المجلس الوطني الاتحادي
الإمارات العربية المتحدة

الممارسة / المناقصة: (2025-06)

تاريخ الطرح

2025/05/26 ---2025/5/05

اسم المشروع : تطوير أنظمة الصوت والصورة بقاعة زايد بالمجلس الوطني الاتحادي بابوظبي

جدول المحتويات

1- التعريفات

مُقدم العطاء/ المناقص	الكيان القانوني الذي يحق له تقديم عروض اسعار استجابة لهذا العرض
المجلس / الطرف الاول	المجلس الوطني الاتحادي - ابوظبي
الطرف الثاني	الشركة المتعاقد معها لتنفيذ المشروع
مدير المشروع	ممثل الطرف الأول للاشراف ومتابعة سير تنفيذ أعمال المشروع
الأعمال	الاعمال المطلوب تنفيذها طبقا لشروط العقد
العقد	جميع وثائق العقد وهي مستندات الممارسة والعقد والشروط العامة والخاصة والمواصفات العامة والخاصة
المورد/ المقاول	مُقدم العطاء المختار الذي تم إخطاره رسميًا لتنفيذ نطاق العمل المحدد في طلب تقديم العروض هذا
موقع المشروع	مقر المجلس الوطني الاتحادي في أبوظبي

2-مقدمة عن الممارسة

- يسر المجلس الوطني الاتحادي دعوتكم للاشتراك في الممارسة / المناقصة وتقديم عروضكم الفنية والمالية بموجب المتطلبات المرفقة وطبقاً للمتطلبات اللاحقة.
- على المشترك في الممارسة/ المناقصة تقديم العروض الفنية والمالية المعدة على النحو التالي:
  - **أولا: العرض المالي ويشتمل على :**

- القيمة الاجمالية للأعمال قبل الضريبة وبعد الضريبة.

  - **ثانيا: العرض الفني ويشتمل على :**

1. المواصفات الفنية القياسية لكافة الأعمال المبينة في بيان الأعمال المطلوبة رقم (4)
2. توقيع مستندات المناقصة/ الممارسة
3. تقديم ملف الشركة ويتضمن الرخص وهيكل الشركة وشهادات الايزو و شهادة القيمة المحلية المضافة والشهادات التقديرية .
4. أية إيضاحات تراها الشركة ضرورية ومؤثره في أعمال المشروع.
5. السيرة الذاتية لجميع أعضاء فريق العمل للمشروع.
6. سياسة إدارة نظام ضبط ومراقبة الجودة.
7. سياسة إدارة نظام الصحة والسلامة المهنية والبيئة.

  - **ثالثاً: التقييم:**

- سيتم تقييم العروض المؤهلة بنسبة 70 ٪ فنياً و 40٪ مالياً حال كونها توريدات
- وحال كونها خدمات مقدمة يتم التقييم بنسبة 70% فنياً و30% مالياً وذلك بناءً على المعايير المعتمدة ومع الأخذ في الاعتبار استيفاء متطلبات العروض المذكورة.
- لا يحق لأي مناقص الاعتراض على نتيجة التقييم.
- تتم عملية التقييم بموجب المستندات المقدمة من قبل المناقص.
- التقييم الفني هو مجموع العلامات التي يحصل عليها المناقص بعد تقييم عطائه الفني.
- العطاءات المؤهلة هي العطاءات التي حصلت في التقييم الفني على مجموع علامات 70 % فأكثر.
- المشاريع المشابه هي أي مشاريع مرتبطة بنفس نطاق اعمال هذا العقد.

- **رابعاً: طريقة التقديم:**

- يتم تقديم العروض المالية والفنية ببوابة الموردين الالكترونية الخاصة بالمجلس وفي حال طلب تقديم ضمان بنكي بقيمة (5%) من العرض المالي يرفق بالنظام نسخة منه ويسلم الاصل في ظرف مغلق ومختوم بالشمع الأحمر لقسم المشتريات والعقود بمبنى المجلس الوطني الاتحادي بأبوظبي في الموعد المحدد.

ملاحظة:

تعتبر الوثائق النهائية والكاملة للمشروع والمعتمدة للتنفيذ بما في ذلك المخططات والمستندات والمقدمة من الشركة ملكاً خاصاً للمجلس الوطني الاتحادي وله الحق في استخدامها في هذا المشروع أو أي مشروع آخر دون مطالبة الشركة بأية أجور أو حقوق إضافية لاحقاً.

- **خامساً: المواعيد النهائية:**

يجب إرفاق جميع العروض المالية والفنية في موعد أقصاه المحدد في الجدول أدناه

الرقم	الحدث	التاريخ
1	طرح الممارسة / المناقصة	2025/5/05
2	الموعد النهائي لتقديم الاستفسارات إلى المجلس الوطني الاتحادي (إن وجدت)	2025/5/12
3	رد المجلس الوطني الاتحادي على الاستفسارات (إن وجدت)	2025/5/15
4	الموعد النهائي لتقديم العروض الساعة: 12:00 ظهراً	2025/05/26

يجب على الجميع اتباع هذا النطاق الزمني،حيث يخطط المجلس الوطني الاتحادي الالتزام بالبرنامج المحدد ضمن النطاق الزمني المذكور أعلاه، وسيتم إبلاغ المشاركين بالمناقصة، عبر البريد الإلكتروني عند حدوث أي تغيير في الجدول الزمني.

- **سادساً: الاستفسارات والتوضيحات:**

يمكن لمقدمي العطاء إرسال أسئلة كتابية عبر البريد الإلكتروني إلى العنوان التالي قبل التاريخ المحدد أعلاه، وقبل الموعد النهائي لتقديم العروض:

البريد الإلكتروني: Bids@almajles.gov.ae

قسم المشتريات والعقود

رقم هاتف: 026199440-026199411

المجلس الوطني الاتحادي (FNC)، صندوق بريد 836، أبو ظبي، الإمارات

ملاحظة : في حال طلب عقد اجتماعات سيتم جدولتها مع مقدمي العطاء لمعرفة المتطلبات/التوضيحات وللإجابة على الأسئلة التي قد تراود مقدمي العطاءات،كما يمكن لهم تجهيز أسئلة مكتوبة لتوضيح أي نقاط في وثائق المناقصة في أي وقت حتى التاريخ المحدد بالجدول اعلاه ، وسيتم تعميم هذه الإجابات على كل المتقدمين.

3- تعليمات المناقصين

يجب على كل من يتقدم للاشتراك في المناقصة مراعاة ما يأتي:

- أن يحدد عنواناً له في دولة الإمارات العربية المتحدة لتوجيه المراسلات (مع ذكر صندوق البريد والعنوان البريدي وأرقام الهواتف والفاكس والبريد الالكتروني).
- على المناقص الالتزام بما ورد في وثائق المناقصة وكافة الملاحق الخاصة بمناقصة المشروع وملئ كافة الجداول المطلوبة.
- لا يجوز للمناقص شطب اي شرط من الشروط التعاقدية او المواصفات الفنية أو اجراء أي تعديل عليها وإلا استبعد عطاؤه، واذا رغب المناقص في وضع اشتراطات فنية خاصة أو اجراء أي تعديل، فعليه أن يوضحها في كتاب مرفق بالعطاء.
- على كل مناقص ان يراعي عند تعبئة العطاء تجنب محو أو كشط أي بيان قام بوضعه في العطاء.
- على المناقصين أن يراعوا تقديم عطاءاتهم في الموعد المحدد مستوفية لجميع الشروط المطلوبة ولن يلتفت الى عطاء يصل بعد الميعاد المحدد مهما كان السبب في تأخيره.
- **يحق للمجلس سحب أي بند من بنود العرض الفني .**
- يعتبر توقيع المناقص على العطاء اقراراً منه باطلاعه عليه وبدراسته وقبوله لجميع ما ورد في وثائق هذا العطاء.
- **يجب على جميع المناقصين ارفاق كفالة بنكية بقيمة (5%) من قيمة العرض المالي (بالنظام) ويسلم الاصلي بمقر المجلس ، وفي حال الفوزيتم تقديم (10%) من قيمة العقد.)**
- اذا تخلف المناقص الفائز عن الحضور لتوقيع العقد بدون عذر مقبول خلال مدة أقصاها أربعة عشر يوما من تاريخ إخطاره بترسية العطاء اعتبر منسحباً مع حرمانه من الاشتراك في المناقصات التي يطرحها المجلس للمدة التي يحددها.
- على المناقص الفائز تعيين ممثل/ فريق عمل مقيم للتنسيق مع متطلبات المجلس.
- طلب تقديم العرض لا يلزم المجلس الوطني الاتحادي بمنح العقد أو إلزامية المجلس بمنح العطاء لأقل العروض المقدمة سعراً .
- يجب ألا يتضمن العرض الفني أي معلومات مالية، وسوف يستثنى أي عرض فني يحتوي على أي شكل من أشكال المعلومات المالية التي يمكن أن تؤدي إلى تحديد عرض السعر أو أي معلومات أخرى قد تكون ذات صلة بالعرض.
- يقع على عاتق الطرف الثاني مسؤولية فهم جميع المتطلبات و طرح أي تساؤلات بما يختص بالمشروع قبل تقديم عرضه النهائي.
- تعتبر الدعوة وكافة الملاحق والمراسلات جزء لا يتجزء من وثائق المناقصة والعقد .

4- بيان الاعمال المطلوبة

1-Federal National Council Solution Integration Scope of Work

1. Introduction

The Federal National Council seeks proposals from audiovisual (AV) integrators with demonstrated expertise in deploying large-scale projects of a similar nature and complexity for the comprehensive upgrade of Zayed Hall's AV systems during the summer recess. The project involves LED walls, Loudspeakers, AVoIP distribution, cameras system, and control room equipment to align with state-of-the-art technology and future-proof the council's capabilities.

2. Project Objectives

The primary goal of this project is to:

- Replace outdated AV systems with advanced, dependable, and scalable solutions.
- Seamlessly integrate new systems with existing AV and broadcast infrastructure.
- Provide high-quality, user-friendly, and efficient audiovisual capabilities for legislative sessions and other events, such as intuitive touchscreen controls, automatic shot framing for cameras, and seamless content switching with minimal operator intervention.
- Ensure compliance with UAE regulations and standards.

Key tasks within this project scope include:

1. Designing and implementing the upgraded video distribution and switching system.
2. Integrating existing AV, broadcast, and production solutions with the upgraded system.
3. Providing updated as-built drawings, source code, user manuals, and training manuals during the handover process.
4. Offering after-sales support for the upgraded system.
5. Conducting operational training sessions for the systems that are part of the upgrade.
6. Providing professional services tailored to end-user requirements.
7. The AV Integrator will be responsible for all passive components related to the project.
8. Subscription-based licensing for the upgrade will be priced for one year with a provision for three years.
9. High Availability / Redundancy to be considered wherever applicable.

10. The AV Integrator is responsible for integrating the newly furnished equipment with the owner-provided equipment that is not part of the upgrade. This includes providing any necessary cabling, software updates, and accessories to ensure a fully functional system.
11. Ensure lead times for necessary equipment for the upgrade are provided, verifying that all items will arrive and be installed within the project timeline.
12. Installation, commissioning, and training to occur between July 1st and Sep 15th, 2025.
13. All removed and dismantled equipment will be wiped, disposed of, and handed over to FNC by the AV Integrator.

