

# Terms of Reference (TOR):

## Conferencing and Related Services

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## Introduction

Meeting rooms are used as boardrooms and executive meetings rooms, training rooms, Town Halls and social meetings. This project is to promote the use of conferencing facilities through the implementation of effective IT tools and services, including among others, ensuring that the conference rooms have:

- a. High quality of in-room sound system,
- b. Enhanced teleconferencing tools,
- c. Capability to use web-desktop conferencing applications,
- d. Effective video conferencing solutions.

UNDP is implementing conferencing facilities for partner Ministry of Justice (MoJ) Offices. We are seeking to deploy a **multipurpose conferencing and collaboration solution** for MOJ conference rooms that will enable enhanced teleconferencing, AV & Presentation, video conferencing, use of cloud-based conferencing (ZOOM and Microsoft Teams), use of web-desktop conferencing (audio and video), and meeting rooms with quality audio.

The **multipurpose conferencing and collaboration solution** must be tightly integrated with **ZOOM, Microsoft Teams, standard web browser and Skype**, equipment and devices in the room and functional components. The solution must also bring the **touch-screen simplicity** experience to conference rooms, enhance better usability of conference rooms through shift towards self-service, and eliminate the use separate remote controls and unnecessary on-demand tasks of connecting devices during the conferencing sessions.

## Objectives

The objectives for the implementation of conferencing facilities for MOJ Offices are:

1. Increased user productivity during meetings and conferencing sessions through elimination of unnecessary technical support to establish connection.
2. Reduced travelling, technical operational cost and time to established meetings and conferencing sessions.
3. Effective management and reporting of conferencing sessions, including ensuring the availability of historical scheduling information and conferencing sessions.

## Methodology and Expectation

To be able to realize the above objectives, the below are some of critical functional components or approach to the implementation process that should be emphasized in the technical proposal:

- a. Use of an interactive dialer with intuitive interfaces emulating a telephone keypad for small conference room, or a programmable electronic control panel (Creston, AMX, Polycom etc.) for conference rooms to enhance the usability of the conference rooms is very critical to this project. Moving towards a Self-Service Conferencing solution to empower the user and enable higher productivity when using conference rooms – therefore interface that allows simplicity at the user level while ensuring easy access and effective use of conferencing room features must be fully implemented.
- b. A cost-effective deployment must consist of use of the current standards for implementation of voice and video conferencing solutions, including voice/video transmissions, encoding/decoding, low-bit rate compression, and security and ensuring compatibility with other video codecs in achieving integration with other existing conferencing solutions.
- c. The other critical component is the in-room audio system. Ensuring clarity of sound and full integration

of in-room audio through the use of mixer board, the speakers and microphones, or use of integrated audio bridging, or integrated audio touch-screen is highly essential in the implementation of the solution.

- d. Proper assessment of the technical requirements for audio and video configurations for each conference room to ensure that technical proposal address issues such as the different types of the audience, size of conference room, nearby interfering signals, functional use of the conference room, etc.
- e. A professional project management, including, planning, sourcing, equipment delivery, installation, ensuring clean cabling, ensuring no wiring hanging out or around and finish, and delivery of a well-designed and cost-effective system.
- f. Proper documentation and transfer of knowledge to MOJ ICT Office team.

## Types of Conference Rooms.

The default configurations for Conference rooms are for teleconferencing, AV & presentation, content sharing, connecting to a cloud-based conferencing systems (ZOOM & Microsoft Teams) and use of web-desktop conferencing, such use of Skype and WebEx and a point-to-point or bridge-enabled video conferencing session. The configuration for conference rooms must include a fixed video conferencing station.

The conference room will use the **integrated HD/HDX equipment** as the integral tool for configuring teleconferencing. The Room PC and other auxiliary devices attached to HD/HDX Equipment may be used to connect to existing cloud-based conferencing solution (ZOOM & Microsoft Teams), and to provide AV & Presentation, content sharing, and web-desktop conferencing. The HD/HDX Equipment in the conference room should also used to configure video conferencing and content sharing through IP-IP/IP-ISDN direct connections or through video conference bridge.

