No. B-V-7/2013-14-C (QRs)-(22) 843

भारत सरकार/Government of India

गृह मंत्रालय/Ministry of Home Affairs

पुलिस आधुनिकीकरण प्रभाग /Police Modernization Division

संभरण-I डेस्क /Prov.I Desk

26, Man Singh Road, Jaisalmer House,
New Delhi, dated the 21 April, 2015

To,

The DsG: AR, BSF, CISF, CRPF, ITBP, SSB, NSG & BPR&D.

Subject: QRs and Trial Directives of Command and Control Centre.

Sir,

The undersigned is directed to refer to the subject mentioned above and to say that the QRs and Trial Directives in respect of Command and Control Centre as per Annex-I and Annex-II, respectively have been approved by the competent authority in MHA.

2. Henceforth, all the CAPFs should trial evaluate and procure the above item, required by them, strictly as per the laid down QRs.

3. Concerned CAPF will be accountable for correctness of the QRs and Trial Directives.

Yours faithfully,

21/4/15

(M. K. Chahar)
Under Secretary to the Govt. of India

Encl: As above.

Copy forwarded for necessary action to:

SO (IT), MHA - with the request to host the QRs and Trial Directives Command and Control Centre on official website of MHA (under the page of Organizational Set up, Police Modernization Division-Communication Equipments). Soft copy is being sent through email also.

(R. K. Soni)
Section officer (Prov-I)

Copy to: DDG (Procurement), MHA

QRs of Command Control Centre

Sl.No	Item	Specification
1	LED-Lit LCD Video Wall Display	Supply, installation, testing & commissioning of LED- lit LCD Video Wall having following technical parameters: (Quantity to be decided by user)
1.2	Panel	55" or bigger (Size & No. of panel to be decided by the users as per requirement during procurement)
1.3	Resolution	Full HD (1920x1080) or higher per display Unit.
1.4	Brightness	Minimum 700 nits or cd/m
1.5	Contrast ratio	Minimum 3500:1
1.6	Data / Video compatibility	VGA, SVGA, XGA, WXGA, UXGA, HD (1080p), NTSC 3.58/ NTSC4.43,PAL,SECAM
1.7	Input	VGA / DVI / HDMI, RS 232C / RJ45
1.8	Output	DVI / VGA
1.9	Bezel to Bezel	5.7 mm or less
1.10	Panel Construction	System should be Wall Mountable.
2	LED-lit LCD Video Wall Display Controller	(Quantity to be decided by user)
2.1	Basic Function	To make the above display behave as a single logical screen and provide functionalities of display of windows through LAN, VGA, Video inputs as per specifications below.
2.2	Processor	Quad Core Intel 64-bit Xeon 2.0 GHz
2.3	RAM	4 GB RAM and upgradeable
2.4	HDD	Min 500 GB SATA Hard Disk. Hard disk Capacity should be upgradable
2.5	Operating System	Supports 64-bit Operating Systems Windows 7 or better
2.6	Chassis	Single or multiple 19" industrial Rack mountable
2.7	Output	DVI output
2.8	Input cards	4 universal inputs with dual LAN
2.9	Redundancy	i) Redundant hot swappable Power Supply & HDD ii) Selected inputs and presence of sources on either input
2.10	Wall Management Software	i) The software shall be able to pre configure various display layouts and access them at any time with a simple mouse click or based on the timer. ii) The software shall enable the users to see the desktop of the graphics display wall remotely on any WIN PC connected with the Display Controller over the Ethernet and change the size and position of the various windows being shown. iii) The software shall copy the screen content of the WIN PC / workstation connected on the Ethernet with the Display Controller to be shown on the Display wall in scalable and moveable windows in real time environment. iv) The wall management software shall allow the minimum concurrent 4 client users.-
3	Touch Panel with Controller and Accessories-	
3.1	Integrated Controller	
3.2	Processor	Processor with minimum speed of 400 MIPS
3.3	Memory	256 MB RAM,2 GB Compact Flash
3.4	Ports	7/8 configurable RS232/RS422/RS 485 Serial ports, 8 relays, 8 IR, 8 Digital I/O ports, 1 USB Communication port, RJ45

