BID DOCUMENT

SUPPLY, INSTALLATION, TESTING AND COMMISSIONING

OF

HDTV PRODUCTION FACILITY, INGEST/PLAYOUT AUTOMATION, MEDIA ASSET MANAGEMENT AND ARCHIVE

FOR

EDUCATIONAL MULTIMEDIA RESEARCH CENTRE
ST. XAVIER’S COLLEGE (AUTONOMOUS)
KOLKATA

Ref No: EMMRC/SXC/AJAYNAGAR/SITC/2016
Dated: 09/05/2016
Invitation to Bid (ITB)

For Supply, Installation, Testing and Commissioning (SITC) of HDTV Production facility, Ingest/Playout Automation, Media Asset Management and Archive at Educational Multimedia Research Centre (EMMRC), Kolkata.

1) EMMRC, St. Xavier’s College (Autonomous), Kolkata invites bids from eligible and qualified Bidders for the supply of the goods and services as described above.

2) Bidding will be conducted through the Two Envelop Competitive Bidding procedures specified in the GFR Procurement Manual and are open to all eligible Bidders as defined in this ITB.

3) Interested eligible bidders may obtain further information from the Director, EMMRC, St. Xavier’s College (Autonomous), Kolkata.

4) Qualification requirements are specified in the ITB.

5) Bids must be delivered as specified in the Instruction to Bidders of this ITB (please read this part carefully). Late submission of bids will be rejected.

Pre-cleared and Approved by

Rev. Fr. (Dr.) John Felix Raj
Principal
St. Xavier’s College ( Autonomous)

Dated: 09.05.2016
ITB for Procurement of Goods and Services

Summary

Section I. General Information & Instructions to Bidders

The Bidder has to be System Integrator (SI), who would integrate the entire system.

This section provides information to help Bidders prepare their bids.

Information is also provided on the submission, opening and evaluation of bids and on the award of Contracts. Section I contains provisions which are to be used without modification.

Section II. Technical System Requirement

This section includes Scope of Work, Generic and Technical requirements of the project, List of Goods and related services and Technical Specifications of goods and services to be procured.

Section III. Enclosure

This section includes format for System Integrator (SI) information and their customer’s references and checklist for the bidders.
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GENERAL INFORMATION & INSTRUCTIONS
TO BIDDERS

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A. BID SCHEDULE AND CRITICAL DATES

The Bid document tentative schedule and critical dates are shown below:

<table>
<thead>
<tr>
<th>S. No</th>
<th>EVENT</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Availability of Bid Document in website</td>
<td>13.05.2016 to 03.06.2016 till 3.00 pm</td>
</tr>
<tr>
<td>2</td>
<td>Date of Pre-Bid Meeting/Site Inspection</td>
<td>20.05.2016 Time 11.00 am/2.00 pm</td>
</tr>
<tr>
<td>3</td>
<td>Venue for Pre-Bid Meeting</td>
<td>493, Ajaynagar, Kolkata – 700094 (Adjacent to Indus Valley Public School)</td>
</tr>
<tr>
<td>4</td>
<td>Bid Submission Last Date and Time</td>
<td>03.06.2016 till 3.00 pm</td>
</tr>
<tr>
<td>5</td>
<td>Venue for Submission and Opening of Bids</td>
<td>EMMRC, St. Xavier’s College (Autonomous), 50 Circus Avenue, Kolkata 700 017</td>
</tr>
<tr>
<td>6</td>
<td>Opening of Technical Bid</td>
<td>03.06.2016 at 4.00 pm</td>
</tr>
<tr>
<td>8</td>
<td>Opening of Financial Bid</td>
<td>To be intimated</td>
</tr>
</tbody>
</table>

EMMRC Kolkata reserves the right to amend the Bid document, tentative schedule and critical dates.

The bid document can be downloaded from the website [http://www.sxccal.edu](http://www.sxccal.edu), [http://www.emrc.org](http://www.emrc.org) and cost of document to be paid by NEFT/RTGS of Rs.5,000/- (Rupees Five Thousand Only). The proof of payment must be submitted along with the Technical Bid otherwise the bid will be rejected.

B. INTENT OF THE BIDDING

Educational Multimedia Research Centre (EMMRC), St. Xavier’s College (Autonomous), Kolkata, is one of the 21 electronic multimedia centres of UGC and only one hosted by an undergraduate college. It has evolved from a modest Audio Visual Research Centre (AVRC) in August 1986 to its present shape as Educational Multimedia Research Centre (EMMRC). It has been acknowledged as a significant player in the evolution of India’s ‘Knowledge Society’. It is making significant contribution to Government of India’s ‘Digital India Initiative’ with its robust manner of content creation and its dissemination through different platforms. EMMRC Kolkata is currently an essential part of the GOI’s National Mission for Education through Information and Communication Technology (NME-ICT).
This Bid aims at the Supply, Installation, Testing and Commissioning (SITC) of multi-purpose
High Definition TV (HDTV) Studio Production facility, Ingest and Playback of media content,
Media Asset Management and deep Archive of media content, along with associated technical
facilities for EMMRC Kolkata at its new premises at Ajaynagar, Kolkata, on turn-key basis. The
HD Studio Set-up and its associated technical facilities will include the following broad scope of
work:-

(a) HDTV Studio production facility with Two studios, having ergonomically designed
following technical areas:-

i) Equipment Area for housing the electronics of the equipment etc.

ii) Production Control Rooms (PCR) including Production desks & Video Monitoring
Walls.

iii) Camera Control Desks.

iv) Audio Desks.

vii) Central Apparatus and Server Room.

ix) Wall mounted termination panels in Studio floor etc.

x) Audio-Video, intercom, data interconnection between various technical facilities
and any other work/job defined elsewhere in the specifications.

xi) Proper Technical and Power-earthing.

xii) UPS Power distribution.

Bidders are requested to quote their best possible prices with special discount, as the set-up is a
non-commercial public service educational initiative supported by University Grants
Commission (UGC) and Ministry of Human Resource Development (MHRD), Government of
India (GOI). Adequate training is to be imparted to the technical staff of EMMRC Kolkata for
operation of supplied/installed equipment.

Bidders are required to note the following points before submitting the bids:

(a) Each and every offered equipment should be from an internationally reputed
manufacturer and the quoted model should be field proven and in use by leading
broadcasters in various continents of the World.

(b) The bidder should essentially submit the list of the broadcasters to whom the quoted
model of the offered equipment has been supplied.

(c) The layout should be designed so as to maximize the utilization of the available space
without compromising the functional requirement.
(d) The installed equipment in each technical facility should have quick access to front and back panels for ease of operation and maintenance.

(e) The bidder should have a proven track record of design & installation of HDTV Studio, Ingest and Playback Automation, Media Asset Management and Deep Archiving of media content, along with associated technical facilities and should have work experience of having at least two such projects in the last three years prior to the submission of the bid. The cut-off date for the counting of such experience shall be the date of submission of the bid. The Bidder not having requisite work experience may form Joint Venture with requisite work experience as mentioned above. The Joint Venture Agreement should clearly mention the Lead Partner and JV Partner. In this case, the JV partners will be jointly and severally accountable and responsible for carrying out design, installation, testing, and commissioning of the facility.

The Joint Venture Agreement to this effect should be submitted along with the bid. However, this Joint Venture Agreement does not absolve the Bidder from successful completion of the SITC job as per the terms and conditions of the tender. The list of such turnkey works successfully done by the Lead Partner/JV Partner in the past 3 years along with the full details should be enclosed along with the bid. The supporting documentary evidence like work order with successful completion certificate should also be submitted along with the offer. The offer from the Bidder not having work experience of undertaking at least two such projects in the last 3 years, will not be considered.

(f) A pre-bid conference will be held at the mentioned date and time to bring clarity to all the prospective bidders in respect of the requirement of tender specifications. The date and venue is given in the table ‘Bid Schedule and Critical Dates’. The prospective bidders are required to submit their queries (if any) in writing, so as to reach the Bid Coordinator, EMMRC Kolkata on the date of pre-bid meeting.