## Integration and User-Friendly Interface

### 1. The Simple Control Panel.

The default requirement for integration and better user-friendly interface for conference rooms is to have a **programmable interface with tight integration to conferencing system** through control panel such as Creston, AMX, Polycom, etc. The control panel should be simple to use and effective in initiating the access to features of the conferencing solution. This should include the below:

- a) Turn ON & OFF the conferencing system and subsequent tools,
- b) Access to teleconferencing or video conferencing system, including dialing remote conferencing participants, adding remote participant, volume control, use of PAC (authenticated regional, long-distant and international calls etc.),
- c) Access to the management features of the video conferencing sessions, including, establishing a cloud conferencing session, establishing point-to-point video session, bridging video calls to existing video session, dropping specific video session, disconnecting session, volume control, use of existing Pin Authorization (PAC) to make calls, etc.,
- d) Select Room USSF PC or User brought-in laptops; Access to Presentation and AV sessions (viewing video session) and Use of PC for web-desktop conferencing.

### 2. Integration and Rooms Configuration.

The below table is to guide the vendor on the types equipment that may be required conference room. UNDP is looking for an effective voice and video conferencing solution at an affordable cost, and therefore vendor are required to provide specific equipment for their solution.

		Conference Room	Comments
A	Standard-based HD/HDX Video conferencing unit and/or Web-cam	- Standard-based HD/HDX video conferencing unit is required and must be fully integrated with conferencing video and in-room audio.	See Detail on Conferencing System and Compliance, & The Technical Requirements

<b>B</b>	LED Flat Screen TV	- 75" UHD Commercial TV	<ul style="list-style-type: none"> <li>- TVs are securely mounted on the wall.</li> <li>- See Details information on the Sections on Display Monitor Requirements</li> </ul>
<b>C</b>	Licenses	Required	<ul style="list-style-type: none"> <li>- Integration with MS Teams and ZOOM on the room controller</li> </ul>
<b>D</b>	Wireless Content sharing for brought-in Laptops and Room PC	Required	<ul style="list-style-type: none"> <li>- Wireless Content sharing for the brought-in laptops to the TV for guest users</li> </ul>
<b>E</b>	Microphones and Speakers	Required	<ul style="list-style-type: none"> <li>- Securely mounted on the ceilings or sidewalls.</li> <li>- Configured to integrate with the standard-based HD/HDC unit [A], TV [B], and the Telephone Line [G]</li> </ul>
<b>F</b>	Control Panel	Required	<ul style="list-style-type: none"> <li>- The Simple Control panel is to enhance a better User-experience and higher user productivity level and</li> <li>- Bring the touch-screen simplicity to operating the conferencing systems.</li> </ul>
<b>G</b>	Audio/Phone line	Use of HD/HDX unit to be integrated Audio Phone is Required	<ul style="list-style-type: none"> <li>- Through an analogue line or Ethernet port (VoIP).</li> <li>- Teleconferencing uses this line and should be accessible through a simple control panel [F].</li> </ul>

			<ul style="list-style-type: none"> <li>- Audio Bridging should allow communication between Skype, telephone and H.323/SIP video conference or teleconference sessions.</li> </ul>
<b>H</b>	High quality of sound in the room	Required	<ul style="list-style-type: none"> <li>- Distributed echo cancellation and automatic gating control.</li> <li>- 360 degree coverage for conference rooms.</li> <li>- Elimination of interference due to Wireless Network, mechanical sound transmission, or other unnecessary signals.</li> </ul>
<b>I</b>	System Administration, Remote Control and Monitoring	Required, may be deployed at later stage	<ul style="list-style-type: none"> <li>- Remote access of the conferencing sessions to monitor and</li> <li>- Schedule and manage the sessions</li> </ul>
<b>J</b>	Audio and video Playback	Required, may be deployed at later stage	<ul style="list-style-type: none"> <li>- Record a conferencing session (voice and Video) and</li> <li>- Keep track of conferencing sessions for reporting purposes</li> </ul>

## ICT Working Environment

In this set-up, the staff are expected to easily establish conferencing connection and have a more productive user experience during the conferencing session with minimal technical intervention. Such an effort requires to implement a user-friendly conferencing facilities, ensure the devices are fully integrated with one another and the functional services accessible through a simple control panel or an integrated touch-screen.