4	**Wireless Touch Panel**	
4.1	Design: - Touch panel should be thin and compact.	
4.2	On-screen menu navigation or even pan/tilt camera control.	
4.3	Wi-Fi Wireless	Integrated 802.11a/b/g/n Wi-Fi technology with WEP encryption, delivers secure, high-speed 2-way wireless performance across wireless LAN's affording mobile freedom and seamless communications with control systems, computers, digital media servers, and other IP-based devices.
4.4	Audio Features	Built-in speakers and microphone
4.5	Display	8 inch, LCD/ LED backlit screen or better.
4.6	Resolution	1024 x 768 pixels
4.7	Accessories	To be supplied along with all required accessories to control all the equipments installed in control room, i.e. Data Wall, Air conditioner, MDS, DVD Player, Lighting, camera, Video conferencing.
5	**Interactive Pads**	**(Quantity to be decided by user)**
5.1	Size	8"x6"
5.2	Technology	Electromagnetic, RF connectivity.
5.3	Pen	Pen must be able to accept both nylon tips and ball point refills
5.4	Complete with Driver software, interactive tools etc.	
6	**LED Display of 46" or more**	**(Quantity & size to be decided by user)**
	Supply, installation, testing & commissioning of Wall Mountable ,full High Definition Resolution (1920x1080) LED Monitor having following technical performance parameters: -	
6.1	LED Screen Size	Minimum 46" or higher
6.2	Resolution	1920 x1080 pixels
6.3	Brightness	Minimum 450 cd/m2
6.4	Contrast Ratio	Minimum 3000:1
6.5	Should have RS 232C Control Port	
6.6	Input	DVI/RGB HV/ HDMI
7	**IP PTZ Camera**	**(Quantity to be decided by user)**
7.1	Image Sensor	1/3-inch CCD/CMOS
7.2	Resolution	704x480 pixels or better
7.3	Imaging modes	day/night auto/manual
7.4	Lens	36x Optical Zoom or more
7.5	Video compression method	H.264 / M JPEG
7.6	Camera control	Pan, tilt, zoom, brightness, shutter speed, focus speed
7.7	Multi-connector	Video IN/OUT: NTSC/PAL composite, BNC terminal (1 each), RJ 45
7.8	Streaming	Multi / Dual streaming
8.	**Map Dispensing System**	Size minimum 6x4 feet, 4 (for Maps) polyurethane sheets are rolled on motorized pipes stacked in fixed positions in such a way that on giving command the selected map rolls down in one window. The second map comes down on giving command only when the previous map is rolled back in its position. The system should be capable of operating by a Remote. The installation will be on two steel columns to be raised from floor. The rest of the systems can be in the false ceiling. Any one selected map will roll down also through touch panel controller integrated with the main system. The systems can be standalone systems in a box covered from all sides and having open able bottom cover for servicing and changing of maps.

9.	**PODIUM**	
9.1	Metallic Smart Podium Should Have -	
9.2	Built-in 19" LCD Tablet touch screen Monitor with Viewing angle adjustment	
9.3	Integrated PC, with minimum core i3 processor, windows 7 professional & MS Office latest	
9.4	Keyboard tray	
9.5	Cooling Fan	
9.6	19" Rack shelves and drawer	
9.7	Built-in Gooseneck Microphone	
9.8	Wireless Microphone	
9.9	USB Port min. 3 USB (3.0), HDMI PORT & LAN port.	
10	**QUADVIEW**	
10.1	Input	4x VGA or 3x DVI or 3x component or 3x composite.
10.2	Output	1x DVI, 1x VGA
10.3	Video support	480i to 1600x1200
10.4	Control	RS-232 and RS-485
10.5	LAN Port	RJ45
10.6	Embedded video mixer	Yes
10.7	Mounting	1U rack-mount with ears
10.8	Power supply	AC Power 100-240V
11	**Visualiser**	
11.1	Camera	1/3" CMOS
11.2	Resolution	Full HD(1920x1080)
11.3	Lens	12 x optical zoom, 10 x Digital Zoom
11.4	Image Rotation	90/180/270 degree
11.5	Focus	Auto/Manual selectable
11.6	Built in arm light	LED Lamps
12	**Digital Audio Conferencing System consisting of**	
12.1	**Digital Central Control Unit**	
	a) Fully Digital Audio transmission and Control	
	b) Minimum 50 Conference Units can be controlled -	
	c) Facility to connect conference delegate units, conference chairman unit etc. for providing audio conference management using system bus	
	d) PC Control Mode of operation of audio conference and also Automatic mode (Without PC)	
	e) It should have built in Power supply for Minimum 50 Units.	
12.2	**Digital Chairman Unit (Quantity to be decided by user)**	
	a) The unit shall incorporate a pluggable and removable high sensitive microphone with a flexible stem and a Loudspeaker provides superb clarity and intelligibility.	
	b) Fully Digital Audio transmission and Control, Immune to mobile Interference.	
	c) Facility for Individual Microphone Sensitivity / Gain Control Via Software and hardware.	
	d) When Microphone is 'ON', speaker is automatically muted to improve the gain before feedback.	
	e) Priority Button for temporary or Permanent muting of active delegates	
	f) Microphone on/off or request to speak button	
	g) Color LED indication: for MIC "ON", "MIC REQUEST"	
	h) Directional pattern : Cardioids	
	i) Transducer Type : Condenser	

