Warranty:	Minimum 1 Year with labor and parts
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Technical Requirements:	
1.	General Requirement:
1.1	It should built-in Wi-Fi module and supports 2.4G/5G B/G/N/AC connection mode
1.2	Have SD and Micro USB Slots to allow to play media from SD card or other attached storage
1.3	It shoul built-in browser to allow the user connect the set-top-box to the internet to browse and search programmes
1.4	It should allow to install the apps from the apps store
1.5	It should built-in with 1000GB Hard Disk Drive
1.6	It should have power saving mode for energy saving.
1.7	It should support MPEG 2, MPEG 4 AVC/H.264 and HEVC/H.265 video decoding formats
1.8	It should support Dolby Digital and PCM audio. Includes downmixing for Stereo systems
1.9	It should support output TV formats, 4K (3840x2160) 24/25/50/60Hz 1080p 50/60Hz 1080i 50/60Hz 720p 50/60Hz 576p 50Hz 480p 60Hz
2.	Rear Connection:
2.1	It should have at least one (1) antenna input and one (1) antenna loop-through
2.2	It should have at least one (1) HDMI output with embedded audio and it must support HDMI 2.0, HDCP 2.2
3.	Dimension
3.1	Should not greater than, Height: 56mm Width: 220mm Depth: 220mm Net Weight: 1.2 kg

Section K - Three-Input switcher with signal extension

Product	Three-input switcher with signal extension
Quantity	2 sets
Warranty	Minimum 3 years including labor and parts

Technical Requirements:	
1.	Video Input Requirement
1.1.	Provide video input connections <ul style="list-style-type: none"> • At least one DisplayPort • At least one HDMI • At least one 15-pin HD for analog video
1.2.	Shall digitize analog video input signals up to 1920x1200 prior to transmission to the digital video output
1.3.	Supported HDMI specifications include data rates up to 10.2 Gbps, Deep Color up to 12-bit, 3D, and HD lossless audio formats
1.4.	Shall support DisplayPort SST - Single Stream Transport data rates up to 10.8 Gbps

1.5.	Support digital video resolutions up to 4K, including 1080p/60 Deep Color
2.	Video Output Requirements
2.1.	Provide video output connections <ul style="list-style-type: none"> • One RJ-45 for connection to the video matrix as specified in this tender
2.2.	Support connection of DVI displays that do not recognize HDMI-specific formats <ul style="list-style-type: none"> • Automatically enable or disable embedded TMDS audio and InfoFrames • Automatically set the correct color space
2.3.	Provide signal transmission distance capability of 230 feet (70 m) at 1920x1200, including 1080p @ 60 Hz and 2K using a shielded CATx cable
2.4.	Provide signal transmission distance capability of 4K @ 30 Hz, UHD, and 2560x1600 up to 130 feet (40 m) using a shielded CATx cable
2.5.	Shall be configurable for sending digital video and embedded audio, plus bidirectional RS-232 and IR signals to an HDBaseT-enabled display
3.	Switching Requirements
3.1.	Automatically switch to the active input
3.2.	Provide a configurable switching priority when multiple inputs are active <ul style="list-style-type: none"> • High to low: highest numbered input has priority • Low to high: lowest numbered input has priority
3.3.	Provide the capability to set the analog audio input to follow the input switch
4.	HDCP Requirements
4.1.	The unit shall be HDCP compliant
4.2.	Shall provide the option to disable HDCP processing at the DisplayPort or HDMI input connection when passing unencrypted content
4.3.	Provide real-time verification of HDCP status for each digital video input <ul style="list-style-type: none"> • Accessible through front panel LEDs • Electronically accessible over RS-232 or USB connection
5.	Audio Requirements
5.1.	Provide audio input connections <ul style="list-style-type: none"> • At least One DisplayPort, embedded • At least One HDMI, embedded • At least One 3.5 mm stereo mini jack, unbalanced analog stereo
5.2.	Provide audio output connection <ul style="list-style-type: none"> • At least one RJ-45, HDMI embedded and analog audio
5.3.	Provide the capability to assign the analog audio input to any video input
5.4.	Provide the capability to set the analog audio input to follow the input switch
5.5.	Support embedding analog stereo audio signals onto the digital video output signal and transport over CATx cables
5.6.	Support multiple embedded audio formats
5.7.	Support audio transmission over shielded CATx up to 230 feet (70 meters) <ul style="list-style-type: none"> • Shall digitize analog stereo audio input for transmission over shielded CATx
6.	Control/Remote – Switcher Control Requirements
6.1.	Provide connections for remote switcher control <ul style="list-style-type: none"> • At least one 3-pole captive screw: RS-232 • At least one Mini USB-B: USB 2.0 • At least one 4-pole captive screw: contact closure • At least one 4-pole captive screw: tally
6.2.	Provide alternatives for configuration and operation <ul style="list-style-type: none"> • Front panel controls • Product configuration software connected via USB • Serial commands sent over RS-232 or USB connection
6.3.	Tally output shall provide +5 VDC to light an LED indicating the currently selected input
6.4.	Support disabling of front panel controls to prevent inadvertent or unauthorized changes to configuration settings