(g) It will be the responsibility of the bidder to ensure after-sales service and guarantee for the equipment from various manufacturers. Firms that are dealing with the turnkey implementation of the project only can be considered if and only if the manufacturer(s) of different major equipment such as Camera chain, Production Switcher, Audio Mixers, Intercom system, Router, measuring and monitoring equipment, Media and MAM Servers, Online storage, Deep Archive etc. extend and ensure all Guarantee with respect to their equipment to the bidder and in turn to the procurement authorities i.e., EMMRC Kolkata.

(h) The bidder will be required to use only high quality HD video / audio/Data cables, connectors and other accessories. The HD video cable should be similar to Belden 1855 for rack wiring and Belden 1505 & 1694A for other applications. The HD BNC connectors of high quality, similar to Neutrik/Canare should be used. XLR connectors should be of high quality and similar to Switchcraft/Canare.
(i) The bidder should use video/audio/Data cables of different colours for ease of identification. The standard cable identification should also be used.

(j) The system integrator should display in vantage positions in the facility the Technical block and Line diagrams of the Video, Audio and Data chain and UPS power distribution.

(k) All the input and output routing of video signals to and from the production switcher and routing switcher will be through sufficient number of HD video patch panels. Only high quality digital patch panels which support high bandwidth should be offered. The patch panels should have matching U-links with adequate number of patch cords.

(l) The offered audio and video racks should be equipped with professional grade MDUs for powering various equipment. The rack should also have cooling fans etc. Racks should be of high quality with lockable double doors on the back, powder coated painted. All racks should be of same colour.

(m) The number of inputs, outputs and performance parameters mentioned in the specifications for various equipment required for the various facilities are suggestive and minimum only. The bidder can offer better parameters and more I/O-s.

(n) Layout drawing of the Equipment, Racks, Production Desks, Power Supply, Data, Video and Audio Schematic etc. are of prime concern and are to be submitted by bidders along with the bid. The successful bidder will be required to prepare and submit the layout & design of the facility, preferably in DWG format and will get the final layout & design approved by EMMRC Kolkata immediately after getting the supply order.

(o) The layout & facility design including selection of equipment should be done keeping in view the broadcast quality professional workflow requirements for the HDTV production as described in these specifications.

LOCATION AND BUILDING

(a) The facilities will be installed at the new premises of EMMRC Kolkata, at 493, Ajaynagar, Kolkata – 700094 (Adjacent to Indus Valley Public School).

(b) The bidder is essentially required to visit the site for assessment of space available, room layouts, distance between various technical areas, various cable routes, partitions required etc., on any working day between 10:00 AM to 05:00 PM before submitting the offer. The bidder may contact the Director, EMMRC Kolkata for the purpose. In case the bidder misses out certain details in its bid for lack of such visit
and it is found that the offer is incomplete, the bid will be rejected on sole responsibility of the bidder.

(c) No cavity flooring or cable trenches exist at the site; System Integrator is required to make suitable arrangement for routing different type of cables by using cable trays, alleys, raised platform etc. in CAR/Server room.

(d) The necessary partitioning, panelling within the facility, will be part of the offer. The firm is required to use Stainless Steel frame with glass & aluminium composite panels for the partitioning works.

C. PROCEDURE, TERMS & CONDITIONS

1. The proposal is to be submitted in TWO BID SYSTEM with separate Technical Bid and Financial Bid under separated sealed covers.

2. TWO-BID SYSTEM

All Bidders are required to submit their offer in two covers as under:-

2.1 Technical Bid should contain the following:-
(i) Bid documents duly completed, signed and stamped on all pages BUT WITHOUT INDICATING THE RATE QUOTED.
(ii) The technical details of the models offered along with the supporting original technical literature, Leaflets, Brochure etc. in duplicate.
(iii) This cover should be superscripted with the words “Technical Bid for SITC of HDTV Production Facility, Ingest/Playout Automation, Media Asset Management and Archive for EMMRC Kolkata” against Ref No. EMMRC/SXC/AJAYNAGAR/SITC/2016 dated 09.05.2016.
(iv) Cost of bid document to be paid by NEFT/RTGS of Rs.5,000/- (Rupees five thousand Only). The proof of payment must be submitted along with the technical bid otherwise the bid will be rejected.
(v) Earnest Money Deposit to be paid by NEFT/RTGS of Rs.10,00,000/- (Rupees Ten Lakhs only). The proof of payment must be submitted along with the technical bid otherwise the bid will be rejected.

2.2 Financial Bid should contain the following:-
(i) Details of rate, taxes, duties, discount, if any, quoted by the bidder. These details should be submitted on their letterhead, signed and stamped.
(ii) FOR terms, delivery period to be quoted.
(iii) This cover should be superscripted with “Financial Bid for SITC of HDTV Production Facility, Ingest/Playout Automation, Media Asset Management and Archive for EMMRC Kolkata” against Ref No. EMMRC/SXC/AJAYNAGAR/SITC/2016 dated 09.05.2016.

Both the abovementioned bids should be sealed separately and thereafter be kept in a THIRD cover and sealed again. This cover should be superscripted with “Bid for SITC of HDTV Production Facility, Ingest/Playout Automation, Media Asset Management and Archive for EMMRC Kolkata” against Ref No. EMMRC/SXC/AJAYNAGAR/SITC/2016 dated 09.05.2016.

Any composite bid i.e. bid with rate indicated in the Technical bid openly in tender, is liable to be rejected.

3. Bid Responses must be addressed to and submitted at the following address:

The Director, EMMRC, St. Xavier’s College (Autonomous), 50 Circus Avenue, Kolkata-700017. Tel. No. (033) 4072 7019

4. The Bids, both Technical and the Financial, should reach the office of EMMRC, KOLKATA, on the above address, not later than 3.00 pm on 03.06.2016. Bids received beyond the specified date & time will be rejected. It is the responsibility of the Bidder to confirm that the bids have been received on time & to the proper place within the specified dates. Facsimile and electronic submissions are not acceptable.

5. All bids are to remain valid for 180 days from the date of submission of bid.

6. EMMRC Kolkata reserves the right to solicit additional information from Bidders if it deems fit to meet the need of the Project. Additional information may include, but is not limited to, past performance records, lists of available items of work will be done simultaneously with the project, on-site visit and evaluations by EMMRC personnel, or any other pertinent information. It will be System Integrator’s (S.I.) responsibility to check for updated information on EMMRC’s web site viz. http://www.emrc.org, as also website of St. Xavier’s College (Autonomous) viz. http://www.sxccal.edu.

7. Bid queries should be submitted in writing and addressed to

Bid Coordinator
C/o. The Director, EMMRC
EMMRC
St. Xavier’s College (Autonomous)
50, Circus Avenue, Kolkata-700017
Tel: 033-4072 7019
E-mail: director@emrc.org
8. EMMRC Kolkata will make its decision based on the ability of the Bidder(s) to meet the specific needs, technical expertise of the Bidder(s), delivery capabilities, customer references, past satisfactory performance experience, system completeness etc. besides cost.

9. EMMRC Kolkata reserves the right to waive off any deviations, accept the whole or part thereof or reject any or all bids and to select the Bidder(s) which, in the sole opinion of the Project In charge, best meets the project’s interest. EMMRC Kolkata also reserves the right to negotiate with potential bidders so that its best interest to fulfil the need of project is served.

10. EMMRC Kolkata reserves the right to reject any and all proposals, to negotiate all terms of any agreement resulting from this request for proposal, and to request additional information from System Integrators (S.I.).

11. All information contained in this bid document, or provided in subsequent discussions or disclosures, is proprietary and confidential. No information may be shared with any other organization without prior written consent of the Bid Coordinator.

12. EMMRC Kolkata reserves the right to either increase or decrease the quantity of any or all the items included in suggestive bill of material, which are estimated requirements and therefore open to variation.

13. EMMRC Kolkata reserves the right to alter/modify the scope of work mentioned in this Bid document at any stage of the bidding process and contract.