12.3	Digital Delegate Unit (Quantity to be decided by user)	
	a) The unit shall incorporate a pluggable and removable high sensitive microphone with a flexible stem and a Loudspeaker which provides superb clarity and intelligibility.	
	b) Fully Digital Audio transmission and Control, immune to mobile interference.	
	c) Facility for ndividual Microphone Sensitivity / Gain Control Via Software and Hardware	
	d) When Microphone is 'ON', speaker is automatically muted to improve the gain before feedback.	
	e) Microphone on/off or request to speak button	
	f) Directional pattern : Cardioids	
	g) Transducer Type : Condenser	
12.4	Control Software for Conference Control and PC	
	a) PC of latest configuration with 22" touch LCD monitor, i3 or better processor, 4 GB RAM, 500 GB Hard Disk, Mouse, Keyboard, Multimedia Speakers or Laptop with latest configurations (User may decided during procurement)	
	b) Microphone management facility, which shall facilitate management of delegate request list switching ON and OFF of individual microphones from single / multiple points, Setting and control of the volume levels of individual microphones and loudspeakers in the delegate / chairman units, setting of overall volume control of audio conference system, setting and control of the line inputs and line outputs from / to the conference control unit.	
	c) Synoptic control facility, which shall enable switching ON and switching OFF of microphones on a geographical layout on the screen, made as per the actual seating inside the hall. Different colors shall be used to represent the status of microphones on the layout namely Red for Microphone ON status, Green on Request Status etc. It should be further possible to change the level of individual microphone depending on requirement.	
12.5	P A System (Quantity to be decided by user)	
	a) Power Amplifier should be dual channel and total 450 Watts@ 4 ohm,8 ohm & 70/100V	
	b) Built in fan for temperature control. Short circuit protection.	
	c) Power Supply –AC- 230V (+/- 10%) . 50 Hz or 24VDC	
	d) XLR Input-	
	e) Sensitivity : 1V balanced or better	
12.6	Wireless Handheld Microphone (Quantity to be decided by user)	
	a) It shall be UHF Wireless Handheld microphone	
	b) It shall have Minimum 100 selectable UHF channels in steps of 125 KHz	
	c) It shall have LCD with battery status and frequency indication	
	d) It shall have Lock function	
	e) Frequency up/down buttons	
	f) LCD displaying frequency and battery level-	
12.7	Wireless Livelier/Collar Microphone (Quantity to be decided by user)	
	a) It shall be UHF Wireless Collar microphone-	
	b) It shall have Minimum 100 selectable UHF channels in steps of 125 KHz	
	c) It shall have LCD with battery status and frequency indication	
	d) It shall have Lock function	
	e) Frequency up/down buttons	
	f) LCD displaying frequency and battery level-	
12.8	Mixer / Preamplifier (Optional)	
	a) Minimum 08 microphone inputs and 2 outputs	
	b) Balanced Phoenix-type mic /line inputs ; RCA inputs	
	c) Balanced Phoenix-type line output	
	d) Any input can be sent to any output-	
	e) Priority Muting and Phantom Power-	
	f) Independent bass and treble controls for each input.	

12.9	Digital Signal Processor
	a) Digital Signal Processor for Telephone Interface and Video conferencing with Automatic echo cancellation feature.-
	b) 10 Analog inputs (With 48v Phantom Power per Channel) & 8 Analog Output-
	c) RJ-11 Telephone input / output port
	d) Configuration, control and Monitoring via PC.
	e) 8 Channel of AEC Processing with Auto Gain control and Noise cancellation.
	f) Low Latency , Fault Tolerant Digital Audio Bus of 48 channels
	g) 10 Control inputs and 5 Logic Outputs-
12.10	**DVD Recorder :** Recorder should have 320 GB Hard Drive 1080p Up Conversion – Creates more smooth, High resolution images, SD Card Slot, USB terminal, HDMI Plays any region PAL or NTSC DVD-Video, DVD-Audio, DVD-RAM, DVD R, DVD-R, and Video CD, Plays audio CD, DVD audio, DiVX, DVD-R, DVD-RW, and MP3 CD-R & CD-RW & Records in PAL or NTSC. RF input/output for antenna/cable signals with stereo cable, remote & manual.
12.11	**Speakers :-** Wall Mounted 6 inch two way full range 60 watts speaker with wall bracket and should comply with the following parameters –
	i) Frequency Response (-3dB): 80Hz – 20KHz
	ii) System Sensitivity (1W @1m): minimum 80dB
	iii) Transformer Taps: 70/100 Volt with power taps 60W/30W / 15W / 7.5W
	iv) Water and Dust ingress protection to IP64 standard.
	(Quantity to be decided by user)
12.12	**Speaker Cable (As on required basis)**
	a) 48/0.2mm two core twin twisted loudspeaker cable with Tinned copper conductor
	b) Individual core shall be PVC sheathed with two separate colors
	c) Overall PVC sheathed cable
12.13	**Conference Cable: Multi**-core Conference cable with appropriate connector and proper Shielding
	(As on required basis)
13	Equipment Rack
	a) A suitable standing aluminum rack for housing control equipment for conference, Sound Reinforcement, Automatic Camera Control, Projection and presentation System.
	b) There shall be provision of at least 1 U blank plate spacing between two adjacent equipment so as to provide sufficient ventilation
	c) Fan at top of each rack for heat dissipation, Power supply panel with MCB at the bottom
	d) Front transparent door and rear metallic glass door with locking facility
	e) Adequate power supply sockets for the equipment to be fitted in the rack