7.	General Requirement
7.1.	Provide real-time verification of signal flow and operation <ul style="list-style-type: none"> • Directly readable on RJ-45 signal and link LEDs
7.2.	Shall be compatible with all Extender pair stated in this tender
7.3.	Shall be compatible with CATx shielded twisted pair cable,
7.4.	Provide power to a connected extender stated in this tender
7.5.	Shall support the use of HDMI to DVI-D cables or adapters for DVI-D signals
7.6.	Enclosure shall be rack-mountable, half rack width, and 1" (2.5 cm) in height
7.7.	Shall be equipped with an external universal AC power supply capable of supporting 100-240 VAC, 50/60 Hz power
7.8.	Shall meet regulatory compliances <ul style="list-style-type: none"> • CE, c-UL, UL • CE, C-tick, FCC Class A, ICES, VCCI

Section L – A Pair of USB Extender

Product	A Pair of USB Extender
Quantity	2 sets
Warranty	Minimum 3 years including labor and parts

Technical Requirements:	
1.	General Requirement
1.1.	Provide a transmitter for extending signals from USB peripheral devices such as human interface devices, imaging devices, mass storage devices, and other USB devices over a single CATx cable in a point-to-point configuration or via a Gigabit Ethernet network.
1.2.	Shall be paired with a transmitter/receiver to provide extension of USB peripheral devices up to 330 feet (100 meters) from the host device over one CATx twisted pair cable
1.3.	Shall be paired with a transmitter/receiver through a Gigabit Ethernet switch to provide extension of USB peripheral devices up to 660 feet (200 meters) from the host device within an IP network
1.4.	Shall support up to four transmitter/receivers via an IP network using a Gigabit Ethernet switch
1.5.	Shall be compatible with up to five Gigabit Ethernet switches to provide extension of USB peripheral devices up to 1,980 feet (600 meters) within an IP network
1.6.	Shall support USB 3.0, 2.0, 1.1, or 1.0 hosts
1.7.	Shall support data transfer/receive rates up to 480 Mbps
1.8.	Shall provide connection for the host computer on one USB Type B connector located on the rear panel <ul style="list-style-type: none"> • Shall provide peripheral emulation for a virtual connection of a keyboard and mouse to the host computer • Shall provide the capability to configure the unit with peripheral emulation disabled
1.9.	Shall provide connection for twisted pair cable on one female RJ-45 connector located on the rear panel
1.10.	Shall provide connection for RS-232 configuration of the transmitter/receiver on one 2.5 mm tip, ring, sleeve connector located on the front panel
1.11.	Shall provide a recessed button located on the front panel to pair a transmitter/receiver to a receive/transmitter
1.12.	Shall provide connection for 12 VDC power on one 2-pole, 3.5 mm captive screw connector located on the rear panel
1.13.	Shall be equipped with an external, universal AC power supply capable of supporting 100 - 240 VAC, 50/60 Hz power
2.	Other Requirements
2.1.	Shall be available in a 1-inch (2.5 cm) high, quarter rack width, low profile metal enclosure

	<ul style="list-style-type: none"> • Rack mountable with optional rack shelf or rack mounting brackets • Wall or furniture mountable with optional mounting kits
2.2.	Shall provide LED indicators located on the front panel for power, link status, and host status
2.3.	Shall meet regulatory compliances <ul style="list-style-type: none"> • CE, c-UL, UL • CE, C-tick, FCC Class A, ICES, VCCI • RoHS, WEEE

Live Streaming Systems for Cyberport Function Room

Cyberport Function Room will be hosting different types of events from time to time and a live video streaming system has to be implemented to broadcast live events happening in Function Room to the AV system in this tender.