The focus of delivering quality and timely conferencing services through Self-Service include the below:

- The capability to easily schedule conferencing through MS Outlook plug-in, the simple control panel, or integrated touchscreen,
- Tight integration of in-room sound system with conferencing solution,
- Ability to use conference system with ease, for example, user do not have to connect devices to start a conferencing session but access the system through an intuitive interface.

**Sound System:** The sound system should be fully integrated with the video conferencing system, desktop web-cam/microphone solution and the teleconferencing equipment or solution.

**Cabling: Minimum requirements:**

- CAT6 UTP Cable: 4pr Category 6 Plenum performing 550 MHz:
- Fiber Optics: Armored, OM3 50/125 Micron Plenum Fiber performing at 10Gbits/s.
- Use of newer cable standards such HDMI, video components, etc. are recommended

**Network:** IP-Network using Cisco Switches and routers

**Functional: Functional use of the conference rooms:**

- Town Hall Meetings
- End-year, birthday and farewell parties
- High Level Executive Meetings and Board meetings, Inter Ministerial meetings,
- Web-Desktop conferencing,
- Teleconferencing and video conferencing.
- Trainings
- Live Stream Meetings

**Integration: Control Panel or touch-screen:**

- Use of a simple control panel to manage the function of the room.
- Use of touch-screen integrated with Audio Conferencing System  
Enabling high usability by integrating sound system and video systems in the conference rooms.

**Existing PBX:** N/A

## Expected Equipment or ports in the Conference Rooms

The below table is to guide the vendor on what type of equipment are expected in each conference rooms configurations. Please note that the list is not comprehensive, and the vendor should choose equipment that meet their proposal.

Description	Conference Room
<b>No. of Room (initial project)</b>	<ul style="list-style-type: none"><li>- Total = 3</li><li>-</li></ul>
<b>May Need Fixing</b>	<ul style="list-style-type: none"><li>- Total = 0</li><li>-</li></ul>
<b>Required Equipment /ports</b>	<ul style="list-style-type: none"><li>- 75" UHD Commercial TV</li><li>- Enough Speakers</li><li>- Enough Microphones</li><li>- HD Web Cam</li><li>- HD/HDX unit for teleconferencing and video conferencing equipment</li><li>- SIP Phone</li><li>- Ethernet ports</li><li>- SIP or standard analogue Line to connect to HD/HDX unit</li></ul>
<b>Room Feature and Default Configurations</b>	<ul style="list-style-type: none"><li>- Wireless Presentation &amp; AV</li><li>- Teleconference</li><li>- Integrated web-desktop conferencing (Skype and WebEx – both audio and video) using in-room audio system</li><li>- Cloud-based conferencing tools- ZOOM &amp; Microsoft Teams</li><li>- Integrated Audio and Video conferencing using in-room audio system</li><li>- Wireless PPT Content Sharing through Video Conferencing.</li></ul>
<b>System Integration</b>	<ul style="list-style-type: none"><li>- A fully integrated audio/video system with the speakers, microphones and the HD/HDX video unit to offer high quality sound.</li><li>- Integration of Presentation PC with conference room sound.</li><li>- Flexible inputs and equipment organization (Connect Laptop and ROOM PC for PPT).</li><li>- Echo cancellation features.</li></ul>

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<sup>1</sup> In-room Audio system in this context refers to a sound solution for conference room. All the components of the sound solution must be integrated using audio mixer or processor, microphone and speakers and PC audio.