14.	5/7.5/10 KVA ONLINE UPS (Type & Capacity to be decided by user during procurement)	
	a) Input System	1- Phase, Plus PE
	b) Rated Voltage	220 VAC, 50 Hz
	c) Voltage Range	180-270 V
	d) Power Factor	>0.98
	e) Frequency Range	46-54Hz
	f) Output System	1- Phase, Plus PE
	g) Power Factor	0.7
	h) Voltage	220VAC/230VAC/240VAC, +/-1% 50Hz
	i) Line Regulation	<1%
	j) Voltage Harmonic Distortion	<2%
	k) Dynamic Variation	+/-5% in 60ms
	l) Inverter Overload Capability in Normal Mode	105%~130% 10min. Transfer to Bypass- 130% 1 sec. transfer to bypass turn off output
	m) Inverter Overload Capability in Battery Mode	
	n) Crest Factor	3:1

	o) Bypass Auto Retransfer	Yes
	q) Transfer Time	Normal
	r) Communication Port	RS 232
	s) Back up	Minimum 120 Minutes
	t) External Battery Voltage	240 VDC
	u) Charging Current	4.2A
	v) Battery Capacity	12 V 100 AH
	w) Nos. of Battery	20
	x) Noise	<55dB
	y) Protection	IP 20
15	Motorized Screen	
15.1	Size	Projection screen 6' x 4' wall mounted type.
15.2	Desired Features: - i) Electrically operated 220 volt (50 Hz). Shall have specially designed motor mounted inside the roller with a patented noise silencer to be three wire quick reversal type, oiled for life, with automatic thermal overload cut-out, integral gears, capacitor and an electric brake to prevent coasting. To have pre-set but adjustable limit switches to automatically stop picture surface in the "up" and "down" positions. The roller to be of rigid metal,3" in diameter. ii) Screen fabric to be flame retardant and High Contrast Matte White, with black masking borders standard. Bottom of fabric shall be formed into a pocket holding a 3/8" diameter metal rod Case to be painted white 21-gauge steel, hexagon in shape with flat back to prevent scraping fabric. Case end caps to be heavy duty, allowing no exposed roller pins. End caps shall form sturdy brackets for wall or ceiling installation. To be complete with three position control switch with cover plate.	
16	Ceiling mounted projector	
	a) Brightness : 4000 ANSI Lumens-	
	b) Resolution : XGA (1024x768 pixels)	
	c) Contrast Ratio : 2400:1	
	d) Wireless Compatibility	
	e) Estimated Light Source Life : Up to 20,000 hours	
	f) Projection Lens : 2x Optical Power Zoom Lens	
	g) Interfaces : RGB; HDMI, USB & AV terminal	
	h) Other Functions:- Direct Power ON/OFF (i) 2x Digital Zoom (ii) Freeze iii) Pointer	
	i) Modes : Color mode, Eco mode and Blank	

17 Comprehensive guidelines for communication links in command and control centre:

(a) The command and control centres should be provided with following communication links.

(i) **Land line telephone:** STD and ISD (Optional) facility is proposed to enable the interaction between Command and Control Centre and field formations.

(ii) **Internet connection:** Internet connection is proposed for efficient functioning of various web based applications.

(iii) **Intranet/WAN(Wide Area Network) (Optional/as per availability):** Various CAPFs have set up their own WANs like SELO of CRPF and PRAHRI of BSF to facilitate exchange of information and to facilitate secure data link transfer.WAN connectivity will be useful in quick decision making.

(iv) **POLNET (Optional/as per availability):** POLNET (Police Network) is an indigenous satellite based wide area network for the modernization of Police Telecommunication of the country. All CAPF's have their own POLNET terminals set up at strategic locations. Being satellite based communication it is most reliable network of communication during terrestrial disasters.

(v) **VSAT (Optional/as per availability):** Very Small Aperture Terminal (VSAT) is a two way satellite ground station with a dish antenna having diameter less than 3 meters. V-SAT Network terminals can be used for exchange of data/video.

(vi) Suitable interfaces for exchange of information with following devices.(Optional/as per availability)

(1) **GPS:** To enable analysis of GPS logs so as to evaluate operational performances.

(2) **Satellite Tracker:** To enable identification of exact location of troops in operation/movement.

(3) **Satellite Phone:** To enable direct voice interaction with field/operational commanders in remote areas.

(4) **ICS (Integrated Communication System):** To enable connectivity of communication networks such as HF, VHF, UHF, PSTN and Cellular Phone with the command and control centre.

(b) It should also be ensured to maintain Communication Security while utilizing above options.

(G. Rajan, Insp(C), SSB)

(S.P. Singh, Insp(T), BSF)

(Harwinder Singh, Insp(T),ITBP)

(S.DHOUNDIYAL, AC, CISF)

(Kapil,SSA(E), BPR&D)

(Major Manish Sehmi, NSG)

(Hem Pushap Sharma,DC,CRPF)

(S.K. Thakur, DC, Assam Rifle)

(Rajesh Ekka, Dy. Director, DCPW)

(Ajay Singh,Cdr.)
(Indian Coast Guard)

(Jitendra Agrawal)
(DIG (Eqpt),CRPF)

(Shailendra Kumar)
(IG (Comn.),CRPF)

Approved/ ~~Not Approved~~

(Prakash Mishra, IPS)
DG, CRPF

(10)

TRIAL DIRECTIVES FOR COMMAND AND CONTROL CENTRE

Trial of equipment will be conducted by a Board of Officers in the presence of Vendor or representative of Firms to assess the actual performance of the equipment.