The following video streaming equipment is already deployed in Cyberport main campus and they will have to be integrated with the new equipment as specified in this tender specification:

- Haivision MB6 – Makito X / Makito / Barracuda / Torpedo2 6 Slot Chassis – 2 units
- Haivision B-292E-DVI : Makito DVI Encoder Blade – 10 units

Tenderers should make sure any proposed equipment, integration work, re-configuration related to above equipment cannot breach any existing licensing agreement & maintenance contract.

Section A – HDMI Extender – Receiver Side

Product	HDMI Extender – Receiver Side
Quantity	3 sets
Warranty:	Minimum 1 Year with labour and parts

Technical Specifications Requirement	
1.	HDMI Extender – Receiver
1.1.	Rack-mountable receiver for HDMI, audio, and control
2.	Video output requirements
2.1.	Provide one (1) video output for digital video signals <ul style="list-style-type: none"> • Supported HDMI specifications include data rates up to 10.2 Gbps, Deep Colour up to 12-bit, 3D, HD lossless audio formats, and CEC pass-through
3.	Audio output requirements

Technical Specifications Requirement	
12.6.	The unit shall support the use of HDMI to DVI-D cables or adapters for DVI-D
12.7.	The unit shall have a low-profile enclosure and versatile mounting capability
12.8.	Shall provide visual indication for signal presence and power
12.9.	shall meet regulatory compliances <ul style="list-style-type: none"> • CE, c-UL, UL • CE, C-tick, FCC Class A, ICES, VCCI

Section B – HDMI Extender – Transmitter Side

Product	HDMI Extender - Transceiver
Quantity	3 sets
Warranty:	Minimum 1 Year with labour and parts

Technical Specifications Requirement	
1.	HDMI Extender – Transceiver Technical Specification Requirement
1.1.	Rack-mountable transmitter for the transmission of HDMI, audio, and control
2.	Video input requirements
2.1.	Provide one (1) video input for digital video signals <ul style="list-style-type: none"> • Supported HDMI specifications include data rates up to 10.2 Gbps, Deep Colour up to 12-bit, 3D, HD lossless audio formats, and CEC pass-through
3.	Audio input requirements
3.1.	Support embedded digital audio on HDMI input
3.2.	Provide a dedicated analog audio input connection <ul style="list-style-type: none"> • One (1) stereo analog audio
4.	Control input requirements
4.1.	Provide communication connections for AV device control <ul style="list-style-type: none"> • One bidirectional RS-232 pass-through • One bidirectional IR pass-through
5.	Interconnection requirements
5.1.	Support interconnection between receiver and transmitter all matrix and HDMI extender as specified in this tender <ul style="list-style-type: none"> • One RJ-45 twisted pair connection
6.	Transmission requirements
6.1.	Provide signal transmission distance capability of 230 feet (70 m) at 1920x1200, including 1080p @ 60 Hz and 2K using a shielded CATx cable
6.2.	Support signal transmission distance capability of 4K @ 30 Hz, UHD, and 2560x1600 up to 130 feet (40 m) using a shielded CATx cable
6.3.	Support video, audio, and control over a single shielded CATx cable
6.4.	Support embedded HD lossless audio formats
6.5.	Actively buffer DDC channels
7.	Resolution requirements
7.1.	Support computer and video resolutions up to 4K, including 1080p/60 Deep Colour
7.2.	Support RGB and YCbCr digital video formats
8.	Audio requirements

Technical Requirements:	
7.	Network Interface
7.1	Should support an Ethernet RJ-45 port capable of 10/100/1000 Base-T, auto-detect, and Half/Full-duplex.
7.2	Should support static or DHCP IP assignment.
7.3	Should provide an easy to use web management interface.
7.4	Should support management via SSH, Telnet, RS-232/Serial and SNMP v3.
7.5	Should support the following Networking Protocols: <ul style="list-style-type: none"> • Unicast streaming • Multicast streaming (IGMP v3) • Multiple unicast streaming • MPEG transport stream over UDP/RTP • Direct RTP – H.264 over RTP (RFC 3984) • RTMP • Static IP/DHCP • QuickTime RTSP RFC 3640 (Progressive resolution only) • SAP (RFC 2974)
7.6	Should be JITC Certified: MISP 5.5
7.7	Should be Common Criteria NDPP 1.1 Certified
8.	Manageability and Copyright
8.1	The encoder should be manageable by the IPTV server software and allow the IPTV server to remotely make changes to the configurations
8.2	The encoder should NOT encode any video input with HDCP encryption