The AV Integrator is responsible for ensuring the comprehensive functionality of the system, encompassing integration, programming, and commissioning. By fulfilling these duties, the project endeavors to provide an audiovisual system that not only meets but also anticipates the present and future requirements of the Federal National Council. Additionally, participation in a site visit during the tender process is obligatory for all AV Integrators interested in bidding on this project. Please note that while selected items within this scope of work have comprehensive specifications. It is the responsibility of the integrator to source and provide well-known professional and compatible products that meet the project's requirements.

LED Wall(s)

Design Narrative

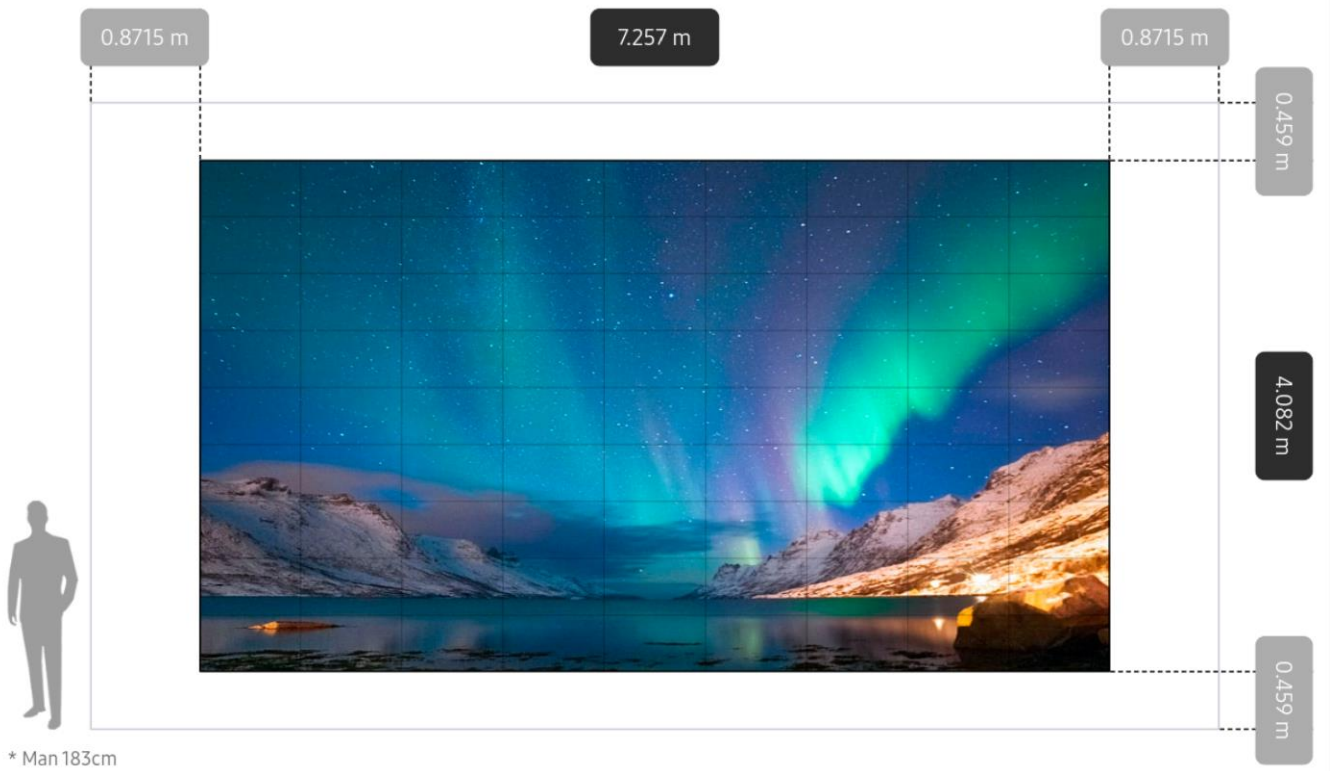
The scope of work includes the installation of one 4K LED wall, it will be positioned on the existing wall where the current LED wall is situated. This LED wall will feature front serviceability. AV INTEGRATOR will supply the complete setup, including installation, the mounting frame, a spare parts kit, and a three-year warranty. Additionally, AV INTEGRATOR will be responsible for removing the existing LED wall. AV INTEGRATOR will ensure structural support of the cladding of the installed LED walls and provide scaffolding necessary for the installation process.

Scope of Work – Hardware Integration

This section describes hardware specifications. All equipment provided and installed by AV INTEGRATOR unless otherwise specified.

LED Wall(s)

The LED Walls shall be a minimum of 4K in resolution and meet or exceed the following specifications:



1. Physical Parameters

- **Pixel Pitch:** 1.68 mm
- **Pixel Configuration:** 480 x 270
- **Diode Type:** Flip-chip RGB LED (182 x 93)

2. Optical Performance

- **Brightness:** 1000 nits

- **Contrast Ratio:** 16,000:1
- **Viewing Angle (Horizontal / Vertical):** 160° / 140°
- **Color Temperature:** 6,500K ± 500K.

3. Electrical Parameters

- **Video Rate:** 120 Hz
- **Input Voltage:** 100–240V AC.
- **Power Frequency:** 50/60 Hz
- **Maximum Power Consumption:** 411 W/m²
- **Refresh Rate:** 3840 / 7680 Hz

4. Environmental Conditions

- **Operating Temperature:** 0°C to +40°C
- **Operating Humidity:** 10–80% RH (non-condensing)

5. Certification and Compliance

- **Safety Compliance:** IEC 60950-1
- **EMC Compliance:** Class B

6. Origin and Warranty

- **Country of origin**: Europe, North America, or East Asia (non-Chinese) – Manufacturer must have a local presence in UAE with a service center for after sales support.
- **Warranty:** Limited Lifetime warranty Lifetime of LED is 150,000 hours

LED Controller(s)

The LED Controller(s) shall meet or exceed the following specifications:

1. Video & Software Features

- **Maximum Output Resolution:** 7680 x 4320
- **Software Platform:** Oscar-P
- **Content Management Support:** Yes (compatible with integrated media management systems)
- **Refresh Rate:** 120 Hz

2. Connectivity

- **DisplayPort Input:** 1
- **DVI Output:** 1
- **Audio Output:** Optical
- **Optical Out:** 8 ports

- **Bluetooth:** Supported
- **Bluetooth-Compatible Devices:** Keyboard, Mouse

3. Power

- **Typical Power Consumption:** 120 W

4. Mechanical Specifications

- **Unit Dimensions (W x H x D):** 440 x 60.5 x 348.9 mm
- **Unit Weight (without stand):** 4.2 kg

5. Certification and Compliance

- **Safety Compliance:** EN60950-1
- **EMC Compliance:** Class B

6. I/O Expansion Card

- **Card Dimensions:** 75.6 x 23.3 x 210.6 mm
- **Card Weight:** 0.4 kg

7. Front LCD Panel

- **Panel Size:** 76.9 x 38.22 mm
- **Panel Resolution:** 320 x 120

Video and Presentation Distribution System

Design Narrative

The existing video distribution and switching system currently serves approximately 185 desk-mounted monitors and allows presentation input from six designated seating locations. This system is based on legacy twisted-pair encoding, decoding, and switching hardware from 2010. As part of the planned upgrade to an AV over IP (AVoIP) platform, several existing components are to be retained and integrated into the new system. These include:

- **Contact-closure video/PC selection buttons** embedded in each desk, currently interfacing with legacy analog video switches.
- **Small form factor desktop PCs** with DisplayPort and VGA outputs (approx. 10 years old)

The existing distribution system is to be fully replaced with a cost-effective, low latency, 4K digital video infrastructure. This includes networked 4K video encoders and decoders, HDMI distribution amplifiers, and HDMI switches at each desk.

System Layout and Distribution Strategy

The seating arrangement consists of the following areas:

- 1 podium section with 3 seats
- 7 sections with 4 seats each
- 15 sections with between 5 and 8 seats each

- 6 sections with 9 to 10 seats each

In total, there are **25 Member row sections**, **2 podium sections**, and **2 administrative side rows**. Each row will be equipped with:

- One network video decoder
- One or more HDMI distribution amplifiers (1:4 or 1:8)
- One 2-input, 1-output HDMI switch per desk, allowing user control between program video and local PC input via the existing contact-closure buttons.

A single video encoder will stream the program video content via Cat6a cabling to the decoders located in each row section. The HDMI output from each decoder is then split to serve new desktop monitors at each desk in that section.

In addition, six video encoders will be installed at the designated presentation seats. These will send presentation content to the operator control room, where a single decoder converts the stream back to HDMI. The signal is then converted to SDI via a format-scaling device to accommodate future compatibility needs and routed to the central video mixer for distribution to all displays.

Device Requirements

Video Encoders/Decoders:

- Gigabit LAN port for 4K60 4:4:4 video transmission and control
- Bandwidth requirement not exceeding 1 Gbps.
- PoE-powered.
- HDMI input/output (encoder must include HDMI loop-through)
- Ultra-low latency (less than one frame)
- Certified for use with integrated control systems.
- Configuration software included.
- LAN-based system health reporting compatible with centralized monitoring

HDMI Distribution Amplifiers:

- Available in 1:4 and 1:8 configurations
- Support for 4K60 4:4:4 video.

HDMI Input Switches (per desk):

- Two HDMI inputs, one HDMI output
- Support for 4K60 4:4:4 video.
- Compatible with existing contact-closure desk buttons

Control Integration

The central control system is to be updated to manage presentation requests from the six designated locations. New configurable keypads will be installed at these seats, providing three-button functionality:

- **Request Presentation**
- **Start Presentation**
- **Cancel Presentation**

Each button will be engraved and fitted with programmable LED indicators to provide visual feedback. Button activations will send notifications to the operator's touch panel interface, allowing appropriate routing and switching of presentation content.

Video transmission to be secured/disabled during any private sessions.

Scope of Work – Hardware Integration

This section describes hardware specifications, quantities determined by AV INTEGRATOR. All equipment provided and installed by AV INTEGRATOR unless otherwise specified.

Professional Network AV Encoder / Decoder

Shall meet or exceed the following specifications:

Video & Audio Performance

- **Codec**: JPEG2000-based visually lossless compression
- **Latency**: Ultra-low, sub-frame (approx. 2ms at 4K60/1080p60; ~4ms at 4K30/1080p30)
- **Bit Rate**: 50–800 Mbps
- **Streaming Protocols**: IP, UDP, TCP, ICMP, IGMP
- **HDCP & Encryption**: HDCP 2.2/2.3, AES-256 encryption
- **Supported Resolutions**:
    - Up to 4K60 4:4:4 HDR (8-bit & 12-bit variants)
    - HDR formats: HDR10, HDR10+, HLG, Dolby Vision

Signal Inputs & Outputs

- **Encoder Input**: HDMI (with loop-through), up to 4K60 4:4:4
- **Decoder Output**: HDMI, up to 4K60 4:4:4
- **Scaler (Decoder)**: Integrated scaling and rotation; supports mixed resolution environments and video wall configurations (up to 16x16)

Audio Capabilities

- **Input Types**: HDMI (embedded), Analog Stereo (balanced/unbalanced)
- **Output Types**: HDMI (pass-through), Analog Stereo (balanced), Native AES67
- **Formats Supported**: Dolby (all major formats), DTS, LPCM (up to 8 channels)

- **Conversion Quality**: 24-bit / 48 kHz for both ADC and DAC
- **Analog Output Volume Control**: -80 dB to +20 dB

Control & Connectivity

- **Network**: 100/1000 Mbps Ethernet (RJ45), PoE (IEEE 802.3af/at)
- **USB**:
    - Encoder: USB 2.0 device (Type-B)
    - Decoder: USB 2.0 host (2x Type-A)
- **Serial**: Bi-directional RS-232
- **GPIO**: For third-party device integration
- **CEC/EDID**: HDMI CEC (decoder), EDID (encoder)