<b>Control /Programming</b>	<ul style="list-style-type: none"> <li>- Complete connectivity of all devices built into conference table</li> <li>- Central Control Panel to operate all devices, or through use of integrated touch-screen</li> </ul>	<ul style="list-style-type: none"> <li>- Complete connectivity of all devices built into conference table.</li> <li>- Central Control Panel to operate all devices.</li> </ul>
<b>Finishing</b>	<ul style="list-style-type: none"> <li>- Clean installation of cables.</li> <li>- Rack properly to house the equipment.</li> </ul>	<ul style="list-style-type: none"> <li>- Clean installation of cables.</li> <li>- Rack properly to house the equipment.</li> </ul>
<b>Sound System</b>	<ul style="list-style-type: none"> <li>- Clean and undistorted audio</li> <li>- Audio system integrated with the HD Phone, speakers and microphones</li> </ul>	<ul style="list-style-type: none"> <li>- Clean and undistorted audio</li> <li>- Audio system integrated with the HD Phone, speakers and microphones</li> </ul>
<b>Warranty/ Maintenance</b>	<ul style="list-style-type: none"> <li>- Three years Equipment warranty</li> <li>- Certification, Technical support and Maintenance through SLA.</li> </ul>	<ul style="list-style-type: none"> <li>- Three years Equipment warranty.</li> <li>- Certification, Technical support and Maintenance through SLA.</li> </ul>

# The Technical Requirements

## 1. Functional Requirements

- HDX/HD video camera, or HDX/HD webcam to capture a clear view of the audience and participants and enable camera control for voice tracking;
- Compliance with ZOOM, MS Teams software, Skype, MS Outlook and capability to access the web-desktop and video Conferencing System from User Desktop; from ISDN and IP conferencing systems;
- Clean cabling and finish, ensuring that the cable are neatly routed and connected;
- Integrated Sound System: Integration of HD in-room audio system with the HD video using mixture board, microphones and speakers or use of Integrated audio-bridge for smaller conference rooms;
- Enhanced and quality audio system, including capability to enforce clarity and to cancel noise and interference, enforce distributed echo cancellation and gaiting control;
- Capability for content Sharing and AV & Presentation through standard HD/HDX equipment;
- Integration of in-room audio with Internet-enabled ROOM PC;
- Integrated control panel or touch-screen/pad to access and manage conferencing features and sessions;
- Capability with cloud-based video conferencing system, e.g. ZOOM & Microsoft Teams;
- HD Digital LCD/LED Monitor/TV with Digital and Analogue QAM encryption and decryption capability. The Monitor/TV should support RCA/HDMI, Display Port connector for worldwide bi-directional and standards conversion of global TV systems (PAL, SECAM and NTSC);
- Usability: Ease of use, especially when scheduling conferencing and meetings;
- Playback features including capability to view historical scheduling information and to record conferencing sessions, both teleconferencing and video conferencing;
- Remote configuration, control and monitoring of Conferencing system;
- Compatibility to access video conferencing session through with mobile conferencing applications, e.g., Apple IOS, Android, Windows Mobile etc.

## 2. Features of Conferencing System.

### 2.1 Graphical User Interface:

- The video conferencing system shall have a user-friendly graphical interface.
- The graphical user interface shall be customizable.
- The management should web-enable and shall have a user-friendly graphical interface.

### 2.2 The Capability and functionality:

- Deliver superior audio and image quality to the entire conference room environment.
- Have the ability to schedule and invite participants to a video conferencing session.
- Have a management tool capable of centrally managing a conferencing session (Teleconferencing, web-desktop conferencing and videoconference) as well as the entire conferencing system and embedded multipoint conference unit.
- HD/HDX Unit should support Minimum connection of four (4) simultaneous end points to a single videoconferencing session. These end points can be local (on the LAN) or from remotelocation(s).
- Allow real-time conferencing and content sharing; dial-in to a video conferencing session from an ordinary telephone land line, including ability to support calls made from PSTN, ISDN, H.323, SIP on demand and simultaneous scheduled conferences on the video conference session.