Section E – 4K Four Output Splitter

Product	4K Four Output Splitter
Quantity	1 set
Warranty	Minimum 3 years including labor and parts

Technical Requirements:	
1.	General Requirement
1.1	Input: Provide at least one female HDMI type-A connector
1.2	Output: Provide at least four female HDMI type-A connector
1.3	Shall Supported HDMI specification features include data rates up to 10.2 Gbps, Deep Color up to 12-bit, 3D, and HD lossless audio formats
1.4	Shall support EDID Minder® automatically manages EDID communication between connected devices and ensures that the source powers up properly and reliably outputs content for display.
1.5	Shall support up to below resolution range <ul style="list-style-type: none"> - 1920 x 1200 or 1080p @ 60Hz, 12-bit color - 4K (4096 x 2160) @ 30 Hz, UHD (3820 x 2160) @ 30Hz
1.6	Should support video format in RGB and YCbCr digital video
1.7	Shall support HDCP compliant and Ensures display of content-protected media and interoperability with other HDCP-compliant devices.

1.8	Provides the capability to mute one or all outputs at any time. This allows content to be viewed on a local monitor prior to appearing on the main presentation display.
1.9	Allows the unit to appear HDCP compliant or non-HDCP compliant to the connected source, which is beneficial if the source automatically encrypts all content when connected to an HDCP-compliant device. Protected material is not passed in non-HDCP mode
1.10	Shall automatically adjust color bit depth based on the display EDID, preventing color compatibility conflicts between source and displays.
1.11	Shall automatically reformat HDMI source signals for output to a connected DVI display.
1.12	Shall provide a front-panel LED indicators for signal presence and HDCP authentication provide real-time feedback and monitoring of key performance parameters
1.13	Shall provide RS232 control port and enables the use of serial commands for integration into a control system.
1.14	Shall provide Front panel USB configuration port and Enables easy configuration without having to access the rear panel.
1.15	The unit should be rack-mountable with metal enclosure
1.16	Shall meet regulatory compliances <ul style="list-style-type: none"> • CE, c-UL, UL • CE, C-tick, FCC Class A, ICES, VCCI • RoHS, WEEE

Professional Service Requirement

Tenderer is required to provide the following professional service

1	Professional Services requirement
1.1	Provide installation and configuration services for all AV equipment as specified in this tender
1.2	Below drawings must be included as part of the professional service scope <ul style="list-style-type: none"> • Shop drawings for all AV installation • Cabling & wiring diagram • Detailed schematic diagram of the system
1.3	Documentations <ul style="list-style-type: none"> • Training guide • Operation guide
1.4	Training & Skill Transfer
1.5	Any reconfiguration to the existing video streaming equipment must be carried out by certified engineers from the original manufacturer. Please include the certificates of at least 2 engineers as part of the tender submission

Description	Qty	Unit
AV Equipment		
Breakout Area		
Professional Display	2	sets
AV Input Faceplate	2	sets
HDMI Extender - Receiver Side	4	sets
HDMI Extender - Transmitter Side	2	sets
4K Multi-Input Switcher	2	sets
All-in-one 4K Video Matrix and Control Processor	1	set
Portable Control Panel	1	set
Wall Installed Control Panel	1	set
Light Control Interface	1	set
Wireless Sharing system for BYOD, Mac or Laptop	1	set
Speaker	8	sets
Audio DSP	1	set
Audio Amplifier	1	set
Handheld Mic bundle with charging station	4	sets
Clip Mic	2	sets
4K TV Set-Top-Box	1	set
Meeting Room 1 & 2		
4K Display with Built-in Whiteboard	2	sets
AV Input Faceplate	2	sets
HDMI Extender - Receiver Side	4	sets
HDMI Extender - Transmitter Side	4	sets
Speaker	8	sets
TV Trolley	0	sets
Wireless Sharing system for BYOD, Mac or Laptop	2	sets
All-in-one video Matrix and Control Processor	2	sets
Furniture mountable enclosure for Cable management and USB Power	2	sets
Wall Installed Control Panel	2	sets
4K TV Set-Top-Box	2	sets
Three-Input Switcher & Extender – Transmitter	2	sets
A Pair of USB Extender	2	sets
Live Stream from Cyberport Function Room		
HDMI Extender - Receiver Side	3	set
HDMI Extender - Transmitter Side	3	set
Video Encoder	1	set
Video Decoder	1	set
4K Four Output Splitter	1	set
Installation services and 12-month onsite maintenance support services	1	job
Provide professional services to overall installation, configuration, system integration and testing & commissioning of the IT equipment and network to the satisfaction of the Employer.	1	sum