Power & Environmental

- **Power Consumption**: 12W typical
- **Cooling**: Passive (fanless)
- **Temperature Range**: 0° to 40° C
- **Humidity**: 10%–90% RH, non-condensing
- **Acoustic Output**: Silent (0 dBA)
- **Heat Dissipation**: ~41 BTU/hr

2 Input HDMI Switcher

Shall meet or exceed the following specifications:

Video Capabilities

- **Maximum Resolution**: Up to 4K60 @ 4:4:4
- **HDMI Compliance**: HDMI 2.0b
- **Data Rate**: Up to 18 Gbps
- **Color & HDR**:
    - Deep Color up to 12-bit
    - Supports HDR, including HDR metadata exchange.
    - Automatically adjusts color bit depth and HDMI/DVI format based on display EDID
- **3D Support**: Yes
- **HD Audio Formats**: Supports HD lossless audio

EDID & Compatibility

- **EDID Management**: Built-in EDID Manager for reliable source detection and content output
- **Format Correction**: Automatically corrects signal format for compatibility between source and display

Control & Connectivity

- **Control Interfaces**:

- RS-232
- Ethernet (LAN/WAN)
- Contact Closure (for physical button control)

- **Automatic Switching**:
  - Configurable to switch to highest numbered input or to active input based on priority

8 Output HDMI Distribution Amplifier

Shall meet or exceed the following specifications:

Video Capabilities

- **HDMI Version**: HDMI 2.0, HDCP 2.2 compliant
- **Supported Resolutions**:
  - **UHD/HD**: Up to 4096×2160 (DCI 4K) @ 60Hz
  - **VESA Formats**: Wide range including 2560×2048 down to 640×480
- **Color**: RGB, YUV
  - Chroma: 4:4:4, 4:2:2, 4:2:0
  - Depth: 8, 10, 12-bit
- **HDR Support**: HDR10, HLG, Dolby Vision (up to 60Hz)

Signal Connections

- **Inputs**:
  - 1x HDMI Type A (female)
- **Outputs**:
  - 8x HDMI Type A (female)
  - 1x Analog Audio (5-pin captive screw)
  - 1x Digital Audio (S/PDIF RCA)
- **Other Ports**:
  - Mini-USB (for firmware)
  - Locking power connectors (main and backup)

EDID & Indicators

- **EDID Management**: Internal and Learn modes
- **LED Indicators**:
  - Power (2x red)
  - Output status (8x blue)
  - EDID (2x blue)

Performance Range

- **Max Cable Distances**:
  - 4K: up to 5 meters (15 ft)
  - 1080p: up to 10 meters (30 ft)

Power & Compliance

- **Power Input**: AC 100–240V, 50/60Hz

Environmental

- **Operating Temp**: 0°C to 50°C (32°F to 122°F)
- **Storage Temp**: -20°C to 60°C (-4°F to 140°F)
- **Humidity**: 20%–90% RH (non-condensing)

Desktop QHD Video Monitor

Shall meet or exceed the following specifications:

Display

- **Screen Size: 24"**
- **Flat / Curved: Flat**
- **Active Display Size (HxV): 526.848 x 296.352 mm**
- **Aspect Ratio: 16:9**
- **Panel Type: IPS**
- **Brightness: 350 cd/m² (Typical), 280 cd/m² (Min.)**
- **Contrast Ratio: 1000:1 (Static), Mega (Dynamic)**
- **HDR: HDR10**
- **Resolution: QHD (2,560 x 1,440)**
- **Response Time: 5ms**
- **Viewing Angle: 178°/178°**
- **Color Support: Max 1.07B**
- **sRGB Coverage: 99% (Typ)**
- **Refresh Rate: Max 100 Hz**

Interface

- **Display Port: 1 EA, Version 1.4, HDCP Version 2.2**
- **HDMI: 1 EA, Version 2, HDCP Version 2.2**

- **Headphone: Yes**
- **USB Hub: 3, Version 3.0**

Operation Conditions

- **Temperature: 10~40 ℃**
- **Humidity: 10~80%, non-condensing**

Design

- **Front Colour: Black**
- **Rear Color: Black**
- **Stand Color: Black**
- **Stand Type: HAS PIVOT**
- **HAS (Height Adjustable Stand): 120 mm (±5.0 mm)**
- **Tilt: -2.0˚ (±2.0˚) ~ 25.0˚ (±2.0˚)**
- **Swivel: -30.0˚ (±3.0˚) ~ 30.0˚ (±3.0˚)**
- **Pivot: -92.0° (±2.0°) ~ 92.0° (±2.0°)**
- **Wall Mount: 100 x 100 mm**

Eco

- **Recycled Plastic: Over 10%**

Power

- **Power Supply: AC 100~240 V**
- **Power Consumption: 80 W (Max)**
- **Type: Internal Power**

Control Room Switching and Recording Equipment

Design Narrative

Display Resolution and Monitor Considerations

When selecting new computer monitors, three common resolutions will be considered:

- **Full HD (FHD)** – 1080p resolution, which aligns with the current system's 1080i50 operation.
- **Quad HD (QHD)** – 1440p resolution, offering a noticeable improvement over FHD.
- **Ultra HD (UHD / 4K)** – 2160p resolution, providing high image clarity but only available in larger screen sizes.

Monitor

Monitors used at desks will not exceed approximately 24 inches, to ensure they do not obstruct sightlines

to the hall or interfere with camera views of participants. The current monitors are 21.5 inches and support 1080p resolution.

While UHD offers higher picture fidelity, it is typically only found in monitors 27 inches or larger. For smaller screens around 23–24 inches, **QHD** provides an ideal balance between image quality and practical screen size, and should be considered for replacements.

Video System Upgrades – Mixer and Signal Management

The existing video mixer supports up to 6G video, which limits UHD operation to interlaced formats. To fully support **progressive UHD (2160p50)**, the video mixer will be upgraded to a unit capable of handling **12G video signals**.

Alongside the mixer upgrade, the control panel will also be replaced with a newer model offering equivalent functionality but improved integration and performance.

For systems delivering UHD signals, a **scaler** is required to downscale the video to QHD or FHD for desktop monitors, recording devices, and interface hardware. Supporting equipment such as recorders and video interfaces must also be capable of handling **12G UHD signals**.

A modern video mixer will also support UHD multi-view output, enabling high-resolution displays for preview, program, and control interfaces. As such, the system design includes multiple **4K monitors (around 27")** for operational viewing and a large-format **UHD screen (around 83")** for centralized multi-view monitoring.

Scope of Work – Hardware Integration

This section describes hardware specifications, quantities determined by AV INTEGRATOR. All equipment provided and installed by AV INTEGRATOR unless otherwise specified.

Capture and Playback

The Capture and Playback device(s) shall meet or exceed the following specifications:

Connections

- **SDI Video Inputs:** 1
- **SDI Video Outputs:** 2
- **SDI Monitor Outputs:** 1
- **SDI Rates:** 270Mb, 1.5G, 3G, 6G, 12G
- **HDMI 2.0 Video Inputs:** 1
- **HDMI 2.0 Video Outputs:** 1
- **Built-in Speaker:** Mono
- **Audio Output:** 1 x 6.35 mm headphone jack
- **Screen:** 2.2 inch LCD

- **Timecode Connections:** 1 x XLR In, 1 x XLR Out
- **Reference Connections:** 1 x BNC In, 1 x BNC Out (Tri-Sync or Black Burst)
- **SDI Audio Inputs:** 16 channels embedded audio
- **SDI Audio Outputs:** 16 channels embedded audio
- **HDMI Audio Inputs:** 8 channels embedded audio
- **HDMI Audio Outputs:** 8 channels embedded audio
- **Remote Control:** 1 x RS-422 In, 1 x RS-422 Out
- **Recorder Configuration:** Via user interface or Ethernet Protocol
- **Ethernet:** 10Gb/s
- **Computer Interface:** 1 x USB Type-C 3.1 Gen 2 (up to 10Gb/s)

Standards

- **SD Video Standards:** 525i59.94 NTSC, 625i50 PAL
- **HD Video Standards:** 720p50, 720p59.94, 720p60, 1080i50, 1080i59.94, 1080i60, 1080p23.98, 1080p24, 1080p25, 1080p29.97, 1080p30, 1080p50, 1080p59.94, 1080p60, 1080PsF23.98, 1080PsF24, 1080PsF25, 1080PsF29.97, 1080PsF30
- **2K DCI Video Standards:** 2Kp23.98 DCI, 2Kp24 DCI, 2Kp25 DCI, 2Kp29.97 DCI, 2Kp30 DCI
- **Ultra HD Video Standards:** 2160p23.98, 2160p24, 2160p25, 2160p29.97, 2160p30, 2160p50, 2160p59.94, 2160p60
- **4K DCI Video Standards:** 4Kp23.98 DCI, 4Kp24 DCI, 4Kp25 DCI, 4Kp29.97 DCI, 4Kp30 DCI
- **SDI Compliance:** SMPTE 259M, SMPTE 292M, SMPTE 296M, SMPTE 424M, SMPTE 425M level A and B, SMPTE 2081-1, SMPTE 2081-10, SMPTE 2082-1, SMPTE 2082-10, SMPTE 2084, SMPTE 2108-1
- **SDI Metadata Support:** HD RP188, closed captioning CEA-708, HDR Metadata
- **Supported HDMI Formats:** 525i59.94 NTSC, 625i50 PAL, 720p50, 720p59.94, 720p60, 1080i50, 1080i59.94, 1080i60, 1080p23.98, 1080p24, 1080p25, 1080p29.97, 1080p30, 1080p50, 1080p59.94, 1080p60, 2Kp23.98 DCI, 2Kp24 DCI, 2Kp25 DCI, 2Kp29.97 DCI, 2Kp30 DCI, 2160p23.98, 2160p24, 2160p25, 2160p29.97, 2160p30, 2160p50, 2160p59.94, 2160p60, 4Kp23.98 DCI, 4Kp24 DCI, 4Kp25 DCI, 4Kp29.97 DCI, 4Kp30 DCI
- **Audio Sampling:** 24-bit, 48 kHz
- **Video Sampling:** 4:2:2 YUV
- **Color Precision:** 10-bit

- **Color Space:** REC 601, REC 709, REC 2020
- **HDR Support:** Hybrid Log-Gamma, ST2084
- **Multi Rate Support:** Auto detection of SD, HD, 6G-SDI, 12G-SDI
- **Copy Protection:** HDMI input is unable to capture from copy protected HDMI sources

Media

- **Disc Slots:** 2 x 2.5 inch
- **SD Card Slots:** 2
- **USB C 3.1 Gen 2 Expansion Port:** For external recording

Supported Codecs

- ProRes HQ QuickTime, ProRes 422 QuickTime, ProRes LT QuickTime, ProRes Proxy QuickTime, DNxHD, DNxHR, H.265, H.264

Control

- **Built-in Control Panel:** 16 buttons, search dial, 2.2 inch color display
- **External Control:** RS-422 deck control, SDI start/stop, timecode run, Ethernet Protocol, remote FTP file upload

Standards Converter

The Standards Converter device(s) shall meet or exceed the following specifications:

Connections

- SDI Video Inputs: 2 x BNC (10-bit SD, HD, 2K, 3G HD, 6G, 12G Ultra HD auto switching)
- SDI Video Input Loops: 2 x BNC (Reclocked, 10-bit SD, HD, 2K, 3G HD, 6G, 12G Ultra HD auto switching)
- SDI Video Outputs: 2 x BNC (10-bit SD, HD, 2K, 3G HD, 6G, 12G Ultra HD auto switching)
- Quad SDI Video Outputs: 4 x BNC (10-bit 3G-SDI Quad Link or Quad HD Split for Ultra HD)
- HDMI Video Inputs: 1 x HDMI 2.0 type A (YUV or RGB, auto switching)
- HDMI Video Loop Inputs: 1 x HDMI 2.0 type A (Active Input loop)
- HDMI Video Outputs: 1 x HDMI 2.0 type A (YUV or RGB, user selectable)
- SDI Audio Inputs: 16 channels embedded audio
- SDI Audio Outputs: 16 channels embedded audio
- HDMI Audio Inputs: 8 channels embedded audio
- HDMI Audio Outputs: 8 channels embedded audio
- Optical Fiber Connection (optional): 1 x SMPTE optical fiber SFP socket
- Optical Fiber Video Inputs: 1 x 10-bit SD, HD, 3G HD, 2K, Ultra HD auto switching
- Optical Fiber Video Outputs: 1 x 10-bit SD, HD, 3G HD, 2K, Ultra HD auto switching
- Optical Fiber Audio Inputs: 16 channels embedded audio
- Optical Fiber Audio Outputs: 16 channels embedded audio
- Analog Audio Inputs: 2 x XLR (balanced), 2 x RCA (unbalanced)
- AES/EBU Digital Audio Inputs: 2 x XLR (4 channels, balanced)
- Timecode Inputs: VITC/ATC support
- Timecode Outputs: VITC/ATC support
- Reference Input: 1 x BNC (Black Burst or Tri-level sync)
- Reference Output: 1 x BNC (Black Burst or Tri-level sync)
- Computer Interface: 1 x USB Type-C, 1 x RJ45 Gigabit Ethernet
- Processor Interface: Illuminated pushbuttons, status LEDs, LCD with onscreen menus

Standards

- SD Video Standards: 525i59.94 NTSC, 625i50 PAL
- HD Video Standards: 720p50, 720p59.94, 720p60, 1080i50, 1080i59.94, 1080i60, 1080p23.98, 1080p24, 1080p25, 1080p29.97, 1080p30, 1080p50, 1080p59.94, 1080p60, 1080PsF23.98, 1080PsF24, 1080PsF25, 1080PsF29.97, 1080PsF30
- 3G-SDI HD Video Standards: 1080p50, 1080p59.94, 1080p60
- 2K Video Standards: 2K DCI 23.98p, 2K DCI 24p, 2K DCI 23.98PsF, 2K DCI 24PsF
- Ultra HD Video Standards: 2160p23.98, 2160p24, 2160p25, 2160p29.97, 2160p30, 2160p50, 2160p59.94, 2160p60
- SDI Compliance: SMPTE 259M, SMPTE 292M, SMPTE 296M, SMPTE 372M, SMPTE 425M
- SDI Metadata Support: VITC/ATC, SMPTE 12M, WSS, RP186, AFD, SMPTE 2016, Closed captioning (608 and 708), SMPTE 334M
- Audio Sampling: 48kHz, 24-bit (HD), 20-bit (SD)
- Video Sampling: 4:2:2

- Color Precision: 10-bit
- Color Space: REC 601, REC 709
- HDMI Color Precision: 4:2:2 10-bit
- Copy Protection: HDMI input unable to capture from copy protected sources

Conversions

- Aspect Ratio Conversion: Real time variable and fixed
- Real Time Video Processing: Noise reduction, cadence detection, scene cut detection, color correction, proc amp control
- Low Latency Processing: 2 frame latency for select format conversions
- Format Conversion: Real time up, down, cross, and standards conversion
- Color space Conversion: Hardware based real time
- Still Store: Capture video frame into non-volatile memory
- Freeze Frame: Temporarily freeze incoming live video
- Test Patterns: SMPTE 75% Bars, full field color bars, convergence grid, multiburst, black with selectable audio tones
- Output Switching: Switch between input video, internal black, user still frame, or freeze frame with transition rate (0 to 5 seconds)

Software

- Software Control: Included application for Windows and Mac
- Internal Software Upgrade: Via USB Type-C

Broadcast Production Switcher

The Broadcast Production Switcher shall meet or exceed the following specifications:

Connections

- Total Video Inputs: 40
- Total Video Outputs: 28
- Total Aux Outputs: 24
- SDI Rates: 1.5G, 3G, 6G, 12G
- Total Audio Inputs: 2 x balanced 1/4 inch Jack, 1 x 32 stereo channel BNC MADI in, 1 x 5 pin XLR Talkback
- Total Audio Outputs: 2 x balanced 1/4 inch Jack, 2 x 32 stereo channel BNC MADI out, 1 x 5 pin XLR Talkback
- Reference Input: Tri-Sync or Black Burst
- Video Input Re-Sync: On all 40 inputs
- Frame Rate and Format Converters: On all 40 inputs
- SDI Video Inputs: 40 x 10-bit 720p, 1080i, 1080p, 2160p
- SDI Audio Inputs: 8 Ch embedded audio on all SDI inputs
- Extra Audio Inputs: 1 x 5 pin XLR Talkback
- SDI Video Outputs: 28 x 10-bit 720p, 1080i, 1080p, 2160p
- SDI Audio Outputs: 16 Ch embedded into SDI output on all outputs
- Extra Audio Outputs: 1 x 5 pin XLR Talkback
- SDI Program Outputs: Any of the 24 SDI outputs
- Down Converted SDI Program Output: 1
- SDI Preview Outputs: Any of the 24 SDI outputs
- SDI Multi View Outputs: 4
- Webcam Output: 1 x USB-C supporting 720p or 1080p at PGM frame rate
- Remote: RJ12 supports RS-422
- Control Panel Connection: Ethernet supports 10/100/1000 BaseT
- Internal Timecode Generator: Yes
- Talkback: RJ45 for 3rd party talkback systems
- Tally Output: Added via ethernet connection
- Computer Interface: 1 x USB-C port

Standards

- HD Video Standards: 720p50, 720p59.94, 720p60, 1080i50, 1080i59.94, 1080i60, 1080p23.98, 1080p24, 1080p25, 1080p29.97, 1080p30, 1080p50, 1080p59.94, 1080p60
- Ultra HD Video Standards: 2160p23.98, 2160p24, 2160p25, 2160p29.97, 2160p30, 2160p50, 2160p59.94, 2160p60
- SDI Compliance: SMPTE 292M, SMPTE 296M, SMPTE 424M, SMPTE 425M level A and B, SMPTE 2081-1, SMPTE 2081-10, SMPTE 2082-1, SMPTE 2082-10, SMPTE 2082-12
- Video Sampling: 4:2:2
- Color Precision: 10-bit
- Color Space: REC 709, REC 2020

- SDI Auto Switching: Automatically detects between 1.5G-SDI, level A and level B 3G-SDI, 6G-SDI, 12G-SDI

Product Specifics

- Upstream Keyers: 16
- Downstream Keyers: 4
- Advanced Chroma Keyers: 16
- SuperSource: 2
- Talkback Support: Yes
- Mix Minus Support: Yes
- Linear/Luma Keyers: 21
- Transition Keyer (Stinger/DVE): 4 Stinger, 4 DVE
- Total Number of Layers: 28
- Pattern Generators: 21
- Color Generators: 2
- DVEs: 4
- Control Panel: Front fascia emergency switching, software or optional hardware panel
- Routable Windows: 64
- Tally: Red for program and green for preview indication
- Windows Source Labels: Yes
- Multi View Monitoring: 4 x 16 Multi View pattern options for up to 64 total views
- Multi View Video Standard: Select HD or Ultra HD

Media Player

- Media Players: 4
- Channels: Fill and key for each media player
- Media Pool Still Image Capacity: 64
- Media Pool Clip Capacity: 4
- Media Player Clip Length in 720 HD: 3200 frames
- Media Player Clip Length in 1080 HD: 1600 frames
- Media Player Clip Length in Ultra HD: 400 frames
- Media Pool Still Image Format: PNG, TGA, BMP, GIF, JPEG, TIFF
- Media Pool Video File Format: TGA Sequence
- Media Pool Audio File Format: WAV, MP3, AIFF

Display

- Interface: Minimum monitor resolution of 1366 x 768
- Front Panel: Built-in HD LCD monitor, 42 LED buttons, 8 source buttons, 4 transition buttons, 6 talkback selection and mix buttons, menu control knob, set button, front panel lock button

Processing

- Processing Delay: < 10 lines

- Audio Mixer: 156 Channel mixer, selectable On/Off/Audio-Follow-Video, level and peak metering, master gain control, 6 band parametric EQ, dynamics including expander, gate, compressor, limiter
- Down Conversion: 1 x selectable HD down converted output

Software

- Control Panel Included: Software Control Panel for Mac and Windows
- Software Updates: Via USB-C connection
- Configuration: Set via Software Control Panel

Environmental Specifications

- Operating Temperature: 0° to 40° C (32° to 104° F)
- Storage Temperature: -20° to 60° C (-4° to 140° F)
- Relative Humidity: 0% to 90% non-condensing

Production Switcher Control Surface

The Production Switcher Control Surface shall meet or exceed the following specifications:

Connections

- Ethernet: 4 x 10/100/1000 BASE-T with loop output for additional control panels or computers
- Software Updates: 1 x USB-C for firmware updates

Product Specifics

- Number of Mix Effects Rows: 2
- Direct Cross Points: 20
- Shifted Cross Points: 40
- Crosspoint Button Type: Tri-Color LED
- Crosspoint Label: 6 rows 24 character LCD
- On-Air Indicator: 8
- Power Status Indicators: None
- DSK Transition Selectors: 4 x Auto, Cut, Tie/Preview
- Preview Transition: 2
- Transition Rate Displays: Via main menu
- LCD Menu Displays: 2
- Menu Control: 2 x 20 buttons
- Dedicated Macro Buttons: 2 x 20
- Transport Control Buttons: 8
- Destination Bus: 2
- Source Select Bus: 2
- Fader Bar: 2
- 3 Axis Joystick: 1
- Numeric Keypad: 1

Software

- Software Applications: ATEM Software Control Panel

- Operating Systems: Mac 14.0 Sonoma, Mac 15.0 Sequoia or later; Windows 10 and 11

Environmental Specifications

- Operating Temperature: 0° to 40° C (32° to 104° F)
- Storage Temperature: -20° to 60° C (-4° to 140° F)
- Relative Humidity: Up to 95%

Camera's system and Accessories

Design Narrative

The existing broadcast cameras, camera robotics, and associated accessories in Zayed Hall will be upgraded to align with enterprise broadcast standards. This will involve removing the current camera systems and installing new cameras, with upgraded cabling as necessary. Programming adjustments will be made to ensure that the operator's experience closely mirrors current operations, facilitating a smooth transition to the upgraded equipment.

As part of this upgrade, a total of 8 Pan-Tilt-Zoom (PTZ) cameras are required, along with an overview camera that will be a fixed camera, provided its picture quality matches that of the PTZ cameras. The cameras will be PTZ cameras with or without interchangeable lenses. Six of the cameras will be installed inside the walls in cabinets, allowing a maximum of 38cm camera height including bracket and robotics. Two cameras will be installed on the wall.

Scope of Work – Hardware Integration

This section outlines the hardware installation process and provides an overview of general functionality and specifications. All necessary equipment and accessories, including but not limited to fiber extenders, patch bays, and patch cables required to establish a functional system, will be provided and installed by AV INTEGRATOR, unless specifically stated otherwise.

