UN-CITY

Copenhagen

Auditorium update

User Requirements Specifications

AV-systems for Auditoriums and Press Room

03 January 2019

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User Requirements Specifications, AV systems for auditoriums and press room

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User Requirements Specifications, AV systems for auditoriums and press room

1.0   Introduction, general application and system requirements

The UN-City auditoriums are to be up-dated and renovated.

The current installation was put in to operation in 2013 and has been extensively used with most central components running 24/7.

Existing systems and components are in general of very high quality and the update must maintain the level of performance and quality.

The update is aiming on improving the AV facilities to meet the requirements for the future usage of the rooms. Furthermore, the update must extend the expected life of the system for the next 5-year period and ensure the best possible operational stability.

The update must be planned in a way to minimize the changes required to the existing system, i.e. cabling and components in CAR racks and OP room. Furthermore, the execution of the update must be planned in stages, which ensures a minimum downtime for each of the auditorium sections and the pressroom. Please refer to the stated time schedule in section 1.2.

The following description of the general application and system requirements is the bases for the required AV solution and any submitted bid must comply with all listed requirements for functionality and quality.

The proposal must be fully and accurately described in terms of both functionality and price. Relevant documentation must be included.

The AV system must be designed for a minimal power consumption and minimal environmental impact. The bidder must detail how these criteria are met, both as part of the technical design, when handling the installation process and the following system operation.

The bidder must carry out all required engineering and calculations and take full responsibilities for the functionality and performance of the system, including all relevant safety measures.

The bidder must include needed project coordination with the UN-City project team and the project management. This will include the participation in project coordination meetings on site as required.

The total project time frame is about 4 months and the AV supplier must during this execution period currently evaluate any relevant beneficial adjustment to the scope in relation to components and/or technologies that may be available.

Note the following abbreviations:

AVS: AV-supplier
CAR: Central Apparatus Room
OP: Operators Room

Please refer to enclosed block schematic ref. PE20482-01 showing the existing AV system, and block schematic re. P18-008-BS02, showing the intended updated system.

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1.1 Installation, general conditions

1.1.1 Installation

- The installation of cables, equipment components, connectors etc. must be carried out in accordance with best practice
- It is the full responsibility for the AV supplier (hereafter AVS) to execute the delivery and installation in such a way, that interference and /or signal disturbances in between adjacent technical systems does not occur.
- It is the full responsibility of the AV supplier that the offered system and its components can be installed as intended. All relevant measurements must be taken on-site.

1.1.2 Cable conduits and cabling

- UN-City provides and appoints conduits
- UN-City provides all 230V AC power outlets for AV systems
- UN-City provides installed AV cabling in accordance with attachment P18-008-SK006
- Delivery of all other cables related to the AV system is to be part of the AV system delivery

1.1.3 Labelling

- All components and cables must be labelled uniquely and in accordance with the supplier's documentation.
- The system and principle of the labelling are to be aligned with the existing system cabling and overall labelling system for the building ABD and to be approved by the project management
- All cables are to be marked in both ends

1.1.4 Test and commissioning

- All functions, connections and outlets/inlets must be tested and the results documented in a protocol
- The PA systems are to be calibrated for all settings and a comprehensive measuring report to be issued. Said report are to be approved by the project management prior to final hand-over
- The full AV system must be tested step-by-step under supervision of UN-City representatives and the project management. Approved test is mandatory for final handover
- The AV system must pass a test-running of 100 hours for the display systems and 25 hours for the full system usage without any qualified faults. A qualified fault is to be understood as a technical fault or defect which prevents the intended use of the system.

1.1.5 Documentation to be delivered before final hand-over

The system documentation for the current AV system is incomplete and the original supplier is no longer in business. As part of this contract, the AVS must provide a complete and comprehensive system block schematic covering the full upgraded AV system.

Documentation for the update must as a minimum comprise the following:

- Functional description
- User guide
- Overall revised block schematics, video, audio, network, control, as built
- Floor plans showing location of system components
- Overview of connections
- List of components, numbered in accordance with labelling

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- Short-form trouble shooting guide
- List of cablings
- Datasheets on all system components
- Original user manuals for system components
- Software documentation for audio and remote control system*

* This documentation must ensure UN-City the possibility, independent of the AV supplier, to have changes and modifications made to the systems without any limitation.
All required licenses, standard software modules, customized software and eventual special hardware must be included. In case of any licenses required, these must be valid for a minimum of 10 years after hand-over.

System documentation is to be approved by the project management.

The full payment of the contract value is not to be released until final approved system documentation is present.

1.1.6 Service and support

The bidder must detail the service and support organisation offered, hereunder how immediate required support are handled.

The bidder shall include a quotation for a service agreement covering the following:
- Hot-line service on weekdays 08.00 > 17.00. The hot-line must ensure direct telephone contact with a qualified service technician via a fixed phone no and a maximum of 1 connection
- Provision of an on-site spare part package to ensure 1st line service. Detailed proposal for spare parts must be included. The spare part package must also cover existing components that continues in operation as applicable
- A voucher covering a total of 15 on-site service calls of 4 hour's duration to be available for a period of 36 months
- Coverage within warranty period: all supplemental services required, that are not covered by the warranty, for a full fault correction
- Coverage for the first 12 months outside warranty period: all required spare parts, without limitations, plus all supplemental services required for a full fault correction (new systems and components only)
- Necessary on-loan equipment to ensure minimum functionality

1.1.7 Training

The delivery must include user training comprising the following:

Knowledge and user training, UN-City intern technical support:

- How to obtain information's about the system
- System structure and main functionality
- Preparing the meeting
- In depth usage and operation
- Test meetings with "hands-on"
- Troubleshooting and usage of support

The user training must be coordinated in detail with the UN-City internal technical support team and must cover training for duration of not less than 30 hours.

The training must be planned and executed in a way to ensure the UN-City internal technical support has the necessary know-how and competences before the system is put in to operation.

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1.1.8 Hyper-care

AVS must provide hyper-care for a total of 10 days of operation. This implies the allocation of a support technician on-site to assist with operation and event execution.

UN are free to assign the 10 days of support on any date within the first four month of operation after the system has been put in to operation.

1.1.9 Warranty

The delivery must be covered by minimum 24 months of warranty, calculated from final hand-over and approved test running.

Factory warranty exceeding this must be passed on to UN without any limitations.

The warranty must cover all services related to correcting defects and faults, hereunder spare parts, shipping and transportation, man-hours etc.

1.2. Time schedule

The project is to be executed in accordance with the following initial milestones:

- **Note**: *The following week numbers refers to the signing of the contract*
- Contract award: week 0
- Project initiation: week 2
- AV engineering and planning: week 3-7
- Phase 1 installations: week 8+9
- Phase 2 installations: week 12+13
- Test and commissioning, user training: week 14+15
- Hand-over: week 16
- Test running period: week 17-30
- Hyper-care period: week 16 - 30

Above time schedule is subject to change and may be adjusted at the time of project initiation.