PART G : SCHEDULE OF RATES

Item	Description	Qty	Unit	Rate	Amount (HK\$)
	Tenderer / Contractors should check and include hereunder any other outstanding items and works in accordance with the drawings, specifications, site visit, etc. for complete tender. NO CLAIMS relating to the works will be allowed afterward.				
	Sub-Total (Plumbing and Drainage)				
N	<u>Audio & Video System Installation</u>				
1	Supply and install the following AV equipment and provide relevant drawings and/or catalogues for review and approval;				
	<u>Breakout Area</u>				
a.	Professional Display	2	sets		
b.	AV Input Faceplate	2	sets		
c.	HDMI Extender - Receiver Side	4	sets		
d.	HDMI Extender - Transmitter Side	2	sets		
e.	4K Multi-Input Switcher	2	sets		
f.	All-in-one 4K Video Matrix and Control Processor	1	set		
g.	Portable Control Panel	1	set		
h.	Wall Installed Control Panel	1	set		
i.	Light Control Interface	1	set		
j.	Wireless Sharing system for BYOD, Mac or Laptop	1	set		
k.	Speaker	8	sets		
l.	Audio DSP	1	set		
m.	Audio Amplifier	1	set		
o.	Handheld Mic bundle with charging station	4	sets		
p.	Clip Mic	2	sets		
q.	4K TV Set-Top-Box	1	set		
	<u>Meeting Room 1 & 2</u>				
r.	4K Display with Built-in Whiteboard	2	sets		
s.	AV Input Faceplate	2	sets		
t.	HDMI Extender - Receiver Side	4	sets		
u.	HDMI Extender - Transmitter Side	4	sets		
v.	Speaker	8	sets		
w.	TV Trolley	0	sets		
x.	Wireless Sharing system for BYOD, Mac or Laptop	2	sets		
y.	All-in-one Video Matrix and Control Processor	2	set		
z.	Furniture mountable enclosure for Cable management and USB Power	2	set		
aa.	Wall Installed Control Panel	2	set		

PART G : SCHEDULE OF RATES

Item	Description	Qty	Unit	Rate	Amount (HK\$)
ab.	4K TV Set-Top-Box	2	set		
ac.	Three-Input Switcher & Extender – Transmitter	2	set		
ad.	A Pair of USB Extender	2	sets		
	<u>Live Stream from Cyberport Function Room</u>				
ae.	HDMI Extender - Receiver Side	3	set		
af.	HDMI Extender - Transmitter Side	3	set		
ag.	Video Encoder	1	set		
ah.	Video Decoder	1	set		
ai.	4K Four Output Splitter	1	set		
aj.	Installation services and 12-month onsite maintenance support services	1	job		
2	Provide complete testing and commissioning record / report with as-fitted drawings (2 Copies_ in hard and soft copy format). The Contractor shall provide professional services to overall installation, configuration, system integration and perform all system testing and commissioning to the satisfaction of the Employer.	1	Sum		
	Tenderer / Contractors should check and include hereunder any other outstanding items and works in accordance with the drawings, specifications, site visit, etc. for complete tender. NO CLAIMS relating to the works will be allowed afterward				
	Sub-Total (AV System Installation)				
O	<u>Access Control and Security CCTV Installation</u>				
1	Supply and installation of a new access control system to control access at all the controlled entrances (including the existing double-leaf timber door at the cargo lift lobby) as indicated on the Design Intent Drawing(s). The system shall enable to provide or record real-time information giving a full understanding of who are in the premises.	1	Sum		
2	Supply and installation of a new colour closed circuit TV (CCTV) security cameras system with cameras at the locations as indicated on the Design Intent Drawings including but not limited to the followings: (i) IP Network Camera, 11 sets (ii) Recording Software license for IP Network Camera, 11 sets (iii) Recording system with storage, 1 set (iv) Installation services and 12-month onsite maintenance support services, 1 job	1	Sum		