14. EMMRC Kolkata reserves the right to terminate the contract at any stage of the work by giving 7 (seven) days’ notice if it is noticed that the delay occurred in any of the activities covered under the contract cannot be made good and will affect the overall work schedule. EMMRC Kolkata shall revoke the Performance Bank Guarantee of the bidder. The decision of the Director, EMMRC Kolkata shall be final and binding.

15. In case Lead Partner/JV partner goes into liquidation or there is change in business/management, it will have to be intimated to EMMRC Kolkata & Lead Partner/JV Partner will fulfil its commitment in case order is awarded to them.

16. Indemnification:

Contractor shall at all times indemnify and keep indemnified each other against all claims/damages etc. for any infringement of any Intellectual Property Rights (IPR) while providing its service under the contract. Contractor shall at all times indemnify and keep indemnified each other against any claims in respect of any damages or compensation payable in consequences of any accident or injury sustained or suffered by its (their) employees or agents or caused by any action, omission or operation conducted by or on behalf of both parties. All claims regarding indemnity shall survive the termination or expiry of the contract. EMMRC Kolkata
shall have no role in engaging of subcontractors by the Contractor, and Contractor alone shall be responsible to such Sub-Contractors.

17. Arbitration Clause:

In the event of any dispute or difference between the parties hereto, such dispute or difference shall be resolved amicably by mutual consultation. If such resolution is not possible, then the unresolved dispute or difference shall be referred to International Centre for Alternative Dispute Resolution (ICADR) Arbitration Rules, 1996. The arbitration shall be held in Kolkata and shall be in the English Language. The award of the Arbitrator shall be binding upon parties to the dispute. Provided, however any party aggrieved by such award may make a further reference for setting aside or revision of the award in the Court of Law. All legal and beneficial ownership right, title and interest of each party will vest with respective parties, and the other party shall not have any right whatsoever to make any claim of title or create any lien, charge or other encumbrance whatsoever overall or any parts.

18. Jurisdiction

This Agreement shall be construed, interpreted and applied in accordance with, and shall be governed by, the laws applicable in India. The courts at Kolkata shall have the exclusive jurisdiction to entertain any matter arising out of or in relation to this Agreement.

D. ELIGIBILITY CRITERIA

1. For purchase of Bid document, bidder will have to pay a fee of Rs. 5,000/- (Rupees five thousand only) to be paid by NEFT/RTGS.

2. EMD Amount of Rs. 10,00,000/- (Rupees Ten Lakhs only) should be paid only to be paid by NEFT/RTGS.

3. The Bidder should have experience of undertaking SITC of HDTV studios, post-production facilities, ingest/playout automation, media asset management and archives. The Bidder should submit documentary proof such as copy of Work Order along with Completion Certificate etc. for the same.

4. The Bidder should have physically completed within the qualifying period i.e. three previous financial years (even though the work might have commenced before the qualifying period) at least one similar single work for a minimum value of 35% of the published estimated value of the work.

5. Total Contract Amount received by the Bidder(s) during three previous financial years should be a minimum 150% of the published estimated value of the work. In support of this, work order should be furnished.
6. In case of composite works involving combination of different works, even separate completed works of required value should be considered while evaluating the eligibility criteria.

7. The Lead Partner / JV Partner should be registered under Indian Company Act 1956. The copy of incorporation Certificate should be submitted.

8. The bidder is required to submit following documents:
   a) Copy of PAN No.
   b) Copy of Service Tax Registration No.
   c) Copy of CST/VAT No.
   d) MoA & AoA
   e) Latest Trade License
   f) JV Agreement (if applicable)

   And in case any document is not submitted, bid shall stand rejected.

9. Letter of Authorization from OEM to quote against Ref No. EMMRC/SXC/AJAYNAGAR/SITC/2016 dated 09.05.2016 enlisting after sales support after project execution is essential. The details have been given in the technical section separately. Original copy of Authorization letter should be submitted.

10. The compliance statement including Bill of Material duly signed & stamped by OEM on their letterhead should be submitted by bidder.

11. A separate point by point compliance statement duly signed & stamped by bidder in respect to all points laid down in the specifications for all the equipment/item(s) must be submitted.

12. The bidder should provide Vendor Information with name, address, website and contact details. Format is provided in “Appendix-3” of this Bid document.

13. Warranty/ Guarantee of the items should be given.

14. The Bidder should be a financially sound company with positive net in last three consecutive Financial Years and should provide the copy of Audited financial statement of last three Financial Years.

15. The Bidder should provide the Technical Literature of the item whose make and model have been quoted by the bidder. No similar type of item(s)/equipment(s) or same series item(s)/equipment(s) technical literature will be considered. In this case the bid may be technically rejected.

16. All bidders must strictly quote the product as per Serial Number/Heading/ Sub-Heading given in BOM of Bid document.

17. Schematic Workflow Diagram and Block Diagram must be provided.
E. GENERAL CONDITIONS

1. GENERAL REQUIREMENTS

1.1 The Proposer should not put any unusual condition from their side contradicting terms and conditions in the Bid document. Such unusual/contradicting conditions will not be considered.

1.2 All documents to be submitted in connection with this Bid will have to be written in **ENGLISH ONLY**.

1.3 No erasure or alteration in the submitted Proposal is permitted. In case there is such erasure(s) and/or alteration(s) these will have to be attested by the bidder. However, EMMRC Kolkata reserves the right to either ignore such erasure and/or alteration or render the whole proposal void.

1.4 If a Bidder liquidates after the submission of proposal and or after the acceptance of its bid, EMMRC Kolkata shall deem such bid as cancelled. If JV partner of a bidding firm liquidates after submission of their bid or after the acceptance of their bid, EMMRC Kolkata shall deem such bid as cancelled. Notwithstanding the fulfilment of eligibility criteria by the bidder, EMMRC Kolkata reserves the right to reject the bid after considering the various circumstances of the individual case.

1.5 No Bidder shall canvass any person connected, directly or indirectly, with this project in respect of his or any other Bid. Contravention of this condition will involve rejection of the Bid.

1.6 Any bribe, commission, gift or advantage given, promised or offered by or on behalf of the bidder, agent or employee to any person related, directly or indirectly, to this project shall, in addition to the criminal liability will incur action under the Prevention of Corruption Act 1980, subject the Bidder to cancellation of this and other Bids and also to payment of any loss resulting from any such cancellation, and EMMRC Kolkata shall be entitled to deduct the amounts so payable, from any payment and EMMRC’s decision shall be final and conclusive in this matter.

1.7 The prospective bidders should submit a declaration as under:

To
The Principal
St. Xavier’s College (Autonomous)
30, Mother Teresa Sarani
Kolkata-700 016

Subj: Supply, Installation, Testing, Commissioning (SITC) of HDTV Production facility, Ingest/Playout automation, Media Asset Management, and Archive at Educational Multimedia Research Centre (EMMRC), Kolkata at Ajay Nagar, including training with warranty for 36 months.
Sir

1. We have read and understood fully the various conditions of Bid document and hereby agree to abide by the said conditions. We also agree to keep this Bid open for acceptance for a period of 180 days from the date fixed for technical opening the same and in default thereof we will be liable to forfeiture of our Earnest Money. We offer to do the above works of EMMRC Kolkata at the rate quoted in the attached schedules and hereby bind ourselves to complete the works in all respects within 14 (fourteen) weeks from the date of issuance of work order by EMMRC. We also hereby agree to carry out the work according to the specification for materials and as laid down by EMMRC Kolkata for the present work.

2. A sum of Rs. 10,00,000/- (Rupees Ten Lakhs only) is herewith forwarded as Earnest Money. The full value of the Earnest Money of Rs. 10,00,000/- shall be forfeited without prejudice to any other rights or remedies if :-
   a. We do not execute the contract document within 15 (fifteen) days after receipt of notice issued by EMMRC Kolkata that such documents are ready or
   b. We do not commence the work within 7 (seven) days after receipt of Notice to Proceed to the effect.