Note that the phase 1 installations must be planned to allow operation using the existing system during week 10 and 11.

AVS must liaise with UN-City to form a detailed execution plan aligned with the planned events in each room.

1.2.1 Building related works outside AV scope

As part of the initial project design and engineering, the AVS must screen and QA the project for the electrical work, carpenter work and ventilation work.

AVS must liaise accordingly with the project management and contractors signed by UN-City for said building related works to ensure alignment with the AV project.

The project management will provide all details for these works when the AV project is initiated.

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2.0 Functional requirements for audio systems

The audio systems are to be updates as follows:

- Installation and implementation of 20 wireless microphone channels
- Installation and implementation of stationary line source speaker systems in auditorium 2 and 3, inclusive of subwoofers.
- Installation and implementation of new audio processor/mixer system including DSP server units.

The DSP server system will function as the main system operated from a PC using a touch panel. A wireless tablet PC will function as a wireless remote device.

The manual mixer console will function as a supplement allowing for manual control of selected events not fully covered by the basic programmed functionality.

2.1 Wireless microphone system

2.1.1 Wireless microphone receivers

- 5 pcs wireless digital quad receiver
- Four ch. receivers in a rugged 1RU metal chassis with internal power supply
- Individual gain controls, LED meters, and XLR outputs for each channel
- Up to 64 MHz tuning range (region dependent)
- Digital predictive switching diversity
- High Density mode optimizes ULX-D systems to simultaneously operate significantly more channels in applications up to 30 meters
- RF cascade ports allow distribution of RF signal to another unit
- Optimized scanning automatically finds, prioritizes, and deploys the cleanest frequencies to transmitters over IR sync
- Bodypack frequency diversity ensures uninterrupted audio for mission-critical applications
- AES 256-bit encryption-enabled for secure transmission
- Audio summing routes two or more audio channels to combinations of receiver outputs. Use each channel's gain adjustment to reach the desired mix.
- Dante™ digital networked audio over Ethernet
- Ethernet networking for streamlined frequency coordination and deployment across multiple receivers
- Interference detection and alerts provided on both the receiver and WWB6
- Up to 60 dB independently adjustable gain for each channel
- Wireless Workbench® 6 (WWB6) software integration for advanced coordination, monitoring, and control
- AMX/Crestron® control
- Compatible with the AXT600 Axient® Spectrum Manager
- Intuitive front panel LCD menu and controls with lockout feature
- Audio and RF LED meters with peak indicator
- Switchable mic/line output level
- Removable ½ wave antennas

Equivalent to: Shure ULXD4Q

The receivers must be installed in CAR rack # 1 and connected to the LAN switch for Dante connection to the audio mixer system.

Existing receivers are to be disconnected and will be used as mobile devices.

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2.1.2 Wireless hand microphone

- 12 pcs handheld wireless microphone
- AES 256-bit encryption for applications requiring secure data transmission
- Proprietary Gain Ranging for optimizing the system's dynamic range for any input source, eliminating the need for transmitter gain adjustments
- Including lithium-ion rechargeable battery providing over 11 hours of battery life, precision metering in hours and minutes, and zero memory effect
- External charging contacts for docked charging (with the Dual Docking Charger)
- Backlit LCD with easy to navigate menu and controls
- Rugged metal construction
- Frequency and power lockout
- Including supercardioid microphone capsule

Equivalent to Shure ULXD2/B58 + SB90A lithium battery

2.1.3 Charger and batteries

- 6 pcs dual-docking battery charger
- 8 pcs lithium battery pack
- 2 pcs with power supply

Equivalent to Shure SBC200-US (2 pcs, and Shure SBC-200 (4 pcs) + Shure SB90A

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2.2 Audio mixer and DSP server system

2.2.1 Audio mixer console

The mixer shall be a compact digital mixer built around a 96kHz XCVI FPGA core with 48 input channels mixing to LR and 12 stereo mix outputs.

The surface shall include 25 moving faders with 6 layers, each layer having dedicated keys, giving easy access to input channels, mixes, FX sends, FX returns, DCA masters and MIDI control.

Each fader strip shall have dedicated PAFL, Select, and Mute buttons with indicators, a variable LED meter, a peak indicator LED and variable colour backlit LCD display.

There shall be dedicated physical controls which allow for adjustment of key processing parameters, and

which follow the select button for the input and output channels.

The fader and rotary controls shall be of a high contrast colour to the mixer surface for excellent visibility during operation in low light conditions. The rotary controls shall also be illuminated to indicate function and availability for use.

Send levels to mixes shall be displayed and adjusted using the faders.

Surface illumination shall be integrated into the bodywork of the mixer.

A signal generator shall be provided with the ability to send a variable level signal to any output mix with

visual assignment status on-screen. The following types of signals shall be available: Sine, White Noise, Pink Noise, and Band-Pass.

Comprehensive input, output, and FX channel and RTA metering shall be provided on-screen. 12-LED bar meters on the surface shall indicate the

Main mix bus level and the PAFL signal shall override the LR meters accompanied by a PAFL active indicator.

A default Mains to PAFL sub-mix shall be provided. There shall be a USB Type-A connector on the surface for stereo/multitrack recording/playback, data-transfer, archiving, and firmware updates direct to USB drive On the rear panel there shall be a USB-B connection following the USB 2.0 standard for multi-channel, bi-directional audio streaming and MIDI DAW control between the mixer and a computer. A DAW transport control using popular DAW control protocols for computer shall be available via the touch-screen. Stereo digital output shall be provided on XLR following the AES/EBU standard and with switchable sample rates. The mixer shall provide a Fast Ethernet (100 Mbit/s) port for Cat5 cable connection to a computer for MI DI over TCP/IP control of mixer parameters via a wireless router (access point) for live mixing control, and the mixing system shall include application software for tablet and phone devices connected via a wireless network router to the LAN port. Input and output channel processing and parameters

in the mixer shall be saved on demand as a user library item for recall in other channels. All library items shall be archived with the show-file. Library items shall be transferrable to USB drive as portable data to be used in other systems. The mixer shall provide the facility to save 300 scenes of the settings of the mixing system and these scenes shall be nameable. A comprehensive table of 'Scene Safes' shall be provided to prevent selected items from being changed from their state when the safe was enabled. A comprehensive scene filter shall be provided per scene to Allow / Block each4 parameter saved in a scene from being changed as that scene is recalled. An option shall be provided for password protection for log-in of several users with different levels of system access and permissions. A scene may be chosen to be recalled per change of user login if desired.

The mixing system shall periodically record all current settings and return the mixer to that state after reboot following a power-cycle.