- Ability to connect to both IP and Integrated Services Digital Network (ISDN) networks (legacy networks) and provide high picture quality at with optimum speeds of 2Mb/s or more and adjustable bandwidth for content sharing.
- Operate with other desktop(s), software and hardware-based videoconferencing technologies from other vendors.
- All functions shall be operational during any condition unless specifications dictate otherwise.
- The system shall utilize the latest encryption standards and other data security services to ensure that communications and system resources are kept secure and confidential.
- Allow future growth and development of similar or updated versions.

### 2.3 The Audio Requirements:

The video conferencing system shall support the below audio requirement

- Wide range of the latest audio industry standards and digital formats.
- Have audio components capable of providing compact disc (CD) type quality audio to the entire conference room environment, including the ability to decode multiple, simultaneous conversations and be able to distinguish which side of the room people are talking from.
- Provide audio error concealment facilities (reduce audio drop on busy IP or ISDN networks), have the ability to correct audio from the communications system, have in-built echo cancellation, automatic level controls, and other noise suppression functionality.
- Conform to ITU-T standards for audio compression and de-compression (CODEX): Support G.711, G.722 and G.728, G.729A coding.
- Have 360° audio pickup capacities sensitive enough to pick up whispers, and smart enough to eliminate noise.
- Support a wide variety of standard network interfaces to facilitate connectivity to various types of networks through but not be limited to the following networking protocols, TELNET, HTTP, FTP, PING, DNS (Client), DHCP (Client), RTCP, SIP, RTP,TCP, H.323 (LAN), H.320 (ISDN), H.323/H.320 Mixed, ARP.

### 2.4 Video processing, control, video industry standards and digital formats:

The video conferencing system shall support automatic gain control and the below video industry standards and digital formats

- Wide range of the latest video industry standards and digital formats; capture and display video at a minimum of thirty (30) frames per second (fps); have the ability to intelligently select the frame rate for best performance video.
- Wide range of the latest video formats and industry standards, including but not limited to the following formats and standards: H.261, H263, H.263++, H264 video standards; MPEG, MPEG2 and MPEG4 video formats; CIF, SIF, 4CIF, VGA, SVGA, XGA display resolution; Full HD 1920x1080p, 30 fps (preferred ); True HD 1280x720, 30 fps (minimum).
- Allow video error concealment facilities (reduce video drop on busy IP or ISDN networks), including the ability to correct video from the communication system easily.

## 2.5 The video conferencing system interface:

The video conferencing system shall support the following interface

- Provision of a wide range of the latest standard interfaces for outputting digital /analogue audio and video to external equipment.
- Provide a variety of standard network interfaces to facilitate connectivity to Gigabit network.
- Provision of a wide range of the latest interfaces for accepting digital / analogue audio and video input from external sources.

## 2.6 Content Sharing

The video conferencing system shall support Wireless Content Sharing, the ability to show /share content from a PC / laptop and standard USB Flash drive, allow laptop / PC IP network to actively participate in a conferencing session and share presentation data from applications such as but not limited to Microsoft PowerPoint, MS Lync, Skype, Excel, Word and drawings on digital whiteboard in real time to local and remote site(s).

## 3. Specifications for Custom A/V integration: Conferencing.

Specification	Minimum Requirement
Audio Standards	G.711, G.722, G.722.1, G.728, CD Quality Audio
Video Standards	High Definition Video (HDV): H.263+, H.263++, H.264; Full HD 1920x1080p, 30 fps (preferred), True HD 1280x720, 30 fps (minimum);
Protocols	ISDN: H.323 (optional, recommended if ISDN service is available); IP: H.320; H.264
Screen	LCD or LED with native resolution of 1080p (recommended)
Camera	HD Camera with 2500 total horizontal field of view; Far-end camera control; 15 near and far-end camera pre-sets; 1280 x 720 pixels progressive @ 30 fps; Camera control for voice tracking where applicable Compliance with ZOOM and MS Teams; Compliance with WebEx is also preferable
Audio Bridging unit for Teleconferencing, and/or video conferencing	Integrated Audio Conference bringing unit to allow easier operations Integrated communication through Skype, MS Teams, telephone and H.323/SIP video conference; Connect to PC through USB to work with UC applications; Attach to a camera control for voice tracking; Full integration with in-room audio (speakers, microphone, touch screen or control panel) Touch screen user interface Manage HD Video and Audio
Data Interface	1 RS-232 data port
Network Connection	Fast or Gigabit Ethernet, routable IP address must be assigned
Minimum Bandwidth	HD video call: 768 Kbps IP video call: 256 Kbps ISDN video call: 128 Kbps