4K Camera(s)

The Broadcast Cameras shall meet or exceed the following specifications:

General

- **Power Requirements:** 12 V DC ± 10% (10.8 V to 13.2 V)
- **PoE++:** IEEE802.3bt standard: DC 42 V to 57 V
- **Current Consumption:** 5.0A (XLR IN), 1.5A (PoE++)
- **Operating Temperature:** 0 °C to 40 °C (32 °F to 104 °F)
- **Operating Humidity:** 20% to 90% (no condensation)
- **Storage Temperature:** –20 °C to 50 °C (–4 °F to 122 °F)
- **Mass:** Approx. 4.6 kg (10.14 lbs)
- **Dimensions (W x H x D):** 213 mm x 277 mm x 240 mm (8-3/8 inches x 10-29/32 inches x 9-7/16 inches)

Camera Unit

- **Imaging Sensors:** 1-type (1") 4K MOS
- **Effective Pixels:** Approx. 9,620,000 pixels
- **Lens:** Motorized Optical 20x zoom, F2.8 to F4.5
- **Zoom:** Optical zoom: 20x, i.Zoom: UHD 24x, FHD 32x, D.Extender zoom: 1.4x, 2x
- **Angle of View Range:** Horizontal: 75.1° (wide) to 4.0° (tele), Vertical: 46.7° (wide) to 2.3° (tele), Diagonal: 82.8° (wide) to 4.6° (tele)
- **Focus:** Auto and manual
- **Focus Distance:** Entire zooming range: 1000 mm (3.3 ft), Wide end: 100 mm (0.33 ft)
- **Standard Sensitivity:** F14 / 2,000lx (Low Light), F11 / 2,000lx (Normal) (59.94Hz), F15 / 2,000lx (Low Light), F12 / 2,000lx (Normal) (50Hz)
- **Horizontal Resolution:** 1,600 TV lines (Center area, UHD Mode, Wide end)
- **Gain Selection:** Auto, -6 dB to 12 dB
- **Electronic Shutter Speed:** Various settings from 1/60 to 1/2000 depending on frame rate
- **White Balance:** ATW: 3200K, 5600K, AWB: AWB-A / AWB-B, VAR: 2000K to 15000K

Output Format

- **UHD/FHD SDI:** 4K 2160/60p, 2160/59.94p, 2160/50p, 2160/29.97p, 2160/25p, 2160/24p, 2160/23.98p; HD 1080/119.88p, 1080/100p, 1080/60p, 1080/59.94p, 1080/50p, 1080/29.97p, 1080/25p, 1080/24p, 1080/23.98p, 1080/59.94i, 1080/50i, 720/59.94p, 720/50p
- **HDMI:** 4K 2160/60p, 2160/59.94p, 2160/50p, 2160/29.97p, 2160/25p, 2160/24p, 2160/23.98p; HD 1080/119.88p, 1080/100p, 1080/60p, 1080/59.94p, 1080/50p, 1080/29.97p, 1080/25p, 1080/24p, 1080/23.98p, 1080/59.94i, 1080/50i, 720/59.94p, 720/50p
- **Fiber (video only):** 4K 2160/60p, 2160/59.94p, 2160/50p, 2160/29.97p, 2160/25p, 2160/24p, 2160/23.98p; HD 1080/60p, 1080/59.94p, 1080/50p, 1080/29.97p, 1080/25p, 1080/24p, 1080/23.98p, 1080/59.94i, 1080/50i, 720/59.94p, 720/50p
- **ST2110 (uncompressed):** HD 1080/60p, 1080/59.94p, 1080/50p, 1080/59.94i, 1080/50i, 1080/29.97p, 1080/25p, 1080/24p, 1080/23.98p, 720/59.94p, 720/50p
- **SMPTE ST2110 JPEG XS (compressed):** 4K 2160/60p, 2160/59.94p, 2160/50p, 2160/29.97p, 2160/25p, 2160/24p, 2160/23.98p; HD 1080/60p, 1080/59.94p, 1080/50p, 1080/29.97p, 1080/25p, 1080/24p, 1080/23.98p

Synchronization System

- **Internal/External synchronization:** BBS/Tri-level sync

Input

- **DC IN:** DC 12 V IN
- **G/L IN:** BBS (Black Burst Sync), tri-level sync supported

- **AUDIO INPUT 1/2:** XLR (2ch) or MIC/LINE Input compatibles (SDI/HDMI/IP)
    - **XLR 3-pin female balanced input:** 2ch
    - **MIC input level:** –50 dBu or -60 dBu/-40 dBu
    - **LINE input level:** 0 dBu (or +4 dBu/-20 dBu)
    - **Phantom power:** 47 V±2 V
    - **Input impedance:** Approx. 10kΩ
    - **Input volume range:** -40 dB to +20 dB
    - **Embedded audio output level:** -12 dBFS/-18 dBFS/-20 dBFS
    - **Sampling frequency:** 48 kHz
    - **Quantization bit rate:** 24 bit (SDI/HDMI), 16 bit (IP)

Output

- **HDMI:** HDMI 2.0 standard, 4:2:2/10bit
- **12G-SDI OUT:** SMPTE2082_1, SMPTE424M/SMPTE292M, 75 Ω (BNC x 1)
- **3G-SDI OUT1:** SMPTE424M/SMPTE292M, 75 Ω (BNC x 1)
- **3G-SDI OUT2/PM:** SMPTE424M/SMPTE292M, 75 Ω (BNC x 1)
- **SFP+:** SFP+ compliant (Single Fiber)
- **USB:** USB3.0 HOST 5G mobile router (with USB tethering support)

Input/Output

- **LAN:** LAN connector for IP control (RJ-45) 100BASE-TX/1000BASE-T
- **RS-422:** CONTROL IN RS-422A (RJ-45)
- **SFP+ (ST 2110):** Compatible protocol: ST 2120-10/-20/-21/-22/-30, PTP ST 2059-1/2, NMOS IS-04/IS-05
    - **Number of outputs:** [Uncompressed] Video x3 (Main line, Crop, Monitor), Audio x2; [JPEG XS] Video x1 (Main line, Crop), Audio x2
    - **Number of inputs:** Video x1 (RETURN)

Pan-tilt Head Unit

- **Control:** IP connecting cable (with or without PoE++ ethernet hub)
- **Installation Method:** Stand-alone (Desktop) or suspended (Hanging)
- **Pan/tilt Operation Speed:** 0.08 °/s to 180°/s
- **Panning Range:** ±175°
- **Tilting Range:** –30° to 210°
- **Quietness:** NC35 or less

Supported Operating Systems and Web Browsers

- **Windows:** Windows®10, Microsoft Edge, Google Chrome
- **Mac:** macOS 10.13 or later, Safari 13, Google Chrome
- **iPhone/iPad/iPod touch:** iOS, Safari, iPadOS
- **Android:** Android OS, Google Chrome

IP Streaming

- **Image Streaming Mode:** JPEG (MJPEG), H.264, H.265, NDI® High Bandwidth, NDI® HX2
- **Image Resolution:** 3840x2160, 1920x1080, 1280x720, 640x360
- **Image Transmission Setting (JPEG):** Frame Rate: Maximum 30 fps, Image quality (Fine / Normal)
- **Image Transmission Setting (H.264):** Transmission Type: Unicast port (AUTO/MANUAL), Multicast port; Transmission mode: CBR, VBR; Frame Rate: [60Hz] 5fps to 60fps, [50Hz] 5fps to 50fps; Max Bit Rate: 2048kbps to 76800kbps
- **Image Transmission Setting (H.265):** Transmission Type: Unicast port (AUTO/MANUAL), Multicast port; Transmission mode: CBR, VBR; Frame Rate: [60Hz] 30fps to 60fps, [50Hz] 25fps to 50fps; Max Bit Rate: 2048kbps to 76800kbps
- **Audio Compression Type:** AAC-LC, 48 kHz / 16 bit / 2ch
- **Supported Protocol:** Network Protocol: ICMP, ARP, GARP, MLD; Transmission Protocol: TCP/IP, UDP/IP; Application Protocol: IPv6: HTTP, HTTPS, DNS, NTP, DHCPv6, MDNS, SNMP, 802.1X; IPv4: HTTP, HTTPS, DNS, NTP, DHCPv4, MDNS, SNMP, 802.1X; Video Streaming Protocol: RTP / RTCP over RTSP, RTMP, RTMPS, SRT, MPEG2-TS over UDP, NDI® High Bandwidth, NDI® HX2; External Device Cooperation Protocol: FreeD, TSL5.0, SNMP

NDI® Support

- **NDI® High Bandwidth:** 4K 2160/60p to 2160/23.98p; HD 1080/60p to 720/50p
- **NDI® HX2:** 3840x2160, 1920x1080, 1280x720
- **Image Streaming Setting:** NDI® High Bandwidth: Transmission Type: TCP/UDP, Unicast/Multicast, Bit rate: Max 250 Mbps; NDI® HX2: Transmission Type: TCP/UDP, Unicast/Multicast, Frame rate: [60Hz] 5fps to 60fps, [50Hz] 5fps to 50fps, Max Bit Rate: 512kbps to 24576kbps
- **Audio Compression Type:** NDI® High Bandwidth: AAC, 48 kHz, 2 ch; NDI® HX2: AAC-LC, 48 kHz, 16 bit, 2 ch

ST 2110

- **Supported Format:** ST 2110 10/20/21/30, PTP ST2059-2, NMOS IS-04/IS-05
- **Number of Outputs (TX):** Video: 3 channels (Full x 1, MONI x 1, Crop x 1); Audio: 2 channels
- **Number of Inputs (RX):** Video: 1 channel (RETURN)
- **Output Format (ST2110 uncompressed):** MAIN x1, MONITOR x1, CROP x1; 1080/60p to 720/50p

- **Output Format (SMPTE ST2110 JPEG XS compressed):** MAIN x1; 2160/60p to 1080/23.98p; CROP x1; 1080/60p to 1080/23.98p
- **Audio specifications MIC1/2:** PCM/48 kHz/24 bit/1ch x 2

Remote Operation Panel(s)

The Remote Operation Panel(s) shall meet or exceed the following specifications:

General

- **Power Supply:** 12 V DC (10 V - 16 V DC from camera/CCU), 42 V - 57 V DC (PoE power supply)
- **Current Consumption:** 0.9 A (from camera/CCU), 0.3 A (PoE power supply)
- **Dimensions (W x H x D):** 102 mm × 385 mm × 113 mm (4 inches x 15-3/16 inches x 4-7/16 inches)
- **Maximum Cable Length:** 20 m (65.7 ft) when camera connected, 50 m (164 ft) when CCU connected
- **Operating Temperature:** 0 °C to 40 °C (32 °F to 104 °F)
- **Humidity:** 90% or less
- **Storage Temperature:** -20 °C to 60 °C (-4 °F to 140 °F)
- **Weight:** Approx. 1.7 kg (3.75 lb)

Monitor

- **Type:** LCD color monitor, touch panel support

Input/Output Section

- **CCU Connector:** 10-pin, male x 1
- **Preview Connector:** 9-pin, female x 1
- **LAN Connector:** RJ-45 x 1

Camera Control System

The Camera Control System shall meet or exceed the following features:

General

- **Power Requirements:** 12 V DC (10.8 V to 13.2 V), DC 42 V to 57 V (Camera Input, PoE+ power supply)
- **Current Consumption:** 1.0 A (Connector Input), 0.6 A (PoE+ power supply)
- **Operating Temperature:** 0 °C to 40 °C (32 °F to 104 °F)
- **Humidity:** 10% to 90% (no condensation)
- **Storage Temperature:** -20 °C to 50 °C (-4 °F to 122 °F)
- **Mass:** Approx. 3.2 kg (7.05 lb)