The mixing control surface shall have a built in power supply accepting AC mains voltages of 100~240V, 50/60 Hz, 90W max via an earthed 3-pin IEC male connector mounted on the rear chassis. A Two Pole Push-Button switch shall be provided near the mains input.

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- Compact Digital Mixer for Live, Studio and Installation
- 48 Input Channels
- 24 Local Mic Inputs (XLR)
- 2 ¼" Stereo Inputs (TRS)
- 1 3.5mm Stereo Input
- 36 Total Busses
- 12 Stereo Mix (Aux or Group) + Main
- PAFL Bus
- 16 Assignable Local Outputs (14 XLR + 2 ¼" TRS)
- AES Digital Output
- Dedicated Talkback mic input (XLR)
- ¼" TRS Headphone out with dedicated control
- SLink EtherCON connection for remote audio using dSnake, DX or gigaACE protocol (64x64 channels)
- I/O Port for Option Card (including 3rd party protocols – Dante/Waves)
- 8 Mute Groups
- 8 DCA Groups
- 8 Stereo FX with dedicated FX Returns
- DEEP Processing Ready
- RackFX Effects suite
- 7" colour touchscreen
- 16 Assignable SoftKeys
- 4 Assignable Soft Rotaries
- Dedicated physical controls for channel processing (Gain, HPF Frequency, Gate Threshold, Compressor Threshold, Pan, EQ   Gain/Frequency/Width)
- 24+1 Faders with 6 Layers for 144 assignable Channel Strips
- Motorised faders for sends on faders, GEQ fader flip and mix recall
- 24 Backlit LCD Channel Strip displays
- Single Point Metering
- Integrated Surface Illumination
- Single/Dual Footswitch Control
- Input channel linking for stereo sources
- Patchable Insert points
- Input processing – Preamp, HPF, Gate, PEQ, Compressor, Delay
- Output processing – PEQ, Graphic EQ, Compressor, Delay
- Automatic Mic Mixing
- 31 Band Real Time Analyser
- Quick copy/paste/reset for parameters
- User Permissions to restrict operator access
- 300 Scene memories per show
- Channel Safes, Global and per Scene Recall Filters
- FX, processing and channel Libraries
- SQ-Drive for stereo and multitrack recording/playback direct to USB drive
- USB transfer of Scenes, Libraries, Shows
- 32x32 channel USB streaming to/from Mac/PC
- DAW Control driver for MIDI control via USB or TCP/IP
- Wireless remote mixing apps for iPad and Android

Dante in/out expansion module included.

Equivalent to: Allen & Heath SQ6

2.2.2 Central Audio I/O DSP server system

The configurable I/O DSP shall support AVB digital audio and control networking by means of a modular 420 x 420 channel card. The configurable I/O DSP shall also support use of one or two 32 x 32 channel CobraNet® digital networking cards and/or one or two 64 x 64 channel Dante™ digital networking cards, up to a maximum of three audio networking cards total per chassis. The configurable I/O DSP shall be factory configured with one DSP card and shall be capable of supporting a total of three cards. The configurable I/O DSP shall provide dual Ethernet ports for configuration and control connection. The configurable I/O DSP shall support port authentication via IEEE 802.1X. The configurable I/O DSP shall be configurable for up to 48 channels of local audio input and output, including mic and line level, VoIP, and standard telephone interface. The configurable I/O DSP shall also support modular I/O cards for acoustic echo cancellation and ambient noise compensation. The configurable I/O DSP shall provide front panel LED identification of device power, status, alarm, and activity as well as system-wide alarm. The configurable I/O DSP shall provide front panel OLED display for device and system information. The configurable I/O DSP shall be rack mountable (3RU) and feature software-configurable signal processing, including but not limited to: signal routing and mixing, equalization, filtering, dynamics, and delay, as well as control, monitoring, and diagnostic tools. The configurable I/O DSP shall be CE marked, UL listed and shall be compliant with the RoHS directive. Warranty shall be five years.

The I/O DSP system must be configured as follows:
- 32 mic/line inputs, 24 line outputs
- 64x64 Dante in/out
- Dual redundant, hot swappable power supply

Equivalent to: 2 x Biamp Tesira SERVER IO + 8x Biamp Tesira SIC-4 + 6x Biamp Tesira SOC-4 + 1x Biamp Tesira DAN-1

The I/O DSP is to be installed in CAR rack # 2, replacing the existing Allen & Heath GLD units.

2.2.3 Audio I/O DSP control PC - desktop

Small form factor PC
CPU type:	1 x Core i5 7400T / 2.4 GHz
Installed RAM	RAM 8 GB
Storage capacity	SSD 256 GB
Graphic engine	NVMe - HD Graphics 630
Network	GigE - WLAN: 802.11a/b/g/n/ac, Bluetooth 4.1
O/S	Win 10 Pro 64-bit
Screen:	23" , 10 point touch
Native resolution	1920 x 1080 n/ 60Hz

PC equivalent to:	Lenovo ThinkCentre M710q Tiny Core i5 8GB 256GB SSD
Screen equivalent to	Acer 23" LED T232HLbmidz
Keyboard/mouse equivalent to:	Logitech MK540 Advanced

2.2.4 Audio I/O DSP control PC - tablet

Tablet PC:
CPU-Type	Core i7 2.5 GHz
Installed RAM	8 GB
Storage capacity	256 GB
Screen size	12.3 "
Native resolution	2736 x 1824
O/S	Windows 10 Pro 64-bit Edition
Graphic engine	Intel Iris Plus Graphics 640

Equivalent to: Microsoft Surface Pro Core i7 8GB 256GB SSD 12.3"

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2.2.5 Programming of I/O DSP system

The I/O DSP system must be programmed and adjusted to suit the following:

- Audio mix for:
- Auditorium 1
- Auditorium 2
- Auditorium 3
- Auditorium 1+2
- Auditorium 2+3
- Auditorium 1+2+3
- Press Room
- Mix and routing of simultaneous interpretation channels
- Routing of signals to streaming, video conference and recordings
- Pre-sets routing sources and destinations to manual mixer console

Please refer to appendix P18-008-SK004 explaining the required layout and functionality on user interface canvas.

Note that the said document is to be regarded as a guideline. The AVS must attend a minimum of two representative meetings using the existing system and conduct a detailed interview of the UN-City technicians to clarify all necessary details.

The final details of the functionality and the layout of the canvas pages are to be approved by the user representatives and the project management.

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2.3. Loudspeaker system

2.3.1 Active line source system for auditorium 2 and 3

Active line source system, which can be electronically controlled and monitored, with eight state-of-the-art CLASS D amplifiers and DSP technology specially developed for this field of application. The system is equipped with eight coated, 4" long excursion drivers. Use of neodymium chassis and an aluminum housing keeps the total weight of the unit, including electronics, down to just 9.4 kg. Ideally suited to the dynamic transmission of both speech and music, especially in acoustically challenging venues with lengthy reverberation times, or in demanding architectural settings.