3. The particulars of Earnest Money deposited are given below:

4. Until a formal agreement is prepared and executed, acceptance of this Bid shall constitute a binding contract between us subject to modifications, as may be mutually agreed upon between us and indicated in the letter of acceptance of our offer for this work.

5. We solemnly declare that we have visited the site of the above work and have familiarised ourselves with the conditions of the site and the local working conditions in all respects.

6. Any State Government or Government of India Organization / Department have not blacklisted us.

7. We do not have any record of poor performance, abandoned work, having inordinately delayed completion and having faced Commercial failures etc. for any State Government or Government of India Organization / Department during last 3 years.

   Signature of the witness                        Signature of the Bidder
   Place:                                           Place:
   Date:                                            Date:

2. OFFICIAL PROPOSAL FORM AND SCHEDULES

   The bidder shall submit its bid in time within the last date and time of submission of the bid to the Director, EMMRC, St. Xavier’s College (Autonomous), Kolkata, filling in the proforma given / downloaded duly signed at every page and having filled in the schedules
and annexures, stating therein all the rates, amounts, prices and charges (both in figures and in words), giving all information and particulars asked for.

3. COMMENCEMENT AND COMPLETION DATES

3.1 The contract covered in this bid shall be deemed to be commencing from the date of notice to proceed.
3.2 Time is the essence of this project. The successful bidder shall phase out his programmes of supply of material and execution of work within the stipulated completion period.
3.3 Failure to complete the delivery of material and commissioning work within the stipulated time frame(s) shall subject the successful bidder to penalty laid down under Clause 12 of the Commercial Terms and Conditions (given below).
3.4 Within a period of 1 week from the date of contract awarded, the successful bidder shall submit a detailed time schedule for supply of material and various items of work.
3.5 After the issuance of notice to proceed, the successful bidder shall furnish fortnightly progress report showing the materials and equipment ordered and or received at site and the progress of work carried out at site during the preceding fortnight.

4. ACCEPTANCE OF PROPOSAL

EMMRC, Kolkata shall not be bound to accept the lowest or any bid or to assign any reason for non-acceptance or rejection of a bid. No bid shall be deemed to have been accepted unless such acceptance shall have been notified in writing to the successful bidder by EMMRC, Kolkata.

5. RELEASE OF PAYMENT THROUGH RTGS / NEFT

5.1 Bidders are to give mandate form in vogue / practice for receipt of RTGS / NEFT. Also the bidders are to fill up the said particulars during submission of bids.
5.2 Bidder is to provide the details of back account in line with RBI guidelines for the same. These details shall include Bank Name, Branch Name and Address, Account Type, Bank Account Number, Bank and Branch Codes (such IFSC, MICR Codes etc.).
5.3 The bidder to attach certificate from their bank certifying the correctness of all the above mentioned information (as in para. 5.2 above).

6. CLEARING SITE ON COMPLETION

On completion of the works, the contractor shall clear away, remove, from the site, all constructional plant, surplus materials, and rubbish to the satisfaction of the Centre.

7. ESCALATION

The rate quoted shall be firm throughout the tenure of the contract (including extension of time, if any, granted) and will not be subject to any fluctuation due to increase in cost’ of materials, labour, sales tax, octroi, etc.
# F. COMMERCIAL TERMS AND CONDITIONS

Each bidder is required to accept the following terms and conditions:

<p>| 1 | Earnest Money | Each bidder is required to submit Earnest Money Deposit (EMD) of Rs.10,00,000/- (Rupees Ten Lakhs only) through NEFT/RTGS. EMD will not be accepted in any other form. Bid without EMD will not be accepted. EMD deposited by the unsuccessful bidders will be refunded through NEFT/RTGS. The Earnest Money of the Successful Bidder will be converted to security deposit and will be refunded after successful completion of Defect Liability Period. Under any circumstances, EMMRC Kolkata will not be liable to pay any interest on the EMD. EMD of a Bidder will be forfeited, if the Bidder withdraws or amends its tender or derogates from the tender in any respect within the period of validity of its tender. Further, if the successful Bidder fails to furnish the required performance security within the specified period, its EMD will be forfeited. |
| 2 | Prices | The Prices should be quoted in Indian Rupees only and prices should be FOR destination at site i.e. at EMMRC Kolkata, at 493, Ajaynagar, Kolkata – 700094 (Adjacent to Indus Valley Public School). The prices should be quoted as per format given in Table 2 at Point G of Section I of this Bid document as given in Appendix I. The Table 2 will be part of financial bid only. In case, taxes are not mentioned in Financial bid, prices shall be considered inclusive of taxes. In case no price is mentioned, Value is to be taken as zero or free of cost. Any foreign exchange or Import License, if required, for supply of goods and services under the contract will have to be arranged by the Bidder. However, registration certificate as SIRO to avail necessary customs/excise duty exemption will be provided by EMMRC, Kolkata for the awardee to utilize the same for claiming exemption wherever necessary. The successful bidder has to arrange for Customs Clearance of the imported goods. EMMRC Kolkata shall make all payment in Indian Rupees. |
| 3 | Payment terms for INR | 50% payment of cost of equipment/material supplied shall be released after delivery of material in good condition at site and acceptance by ultimate user/consignee. 30% payment of the total order value shall be released after Installation of material/system at site. 15% payment of the total order value shall be released after Testing and Commissioning of the whole system at site. Balance 5% |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>payment of total order value shall be made after at the end of Defect Liability Period.</td>
<td></td>
</tr>
<tr>
<td><strong>4 Consignee</strong></td>
<td>The equipment should be consigned to EMMRC premises at 493, Ajaynagar, Kolkata – 700094 (Adjacent to Indus Valley Public School)</td>
</tr>
<tr>
<td><strong>5 Tax Invoice</strong></td>
<td>All Tax invoices should be raised in the name of the Director, EMMRC, Kolkata.</td>
</tr>
</tbody>
</table>
| **6 Delivery schedule and commissioning** | (i) The material/equipment shall be supplied within 10 (Ten) weeks from Date of issue of work order / Purchase order.  
(ii) Installation, Testing and Commissioning has to be completed within 4 (Four) weeks after the delivery of material/equipment.  
(iii) Partial delivery of material/equipment is not permitted. |
| **7 Packing** | The material/equipment should be securely packed to withstand transit hazards during different modes of transportation. |
| **8 Guarantee/Warranty** | The entire setup (all supplied equipment/items) shall be under guarantee/warranty for period of 24 months from end date of defect liability period. |
| **9 Authorization** | Original copy of Authorization letter from OEM should be submitted for major items. |
| **10 Performance Bank Guarantee** | The successful bidder shall have to furnish a Performance Bank Guarantee (PBG), in favour of The Director, EMMRC Kolkata, after signing of contract and before issue of work order for an amount equal to 10% of order value for Supply, Installation, Testing, Commissioning (SITC), which shall be refunded without interest after defect liability period of 01 (one year) provided the awardee has satisfactorily carried out all work and attended to all defects in accordance with the terms & conditions, specifications and items of the work.  
Performance Guarantee will be forfeited and credited to the Centre in the event of a breach of contract. |
| **11 Technical Manual** | Two printed copies of Technical Manual / Operation Manual, Wiring Diagram & Block Schematic and one CD version of the same have to be supplied with the equipment. One set of test certificate of each equipment has to be enclosed with shipment and one copy sent to The Director, EMMRC Kolkata. All software in original with perpetual license certificate has to be provided wherever possible. |
| **12 Late Delivery (LD) and Late Commissioning (LC)** | In case of late delivery of item, the supplier shall be liable to pay penalty @ 0.5% (1/2%) of the total value of supply of equipment (as per Work Order) per week of delay or a part thereof. Further, if there is delay in the commissioning of the project, supplier will liable to pay penalty @ 0.5 % (1/2%) of the total value of the Work Order per week of delay subject to maximum amount of 5% of total value of Work Order. |
Note: - In case there is delay in commissioning of the project, the penalty will be levied on total value of Work Order and penalty already levied on delayed supplies will be adjusted from final LD.