<b>Desktop Conference</b>	Ability to connect to Video Conference facilities using a ZOOM & MS Teams software.
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#### 4. Management Tool.

The solution should provide a centrally manageable and easily deployable tool for monitoring and troubleshooting conferencing sessions across the enterprise.

The features and functionality of the management tool should include:

- Support for tight integration with Unified Communication applications such ZOOM, MS Teams, Skype.
- Easily schedule conferencing through control panel, touch screen or desktop communication applications like MS Outlook, MS Teams, web apps etc.
- View network topology and inventory, and manage endpoint software updates and upgrades
- Integration of existing corporate directory such as LDAP and Active Directory.
- Establishment of Global Address book of the enterprise endpoints.
- Access the conferencing management tool via a Web-based GUI.
- Capability to record conferencing sessions.
- Track usage of endpoints and MCU resources and to generate utilization reports
- Remote configuration, control and monitoring of Conferencing system.

#### 5. Technical Support, Warranty and Maintenance.

The solution should offer fast and dependable customer support service for operational and technical support for troubleshooting operational problems, including but not limited to the following:

- Availability of 24 x 7 toll free telephone support.
- Guaranteed quicker response time through maintenance Service Level Agreement.
- Detailed instructions for opening trouble tickets including telephone numbers.
- On line web based support and trouble ticket reporting.
- Replacement of faulty equipment in advance of return of the faulty part or equipment
- Manufacturer's warranty, and additional three years warranty for maintenance and repairs

## Conferencing System and Compliance.

The following outlines expected compliance to industry standards for conferencing equipment and related services, covering user end through to infrastructure (back-end) equipment.

### 1. Compliance: Equipment and Provision of Services.

Existing conference rooms use Poly equipment for video conferencing. These components are not integrated, have varied configurations and sound system is configured using an attached external speakers and microphones. This type of configuration normally require that technical staff is available to connect the devices and therefore does not deliver the expected “self- service” solution. The new installations of conference rooms should fix this problem.

UNDP recognizes that there are interoperability issues among the different manufacturers of conference equipment but does not standardize on a manufacturers’ conference equipment. However, UNDP must ensure compatibility of different manufacturer video equipment in the MOJ enterprise network. Therefore, all the component of the proposed conferencing must seamlessly work with each other regardless of the selection of the manufacture’s equipment.

### 2. Minimum Standard Requirements for Web-Desktop Video.

Feature	Specifications
<b>Mobile / Desktop Video Conferencing</b>	Fully Integrated HD Audio Conferencing system
	Multi-party Conferencing
	Integration of PC audio with external microphone and speakers
	Sharing Personal Workspaces
	Content Sharing from PC during Video Conference
	Full integration of web-desktop conferencing (audio and video) solution installed on the USSF PC with in-rooms audio
<b>Video compression format</b>	H.264
	H.263+, H.263
<b>User PC</b>	Intel Core i5 Processor (3.2GHz, 6M)
	Windows 10 Pro 64-bit
	8.0GB, DDR3-1600MHz SDRAM,
	250GB 3.5 6.0Gb/s SDD with 8MB Data Burst Cache
	Keep the Hard Disk (HDD)
	Wireless 104 Quiet Key Keyboard, English
	Discrete Intel HD Graphics 1 GB (1 DP, 1 HDMI & 1 VGA)
	2 USB 2.0, 2 USB 3.0
	Wireless Optical Mouse
	16X DVD+/-RW
	Minitower Standard Power Supply (100 – 240V)
	Energy Smart Power Management Settings Enabled
	Chassis Intrusion Switch Option
	3 Year NBD Limited Onsite Service
	Connecting cables