A perfect balance of amplifier-, loudspeaker- and DSP technology results in a max SPL of 124 dB. The loudspeaker system has a wide frequency range of 60 Hz – 17 kHz. Its nominal horizontal dispersion angle is 110°. The speaker's vertical beam width (which ranges from 0° to 90°) and its vertical inclination angle (which ranges from -40° to +40°) can both be adjusted in precise 0.1° increments, enabling extremely accurate orientation towards audience areas. For coverage of different audience levels, two separate beams can be generated that are independent of one another. Both beams include, among other things, separate high pass filtering. The acoustic centre of each beam can be moved along the full length of the line. An integrated algorithm effectively suppresses any unwanted side lobes in the beam's vertical dispersion range.

The loudspeaker is also equipped with pilot tone monitoring for integration into an emergency evacuation system. Errors or malfunctions such as internal operating voltage errors, overheating, short circuits, missing pilot tone on both signal inputs (configurable), or network errors can all be monitored and displayed. (Each communication is acknowledged.) Notification and display of error messages is carried out via status messages in the control software.

The loudspeaker additionally has a configurable Auto Power Save function as well as a tilt sensor and password protected access control.

The control, programming and monitoring of all functions and parameters can be done in real time using a single piece of dedicated software. Beam dispersion, sound pressure levels and frequency response are all graphically displayed. The software also enables control of an extensive range of DSP functions for input and output processing that include routing, volume, delay, limiter/compressor, noise gate, signal generator (output only). The loudspeaker system offers an adjustable overall delay of up to 340 m (1000 ms).

The speaker has a lightweight aluminium enclosure with rounded sides and a black or white powder-coated finish. Optionally available in all RAL Classic colours, or with photorealistic textural designs. To protect the loudspeaker chassis and electronics, the enclosure is fitted with a ball impact resistant, highly sound permeable front grille made from powder-coated steel, with damp- and dust repellent acoustic fleece behind. 12 x M6 threaded inserts are integrated to accommodate mounting brackets. Application-specific brackets for wall-, traverse- and stand mounting are optionally available.

CAAD Simulation for EASE is available on request.

Internal connections: A Dante Primary and a Dante Secondary connector – RJ-45 1000BASE-T Ethernet – for digital audio signals and for control signals; a mains power connection using 2-pin WAGO terminal (grounding is screwed).

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Acoustic design	electronically steerable line source speaker
Components	8(16) x 4" impregnated (fully neodymium)
Operational mode	active, 8(16) x DSP amplifiers, Class-D
Max. SPL (1 m) [1]	124 dB/130 db (Dli130/Dli230)
Frequency range [2]	60 Hz – 17 kHz
Beam dispersion angle, horizontal [3]	110°
Vertical beam width, digitally controlled	0° to +90° in 0.1° increments
Vertical inclination angle, digitally controlled	-40° to +40° in 0.1° increments
Acoustic centre	both beams moveable between 0 – 100 % (from speaker bottom to top)
Amplifier power	8 x 100 W / 16 x 100W
Amplifier type	Pure Path Digital PWM
DSP channels, Fohhn Audio DSP	8 /16
Gain	25 dB
Input sensitivity	0 dBFS
Frequency response	20 Hz – 20 kHz
Signal/Noise ratio	>105 dB/A
Protective circuit	softstart, overheating, short circuit, overload
Power supply	100 V – 240 V AC 4 A 50/60 Hz switching power supply with Power Factor Correction (PFC)
Power consumption	Standby 5 W, max. 400 W
Power factor (PFC)	> 90 %
Low Power	Green Power Standby Mode
Temperature range	0 – 40 °C
Cooling	temperature-controlled fan
Weight of electronics	ca. 2 kg /3 kg

Color: white RAL9016

Equivalent to: Fohhn Linea Focus DLI130 Dante (aud. 2) and DLI230 Dante (aud. 3)

Loudspeakers to be wall mounted on each side of the respective projection screens.

A set of custom extensions must be included for the speaker cabinet to match the height of the projection screens, 1800 mm and 2800 respectively for aud. 2 and 3.

The loudspeaker system must be calibrated with pre-sets optimized for the various room configurations.

2.3.2 Active subwoofer for auditorium 2 and 3

Powered 15" subwoofer with 4" Voice Coil
Maximum 136dB SPL and 33Hz-150Hz frequency range
High power 1600W Class-D amplifier module
96kHz DSP for true high-definition sound with super low latency
Equipped with Dante I/O (2in/2out) and features SRC (sample rate conversion) allowing 48kHz device compatibility
Access a variety of DSP functions and load presets, or make precise adjustments to PEQ, delay and routing etc. via the intuitive LCD display
Equipped with D-XSUB processing and cardioid mode capability
Lightweight yet very durable plywood cabinet with premium grade Polyurethane coating

Equivalent to: Yamaha DXS15XLF

1 unit for auditorium 2, 2 units for auditorium 3. The subwoofers are to be placed on the floor near the projection screen wall.

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3.0   Video systems

3.1.1 Projection screen for auditorium 2 & 3

- Fixed frame system
- Wrap around "edge-less" concept
- Modular multi-element frame made of special extruded and hardened aluminum alloy
- Special shape profile cross section with 45 degree edge
- Visible "seamless" surface
- Matt white gain 0.9-1.0
- Effective image format 3:1
- Image size auditorium 2: 5400 x 1800 mm
- Image size auditorium 3: 8400 x 1800 mm

Equivalent to: Stumpfl Fullwhite

The screens are to be wall-mounted with 60 mm distance to the wall

3.2   Projection system

The projection systems in auditorium 2 and 3 are based on an edge-blended set-up for a 3:1 format. The overlap is 240 pixels for an effective canvas of 3600x1200 pixels.