- **Dimensions (W x H x D):** 342 mm x 178 mm x 245 mm (13-15/32 inches x 7 inches x 9-21/32 inches)

Input/Output Connectors

- **DC 12 V IN:** XLR 4-pin
- **3G-SDI IN:** SMPTE424M/SMPTE292 / 75 Ω (BNC x 1)
- **Supported Formats:** 1080/59.94p, 1080/50p, 1080/59.94i, 1080/50i, 1080/23.98p, 1080/25p, 1080/23.98PsF, 1080/25PsF
- **3G-SDI ACTIVE THRU OUT:** SMPTE292 / 75 Ω (BNC x 1)
- **IP CONT:** 100BASE-TX, PoE+ input
- **SERIAL CONT (RJ-45):** RS-422 (control signals for remote cameras)
- **TALLY OUT:** Open collector output (negative logic)
- **TALLY/GPIO 1:** D-sub 25-pin, female
- **GPIO 2:** D-sub 25-pin, female
- **LCD Display:** 7-inch Touch Panel GUI Monitor (WVGA 800×480)
- **SD Memory Card Slot:** SDHC / SDXC Memory Card Slot x 1

Connection Specifications

- **No. of Connectable Cameras:** 200 (IP), 5 (RS422)
- **No. of Camera Selection Buttons:** 10
- **No. of Camera Groups:** 20 (10 units per group)

Memory

- **Preset Memory:** 100 presets
- **Tracing Memory:** Maximum 5 min. total per camera, up to 10 settings per camera

Other Functions

- **No. of User Assignable Buttons:** 6 + up to 10 on the LCD menu
- **Pan / Tilt Speed Adjustment:** 7 levels
- **TALLY LED Display Color:** Green / Red

Loudspeaker System

Design Narrative

The acoustic properties of Zayed Hall, with its large and domed structure, present significant challenges. The hall has a reverberation time of 1.8 seconds, and the distance from the loudspeakers to many seats results in natural audio delays of up to 125 milliseconds. To enhance speech intelligibility, it is essential

to implement a loudspeaker system where numerous small, high-quality loudspeakers are installed near or at each seat.
During a feasibility study, a loudspeaker system was evaluated. Small full-range speakers were installed under the desks between every two seats, and the chairman's position was equipped with two additional speakers. This setup significantly improved speech intelligibility, and the high quality of the loudspeakers prevented acoustic feedback issues.
The specified design includes the following elements:

- Approximately 164 small, high-quality full-range loudspeakers should be mounted between every two seats under the desks, a few centimeters from the edge, for the 25 sections of Member seats, the row behind the chairman, and the two rows on the sides with administrative staff.
- Two small speakers should be installed at each of the two seats next to the chairman's seat.
- Two larger full-range loudspeakers should be installed at the chairman's seat.
- 21 larger full-range loudspeakers should be installed in front of the galleries, with three per gallery section in custom-made wooden enclosures on the parapets in front of the first row.
- 8 larger full-range loudspeakers will be installed in the overflow sections behind the galleries, with four loudspeakers per section.
- Two larger full-range loudspeakers should be provided for the VIP seats, which are set up in the center of the hall once a year. These should be installed either in movable enclosures or embedded in the front of the podium behind a custom-made grille.

Scope of Work – Hardware Integration

This section describes hardware specifications. All equipment provided and installed by AV INTEGRATOR unless otherwise specified.

Small Loudspeakers

The Small Loudspeakers shall meet or exceed the following specifications:

Acoustic

- **Operating Frequency Range:** 120 Hz – 18 kHz
- **Frequency Response:** 135 Hz – 17 kHz ±4 dB
- **Phase Response:** 400 Hz – 20 kHz ±45°
- **Linear Peak SPL:** 111.5 dB (M-noise), 109 dB (Pink noise), 111 dB (B-noise)

Coverage

- **Horizontal Coverage:** 80° (3 kHz – 14 kHz ±10°); 120° (below 2 kHz)
- **Vertical Coverage:** 80° (3 kHz – 14 kHz ±10°); 120° (below 2 kHz)

Transducers

- **Driver:** One 4-inch cone driver; 4 Ω nominal impedance

Audio Input

- **Type:** Differential, electronically balanced
- **Maximum Common Mode Range:** ±5 V DC
- **Connector:** SwitchCraft EN3 5-pin male
- **Input Impedance:** 10 kΩ electronically balanced.
- **Nominal Input Sensitivity:** –2.5 dBV (0.75 V rms)
- **Input Level:** +16 dBV (6.3 V rms) into 50 Ω.

Amplifier

- **Type:** Class-D
- **Total Output Power:** 440 W peak
- **THD, IM, TIM:** < 0.02%
- **Cooling:** Convection

Physical

- **Dimensions (W x H x D):** 4.04-inch (103 mm) x 4.04 inch (103 mm) x 5.72 inch (145 mm)
- **Weight:** 4.2 lb (1.9 kg)
- **Enclosure:** Sealed extruded aluminum
- **Protective Grille:** Perforated steel
- **Mounting:** Two 3/8-inch – 16 side inserts; optional U-bracket

Larger Loudspeakers

The Larger Loudspeakers shall meet or exceed the following specifications:

Acoustic

- **Operating Frequency Range:** 65 Hz – 18 kHz
- **Frequency Response:** 70 Hz – 18 kHz ±4 dB
- **Phase Response:** 102 Hz – 18 kHz ±45°
- **Linear Peak SPL:** 116.5 dB (M-noise), 109.5 dB (Pink noise), 112.5 dB (B-noise)

Coverage

- **Horizontal Coverage:** 100°
- **Vertical Coverage:** 100°

Transducers

- **Low Frequency:** Two 4-inch cone drivers; 4 Ω nominal impedance
- **High Frequency:** One 1-inch metal dome tweeter; 8 Ω nominal impedance

Audio Input

- **Type:** Differential, electronically balanced
- **Maximum Common Mode Range:** ±5 V DC
- **Connectors:** Phoenix 5-pin male
- **Input Impedance:** 10 kΩ differential.
- **Wiring:**
    - Pin 1: DC Power (–)
    - Pin 2: DC Power (+)
    - Pin 3: Audio Shield, Chassis/earth
    - Pin 4: Audio (–)
    - Pin 5: Audio (+)
- **Nominal Input Sensitivity:** -2.0 dBV (0.8 V rms)
- **Input Level:** +16 dBV (6.31 V rms) into 600 Ω.

Amplifier

- **Type:** 3-channel, Class-D with integral advanced digital signal processing
- **Total Output Power:** 500 W peak
- **THD, IM, TIM:** < 0.02%
- **Cooling:** Convection

DC Power

- **Connector:** Phoenix 5-pin male
- **Safety Agency Rated Voltage Range:** 48 V DC

DC Current Draw

- **Idle Current:** 0.23 A average
- **Maximum Long-Term Continuous Current:** 1.00 A average
- **Maximum Instantaneous Peak Current:** 4.5 A peak

Physical

- **Dimensions (W x H x D):** 4.29 in (109 mm) x 15.90 in (404 mm) x 5.69 in (144 mm)
- **Weight:** 14 lb (6.35 kg)
- **Enclosure:** Aluminum with slightly textured black finish
- **IP Rating:** Weather-protected version rated IPx5.
- **Protective Grille:** Powder-coated, stamped steel with black mesh
- **Rigging:** Top and bottom aluminum plates with M8 threads

Compliance

- **Safety Agency Certification:** UL 60065, CSA C22.2 NO. 60065-03 (AMD 2), IEC 60065, IEC 62368-1
- **Fire Rated:** UL Standard 2043
- **EMC Certification:** CE and FCC Part 15 Emission Class B

Loudspeaker Power Supply

The Loudspeaker Power Supply shall meet or exceed the following specifications:

Front Panel

- **LEDs per Channel:**
    - Eight blue LEDs to indicate presence of output voltage.
    - Eight green LEDs to indicate load current.

Rear Panel

- **Audio Input:** Eight male 3-pin Phoenix connectors
- **Channel Output:** Eight male 5-pin Phoenix connectors.
- **Output Wiring:**
    - Pin 1: 48 V DC - (chassis/earth ground)
    - Pin 2: 48 V DC +
    - Pin 3: Audio shield/chassis/earth ground
    - Pin 4: Signal -
    - Pin 5: Signal +

Output Voltage

- **Voltage:** 48 V DC per channel (with intelligent circuit protection against surges and shorts)

AC Power

- **AC Connector:** Neutrik powerCON TRUE1 TOP (True Outdoor Protection)
- **Voltage Selection:** Automatic
- **Safety Rated Voltage Range:** 100–240 V AC; 50–60 Hz; 1350 W maximum.

Telemetry

- **Monitoring:** Via RJ45 connector, standard Ethernet network connection to computer running monitoring software, includes Wink/identify and mute functions, reports power supply temperature and fan speed, voltage and current values for each output channel

Physical

- **Dimensions (W x H x D):** 19.00 in (483 mm) x 1.73 in (44 mm) x 16.22 in (412 mm)
- **Weight:** 15.1 lb (6.9 kg)

Environmental

- **Operating Temperature:** 32 °F (0 °C) to 113 °F (45 °C)
- **Non-operating Temperature:** Below -40 °F (-40 °C), above 167 °F (75 °C)
- **Humidity:** Up to 95% at 35 °C
- **Operating Altitude:** Up to 5000m (16,000 ft)
- **Non-operating Altitude:** Above 12,000 m (39,000 ft)

Audio Format Converter

The Audio Format Converter shall meet or exceed the following specifications:

Formats

- **Sampling Frequency:** 44.1k / 48k / 88.2k / 96k Hz
- **Quantization Bit Rate:** 16 / 24-bit

Analog Inputs/Outputs

- **Line Inputs:**
    - **Connector:** D-sub 25pin female × 2
    - **Locking Screws:** No.4-40 UNC (inch type)
    - **Nominal Input Levels:** +4dBu, +6dBu (only when maximum input level is +15dBu)
    - **Maximum Input Levels:** +24dBu, +22dBu, +20dBu, +18dBu, +15dBu (set by REF. LEVEL switches)
    - **Input Impedance:** 10kΩ or higher.
- **Line Outputs:**
    - **Connector:** D-sub 25pin female × 2
    - **Output Impedance:** 200Ω or lower.
    - **Applicable Load Impedance:** 2kΩ or higher
    - **Nominal Output Levels:** +4dBu, +6dBu (only when maximum output level is +15dBu)
    - **Maximum Output Levels:** +24dBu, +22dBu, +20dBu, +18dBu, +15dBu (set by REF. LEVEL switches)

Primary/Secondary

- **Connector:** RJ-45 × 2
- **Transmission Protocol:** Dante
- **Gigabit Ethernet Standard:** 1000BASE-T (IEEE 802.3ab)

- **Cables:** Category 5e or faster STP cables

Power

- **Power Requirements:** AC 100 - 240V, 50/60Hz

Dante OUT → Analog IN

- **Frequency Response:**
    - 20Hz to 20kHz +0.1dB/–0.5dB (–16dBFS input, 44.1k/48kHz sampling frequency, JEITA)
    - 20Hz to 40kHz +0.1dB/–1.0dB (–16dBFS input, 88.2k/96kHz sampling frequency, JEITA)
- **Distortion (THD+N):** 0.001% or lower (–1dBFS input, 1kHz, 44.1k/48k/88.2k/96kHz sampling frequency, JEITA)
- **S/N Ratio:** 110dB or higher (44.1k/48k/88.2k/96kHz sampling frequency, JEITA)
- **Crosstalk:** 115dB or higher (1kHz, 44.1k/48k/88.2k/96kHz sampling frequency, JEITA)

Wireless Microphone System(s)

Design Narrative

To bolster security within this high-profile venue, the existing wireless microphone system will undergo an upgrade to an encrypted wireless microphone system. This enhancement will ensure the confidentiality and integrity of communications by employing encryption protocols, thus safeguarding against unauthorized interception or tampering.