2) All parameter / Specifications mentioned in the QRs will be checked by board of officers by ascertaining /verifying following checks.

i) **Physical Checks**: In this category specifications of the equipment will be checked physically as per QRs.

ii) **Functional Check**:- The vendors will show all features/ configuration of the equipment to the board of officers during technical evaluation.

iii) **Submission of certificates:** - Specification which can not be checked due to lack of testing facilities/ expertise, a certificate of test shown against each will be provided by vendor/firm during physical trial of the equipment.

Sl.No	Item	Specification	Trial Procedure
1	LED-Lit LCD Video Wall Display	Supply, installation, testing & commissioning of LED- lit LCD Video Wall having following technical parameters: **(Quantity to be decided by user)**	Board will measure screen of panel diagonally by using measuring tape/ scale.
1.2	Panel	55" or bigger (Size & No. of panel to be decided by the users as per requirement during procurement)	
1.3	Resolution	Full HD (1920x1080) or higher per display Unit.	Board will check practically. Vendor will produce certificate as well as board will also refer the brochure of the equipment in this regard.
1.4	Brightness	Minimum 700 nits or cd/m^2	
1.5	Contrast ratio	Minimum 3500:1	
1.6	Data / Video compatibility	VGA, SVGA, XGA, WXGA, UXGA, HD (1080p), NTSC 3.58/ NTSC4.43,PAL,SECAM	
1.7	Input	VGA / DVI / HDMI, RS 232C / RJ45	Board will check practically and physically.
1.8	Output	DVI / VGA	-do-
1.9	Bezel to Bezel	5.7 mm or less	-do-
1.10	Panel Construction	System should be Wall Mountable.	-do-
2	LED-lit LCD Video Wall Display Controller	**(Quantity to be decided by user as per requirement)**	
2.1	Basic Function	To make the above display behave as a single logical screen and provide functionalities of display of windows through LAN, VGA, Video inputs as per specifications below	Board will check it practically.
2.2	Processor	Quad Core Intel 64-bit Xeon 2.0 GHz	-do-
2.3	RAM	4 GB RAM and upgradeable	-do-
2.4	HDD	Min 500 GB SATA Hard Disk. Hard disk Capacity should be upgradable	-do-
2.5	Operating System	Supports 64-bit Operating Systems Windows 7 or better	Board will check it practically.
2.6	Chassis	Single or multiple 19" industrial Rack mountable	-do-
2.7	Output	DVI output	-do-
2.8	Input cards	4 universal inputs with dual LAN	-do-
2.9	Redundancy	i) Redundant hot swappable Power Supply & HDD	-do-
		ii) Selected inputs and presence of sources on either input	-do-

2.10	Wall Management Software	i) The software shall be able to pre configure various display layouts and access them at any time with a simple mouse click or based on the timer. ii) The software shall enable the users to see the desktop of the graphics display wall remotely on any WIN PC connected with the Display Controller over the Ethernet and change the size and position of the various windows being shown. iii) The software shall copy the screen content of the WIN PC / workstation connected on the Ethernet with the Display Controller to be shown on the Display wall in scalable and moveable windows in real time environment. iv) The wall management software shall allow the minimum concurrent 4 client users.	Board will check it practically during functional test.
3	**Touch Panel with Controller**		
3.1	Integrated Controller		Board will check it practically during functional test.
3.2	Processor	Processor with minimum speed of 400 MIPS	-do-
3.3	Memory	256 MB RAM,2 GB Compact Flash	-do-
3.4	Ports	7/8 configurable RS232/RS422/RS 485 Serial ports, RJ45,8 relays, 8 IR, 8 Digital I/O ports, 1 USB Communication port	-do-
4	**Wireless Touch Panel**		
4.1	Design: - Touch panel should be thin and compact.		Board will check it practically.
4.2	On-screen menu navigation or even pan/tilt camera control.		-do-
4.3	Wi Fi Wireless	Integrated 802.11a/b/g/n Wi-Fi technology with WEP encryption, delivers secure, high-speed 2-way wireless performance across wireless LAN's affording mobile freedom and seamless communications with control systems, computers, digital media servers, and other IP-based devices.	-do- Board will check it practically during functional test.
4.4	Audio Features	Built-in speakers and microphone	do-
4.5	Display	8 inch, LCD/ LED backlit screen or better.	Board will check it practically
4.6	Resolution	1024 x 768 pixels	Vendor will produce certificate as well as board will also refer the brochure of the equipment in this regard. Board will check practically all accessories.
4.7	Accessories	To be supplied along with all required accessories to control all the equipments installed in control room, i.e. Data Wall, Air conditioner, MDS, DVD Player, Lighting, camera, Video conferencing.	