13 Taxes
Taxes as applicable have to be shown separately in invoice.

14 Compliance Statement
A point by point full compliance statement in respect to all parameters related to the concerned equipment/items from the respective principle manufacturers should be submitted in the prescribed format given at Table 1.

15. Details of Bank Account
The cost of bid document and Earnest Money Deposit to be paid through RTGS/NEFT at the following bank account:
- **Name of Account:** ST XAV COLL EDU MEDIA RE CENT
- **Bank Name:** State Bank of India
- **Branch:** Park Circus
- **Savings Account Number:** 10513452010
- **IFS Code:** SBIN0001749
- **MICR:** 700002077

<table>
<thead>
<tr>
<th>Table 1</th>
<th>COMPLIANCE STATEMENT PROFORMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. No</td>
<td>S. No of Specification</td>
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</table>

G. SYSTEM INTEGRATOR’S (S.I.) REQUIREMENT

Bidders are required to complete the System Integrator (S.I.) information forms provided in Appendix 3.

1. Warranty / Guarantee

1.1 Apart from the standard product guarantee / warrantee offered for individual product or sets of equipment (e.g. replacements for defective supplies, conformance to specifications provided in documentation etc.) System Integrators (S.I.) must provide details of the nature of guarantee for deliverables of the complete system that they are
willing to commit. Guarantee with respect to the defects in installation, if any, shall also apply.

2. Additional information

Bidders should provide the following additional information.

2.1 Copy of the latest / last annual report of the company and wherever applicable of the key principals. This is required amongst other things, to understand the financial strengths, growth rate etc. of System Integrators (S.I.).

2.2 Details (including name of the clients) of similar work executed in India and abroad within the last three years.

2.3 Particulars of partners or related/inter-linked companies in India for sales, installation/commissioning and support (for Principal/OEM) or Principals with whom the Integrator has a tie-up.

2.4 Any other detailed information of relevance (such as market shares etc.) with supporting documents or references.

3. Functional Workflow/Schematic Diagram

SI must provide complete functional workflow diagram/schematic specifically as per the BOM of this bid document.

H. PROPOSAL RESPONSE FORMAT

All the bidders are requested to use the same or similar format as given below while submitting the commercial bids. The proposal must be submitted strictly in the following fashion as in Table- 2.

1. The proposal shall be submitted in the same envelope at the same time, in two distinct parts: a Technical Proposal and a Financial Proposal.

2. Proposals are to be prepared on standard 8-1/2” x 11” A4 size paper. Foldouts containing charts, spreadsheets, and oversize exhibits are permissible. The pages should be placed in a binder with tabs separating the sections of the proposal. Manuals and other reference documentation may be bound separately. All responses, as well as any reference materials presented must be written in English.
3. Proposals must respond to the bid document requirements by restating the number and text of the requirement in sequence and writing the response immediately after the requirement statement.

4. Figures and tables must be numbered and referenced in the text by that number. They should be placed as close to possible to the referencing text. Pages must be numbered consecutively within each section of the proposal showing proposal section and page number.

5. Proposals shall be based only on the items contained in this bid document and its standard required accessories. The bid document includes official response to pre-proposal conference questions, addenda, and any other material published by the EMMRC Kolkata pursuant to the bid document. The bidder is to disregard any previous draft materials and any oral representations it may have received. All responses to the requirements in Sections (list appropriate section) of this bid document must clearly state whether the proposal will satisfy the referenced requirements, and the manner in which the requirement will be satisfied.

6. A point by point compliance statement duly signed by bidder in respect to all points laid down in the specifications for all the equipment/item(s) must be submitted.

**Table-2**

**FINANCIAL BID FOR SUPPLY, INSTALLATION, TESTING, COMMISSIONING**

<table>
<thead>
<tr>
<th>S.No</th>
<th>Description</th>
<th>Qty</th>
<th>Make</th>
<th>Model</th>
<th>Unit Price In INR</th>
<th>Nature of Tax</th>
<th>Rate of Tax</th>
<th>Total prices In INR</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

Grand Total (in Words and figures):

**I. METHOD OF EVALUATION AND AWARD**

**Evaluation Criterion:**

Proposals will be evaluated for meeting all technical requirements and system completeness as per Bid document.
All bids which are technically qualified shall be shortlisted and Financial bids of qualified bidders shall be opened. Financial evaluation will be made inclusive of taxes. EMMRC Kolkata is not bound to select the qualified bidder with least cost.

Factors which will be considered as a part of evaluation amongst others will include the following.

1. **Product Quality**: Only reputed industry tested equipment and solutions with reliability will be accepted, nonstandard make/model of equipment will disqualify the proposal technically.

2. **Compatibility**: System is envisaged to be compatible with the other quoted equipment.

3. **Up-gradation/ Modular design**: System/equipment should be future looking and open to technology up-gradation besides being capable of add-on facility and features in phased manner.

4. **Assurance of supply**: System Integrator’s (S.I.) technical capability, Organizational stability, reliability of equipment and ability to meet timelines.

5. **Spares**: The bidder has to certify that the Software up-gradation and spares for Hardware shall be available for a minimum period of 5 years after completion of Project.


7. **Service**: Promptness & Quality of After-sales service, availability of spare parts/technical support, guarantee/warranty offered.

8. **Cost**: Cost of the system as proposed and the apparent future financial implications, AMC and Total cost of ownership.

9. **Integration Experience**: Expertise and experience of the bidder in System / Sub-system of integration of similar nature of work.

10. **Delivery Schedule**: Delivery timeline will be critical parameter for evaluation and final decision.

11. **Regulatory**: Should meet the Regulatory compliance, Safety requirements, and Environmental objectives.
SECTION II

TECHNICAL SYSTEM REQUIREMENT

CONTENTS

A. SCOPE OF WORK
B. GENERIC CONDITIONS
C. TECHNICAL CONDITIONS

ANNEXURE 1: INDICATIVE BILL OF MATERIAL
ANNEXURE 2: TECHNICAL SPECIFICATIONS
A. SCOPE OF WORK

EMMRC Kolkata plans to have a High definition Video production infra-structure with all latest facilities for two studios and fully on the digital domain, with Ingest and Playout Automation and an integrated solution for a tapeless workflow in the system along with Media Asset Management and Deep Archival solution. The planned system has to be cost effective, efficient and reliable. The system must be with equipment and accessories of latest technology available in the industry.

B. GENERIC CONDITIONS

This Bid document is for a system that will meet the following basic requirements:-

1. A reliable, redundant system providing an overall system up time with no single point of failure and also having manual system in case of Automotive standby failure.

2. Easy and Economic System, Upgradable & Scalable in nature.

3. Use of industry standard hardware and interfaces.

4. Local (or within India) Post-sales support services.

5. Interoperate with other equipment and technology in future.

6. All the glues/peripheral equipment should be included in the proposal for each subsystem.

7. Equipment with model not nearing obsoleteness.

8. The system offered should be modular in design allowing acquisition of part or complete System.

9. All software applications should be of latest version at the time of Purchase Order and upgrades to be provided without any financial implication during warranty period.

10. Bidder should insure that data (content) should be secured.

11. The equipment/material provided by the OEM/bidder should not be an End of Life type, and spares of quoted equipment must be available for next 5 years.

12. Hardware and Software to be compatible with IPv4 and IPv6 protocol.
C. TECHNICAL CONDITIONS

1. Indicative Bill of Quantity of the system configuration is listed in the Appendix ‘1’.

2. Proposal should be for a complete system / sub system. Incomplete or part component will not be considered.

3. System Integrator (S.I.) should specify the recommended spare parts for each of the major equipment. However, this will not be a part of commercial evaluation process.

4. A copy of certificate from Hardware OEM authorizing the bidder against the tender Reference No. EMMRC/SXC/AJAYNAGAR/SITC/2016 dated 09.05.2016 to quote the product ensuring installation / configuration and after sales support is an essential requirement. The bid submitted without the certificate is liable to be rejected.