<b>Web cam</b>	Full HD 1080p video calling (up to 1920 x 1080 pixels)
	720p HD video calling (up to 1280 x 720 pixels)
	Full HD video recording (up to 1920 x 1080 pixels)
	H.264 video compression
	Built-in dual stereo microphones with automatic noise reduction
	Certified Hi-Speed USB 2.0, (USB 3.0 highly recommended)
	Connecting cables

### 3. Minimum Standard Requirements for Video Conference multi-point Unit:

Feature	Specifications
<b>HD Video</b>	720p30fps
	1080fps
<b>SD Video</b>	Standard Video from 128Kbps
<b>Video Support</b>	H.261
	H.263 (H.263++)
	H.264
	H.239 content sharing resolution
	Up to HD1080p 30fps and 720p 60fps in Continuous Presence (CP) Transcoding (TX)
	Support for QCIF to HD1080p Resolution
	Up to 60 frames per second
<b>Content Sharing</b>	Built-in Video Enhancement Technology including Video up-scaling
	Wireless Content Sharing from PC during Video Conference.
<b>Internal Multipoint</b>	Support to connect at least 4 additional video calls in a single conference in HD Continuous Presence (1 plus 4).
<b>Connectivity</b>	H.323
	SIP
	H.320 (ISDN)
	IPV4
<b>HD Mic(s)</b>	IPV6 compatibility – Please describe.
	Standard with 1 External Microphone with option of at least 2 additional microphones.
<b>Error Correction</b>	Ability to maintain high video/audio quality during a conference session with packet loss & jitter.
<b>Video compression format</b>	H.264
	H.263+, H.263
<b>Audio I/O</b>	Minimum of 6 Audio Inputs.
	Minimum of 4 Audio Outputs.
<b>Video I/O</b>	Minimum of 3 Video Inputs.
	Minimum of 3 Video Outputs.
<b>Camera</b>	Output 720P @ 60 / 50 fps
	Output 1080P @ 60 / 50 fps
	12x Optical Zoom
	Pan Range 80 to 100° / -80 to -100°.
	Tilt Range 15 to 20; -15 to -30 Degrees.



<b>Security</b>	Admin and User Level password
	Encryption support, please specify
	H.460 Standard Firewall and NAT Traversal Solution for Video Conferencing
<b>Power</b>	100 - 240 V, 50- 60 Hz
<b>Conference Phone Integration</b>	Ability to integrate with an external Audio Conference unit. Please describe.
<b>Connectivity</b>	H.460 Standard Firewall and NAT Traversal Solution for Video Conferencing
	Connect from <u>anywhere</u> - via Corporate LAN; Internet Café; Home; Airport and or Hotel.
<b>Video Enhancement</b>	Built-in Video Enhancement Technology including Video up-scaling
<b>Network Support</b>	10/100/1000 Mb interface
	IP H.323
	SIP
	PSTN Support, as well as connection to popular phone, including AVAYA, Aastra, Cisco and others
	ISDN (H.320)
	IPV4
	IPV6 Compatibility
	Support 64kbps - 6Mbps Data Rates
	Call from Anywhere Support
<b>Quality of Service</b>	DiffServ
	Dynamic jitter buffer
	Voice and Video Error Control/Recovery
<b>Security</b>	Transport layer security for SIP
	AES media encryption (IP and ISDN)
	Administrative Access Levels
	H.460 Standard Firewall and NAT Traversal Solution for Video Conferencing
<b>Power</b>	100 - 240 V, 50- 60 Hz
<b>Audio Support</b>	G.711, G.722, G.722.1C, G.722.1, G.723.1, G.728, G.729
	Integrated in-room system
	HD Audio
	DTMF support
	IVR Prompts - Auto Attendant - English is mandatory.
<b>Capacity</b>	40 HD Endpoints in Continuous Presence (CP)
	160 HD Endpoints in Voice-Activated mode (Remote site shows in video display when their participants speak)
	Minimum 200 Audio Participants
	Flexibility to Upgrade Capacity as Required