Scope of Work – Hardware Integration

This section describes hardware specifications. All equipment provided and installed by AV INTEGRATOR unless otherwise specified.

Wireless Microphone System

Shall meet or exceed the following specifications:

The digital wireless system shall operate in the VHF, UHF, ISM (900 MHz), 1.2 GHz, 1.5 GHz, or 1.8 GHz band with the specific range being dependent on the user's locale. The system shall include the option of changing the operating frequency to avoid RF interference. Preconfigured group, channel and frequency setups shall be available to ensure that multiple systems in use do not interfere with one another.

Available transmitters shall include: a bodypack for use with lapel or headworn microphones and a handheld microphone for voice.

All transmitters shall be powered by a Lithium-Ion rechargeable battery and shall have a power on/off switch with LED status indicator. When operated with the rechargeable battery, the system shall display remaining run time in hours and minutes (accurate to within 15 minutes), percentage health, percentage charge, charge cycles, and temperature. The system shall offer networked charging stations with two, four, or eight charging bays for transmitters.

The transmitter front end shall optimize itself for standard inputs without requiring transmitter gain adjustments thus allowing all gain changes to be made at the receiver, which shall provide a 60 dB range of system gain. Overall system signal to noise ratio shall be >120 dB.

The system shall offer a choice of single-channel, dual-channel, and quad-channel rackmount receivers. The receivers shall include Dante™ digital audio networking in addition to analog audio outputs. All receivers shall include DC power on the RF inputs for use with directional antennas and antenna distribution components.

The receiver shall include an RF level meter, an audio level meter, and a Networking Interface connector for computer control and monitoring. The system shall detect RF interference and indicate such to the user via the LCD and RF meters. The system shall use technology such as digital predictive diversity to optimize RF stability.

The system shall include always-on AES-256 encryption that cannot be disabled. The encryption scheme shall conform to the US Government National Institute of Standards and Technology (NIST) publication FIPS-197. The encryption mechanism shall utilize a randomized key that is not transmitted via RF.

Dedicated AV Network

Design Narrative

The Federal National Council (FNC) has experienced latency and freezing issues during the operation of the AV installation. To address this, FNC requires a dedicated AV network based on switches specifically developed for AV over IP.

Scope of Work – Hardware Integration

This section describes hardware specifications. All equipment provided and installed by AV INTEGRATOR unless otherwise specified.

AV Network Switch(s)

The AV Network Switch shall meet or exceed the following specifications:

Ports

- **Total Ports:** 30 & 48
- **10/100/1000BASE-T RJ45 Ports:** 24 & 40 (PoE++)
- **1000/10GBASE-X SFP+ Ports:** 4 & 8

Power over Ethernet (PoE)

- **PoE Standard:** Ultra90 PoE++ (802.3bt)
- **PoE Compatibility:** 802.3af (15.4W), 802.3at (30W), 802.3bt (60W, 75W, 90W)

Performance

- **Switching Fabric:** 240 Gbps
- **Throughput (64-byte packets):** 178.56 Mpps
- **Latency (10G Fiber):**
    - 64-byte frames: 0.708 µs
    - 512-byte frames: 0.716 µs
    - 1024-byte frames: 0.728 µs

- 1518-byte frames: 0.713 µs

- **Latency (1G Fiber):**
  - 64-byte frames: 1.084 µs
  - 512-byte frames: 1.103 µs
  - 1024-byte frames: 1.098 µs
  - 1518-byte frames: 1.115 µs
- **Latency (1G Copper):**
  - 64-byte frames: 2.251 µs
  - 512-byte frames: 2.625 µs
  - 1024-byte frames: 2.775 µs
  - 1518-byte frames: 2.641 µs

Management

- **Management Ports:**
  - Console: RJ45 RS232 (rear), USB-C (rear)
  - Service Port: RJ45 10/100/1000BASE-T (rear)
  - Storage Port: USB-A (front)
- **LED Indicators:**
  - Per port: Speed, Link, Activity, PoE
  - Per device: Power, Fan

Compliance

- **Safety Certifications:** CB, CSA, CE, RCM, CCC, KC, EAC, BSMI
- **Electromagnetic Emissions and Immunity Certifications:** FCC, ISED, CE, RCM, CCC, VCCI, KC, EAC, BSMI

Digital Signage

Design Narrative

The AV Integrator will conduct a Site Assessment to evaluate optimal locations for digital signage, assess cabling needs, and plan for the installation and configuration process. Following the assessment, The AV Integrator will proceed with the Installation, ensuring screens are mounted securely, all equipment is connected, and functionality is coordinated. The team will collaborate with the FNC IT department to

implement the Content Management System (CMS) Setup, installing and configuring software on the existing VM machine, ensuring compatibility with the Hyperv platform. The AV Integrator will also take on the responsibility of Training, guiding the client in Content Creation and development, or integrating client-provided content. This is followed by Testing and Quality Assurance to confirm that all components function correctly, and content is displayed as intended. Furthermore, The AV Integrator will provide staff training on operating the digital signage system and establish a Maintenance Plan that includes ongoing support, troubleshooting, and updates for a minimum of three years.

Digital Signage Equipment

- 24" Ultra-Wide Displays
- PADS4 Server / Designer / Scheduler / Messenger / Agent / CMS Admin user / CMS User / Workspace Admin user
- Redundancy server license
- PADS4 BASIC Viewer (Windows or HTML5)
- PADS4 CMS User

- Reduces hardware server costs by 60%.
- Accelerates application performance by 5x.
- Provides consolidation of remote access infrastructure with a single URL
- Improves application security with centralized policy management.

Scope of Work – Software Integration

An existing control system is installed to activate many necessary user needs. This reduces the complexities of operating an integrated A/V system and facilitates greater system utilization and enhanced meeting experience. The existing control system will be updated to control the new equipment that is installed. All programming and testing are the responsibility of the AV Integrator.

User Experience

Developing a unique system based upon the end users' needs and an understanding of how the space will be utilized has led AV INTEGRATOR to identify three styles of user and room interactions: Autopilot, Co-Pilot, and Pilot. These styles range from the user who wants to use technology transparently, to the person who wants to control every aspect of collaboration. Based on the design requirements, AV INTEGRATOR has selected the following user experience for this room:

Pilot

This is a fully user driven room experience. User interaction is required for most system features, and a user interface is required. Automation in this experience is minimal and typically limited to core events to shut down the room to reduce power consumption and preserve equipment life. Use and function for this experience commonly includes spaces designed for mixed use, training rooms, and control rooms. The goal of this automation level is for end users to be in control. The user will direct the room when to present, dial a call, and control a device.

User Interface

A user interface will facilitate advanced system operation. The following user interface(s) will be used for this system:

- The touch screen graphical user interface will be a custom solution specifically for this project. This custom solution will require coordination meetings with AV INTEGRATOR to design, submit and approve prior to completing all control code creation.
    - AV INTEGRATOR will provide the layout and the functionality of each button for each user page of the touch screen to the Customer prior to implementation for client input and final client approval.
- All specified equipment in the proposal will be incorporated into the control system.

As part of the programming process, AV INTEGRATOR will provide the layout and the functionality of each button to the Customer prior to implementation for input and final approval.

Cable Management

Design Narrative

Proper cable management is essential for ensuring a reliable and organized AV system. This includes structured routing, secure dressing, clear labeling, and thorough documentation. The integrator must implement a professional cabling approach to maintain system integrity, reduce interference, and facilitate future maintenance.

Scope of Work – Cable Management

This section outlines the cable management requirements, including routing, securing, labeling, testing, and documentation. All necessary accessories, such as cable trays, conduits, fiber extenders, patch bays, and termination hardware, will be provided and installed by the AV Integrator.

Cable Management Requirements

Routing & Organization

- Plan and install structured cable pathways for AV, power, and network cables.
- Utilize cable trays, conduits, raceways, or underfloor pathways to ensure a clean installation.
- Maintain proper separation between power and signal cables to minimize interference.
- Avoid sharp bends and excessive slack in all cable runs.

Labeling & Identification

- Label all cables at both ends using a durable, easy-to-read labeling system.
- Labels must indicate the system type, destination, and a unique identification code.

Securing & Dressing

- Ensure that all cable bundles are neatly arranged and secured within racks, trays, or enclosures.

- Use Velcro straps (not zip ties) to bundle cables neatly, allowing for flexibility in future maintenance.

Testing & Verification

- Conduct end-to-end testing of all installed cables, including signal integrity and continuity checks.
- Ensure shielded cables are properly grounded to prevent noise and interference.
- Verify all terminations are secure and assessed before system commissioning.
- Submit a final test report with results and certification where applicable.

Documentation & Compliance

- Provide as-built documentation that includes:
- Cable type, length, termination points, and pathway details.
- Ensure all cabling work complies with local building codes, fire safety regulations, and AV industry standards.
- Maintain accessibility for future maintenance and upgrades.

Documentation

Design Narrative

The existing documentation for the Zayed Hall AV System is currently inaccurate and missing critical information. As part of this project, a comprehensive documentation package will need to be developed. This package should encompass both the existing system, and any new components introduced during this job.

Scope of Work – System Integration

The AV integrator will provide at a minimum:

- One or more schematics showing all equipment, inputs/outputs, and cable numbers and types (separate schematics for video and audio if necessary).
- Equipment location in all relevant areas.
- Rack layouts.
- DSP configuration.
- Dante audio configuration.
- Configuration parameters for all systems.

The Federal National Council (FNC) is responsible for providing building drawings and should make the following available to the system integrator:

- Drawings showing all relevant cable ways and floor boxes.
- Drawings showing accurate seating/furniture layout.
- Building drawings showing the hall and relevant rooms/areas where any equipment is to be installed.

Network and Network Security

The integration of Audio-Visual hardware can consist of many different devices and systems, each with varying network requirements, impacts to traffic and routing, and unique management and security processes. AV INTEGRATOR will work with Federal National Council identified stakeholders to properly assess network requirements and deployment considerations.

AV INTEGRATOR will design the system to meet identified network requirements and will provide construction drawings and a list of devices before installation on site. At the time of installation, AV INTEGRATOR will connect devices according to the documented system design and identified network requirements. The following network design is being followed for this project:

AV/Client Network

Hardware that does not require integration into the client network can be completely isolated from the client network.

- The control system, touch panel, and audio video transport devices that carry Ethernet control reside in their own wired network.
- Hardware that requires integration with the owner network will be connected directly to the owner network.
- Systems for monitoring, control, scheduling, and other, is provided by services residing in FNC network.

Site Readiness

The minimum acceptable site conditions of the project site for the installation of electronic equipment are as follows.

- The rooms and directly adjacent areas into which the equipment will be installed must be dust-free with floor, ceiling, and the wall finishes to be completely installed in the rooms affected by the equipment.
- The rooms into which the equipment will be installed must be secure.
- All Electrical power, conduit systems, HVAC systems, IT requirements (wired or wireless services), communication circuits, and or other services required by the systems and equipment should be fully installed, energized, and configured for use.
- All furniture into which components of the equipment will be installed shall be present at the time of staging and/or installation.
- All telephone, POTS, VOIP, modem, PRI, data, LAN, and telecommunications connections are installed, fully tested, and active.
- Configuration of OFE networks, applications, servers, and services to provide interoperation with installed systems.
- Coordination and timely IT support and documentation (such as providing IP addresses or account credentials).