3.2.1 Projectors auditorium 3

Image
Colour Light Output: 15,000 Lumen- 10,500 Lumen (economy) in accordance with IDMS15.4
White Light Output: 15,000 Lumen - 10,500 Lumen (economy) in accordance with ISO 21118:2012
Portrait Colour Light Output: 15,000 lm
Portrait White Light Output: 15,000 lm
Resolution: WUXGA, 1920 x 1200, 16:10
High Definition: 4K enhancement
Aspect Ratio: 16:10
Contrast Ratio: 2,500,000 : 1
Native Contrast: 2,000 : 1
Light source: Laser
Laser Light source: 20,000 Hours Durability High, 30,000 Hours Durability Eco
Keystone Correction: Manual vertical: ± 45 °, Manual horizontal ± 30 °
Colour Reproduction: upto 1.07 billion colours
Optical
Lens Shift Motorized - Vertical ± 60 %, horizontal ± 18 %
Lens position memory 10 positions
Focus Motorized
Connectivity
Interfaces: Stereo mini jack audio out, HDBaseT, Stereo mini jack audio in (3x), BNC in, HDMI in, DVI in, VGA out, VGA in, Wired Network, RS-232C, USB 2.0 Type B (Service Only), HD-SDI,
General
Energy Use: 1,024 Watt, 647 Watt (economy), 0.3 Watt (standby), On mode power consumption as defined in JBMS-84 938 Watt
Supply Voltage: AC 100 V - 240 V, 50 Hz - 60 Hz
Product dimensions: 586 x 492 x 211 mm (Width x Depth x Height)
Product weight: 24.1 kg
Noise Level Normal: 40 dB (A) - Economy: 32 dB (A) (4K enhancement OFF)
Temperature Storage: -10° C - 60° C
Humidity Operation 20% - 80%, Storage 10% - 90%

Included lens: zoom range 3.54 – 5.41:1

Equivalent to: Epson EBL-1750U + Epson ELPLM11.
Projectors to be installed as per drawing P18-008-SK001

3.2.2 Ceiling brackets for projectors in auditorium 3

Due to the lightweight steel construction of the 1st floor operator's booth, the structure is susceptible to vibrations. The projectors must therefore be mounted to the stable ceiling concrete structure, which This requires a special bracket suspending the projectors.

As it is not possible to use expansion bolts or similar drilled in to the concrete structure, the brackets must be clamped to the concrete ribs.

The clamping part of the brackets are to be fabricated using sturdy aluminium profiles, min. 80x80 mm. The pole suspending the projector are to be made by a 160x160 mm aluminium profile.

The distance from the underside of the concrete rib to the projector is approx. 195 cm for the left projector and 162 cm for the right.

Note that the concrete rib structure is angled 5 degrees.

Please refer to principle drawing P18-008-SK002.

AVS must take measurements on-site to verify all required details to fabricate the brackets.

Note that the left-hand projector will be in part of the operator's booth. The projector must be shielded against unintended contact. The shielding must ensure free ventilation of the projector. Said shielding must be included.

3.2.3 Projection glass for auditorium 3

Un-City will provide the projection ports required in the wall into the auditorium.

AVS must supply the projection glass with the following specifications.

- Size 600 x 250 mm (final measurements to be taken on-site)
- Iron-free float-glass suited for projection
- Anti-reflex coated on inside
- Fireproof to EI30 standard
- To mounted with heat-expanding sealing

AVS must liaise with the carpenter to align mounting details.

3.2.4 Projectors auditorium 2

Image
Colour Light Output: 8,000 Lumen- 5,600 Lumen (economy) in accordance with IDMS15.4
White Light Output: 8,000 Lumen - 5,600 Lumen (economy) in accordance with ISO 21118:2012
Portrait Colour Light Output: 8,000 lm
Portrait White Light Output: 8,000 lm
Resolution: WUXGA, 1920 x 1200, 16:10
High Definition: 4K enhancement
Aspect Ratio: 16:10
Contrast Ratio: 2,500,000 : 1
Native Contrast: 2,000 : 1
Light source: Laser
Laser Light source: 20,000 Hours Durability High, 30,000 Hours Durability Eco
Keystone Correction: Manual vertical: ± 45 °, Manual horizontal ± 30 °
Colour Reproduction: upto 1.07 billion colours
Optical
Lens Shift Motorized - Vertical ± 67 %, horizontal ± 30 %
Lens position memory 10 positions
Focus Motorized
Connectivity
Interfaces: Stereo mini jack audio out, HDBaseT, Stereo mini jack audio in (3x), BNC in, HDMI in, DVI in, VGA out, VGA in, Wired Network, RS-232C, USB 2.0 Type B (Service Only), HD-SDI,
General
Energy Use: 624Watt, 417 Watt (economy), 0.3 Watt (standby), On mode power consumption as defined in JBMS-84 548 Watt
Supply Voltage: AC 100 V - 240 V, 50 Hz - 60 Hz
Product dimensions: 586 x 492 x 211 mm (Width x Depth x Height)
Product weight: 21 kg
Noise Level Normal: 35 dB (A) - Economy: 29 dB (A) (4K enhancement OFF)
Temperature Storage: -10° C - 60° C
Humidity Operation 20% - 80%, Storage 10% - 90%

Included lens: zoom range 3.54 – 5.41:1

Equivalent to: Epson EBL-1300U + Epson ELPLM11.
Projectors to be installed as per drawing P18-008-SK001.

3.2.5 Ceiling brackets for projectors in auditorium 2

The projectors must be mounted to the stable ceiling concrete structure. This requires a special bracket suspending the projectors ca. 2 meters.

Note that the concrete structure is angled 5 degrees. Please refer to principle drawing P18-008-SK003.

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3.3 Video processor system

The video processor system shall be implemented as an add on system, integrated with the existing Lightware digital matrix system and the related patch panels. The function of the video processor system is to act as front-end for the blended projection systems providing projection blend, background graphic still store and feed and scale input signals to presentation layers.

3.3.1 Video processor

Live effects canvas:
- Up to 20 megapixels in PVW/PGM or 40 megapixels in PGM only mode

Video inputs:
- 12 HD inputs via 3 input cards
- Up to 3 x 4K inputs each input card supports up to 4K@60p
- 12 x HDMI 1.4a (297 Mpix/sec max)

Video outputs:
- 12 HD outputs via 3 output cards
- Up to 3x 4K outputs - each output card supports up to 4K@60 p
- 8x HDMI 1.4a (297 Mpix/sec max)
- 2x HDMI 1.4a for Multiviewer (297 Mpix/sec max) 4X HDMI 1.4a when used as standard output card

Genlock:
- Analog reference input/loop on BNC connectors; bi-level and blackburst at SD and tri-level at HD S3D Sync: 4x input Din connector, 2x output Din connector

Program output:
- -up to 12 outputs can be assigned to a variety of single, tiled, or blended widescreen configurations (preview and Multi-Viewer not available in all configurations).
- Configurable for up to 12x 2048X1200@60 or up to 3x 4096x2400@60 outputs supporting Aux or Program destinations -Independent edge blending/feathering control for all four sides.