5	**Interactive Pads**	**(Quantity to be decided by user)**	
5.1	Size	8"x6"	Board will measure screen of panel diagonally by using of measuring tape/scale.
5.2	Technology	Electromagnetic, RF connectivity.	Board will check it practically and ensure its connectivity.
5.3	Pen	Pen must be able to accept both nylon tips and ball point refills	Boards will check it practically.
5.4	Complete with Driver software, Interactive tools etc.		Board will check it practically and ensure availability.
6.	**LCD/LED Display of 46"or more (Size and Quantity to be decided by user)**		Board will measure screen of panel diagonally by using of measuring tape/scale.
	Supply, installation, testing & commissioning of Wall Mountable ,full High Definition Resolution (1920x1080) LCD Monitor having following technical performance parameters: -		
6.1	LED Screen Size	Minimum 46" or higher	
6.2	Resolution	1920x1080 pixels	Vendor will produce certificate as well as board will also refer the brochure of the equipment in this regard
6.3	Brightness	Minimum 450 cd/m2	
6.4	Contrast Ratio	Minimum 3000:1	
6.5	Should have RS 232C Control Port		Board will check it practically.
6.6	Input	DVI/RGB HV/ HDMI	-do-
7.	**IP PTZ Camera**	**(Quantity to be decided by user)**	Vendor will produce certificate as well as board will also refer the brochure of the equipment in this regard
7.1	Image Sensor	1/3-inch CCD/CMOS	
7.2	Resolution	704x480 pixels or better	
7.3	Imaging modes	Day/Night Auto/Manual	Board will check the all parameters one by one after put "ON" camera and ensure all mentioned parameters are available and with the camera.
7.4	Lens	36x Optical Zoom or more	
7.5	Video compression method	H.264 / M JPEG	
7.6	Camera control	Pan, tilt, zoom, brightness, shutter speed, focus speed,	
7.7	Multi-connector	Video IN/OUT: NTSC/PAL composite, BNC terminal (1 each), RJ 45	
7.8	Streaming	Multi / Dual streaming	
8.	**Map Dispensing System**	Size minimum 6x4 feet, 4 (for Maps) polyurethane sheets are rolled on motorized pipes stacked in fixed positions in such a way that on giving command the selected map rolls down in one window. The second map comes down on giving command only when the previous map is rolled back in its position. The system should be capable of operating by a Remote. The installation will be on two steel columns to be raised from floor. The rest of the systems can be in the false ceiling. Any one selected map will roll down also through touch panel controller integrated with the main system. The systems can be standalone systems in a box covered from all sides and having openable bottom cover for servicing and changing of maps.	Board will measure the size with measuring scale and rest features mentioned in QRs will check practically one by one and ensure its functionality.

9	Podium		
9.1	Metallic Smart Podium Should Have -		
9.2	Built-in 19" LCD Tablet touch screen Monitor with Viewing angle adjustment		Board will check it practically.
9.3	Integrated PC , with minimum core i3 processor, windows 7 professional & MS Office latest.		To ensure the size of panel. Board will measure screen of panel diagonally by using of measuring tape. Angle adjustment will check practically.
9.4	Keyboard tray		Board will check it practically.
9.5	Cooling Fan		-do-
9.6	19" Rack shelves and drawer		-do-
9.7	Built-in Gooseneck Microphone		-do-
9.8	Wireless Microphone		-do-
9.9	USB Port min. 3 USB (3.0), HDMI PORT & LAN port.		-do-
10	Quad view		-do-
10.1	Input	4x VGA or 3x DVI or 3x component or 3x composite.	Board will check all the parameters one by one and will ensure that specifications are as per requirement and working properly.
10.2	Output	1x DVI, 1x VGA	
10.3	Video support	480i to 1600x1200	
10.4	Control	RS-232 and RS-485	
10.5	LAN Port	RJ45	
10.6	Embedded video mixer	Yes	
10.7	Mounting	1U rack-mount with ears	
10.8	Power supply	AC Power 100-240V	Board will check it practically by applying AC input voltage in 100-240V range and will ensure its working capability. Vendor will produce certificate as well as board will also refer the brochure of the equipment in this regard.
11	Visualiser		
11.1	Camera	1/3" CMOS	Board will check all the parameters one by one and will ensure that specifications are as per requirement and working properly.
11.2	Resolution	Full HD(1920x1080)	
11.3	Lens	12 x optical zoom, 10 x digital zoom	
11.4	Image Rotation	90/180/270 degree	
11.5	Focus	Auto/Manual selectable	
11.6	Built in arm light	LED Lamps	