2- Federal National Council Solution maintenance and support Scope of Work

Overview

The System integrator service offering shall provide remote technical phone support services, facilitation of manufacturer repair or replacement programs, access to manufacturer published software updates and upgrades for covered assets, and unlimited Onsite Field Technician dispatch. And should cover the existing system and the new integrated system Explained in below SLA for a period of 12 months start after the handover and acceptance of the end user to the system.

SLA

- Unlimited onsite field technician dispatch – Monday - Friday 8AM to 5PM with Guaranteed SLA - Engineers on site within next business day
- Offers Helpdesk Technical Support: Provision of both Telephone and VC Support 24x7x365.
- Facilitates the repair or replacement programs of manufacturer programs for applicable hardware.
- Access to software updates and upgrades for hardware covered by manufacturer program.
- Use of online incident reporting tool for easy ticket awareness.
- Software and firmware updates managed for covered assets.

HELP DESK & CALL RESPONSE

The system Integrator will provide 1st call pickup within 60 seconds during normal business hours. When a case is opened, the Help Desk will classify the case either as a standard, critical or maintenance request. The system Integrator shall respond to written service requests within four (4) hours of notification.
All calls for assistance are logged as an open case number in the Help Desk ticketing system. This case number remains open until a resolution to the initial report is achieved or the customer and/or the Help Desk determine the case can be closed. The case number is the customer's unique identifier about a specific request and should be used and communicated whenever contacting the Help Desk about an open case.
Onsite technician arrival: Once the Help Desk has diagnosed the issue and an onsite technician has been determined necessary, a field technician will be dispatched and arrive onsite after the appointment is coordinated and confirmed with the Customer. If a replacement part is required, the technician will be dispatched in coordination with the arrival of the replacement parts.

HELP DESK PROCESS

LEVEL 1 HELP DESK SUPPORT
Log call and identify level of coverage for equipment in crisis.
Check equipment/system status for errors.
Perform complete diagnostics and analysis remotely (Telnet, VPN, Extranet, etc.)
Determine systems all working within manufacturer specifications.
Adjust any settings to repair problem.
Escalate to Level 2 Help Desk if problem is not resolved.

LEVEL 2 HELP DESK SUPPORT

Diagnose and identify cause of problem.

Repair remotely via remote access to equipment or identify defective equipment and order replacement components from manufacturer.
Schedule parts delivery from manufacturer.
Dispatch technician to arrive with replacement part.
Escalate to Level 3 if problem is not resolved.

LEVEL 3 HELP DESK SUPPORT

Escalate problem to manufacturer engineering for resolution.
Work with manufacturer's engineering to test and provide information.
Implement fix provided by manufacturer's engineering and test, Close Case.

Repair/Replacement Facilitation

- Whilst the new equipment is covered under manufacturer warranty, if the equipment needs to be removed from the site for repair, the system integrator will use its best endeavors to repair the equipment quickly and without undue delay.

- The system integrator will manage the administration regarding shipping and logistics and if required arrange manufacturer advanced replacements or loan equipment if included within the manufacturer warranty. The system integrator will also manage any warranties on equipment installed by others.

Software Updates and Upgrades

- FNC will receive the latest software updates and upgrades remotely available per manufacturer recommendation as the responsibility of the service provider.

Incident Reporting Tool

- The system integrator shall provide an online tool to keep the end user up to date on ticket creation and frequency. This valuable insight allows the end user to make educated decisions based on equipment performance and uptime during annual business reviews.

Unlimited Onsite Support

- The system integrator shall provide unlimited onsite technical support Monday through Friday 8AM to 5PM, next-business day onsite response following the Help Desk's determination that an onsite dispatch is needed.

Preventative Maintenance Visits

- The system integrator shall provide yearly Preventative Maintenance Visit: prescheduled maintenance visits that provide a field technician to conduct an onsite 47-point cleaning, testing, and calibration of in-room devices. Technicians will record all activities and findings, then make recommendations for identified issues or opportunities for performance optimization. Issues found to be resolved under the service contract at no additional cost.

5- ملحق الشروط العامة لتقديم عروض الاسعار

الشروط العامة لتقديم عروض الأسعار:

1. **وسائل التواصل:**

أ. لمزيد من المعلومات الفنية والاستفسارات يرجى التواصل على: البريد الإلكتروني .Bids@almajles.gov.ae

ب. لمزيد من المعلومات بشأن ارفاق العروض يرجى التواصل مع قسم المشتريات والعقود على هاتف رقم 026199440 – 026199411 أو البريد الإلكتروني Bids@almajles.gov.ae

2. **محتويات العروض الفنية والمالية ومكان تسليمها:**

أ. يجب أن تكون العروض مفصلة، كل بند على حدة، بالسعر ومدة التنفيذ، حسب المواصفات المطلوبة.

ب. تسليم العروض المالية بالدرهم الإماراتي.

ت. الالتزام بالمواصفات والمعايير القياسية الإماراتية المعتمدة.

ث. يجب أن تكون العطاءات صالحة لمدة لا تقل عن 60 يومًا من تاريخ التقديم.

ج. إرفاق نسخة من الرخصة التجارية للمورد مع المغلفات المالية والفنية.

ح. ارفاق نسخة من شهادة القيمة الوطنية المضافة (ICV) ان وجدت

خ. لا تقبل العطاءات التي تقدم على اساس خفض نسبة مئوية من أقل عطاء بل يجب أن يشتمل العطاء على اسعار إفرادية واجمالية خاصة به.

3. **الضمانات البنكية:**

أ. تقديم ضمان بنكي بنسبة 5% من قيمة عرض السعر المقدم وإرفاقه بمغلف منفصل صالح لمدة 60 يوما من تاريخ اغلاق الطلب مع تقديم خطاب تأكيد بمبلغ الضمان البنكي الابتدائي المقدم

ب. يجب على المورد الفائز تقديم ضمان بنكي بنسبة (10٪) باللغة العربية أو ثنائي اللغة لإجمالي المبلغ الممنوح، شريطة أن يجدد تلقائياً حسب المدة التي تبدأ من تاريخ توقيع العقد.

General Conditions for Submitting Quotations:

1. **Contact Metods:**

A. For more technical information and inquiries, kindly contact by email Bids@almajles.gov.ae

B. For more information and inquiries about submitting the offers, kindly contact on telephone No. 026199440 -026199441or by email **Bids@almajles.gov.ae**

2. **Contents of Technical and Financial offers and place of delivery:**

A. Offers must be detailed for each item separately, with price and implementation period according to the required specifications.

B. The financial offers should be presented in UAE dirhams.

C. Adherence to the approved UAE standards and specifications.

D. Bids must be valid for at least 60 days from the date of submission.

E. Attach a copy of the Trade license with financial and techical envelopes.

F. Attach a copy of the IN-Country Value Certificate, if any (ICV).

3. **Bank Guarantees:**

A. Presenting a bank statement having 5% of the value of the submitted quotation and attaching it in a separate envelope valid for 60 days from the date of closing the application.

B. The winning supplier must submit a bank statement in Arabic or bilingual language having (10%) of the total amount awarded, provided that it is renewed

automatically according to the period starting from the date of signing the contract.

4. **Payment Method:**

Payment terms are according to the rules and conditions of the Federal National Council (the FNC does not apply the prepayment policy).

5. **Date of submitting the offers:**

The deadline for submitting

6. **Supplier Registration:**

Bids are accepted only from suppliers registered in the suppliers' electronic system at the following link https://www.almajles.gov.ae:1033/

7. **Special Conditions:**

A. The Arabic language is the official language of this tender and will be used in all documents and correspondence. Drawing, technical specifications, tables of quantities, prices and technical offers may be organized in English. In the event of a contradication between the Arabic text and its counterpart in English, the Arabic text shall prevail.

B. The board has the right to cancel the contract if the company is late in signing the contract for a period of (15) days after notifying it Or the completion of the work agreed upon or refused its implement.

C. The board has the right to choose all or one of the items included in the price offer as needed.

D. The order is subject to what is stated in Resolution No. (14) of the year (2018) regarding the Financial Regulations of the Federal National Council and then to the regulations followed in the Federal Government, particularly those related to the provisions contained in Cabinet Resolution No. (4) for year (2019) and its

4. **طريقة الدفع:**

شروط الدفع وفقًا لقواعد وشروط المجلس الوطني الاتحادي (لا يوجد لدى المجلس سياسة الدفع المسبق).

5. **موعد تسليم العروض:**

آخر مدة لتسليم العروض حسب التاريخ المشار اليه اعلاه

6. **تسجيل الموردين:**

يتم قبول العطاءات فقط من الموردين المسجلين في نظام الموردين الإلكتروني على الرابط الآتي:
https://www.almajles.gov.ae:1033

7. **شروط خاصة:**

أ. اللغة العربية هي اللغة الرسمية لهذا العطاء وستستعمل في جميع الوثائق والمراسلات،ويجوز تنظيم الرسومات والمواصفات الفنية وجداول الكميات والاسعار والعروض الفنية باللغة الانجليزية ، وفي حالة التعارض بين النص العربي ومقابله باللغة الانجليزية يكون النص العربي هو المعمول عليه.

ب. للمجلس الحق في فسخ التعاقد إذا تأخرت الشركة في التوقيع على العقد لمدة خمسة عشريوماً من بعد اخطارها أو إنجاز العمل المتفق عليه أو رفض التنفيذ .

ت. للمجلس الحق في اختيار جميع البنود المتضمنة لعرض السعر أو أحدها حسب ما تفتضيه الحاجة.

ث. تخضع الممارسة لما جاء في القرار رقم (14) لسنة (2018م) بشأن اللائحة المالية للمجلس الوطني الاتحادي، ثم للأنظمة المتبعة في الحكومة الاتحادية، و خاصة الأحكام الواردة بقرار مجلس الوزراء رقم (4) لسنه (2019م) و تعديلاته بشأن لائحة المشتريات و إدارة المخازن في الحكومة الاتحادية .

ج. يحق للمجلس إلغاء أو تعديل متطلبات المناقصة-الممارسة في أي وقت قبل فتح المظاريف أو بعد ذلك وقبل الترسية دون أي اعتراض من مقدمي العطاء ودون أحقيتهم في المطالبة بأي تعويض من جراء ذلك .

ح. **تعتبر الدعوة وكافة الملاحق والمراسلات جزء لا يتجزء من وثائق المناقصة والعقد .**

amendments regarding the Procurement Regulations and Warehouse Management in Federal Government. E. The federal National Council is not obligated to return the offers participating in the bid in any way. F. All defaults are shown by displaying prices, if any. G. Disclosure of sustainable and environmentally friendly products and services in this Boq if applicable. H. The bidder must not withdraw during the period of submitting and studing the offers and before deciding of them, othewise the initial guarantee will be confiscated. I. The bidder must not withdraw during the period of submitting and studing the offers and before deciding of them, othewise the initial guarantee will be confiscated.	خ. المجلس الوطني الاتحادي غير ملزم برد العروض المشاركة الى مقدمي العطاء بأي حال من الاحوال . د. يتم توضيح واظهار جميع الافتراضيات بعرض الاسعار ان وجدت. ذ. على الشركات الإفصاح عن المنتجات والخدمات المستدامة والصديقة للبيئة في هذا العرض إن وجد. ر. عدم انسحاب المتناقص او الممارس طوال فترة تقديم ودراسة العروض وقبل البت فيها والا سيتم مصادرة الضمان الابتدائي .