5. Appendix ‘2’ contains the technical specification for each listed equipment.

6. Each equipment must be accompanied with operational and technical manual.

7. The electrical load of each equipment is to be specified.

8. Evaluation will be done for each equipment and final configuration of the BOM to be determined subsequently.

9. System Integrator (SI) should submit the detailed system Workflow diagram, Block Schematic, Layout Plan (LOP) etc. for equipment and power supply system along with Technical bid.

10. System Integrator (SI) should also submit the PERT Chart indicating the schedule for the commissioning of the project with the terms & conditions as stipulated in the delivery schedule.

11. System Integrator (S.I.) should submit back to back consent from OEM to supply the equipment / components/spares parts for five years.

12. System Integrator (S.I.) should quote only one product in each category, no alternate product will be considered.

13. Cross reference in reference of supporting documents should be given with proper page number and volume number.
# INDICATIVE BILL OF MATERIAL

<table>
<thead>
<tr>
<th>S.No</th>
<th>Description</th>
<th>Quantity</th>
<th>Product Similar to</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>STUDIO CAMERA</strong></td>
<td></td>
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<tr>
<td>1.1</td>
<td>HD/SD Compatible Studio Camera Chain, Fibre connectivity, complete with Tripod adapter, Headset, Viewfinder monitor with hood, Camera Control Unit, OCP/RCP and control cables</td>
<td>3</td>
<td>Sony HSC-100RF/ Ikegami HDK55</td>
</tr>
<tr>
<td>1.2</td>
<td>20X Zoom Lens for HD Camera with servo zoom &amp; servo focus, complete with all zoom and focus assemblies/accessories.</td>
<td>3</td>
<td>Canon20X8.2/ Fujinon 20X8.5</td>
</tr>
<tr>
<td>1.3</td>
<td>Fibre Camera Cable for HD (SMPTE311M) with hybrid fibre connector (SMPTE304M).</td>
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<tr>
<td>1.3(i)</td>
<td>50M</td>
<td>4</td>
<td></td>
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<tr>
<td>1.3(ii)</td>
<td>10M</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1.4</td>
<td>Camera Support with Dolly</td>
<td>3</td>
<td>Vinten Pro Ped/ Shotoku TP 500</td>
</tr>
<tr>
<td>1.5</td>
<td>Pan &amp; Tilt Head with Telescopic Pan &amp; Tilt bar.</td>
<td>3</td>
<td>Vinten Vision 250/ Shotoku SX 300</td>
</tr>
<tr>
<td>2</td>
<td><strong>VIDEO PRODUCTION SWITCHER</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td>Multiformat 2M/E 16-Input Video Production Switcher, with Control Panel and control cables.</td>
<td>1</td>
<td>Ross- Carbonite/For-A- HVS-390HS</td>
</tr>
<tr>
<td>S.No</td>
<td>Description</td>
<td>Quantity</td>
<td>Product Similar to</td>
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<tr>
<td>3</td>
<td><strong>DUAL SYNC PULSE GENERATOR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Dual HD/SD Sync Pulse Generator with GPS receiver and NTP server option</td>
<td>1</td>
<td>Tektronix SPG 8000/ Evertz 5601MSC</td>
</tr>
<tr>
<td>3.2</td>
<td>Automatic Change Over Unit for Dual SPG</td>
<td>1</td>
<td>Tektronix ECO 8000/ Evertz 5601 ACO2</td>
</tr>
<tr>
<td>4</td>
<td><strong>32X32 VIDEO ROUTER</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>32X32 Video Router, transparent to embedded audio.</td>
<td>1</td>
<td>NevionVikinX Sublime/ Imagine Platinum/ s-a-m Halo/Ross NK 3G</td>
</tr>
<tr>
<td>4.2</td>
<td>Router X-Y Control Panel</td>
<td>2</td>
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<tr>
<td>4.3</td>
<td>Router Single Bus Control Panel</td>
<td>7</td>
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<tr>
<td>5</td>
<td><strong>HD/SD RECORDER PLAYER</strong></td>
<td></td>
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<tr>
<td>5.1</td>
<td>HD/SD Recorder/Player</td>
<td>1</td>
<td>Aja Ki Pro/Sony PMWRX 50</td>
</tr>
<tr>
<td>6</td>
<td><strong>HD/SD WAVE FORM MONITOR</strong></td>
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<tr>
<td>6.1</td>
<td>HD/SD Waveform Monitor</td>
<td>2</td>
<td>Tektronix WFM 5000/7200, Imagine TVM 4DG</td>
</tr>
<tr>
<td>7</td>
<td><strong>HD/SD VIDEO RASTERIZER</strong></td>
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<td></td>
</tr>
<tr>
<td>7.1</td>
<td>HD/SD Video Rasterizer</td>
<td>1</td>
<td>Tektronix WVR 5000 /7200</td>
</tr>
<tr>
<td>7.2</td>
<td>17”/21” IPS LED Monitor for Rasterizer</td>
<td>1</td>
<td>Dell/HP</td>
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<tr>
<td>8</td>
<td><strong>TRACKLESS VIRTUAL STUDIO</strong></td>
<td></td>
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<tr>
<td>8.1</td>
<td>Trackless Virtual Studio system</td>
<td>1</td>
<td>Nutek- Tri caster 400 series/Monarch-Virtuoso</td>
</tr>
<tr>
<td>S.No</td>
<td>Description</td>
<td>Quantity</td>
<td>Product Similar to</td>
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<tr>
<td>9</td>
<td><strong>COLOUR MONITOR</strong></td>
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<tr>
<td>9.1</td>
<td>21” Professional Colour Monitor HD</td>
<td>7</td>
<td>Sony/Panasonic</td>
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<tr>
<td>9.2</td>
<td>42” Colour Monitor HD</td>
<td>3</td>
<td>Sony/LG/Samsung</td>
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<tr>
<td>9.3</td>
<td>50” Colour Monitor HD</td>
<td>1</td>
<td>Sony/LG/Samsung</td>
</tr>
<tr>
<td>9.4</td>
<td>9” Professional Colour Monitor HD</td>
<td>2</td>
<td>SONY LMD-941W/PanasonicBT-LH910G</td>
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<tr>
<td>10</td>
<td><strong>HDMI TO HD-SDI CONVERTER</strong></td>
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<tr>
<td>10.1</td>
<td>Professional quality HDMI To HD-SDI Converter</td>
<td>2</td>
<td>Aja HA5/ Blackmagic Mini converter</td>
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<tr>
<td>11</td>
<td><strong>BROADCAST QUALITY AUDIO MIXER</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.1</td>
<td>16 Channel Broadcast quality Audio Mixer with Power Supply</td>
<td>2</td>
<td>Yamaha O1V96i/ Studer</td>
</tr>
<tr>
<td>12</td>
<td><strong>MICROPHONES</strong></td>
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</tr>
<tr>
<td>12.1</td>
<td>Shotgun Condenser Microphone directional (Type-I)</td>
<td>2</td>
<td>Sennheiser MKH 416/Audio-Technica AT875</td>
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<tr>
<td>12.2</td>
<td>Shotgun Condenser Microphone directional (Type-II)</td>
<td>2</td>
<td>Sennheiser ME66/Audio-Technica AT8015</td>
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<tr>
<td>12.3</td>
<td>Cordless dynamic Microphone</td>
<td>1</td>
<td>Sennheiser EW500-945 G3/Audio-Technica ATW T3141B</td>
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<tr>
<td>12.4</td>
<td>Wired Lavalier Microphone</td>
<td>4</td>
<td>Sennheiser MKE 2PC+MZ2/ Audio Technica ATR3350</td>
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<tr>
<td>12.5</td>
<td>Wireless Lavalier Microphone</td>
<td>2</td>
<td>Sennheiser EW 512 G3/Sony UTXB03/42/Audio Technica</td>
</tr>
<tr>
<td>S.No</td>
<td>Description</td>
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<tr>
<td>13</td>
<td>AMPLIFIER, SPEAKERS &amp; HEADPHONE</td>
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<tr>
<td>13.1</td>
<td>Studio Monitoring Speaker 12”</td>
<td>2</td>
<td>Apart-MASK 12BL/ YAMAHA CBR 12</td>
</tr>
<tr>
<td>13.2</td>
<td>Studio Monitoring Speaker 8”</td>
<td>2</td>
<td>Apart-MASK 8BL/JBL LSR708i</td>
</tr>
<tr>
<td>13.3</td>
<td>Monitoring Speaker with Power Amplifier</td>
<td>5</td>
<td>M-Audio BX-8D2/ YAHAMA MSP-7</td>
</tr>
<tr>
<td>13.4</td>
<td>Dual Audio Power Amplifier</td>
<td>2</td>
<td>Yamaha/JBL/Apart</td>
</tr>
<tr>
<td>13.5</td>
<td>Professional quality Headphone</td>
<td>6</td>
<td>Sennheiser HD 280 Pro/ SONY MDR 7502</td>
</tr>
<tr>
<td>14</td>
<td>DIGITAL MATRIX STUDIO INTERCOM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.1</td>
<td>32 or 36 Port Digital Matrix Intercom with redundant controller and redundant power supply, custom tailored x-point mapping.</td>
<td>1</td>
<td>Clearcom Eclipse HX/ Telex Zeus III/Riedel Artist</td>
</tr>
<tr>
<td>14.2</td>
<td>32-Key Control Panel with display, Power Supply, Gooseneck Microphone and in built Speaker</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>14.3</td>
<td>16-Key Control Panel with display, Power Supply, Gooseneck Microphone and in built Speaker</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>14.4</td>
<td>Belt Pack for FM with Headset.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>14.5</td>