Mixers:
- Native resolution background mixer per output screen
- Independent layer transitions or full Preview/Program transition
- Flexible layer allocation
- 4 mixable or 8 single scalable PIP/key layers assignable to any Program output scree
Still stores:
- Up to 100 HD or 25 UHD, depending on the import file size

Layer effects:
- Borders (hard, soft, halo) and drop shadows
- Color effects
- Strobe, H&V flip
- Luma, chroma and Cut/Fill keys (not all modes support keying)
- PIP moves via Keyframes

Multiviewer:
- Flexible user-definable layouts
- Monitor all Inputs and Outputs, including Preview and Aux
- Two outputs
- Dedicated hardware same as E2 Event Master Processor

Expandability:
- Easily expandable for larger display applications via proprietary links
- Link units to increase available Inputs and Outputs for larger tiled/blended widescreen applications
- Expansion via simple linking - up to 8 chassis

HDCP:
- HDCP compliance determined by installed cards.

Serviceability:
- Field-serviceable I/O and processing cards (not hot-swappable)
- Hot swappable dual-redundant power supplies (optional)

Noise Level:
- Max 51.3 dB avg. fans at 100%. Fan speed is software-managed based on operating temperature.
- Reference ISO 7779

Dimensions:
- Height: 13.26 cm / 5.22 inches
- 3 RU rack mount
- Width: 43.2 cm / 17 inches without chassis handles, 48.3 cm / 19 inches with
- chassis handles attached
- Depth: 54 cm / 21.33 inches overall
- Weight
- 21.3 kg / 47 lbs
- Power
- Input power: 100-240 VAC 50/60Hz 826 Watt
- Dual-redundant, hot-swappable power supplies

Equivalent to Barco S3-4K including dual-redundant PSU

The video processor shall be installed in CAR rack #2, below to the Lightware matrix system.

Note that the current streaming hardware must be relocated the adjacent IT network rack to allow space for the processor. 1

3.3.2 HMDI-Fiber converters

4 pcs fiber-HDMI converters interfacing matrix to processor
6 pcs HDMI-fiber convertes for interfacing fiber patch panels from processor

Equivalent to: Lightware HDMI20-OPT-TX90 and Lightware HDMI20-OPT-RX90

3.3.3 Event controller for video processor

Remote control panel connected to the video processor system. It allows for remote operation from the control desk. Illuminated keys with an explicit actuation point. Display supported menu navigation for intuitive handling. Recall and execution of stored presets can be easily processed.

- Complimentary control of the Event Master Series switchers
- High resolution T-Bar
- 4 user-programmable buttons with customizable LCD displays
- Dedicated Background layer button
- 8 dedicated Layer selection buttons with multi-page functionality
- Dedicated layer function buttons for transitions, freeze, and FX arming
- 12 user-definable Destination buttons with multi-page functionality
- USB port for connection to host computer
- Status LEDs and color coded LCD displays
- Auto-ranging 12v 2.08a power supply (100-250VAC)
- user-assignable custom function buttons

Equivalent to: Barco EC-30

The controller shall be installed in OP.

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3.4 Existing Lightware matrix system

3.4.1 Mainframe PSU

Additional PSU for power supply redundancy.

Equal to: Lightware MX-PSU-350

3.4.2 Fiber – HDMI receiver

4 pcs fiber-HDMI receivers for projectors
8 pcs fiber-HDMI receivers for swap and back-up

Equal to: Lightware HDMI-OPT-RX100R

3.4.3 5V replacement PSU

Replacement 5V mains adapter for all existing Lightware fiber HDMI extension RX and TX units.

Equal to Lightware xx.

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User Requirements Specifications, AV systems for auditoriums and press room

3.5   Flat screens

3.5.1 Flat screens for auditorium 1

- 85" screen diagonal
- 4K LCD panel
- Auto on/off
- LED light source
- 500 Nit luminance

Equivalent to: Samsung QM85F

3.5.2 Motorized floor stand

- Finish: Aluminium/Anthracite Grey
- Maximum display weight: 150 kg
- Horizontal VESA: 200 – 1200 mm
- Vertical VESA: 100 – 600 mm
- Security: The display can be locked with a locking screw (included) or padlock
- Stroke length: 500 mm
- Recommended display size: from approx. 80" and up.
- Suitable for Microsoft Surface Hub 84".
- Extensively factory-mounted for easy installation.
- Easy to assemble, easy to move.
- Motorized up and down travel (100 VAC – 240 VAC, 50/60 Hz)
- Dedicated area for cables and peripherals inside the product: 550 (W) x 380 (H) x 132mm (D).

Equivalent to: SMS Prescense Mobile Motorized XL

5 m HDMI/230V snake cable to be included

3.5.3 Flat screens for press room

- 85" screen diagonal
- 4K LCD panel
- Auto on/off
- LED light source
- 500 Nit luminance
- Slim line wall bracket included

Equivalent to: Samsung QM85F

3.5.4 Flat screens for convenience monitor, aud. 2+3

- 43" screen diagonal
- 4K LCD panel
- Auto on/off
- LED light source
- 500 Nit luminance
- Including floor stand dolly
- Including 5 m 230V + HDMI snake

Equivalent to: Samsung PM43H
Floor stand dolly equal to: Audipack 390723

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3.6 Videoconference

- UHD resolution to support large screen surfaces
- 1.5 Rack Units (RU) high, rack mountable, with optional rack-mounting solution
- Professional-grade connectors using Euroblock / Phoenix
  Supports Cisco Intelligent Proximity for content sharing to mobile devices and wireless sharing from Macs and PCs
- Supports switched conferencing for enhanced layouts and enabling video on multiple screens
- Participate in Cisco Webex Teams™ whiteboarding sessions from the Webex Teams app; receive on-screen notification of shared whiteboard content (supported on cloud-registered devices)
- Embedded MultiSite with up to 5 participants
- 6 simultaneous video inputs that can be combined individually on all 3 outputs
- Calls with HD video and UHD content
- Simplified join-meeting experience with One Button to Push (OBTP)
- Ideal for team-based collaboration, boardrooms, meeting rooms, and industry applications
- Optimal definition up to 1080p60
- Up to 15 Mbps total MultiSite bandwidth (6 Mbps in point-to-point calls)
- 6 simultaneous video inputs - 3 4K and 3 Full HD
- Connect up to 8 microphones directly to the codec
- Full-duplex audio with high-quality stereo sound
- Full API
- Cisco Media Assure packet loss protection (Cisco ClearPath also supported)
- Up to 6 Mbps point-to-point
- 720p30 from 768 kbps
- 720p60 from 1152 kbps
- 1080p30 from 1472 kbps
- 1080p60 from 2560 kbps
- H.264, H.265, H.263
- 2 HDMI inputs support formats up to maximum 1080p60
- 3 HDMI inputs support formats up to maximum UHD (3840 x 2160) @ 30 fps including HD1080p60
- One 3G-SDI/HD-SDI input supports formats up to maximum 1080p60
- Extended Display Identification Data (EDID)
- Consumer Electronics Control (CEC) 2.0
- 2 HDMI outputs support formats up to 3840 x 2160@60 fps (4Kp60)
- 1 HDMI output supports formats up to 3840 x 2160@30 fps (4Kp30)
- CEC 2.0
- G.711, G.722, G.722.1, G.729AB, 64 kbps and 128 kbps MPEG4 AAC-LD mono and stereo, OPUS
- High quality 20-kHz audio
- 8 separate acoustic echo cancellers
- 8-port audio mixer
- 8 assignable equalizers
- Automatic Gain Control (AGC)
- Automatic noise reduction
- Active lip synchronization
- H.239 (H.323) dual stream
- BFCP Session Initiation Protocol (SIP) dual stream
- Supports resolutions up to 3840 x 2160p15 fps and 1080p60
- 10" touch user interface included

Equivalent to: Cisco WebEx Room Kit Pro + Cisco Touch 10
          Including Cisco Smart Net support and Cisco TelePresence Essential Operate Services for 36 months

Codec to be installed in 19" rack in CAR.