#### 4. Minimum Standard Requirements for Display Monitor

Feature	Specifications
	75" + Full HD 1080p Smartt LCD/LED Monitor/TV
	Display screen type: LCD/LED Full High Definition (1080p)
	Panel resolution: 1920 x 1080p
	100 Hz Clear LCD/LED
	LCD/LED Monitor/TV with interface to connect to HD/HDX equipment for video display
	Video format compatibility: Supported formats include PAL, NTSC, and SECAM.
	Minimum of 4 HDMI/ Ports
	Power: 100 - 240 V, 50- 60 Hz
	PC Connectivity
	Built-in speakers
	Wall mounting kit
	Include all required cables to connect with the video conference end point.
<b>Cables</b>	Connecting cables

## Scope of Work.

The scope of work defines how these services would be implemented to UNDP's advantage, and what is expected of vendor to ensure that the conferencing solution provided is of high-quality solution that works within the current Computing Environment.

### 1. The Conferencing Services:

- Supply equipment and professional services to install a **multipurpose conferencing and collaboration solution<sup>2</sup>** that connects HQ and regional conference rooms
- Provide and install sufficient and effective microphones, speakers, stands, cabinets and proper configuration of sound system to support room's capacity in its various functions.
- Provide the ability to establish virtual conference rooms so that users may participate from locations throughout the country and world.
- Define the capabilities of the system being proposed, bandwidth capacities, etc.
- Provide the ability to participate in conferences originating from outside, or inside the county via an IP or ISDN or public PSTN (voice) connections.
- Provide a software solution that carries video / voice and provides white board sharing tools, and or content sharing tools. Define the requirements for utilizing the tools.
- Based on technical assessment, provide the IT infrastructure requirements to implement the system based on current infrastructure, and identify equipment they need to purchase for their conference rooms.
- Provide the ability to have multiple-concurrent video/voice connections established. Define the capabilities of the proposed system both in the number of internal and external concurrent conferences.
- Scalability for upgrade and growth, including the connection to Live-stream and translation system.
- Provide a comprehensive project plan with timelines, and detail the scalability of the system and what requirements are needed for growth both in additional infrastructure and bandwidth.
- Provide a training plan for use of the videoconferencing solution. This can range from a developing a training document, train the trainer, or one-to-one training and transfer of knowledge to allow administrators to manage or operate the system. Provide End-user Manual.
- Provide documentation for the system including, final drawing of the end-point connections to devices and documentations.
- Provide certification, warranty, and maintenance and repairs through Service Level Agreement.

### 2. Vendor responsibility:

The vendor must assume responsibility for the following

- Assessment of the technical requirements for audio and video system configurations,
- Implementation of services noted on the Scope of Work, Section 1, The Conferencing Services,
- Project management: Planning and implementation of conferencing systems,
- Training on new product(s), and transfer of knowledge to technical staff.
- Troubleshooting technical issues and management of the implementation of new product(s).
- Integration of unique hardware or software.
- Development, programming or customization of the application.
- System Acceptance testing.
- Project staffing.

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<sup>2</sup> The multipurpose conferencing and collaboration solution refers to teleconferencing, AV & presentation, content sharing, capability to connect to existing cloud-based conferencing systems (ZOOM and MS Teams), web-desktop conferencing and a point-to-point or bridge-enabled video conferencing solutions.

3. MOJ responsibility:

- Provide details of the conference rooms, including room dimensions, pictures, and floor plans if requested. Arrange where possible for a viewing of the conference rooms.
- Make available the necessary analog ports, Ethernet ports and power outlets and other relevant information to ensure proper and detailed assessment of the conference rooms.
- Ensure recommended bandwidth availability
- Provide security for the conference rooms
- Provide ZOOM licenses
- Ensure Successful project delivery and sign-Off.