<td>IFB Belt Pack for Anchor with earplug</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>14.6</td>
<td>Headset for Intercom control panel</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>TELEPHONE HYBRID</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.1</td>
<td>Telephone Hybrid System</td>
<td>1</td>
<td>Telos HS-6/Comrex DH20/22</td>
</tr>
<tr>
<td>S.No</td>
<td>Description</td>
<td>Quantity</td>
<td>Product Similar to</td>
</tr>
<tr>
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<td>-------------------</td>
</tr>
<tr>
<td>16</td>
<td>INTEGRATED MEDIA ASSET MANAGEMENT (MAM) AND ARCHIVE SOLUTION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.1</td>
<td>Fully integrated MAM and Archive application suites with database &amp; all required functional modules</td>
<td>1 Set</td>
<td>Imagine/Primestream/Karthavya</td>
</tr>
<tr>
<td>16.2</td>
<td>Transcoders</td>
<td>1 Lot</td>
<td>--</td>
</tr>
<tr>
<td>16.3</td>
<td>Ingest system workstation</td>
<td>2</td>
<td>As certified by MAM OEM</td>
</tr>
<tr>
<td>16.4</td>
<td>Playout workstation</td>
<td>1</td>
<td>As certified by MAM OEM</td>
</tr>
<tr>
<td>16.5</td>
<td>Browsing &amp; cataloguing terminals with individual UPS.</td>
<td>4</td>
<td>As certified by MAM OEM</td>
</tr>
<tr>
<td>16.6</td>
<td>Workstation for Administrator/QC with UPS</td>
<td>1</td>
<td>As certified by MAM OEM</td>
</tr>
<tr>
<td>16.7</td>
<td>Workstation for Metadata with UPS</td>
<td>2</td>
<td>As certified by MAM OEM</td>
</tr>
<tr>
<td>16.8</td>
<td>Application, Storage, Browse, Database, HSM Servers etc</td>
<td>1 set</td>
<td>As certified by MAM OEM</td>
</tr>
<tr>
<td>16.9</td>
<td>Networking Components for FC &amp; Gigabit Ethernet including HBAs</td>
<td>As per requirement</td>
<td>Cisco, Dell, HP, Brocade</td>
</tr>
<tr>
<td>17</td>
<td>AUTOMATED QC FOR FILE BASED CONTENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.1</td>
<td>Automated QC for File based content (Hardware and software with 1 no license)</td>
<td>1 Set</td>
<td>Cerify- Tektronix, Baton- Interra</td>
</tr>
<tr>
<td>18</td>
<td>ONLINE SAN STORAGE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.1</td>
<td>Online SAN Storage, usable minimum 64 TB, with storage management software.</td>
<td>1 set</td>
<td>Compatible to the offered solution and Internationally reputed makes.</td>
</tr>
<tr>
<td>S.No</td>
<td>Description</td>
<td>Quantity</td>
<td>Product Similar to</td>
</tr>
<tr>
<td>------</td>
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</tr>
<tr>
<td>19</td>
<td>NEARLINE STORAGE–DATA TAPE LIBRARY (MINIMUM 24 SLOTS)</td>
<td>1 Set</td>
<td>IBM/HP/Dell</td>
</tr>
<tr>
<td>19.1</td>
<td>Data Tape Cartridges</td>
<td>50 Nos</td>
<td>IBM/ HP/Dell</td>
</tr>
<tr>
<td>19.2</td>
<td>Barcode reader</td>
<td>1 No</td>
<td></td>
</tr>
<tr>
<td>19.3</td>
<td>Black &amp; White Laser jet network printer</td>
<td>1 No</td>
<td>HP</td>
</tr>
<tr>
<td>20</td>
<td>NLE SYSTEM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.1</td>
<td>Complete NLE system</td>
<td>6 Nos. (2 Nos. Desktop+4 Nos. All-in-one)</td>
<td>Apple (FCP), Matrox (Adobe CS) (License as per OEM licensing policy)</td>
</tr>
<tr>
<td>20.2</td>
<td>Professional Amplispeakers for monitoring</td>
<td>As per design</td>
<td>Genelac, JBL</td>
</tr>
<tr>
<td>20.3</td>
<td>17” HD/SD-SDI Professional Video Monitors</td>
<td>As per design</td>
<td>Sony, Panasonic</td>
</tr>
<tr>
<td>21</td>
<td>BROADCAST VIDEO/MEDIA SERVER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21.1</td>
<td>Broadcast Video/Media Server for 2 nos of Ingest and 1 no Playout</td>
<td>1 Set</td>
<td>As certified by the MAM OEM</td>
</tr>
<tr>
<td>22</td>
<td>KVM SWITCH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22.1</td>
<td>Rack Mount 16-port USB, IP based KVM Switch with 17” LCD Monitor and console.</td>
<td>1 set</td>
<td>Aten /Dell/Raritan</td>
</tr>
<tr>
<td>S.No</td>
<td>Description</td>
<td>Quantity</td>
<td>Product Similar to</td>
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<tr>
<td>23</td>
<td>SOFTWARE</td>
<td></td>
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<tr>
<td>23.1</td>
<td>The software of all the equipment including Operating Systems and automation &amp; application software etc. are required to be supplied in original media and should be licensed to EMMRC Kolkata with perpetual validity.</td>
<td>1 Lot</td>
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<tr>
<td>24</td>
<td>AUDIO AND VIDEO GLUES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24.1</td>
<td>Audio &amp; Video Glues</td>
<td>As per design</td>
<td>Ross/Snell/ Imagine</td>
</tr>
<tr>
<td>25</td>
<td>PoE IP DIGITAL CLOCK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25.1</td>
<td>PoE IP Digital Clock 150 mm Height</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>25.2</td>
<td>PoE IP Digital Clock 100 mm Height</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>25.3</td>
<td>PoE Network Switch,8-port</td>
<td>1</td>
<td>Cisco/D-Link/TP-Link</td>
</tr>
<tr>
<td>26</td>
<td>INSTALLATION MATERIALS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26.1</td>
<td>All installation materials including Audio, Video &amp; Data Racks, Audio, Video &amp; Data Cables and connectors, Audio and Video Patch Bays and other items, Power cords and other items.</td>
<td>1 Lot</td>
<td></td>
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<tr>
<td>27</td>
<td>ONLINE UPS</td>
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<tr>
<td>27.1</td>
<td>3-Phase, Online Double conversion UPS, complete with battery banks, interconnecting cables etc., on N+1 mode load sharing basis, with active redundancy. (Estimated UPS load with 20% headroom is about 45 KVA. UPS capacity to be decided as per design requirement).</td>
<td>1 Set</td>
<td>Emerson/APC</td>
</tr>
<tr>
<td>S.No</td>
<td>Description</td>
<td>Quantity</td>
<td>Product Similar to</td>
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<tr>
<td>28</td>
<td>MISCELLANEOUS</td>
<td></td>
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<tr>
<td>28.1</td>
<td>Operation &amp; Maintenance Manuals (Hard copy 2 Sets &amp; soft copy) of each &amp; every equipment</td>
<td>1 Lot</td>
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</tr>
<tr>
<td>28.2</td>
<td>Any other items/equipment/ installation material/ works required for completion of the work on SITC basis to make the system fully functional in all respect.</td>
<td></td>
<td>As per requirement</td>
</tr>
<tr>
<td>29</td>
<td>SYSTEM INTEGRATION, TESTING, COMMISSIONING AND TRAINING</td>
<td></td>
<td></td>
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<tr>
<td>29.1</td>
<td>System Integration services consisting of:</td>
<td>1 Job</td>
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<tr>
<td></td>
<td>* Detailed design including preparation of technical drawings</td>
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<td></td>
<td>* Cabling (UPS Power, Audio, Video, Control, Data Network)</td>
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<td></td>
<td>* System components installation</td>
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<tr>
<td></td>
<td>* Systems components testing</td>
<td></td>
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<td></td>
<td>* Systems commissioning</td>
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<tr>
<td></td>
<td>* Any other work related to commissioning.</td>
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<td></td>
<td>Training services for:</td>
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<tr>
<td></td>
<td>* System Administration</td>
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<tr>
<td></td>
<td>* Operational</td>
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<td></td>
<td>* Rasterizer by certified professional/OEM</td>
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<td>* NLEs by a certified professional</td>
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<td></td>
<td>* Studio camera by a certified professional/OEM</td>
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<tr>
<td></td>
<td>* Router system, Central monitoring system, Studio Intercom system</td>
<td></td>
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<tr>
<td></td>
<td>* Production Switcher by a certified professional/OEM</td>
<td></td>
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<tr>
<td></td>
<td>* MAM solution, Ingest/Playout automation &amp; Archive</td>
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<tr>
<td></td>
<td>* UPS</td>
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</tr>
</tbody>
</table>
1. **HD/SD Compatible Fibre Studio Camera Chain with CCU**