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__User Requirements Specifications, AV systems for auditoriums and press room__

4.0 Remote control system

4.1.1 Controller / processor

- Exclusive modular programming architecture
- Programmable astronomical time clock for scheduled events
- Onboard 256MB RAM & 4GB Flash memory
- Memory card slot
- Industry-standard Ethernet and Cresnet® wired communications
- XPanel with Smart GraphicsTM computer and web based control
- iPhone®, iPad®, and AndroidTM control app support
- Crestron Fusion® Cloud Enterprise Management Service support
- SNMP remote management support
- Two RS-232/422/485 COM ports with hardware and software handshaking
- Four IR/serial, four relay, and eight Versiport I/O ports
- Native BACnetTM/IP support [2]
- Installer setup via Crestron ToolboxTM software or web browser
- C#, symbol based, and drag-and-drop programming environments
- Full Unicode (multi-language) support
- Increased network throughput and security
- Secure access through full user/group management or Active Directory integration
- Hardware level security using 802.1X authentication
- TLS, SSL, SSH, and SFTP network security protocols
- FIPS 140-2 compliant encryption
- IIS v.6.0 Web Server
- IPv6 ready
- Front panel USB computer console port
- 9M wide DIN rail mountable

Please refer to control block schematic P16-006/SK4

Equivalent to: Crestron DIN AP-3

4.1.2 Remote control panels

Aspect Ratio	16:10 WXGA (OP), 17:10 WSVGA (Press Room)
Brightness	400 nits (cd/m²)
Color Depth	24-bit, 16.7M colors
Contrast	950:1
Display Type	TFT Active matrix color LCD
Illumination	LED Backlit w/auto-brightness control
Resolution	1280 x 800 pixels (OP), 1024 x 600 pixels (Press Room)
Size	10.1 inch (257 mm) diagonal (OP)
Size	7.6 inch (178mm) diagonal, Press Room
Touch Screen	Projected capacitive, 5-point multi-touch capable
Viewing Angle	±80° horizontal, ±80° vertical

Equivalent to: Crestron TSW-1060-NC (OP), desktop version
Equivalent to: Crestron TSW-760-NC (Press Room)), wall mount version

4.1.3 Lighting control

The lighting control will be as follows:

- In-house ceiling light is controlled by the CTS. Scenarios will be programmed as pre-sets in the CTS and called by the AV system via DALI interface
- Stage light fixtures for auditorium 3 will be controlled by the AV system using DMX
- Stage light fixtures for auditorium 1+2 and the Press Room will be controlled by the AV system using 0-10V DC signal to the dimmers

The AV remote control system must include interfaces for above.

4.1.4 AV network

- Dedicated AV-LAN to connect all AV devices requiring control and communication over Ethernet
- 10GB Ethernet, CAT6 Gigabit system
- Managed 48 port network switch
- Including 2 x 802.11 a/b/g/n/ac WiFi access points

Equal to: Cisco SGX350-48P + 2x Cisco Small Business WAP571E-E

AVS must liaise with UN-IT to align the installation of the unit, which will be in the IT rack in CAR. The unit will replace the existing network switch.

4.1.5 Programming of remote-control system

The functionality and user interface of the remote-control system is aimed for use by the in-house technician only.

The remote control will be controlling the following functions:

- Display control (on/off/standby), projectors and flat screens
- Light control and pre-sets
- Audio pre-sets
- Video matrix pre-sets and source switching
- Video processor pre-sets
- Video processor source switching
- Room configuration pre-sets

The overall functionality and layout principles are outlined in enclosed functional layout draft ref. P18-008SK005.

AVS must strive to minimize the programming and avoid overlapping programming of functions which may be controlled via dedicated user interfaces for the audio and video systems.

The final functionality and layout is subject to the approval of the user representative and project management.

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User Requirements Specifications, AV systems for auditoriums and press room

5.0 Lighting

Supplemental dedicated stage light is to be installed in the auditoriums and the press room.

The stage light fixtures in auditorium 3 must cover two different stage positions as indicated on drawing 1P18.008-SK001.

All light fixtures must be adjusted for an even stage wash light.

The light fixtures for auditorium 3 will be mounted on a square metal tube, 40 x 60 mm, suspended from the ceiling. Special brackets are required between the light fixture yoke and the metal tube. Note that the metal tube is following the 5-degree inclination of the ceiling.

The small light fixtures for auditorium 1, 2 and the Press Room will be mounted on power tracks.

The fixtures for auditorium 3 is to be controlled by DMX, the small fixtures on power tracks is to be dimmed directly.

The power tracks with associated 230V supply and dimmers for the power tracks will be supplied by UN-City.

5.1.1 Light fixtures for auditorium 3

General
- 60 LED colour mixing pro le spotlight xture
- IP20 rated for dry location use
- CE compliant
- User-friendly control interface with multiple modes and fixture settings

Physical
- Rugged die-cast all-metal housing
- Available in black, white, silver grey, custom colours by request
- Positive locking double-clutch yoke
- Optional Pole Operated Yokes
- Slot for B-size glass, stainless steel or lm gobo patterns and

Electrical
- 100VAC to 240VAC 50/60 Hz universal power input
- Power factor 0.97
- Max. consumption 157W
- Neutrik power in and through connections
- Up to 9 fixtures may be linked via power in/thru connectors per 15A circuit

LED
- 50,000 hour LED life (50,000 hours to 70% intensity)
- 60 Luxeon® Rebel 2.5W LED emitters

Optical
- Daylight LED arrays, 5000° K
- Use the included soft-focus diffuser for creating washes or soft light
- 36° lens tubes

Control
- DMX512 In and Through via ve-pin XLR connectors
- Multiple control options including RGB, strobe, and consolefree Master/Slave mode
- See DMX Control Table for additional information
- 15-bit virtual dimming engine provides smooth, high quality theatrical fades and minimal colour shift during dimming
- RDM functionality for address and setting changes

Thermal
- Ambient operating temperature -20° to 40°C
- Active electronic thermal management for droop-free operation
- Quiet fan cooling

Equivalent to: ETC Connect Source Four LED CE Daylight, 36°, white incl. special yoke bracket.