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12	**Digital Audio Conferencing System consisting of**	
12.1	**Digital Central Control Unit**	Board will check all the parameters one by one and will ensure that specifications are as per requirement and working properly.
	a) Fully Digital Audio transmission and Control	
	b) Minimum 50 Conference Units can be controlled	
	c) Facility to connect conference delegate units, conference chairman unit etc. for providing audio conference management using system bus	
	d) PC Control Mode of operation of audio conference and also Automatic mode (Without PC)	
	e) It should have built in Power supply for Minimum 50 Units.	
12.2	**Digital Chairman Unit (As per user requirement)**	Board will check all the parameters one by one and will ensure that specifications are as per requiremen and working properly.
	a) The unit shall incorporate a pluggable and removable high sensitive microphone with a flexible stem and a Loudspeaker provides superb clarity and intelligibility.	
	b) Fully Digital Audio transmission and Control, Immune to mobile Interference.	
	c) Facility for Individual Microphone Sensitivity / Gain Control Via Software and hardware.	
	d) When Microphone is 'ON', speaker is automatically muted to improve the gain before feedback.	
	e) Priority Button for temporary or Permanent muting of active delegates	
	f) Microphone on/off or request to speak button	
	g) Color LED Indication: for MIC "ON", "MIC REQUEST"	
	h) Directional pattern : Cardioids	
	i) Transducer Type : Condenser	
12.3	**Digital Delegate Unit (As per user requirement)**	Board will check all the parameters one by one and will ensure that specifications are as per requirement and working properly
	a) The unit shall incorporate a pluggable and removable high sensitive microphone with a flexible stem and a Loudspeaker which provides superb clarity and intelligibility.	
	b) Fully Digital Audio transmission and Control, Immune to mobile Interference.	
	c) Facility for Individual Microphone Sensitivity / Gain Control Via Software and hardware.	
	d) When Microphone is 'ON', speaker is automatically muted to improve the gain before feedback.	
	e) Microphone on/off or request to speak button	
	f) Directional pattern : Cardioids	
	g) Transducer Type : Condenser	

12.4	**Control Software for Conference Control and PC** a) PC of latest configuration with 22" touch LCD monitor, i3 or better processor, 4 GB RAM, 500 GB Hard Disk, Mouse, Keyboard, Multimedia Speakers or Laptop with latest configurations (User may decide during procurement)	Board will check physically and practically and will ensure that PC or Laptop is having all specifications as per requirement.
	b) Microphone management facility, which shall facilitate management of delegate request list switching ON and OFF of individual microphones from single / multiple points, Setting and control of the volume levels of individual microphones and loudspeakers in the delegate / chairman units, setting of overall volume control of audio conference system, setting and control of the line inputs and line outputs from / to the conference control unit.	Board will check all features practically one by one and will ensure that all are as per requirement and working properly.
	c) Synoptic control facility, which shall enable switching ON and switching OFF of microphones on a geographical layout on the screen, made as per the actual seating inside the hall. Different colors shall be used to represent the status of microphones on the layout namely Red for Microphone ON status, Green on Request Status etc. It should be further possible to change the level of individual microphone depending on requirement.	-do-
12.5	**P A System** (As per user requirement)	
	a) Power Amplifier should be dual channel and total 450 Watts@ 4 ohm,8 ohm & 70/100V	Board will check it physically / practically
	b) Built in fan for temperature control. Short circuit protection.	-do-
	c) Power Supply –AC- 230V ±10%, 50 Hz or 24VDC	-do-
	d) XLR Input	-do-
	e) Sensitivity : 1V balanced or better	-do-
12.6	**Wireless Handheld** (As per user requirement)	
	a) It shall be UHF Wireless Handheld microphone b) It shall have Minimum 100 selectable UHF channels in steps of 125 KHz c) It shall have LCD with battery status and frequency indication d) It shall have Lock function e) Frequency up/down buttons f) LCD displaying frequency and battery level	Board will check all parameter practically one by one and will ensure that all are as per requirement and working properly
12.7	**Wireless Livelier/Collar Microphone** (As per user requirement)	
	a) It shall be UHF Wireless Collar microphone b) It shall have Minimum 100 selectable UHF channels in steps of 125 KHz c) It shall have LCD with battery status and frequency indication d) It shall have Lock function	Board will check all parameter practically one by one and will ensure that all are as per requirement and working properly.

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	e) Frequency up/down buttons f) LCD displaying frequency and battery level	
12.8	**Mixer / Preamplifier (Optional)** a) Minimum 08 microphone inputs and 2 outputs b) Balanced Phoenix-type mic /line inputs : RCA inputs c) Balanced Phoenix-type line output d) Any Input can be sent to any output e) Priority Muting and Phantom Power f) Independent bass and treble controls for each input.	Board will check all parameter practically one by one and will ensure that all are as per requirement and working properly.
12.9	**Digital Signal Processor** a) Digital Signal Processor for Telephone Interface and Video conferencing with Automatic echo cancellation feature. b) 10 Analog inputs (With 48v Phantom Power per Channel) & 8 Analog Output c) RJ-11 Telephone input / output port d) Configuration, control and Monitoring via PC. e) 8 Channel of AEC Processing with Auto Gain control and Noise cancellation. f) Low Latency , Fault Tolerant Digital Audio Bus of 48 channels g) 10 Control inputs and 5 Logic Outputs	Board will check all parameter practically one by one and will ensure that all are as per requirement and working properly.
12.10	**DVD Recorder** : Recorder should have 320 GB Hard Drive 1080p Up Conversion – Creates more smooth, High resolution images, SD Card Slot, USB terminal, HDMI Plays any region PAL or NTSC DVD-Video, DVD-Audio, DVD-RAM, DVD R, DVD-R, and Video CD, Plays audio CD, DVD audio, DiVX, DVD-R, DVD-RW, and MP3 CD-R & CD-RW & Records in PAL or NTSC. RF input/output for antenna/cable signals with stereo cable, remote & manual.	Board will check all parameter practically one by one and will ensure that all are as per requirement and working properly.
12.11	**Speakers** :- Wall Mounted 6 inch two way full range 60 watts speaker with wall bracket and should comply with the following parameters – i) Frequency Response (-3dB): 80Hz – 20KHz ii) System Sensitivity (1W @1m): minimum 80dB iii) Transformer Taps: 70/100 Volt with power taps 60W/30W / 15W / 7.5W iv) Water and Dust ingress protection to IP64 standard. **(As per user requirement)**	Board will check it physically/ practically
12.12	**Speaker Cable (As per user requirement)** a) 48/0.2mm two core twin twisted loudspeaker cable with Tinned copper conductor b) Individual core shall be PVC sheathed with two separate colors c) Overall PVC sheathed cable	Board will check it physically.
12.13	**Conference Cable: Multi-core Conference cable with appropriate connector and proper Shielding (As per user requirement)**	-do-

13	Equipment Rack		Board will check equipment rack physically and will ensure that it is as per specification.
	a) A suitable standing aluminum rack for housing control equipment for conference, Sound Reinforcement, Automatic Camera Control, Projection and presentation System.		
	b) There shall be provision of at least 1 U blank plate spacing between two adjacent equipment so as to provide sufficient ventilation		
	c) Fan at top of each rack for heat dissipation, Power supply panel with MCB at the bottom		
	d) Front transparent door and rear metallic glass door with locking facility		
	e) Adequate power supply sockets for the equipment to be fitted in the rack		
14.	5/7.5/10 KVA ONLINE UPS (Type & Capacity to be decided by user during procurement)		Board will check all the parameters/specifications of UPS practically and will ensure that they are as per requirement.
	a) Input System	1- Phase, Plus PE	
	b) Rated Voltage	220 VAC, 50 Hz	
	c) Voltage Range	180-270 V	
	d) Power Factor	>0.98	
	e) Frequency Range	46-54Hz	
	f) Output System	1- Phase, Plus PE	
	g) Power Factor	0.7	
	h) Voltage	220VAC/230VAC/240VAC, +/- 1% 50Hz	
	i) Line Regulation	<1%	
	j) Voltage Harmonic Distortion	<2%	
	k) Dynamic Variation	+/-5% in 60ms	
	l) Inverter Overload Capability in Normal Mode	105% 130% 10min. Transfer to Bypass	
	m) Inverter Overload Capability in Battery Mode	130% 1 sec, transfer to bypass turn off output	
	n) Crest Factor	3:1	
	o) Bypass Auto Retransfer	Yes	
	p) Transfer Time	Normal	
	q) Communication Port	RS 232	
	r) Back up	Minimum120 Minutes	
	s) External Battery Voltage	240 VDC	
	t) Charging Current	4.2A	
	u) Battery Capacity	12 V 100 AH	
	v) Nos. of Battery	20	
	w) Noise	<55dB	
	x) Protection	IP 20	

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15	**Motorized Screen**		
15.1	Size	Projection screen 6' x 4' wall mounted type.	Board will measure the size with measuring scale and rest features mentioned in QRs will check practically/ physically one by one and ensure its functionality.
15.2	Desired Features: - i) Electrically operated 220 volt (50 Hz). Shall have specially designed motor mounted inside the roller with a patented noise silencer to be three wire quick reversal type, oiled for life, with automatic thermal overload cut-out, integral gears, capacitor and an electric brake to prevent coasting. To have pre-set but adjustable limit switches to automatically stop picture surface in the "up" and "down" positions. The roller to be of rigid metal, 3" in diameter. ii) Screen fabric to be flame retardant and High Contrast Matte White, with black masking borders standard. Bottom of fabric shall be formed into a pocket holding a 3/8" diameter metal rod. Case to be painted white 21-gauge steel, hexagon in shape with flat back to prevent scraping fabric. Case end caps to be heavy duty, allowing no exposed roller pins. End caps shall form sturdy brackets for wall or ceiling installation. To be complete with three position control switch with cover plate.		
16	**Ceiling mounted projector** a) Brightness : 4000 ANSI Lumens b) Resolution : XGA (1024x768 pixels) c) Contrast Ratio : 1400:1 d) Wireless Compatibility e) Estimated Light Source Life : Up to 20,000 hours f) Projection Lens : 2x Optical Power Zoom Lens g) Interfaces : RGB; HDMI, USB & AV terminal h) Other Functions:- i) Direct Power ON/OFF, ii) 2x Digital Zoom, iii) Freeze & iv) Pointer i) Modes : Color mode, Eco mode and Blank		Vendor will produce certificate as well as board will also refer the brochure of the equipment in this regard. Board will check it practically. -do-

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