5.1.2 Custom hanging bar for light fixtures

For hanging 7x light fixtures in auditorium 3.

- 40x60x2 mm steel tube, 3 sections each ca. 410 cm
- Integrated 230V power distribution using Neutrik PowerCon
- Integrated DMX distribution with XLR in/out for each fixture
- Connectors for daisy-chaining the sections
- Powder coated RAL 9016
- 3 pcs. rigging eyebolts per section

Please refer to drawing P18-008_SK7

No. 8 light fixture located in aud. 2 are to be mounted on a suspended custom pole bracket.

Hanging points in ceiling for the attaching the hanging bar will be provided by UN-City.

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5.1.3 Light fixtures for auditorium 1 + 2 and Press Room

Features
- Rugged, die-cast fixture body
- Interchangeable lens tubes permit selection of 19°, 26°, 36°
- and 50° field angles
- Unique, efficient optical system
- Long-life dimmable white LED source
- Three-plane shutters
- Multiple accessories available for color, gobo pattern, and
- filtering purposes
- Multiple mounting options: clamp, canopy and 3-circuit
- Eutrac (or Eutrac compatible track - consult vendor)

General
- CE compliant • IP40 rated

Physical
- Die-cast aluminium construction (A380 grade)
- Fine-texture, high-temperature powder-coated paint
- Steel yoke with 10.3mm diameter mounting hole
- Rotating shutter assembly ±175°
- E-size gobo pattern holder (included) 37.5mm with a 25.4mm image area
- Stainless steel shutters in a tri-plane assembly
- Fixed-beam angles to suit a range of throw distances
- Tool-free tilt and beam adjustment
- High-impact resistant, thermally insulated knobs and shutter handles
- Captive accessory slot for pattern holder
- Dual captive accessory slots for media frame
- Track mount EUTRAC 3-circuit adapter

Electrical
- Power at full intensity: 12W typical, 14W max
- Input voltage 190-250V, 50/60Hz
- Dimmable (forward and reverse phase)*
- Inrush current at 230V: 4A
- CE compliant

LED engine
- Cree LED 5000K color temperature

Optical
- 19° field angle Lens Tube
- Projector-quality, high-contrast lenses
- Beam edge continually adjustable hard to soft edge

Thermal
- 0°C to +40°C ambient operating environment

Equivalent to: ETC Connect Source Four Mini LED 5000K,19° - track mount – white

Power tracks will be provided by UN-City.

6.0 Conference room VIP20 - optional

The AV delivery for the VIP20 conference room is to be regarded and quoted as a fully separate and optional scope.

The room are to be equipped with the following:

- 80" flat screen, reusing one existing screen from the Press Room
- HDMI connection
- Telepresence video conference system
- Digital microphone matrix system with auto-mix function
- Distributed ceiling speaker system

6.1. Flat screen and HDMI connection

- Moving flat screen from Press Room
- Install new wall bracket
- Install HDMI fiber cable from meeting table to flat screen
- HDMI Adaptors for USB-C Displayport and Mini Displayport to be included

6.2 Video conference system

- Codec: Equal to pos. 3.6.
- Including PTZ camera.
- Camera to be ceiling mounted

Codec equivalent to:	Cisco WebEx Room Kit Pro + Cisco Touch 10 Including Cisco Smart Net support
PTZ camera equivalent to:	Cisco Precision 60

6.3 Digital microphone matrix system

Audio Capture / DSP
Up to eight discrete steerable lobes for precise positioning to participant(s)
DSP Utilities:
Steerable Coverage™ Technology
Automatic Mixing
Echo Reduction
4 Band C/S PEQ per channel
Software Control
Simple, smart browser-based interface including templates and varying polar patterns for all device parameters
10 Presets
Connectivity
Dante™ Audio Networking, standard PoE (class 0) and Control carried on single Ethernet cable
Control strings for third-party preset controllers including Crestron and AMX
Hardware / Installation
Configurable multi-color LED bar
Color options of red, orange, yellow, green, blue, purple, white, pink
Brightness controls (default, dim, disabled)
External control through browser-based software
Device Reboot/Factory Reset Options
Two stage hardware reset: 4 second press resets Network Settings, 8 second press resets to factory default restoring all settings including device name and network details
Flush mounted into standard ceiling tiles. VESA mount compatible and hanging mounts available through a variety of third-party suppliers.
CommShield® RF Immunity
2 units are to be ceiling mounted evenly spaced in the ceiling and centred in relation to conference table. The microphone array must be configured for a total of 16 directional beams covering the conference room and the beams controlled via auto-mix.

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The microphone/DSP system must include effective echo-cancelling and integrate with the video conference system as well.

Microphone arrays equivalent to: Shure MXA910
Mixer/processor equivalent to: Shure P300-IMX (2 pcs)
LAN switch for Dante network: equivalent to: Cisco SG350XG-2F10

6.4   Distributed ceiling speaker system

Due to the size of the room, a low-level speech reinforcement system is required.

The system must be based on 8 pcs. high quality ceiling loudspeakers installed to ensure an even coverage of the conference seating.

Power amplifier: (2 pcs)
Dante audio network
ClassD design
1x100W/70V
1U/half-rack wide housing

Loudspeaker: (8 pcs)
6.5" two-way system with HF compression driver
50Hz – 20KHz frequency range
100-degree nominal coverage
87dB sensitivity SPL 1W/1m
100W power capacity

Power amplifier equivalent to: Extron NetPA1001-7+VAT
Loudspeaker equivalent to: ElectroVoice EVID C6.2

6.5   Installation

Central equipment shall be installed in a suitable wall-mount 19" rack cabinet in a separate room in close proximity to the conference room.

UN-City will provide 230V outlets and cable conduits as required.

UN-City will handle dismantling of the false ceiling and provide the cut-outs for the loudspeakers.

AVS must include all required cables, installation materials and consumables.

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User Requirements Specifications, AV systems for auditoriums and press room

Enclosed annexes:

P18-008 -URS BOM: Bill of Material
P18-008-SK001:   Auditorium plan drawings, sections and front elevations
P18-008-SK002:   Special bracket for projectors in auditorium 3
P18-008-SK003:   Special bracket for projectors in auditorium 2
P18-008-SK004:   Audio user interface canvas: functions and layout
P18-008-SK005:   User interface for AV remote control system: functions and layout
PE20482-01:   AV block schematic, existing system
P18-008-BS2:   AV block schematic, updated system
P18-008-SK006:   Cabling provided by UN-City
P18-008-SK007:   Custom hanging bar for light fixtures

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