1.1 **Studio Camera (Fibre)**

- **Pickup Device:** 3 chip2/3 inch type CCD, 2.2 Mega pixels or more
- **System:** GBR pickup system
- **Spectrum system:** F1.4 prism system
- **TV Standard:** 1080/50i
- **Optical Filter:** ND: Clear, 1/4, 1/16, 1/64
- **Output standard:** SMPTE 292M
- **Sensitivity** F11, typical at 2000 Lux
- **Effective picture elements:** 1920X1080
- **Horizontal Resolution:** 1000 TV lines or better
- **S/N:** 60 dB or higher
- **Shutter Speed:** 1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000
- **Variable colour temperature:** 2,000K to 20,000K variable
- **Reference Signal:** Black Burst/ Tri level Sync (0.6Vp-p)
- **Gamma:** OFF, 0.35, 0.4, 0.45
- **Gain:** -6dB, -3dB, 0dB, +3dB, +6dB, +9dB, +12dB, +18dB
- **Audio Input:** –60 dBu to 4 dBu (XLR 3-pin female x 2)
- **Tally/Communication:** Two-way, 4-wire intercom, R/G Tally
Camera Headset: High Quality

Camera Cable and Connector: Hybrid Fibre cable/connector

1.2 Fibre Camera control unit

Connector: Hybrid Fibre cable type.
Input: External Sync: BB/ Tri-Sync auto detect
Output: VBS, HD/SD-SDI
          Audio out (XLR)
Tally/Intercom: R/G Tally, 2-way, 4-wire Intercom

1.3 Viewfinder with hood:

Diagonal display size: 7” or more
Display type: LEDbacklit LCD/ OLED anti-reflective panel, 10bit color, contrast ratio 100000:1 or more.
Format: Should support all HD formats
Brightness/Contrast: High
Aspect ratio: 16:10
Viewing angle: 170 degree horizontal, 140 degree vertical
Controls: Menu, Zebra, Brightness, contrast, peaking etc.

1.4 HD Lens with full servo control kit, including focus controller, zoom on demand and required cables/accessories

Zoom Ratio: 20 or higher
Focal Length: 8.5-170 mm or higher
MOD: 0.9m

1.5 Remote Control Panel: RCP with control cable and with the facilities of menu controls and assignable knobs and buttons for direct operation.

1.6 Camera Cable with connector: Hybrid Fibre,
          Cable conforming to SMPTE 311M standard
          Connector conforming to SMPTE 304M standard

1.7 Camera Tripod adapter: As per Camera Model
2. **Camera Support**

2.1 **Camera Support with Dolly**

The offered Pedestals must have Pneumatic Perfect Balance Elevation, Two Stage Elevation Columns, Built-in Self-pumping Function, Robust, Stable, Durable and safe, High Performance Dolly Function with inbuilt Cable Guards, Wheel Brakes.

Max payload: 55 Kg  
Min Height: 67 cm - 72 cm  
Max Height: 147 cm - 157 cm  
On-shot stroke: 40 cm - 42 cm  
Tracking width: 95 cm  
Transit width: 86 cm  
Steering wheel diameter: 53 cm - 54 cm  
Wheel lock: Yes  
Ground clearance: 1.9 cm - 2 cm

2.2 **Pan & Tilt Head**

Maximum payload: 30 Kg  
Tilt Range: +/- 90  
Pan Range: 360  
Pan Bar: Two Telescopic Pan Bars (L & R)  
Pan Bar Mount: Removable  
Levelling: Illuminated Bubble  
Counter Balance: Continuously Variable, Perfect Balance  
Head Mount: Suitable mount for offered Pedestal System  
Pan & Tilt Drag: Continuous

3. **Multiformat 2M/E Video Production Switcher**

Number of MEs: 2  
Video Format: 1080/50i SMPTE292M, 625/50i SMPTE 259M  
Video Input: HD-SDI: 1.5Gbps/SD-SDI: 270Mbps, Auto detect, 75Ω BNC x 16, Frame synchronizer input  
Video Output: HD-SDI: 1.5Gbps/ SD-SDI: 270 Mbps, 75Ω BNC x 10, assignable/ selectable, assignable and scalable, HDMI or more [PGM/ME PGM/PVW/CF/AUX]  
Multi viewer output: 2 Multiviewer out  
Reference Input: BB or Tri-level Sync, BNC 75 Ω  
Signal Processing: 4:2:2 Digital component, HD/SD-SDI 10 bit quantization
Media Interface: USB 2.0 or higher
Other interfaces: All standard interface ports like EDITOR, RS 422, GPI, TALLY OUT, ETHERNET etc.
Redundant power supply: Both for Main Frame and Control Panel

Other Basic Features:

- It should have facility of re-entry of M/E into PGM/PST with extensive layering capability.
- The control panel should have 16 or more source selection buttons (cross point buttons) in each row.
- Each source button should have a complete modifiable display to customize the source names for different applications.
- It should have capability to map all the internal or external sources to any cross point.
- It should have facility to store and recall the complex sequences of the switcher operations through a single button. It should also have internal memory along with external media interface like USB/Hard disk etc. to store and recall the effects.
- Switcher should have 4 Keyers on each M/E and can be used as Luminance, Linear, Chroma, Color Vector and key wipe pattern key and Picture in Picture.
- Every Keyer should have Chroma Key Capability and possible to move and magnify/shrink the key using a resizer or using DME/DVE.
- Keyers per ME. Should have 2.5D resize and should be able to, Locate, Rotate also Defocus, Mosaic etc.
- CH for 3D DME Effects.
- CG Wipe engine on each M/E offering animated wipe/mix transitions.
- Switcher should have 8 frame memory Channels that can be used to output the still and clip file.
- Switcher should store up to 1000 Full HD frames and switcher should be capable to store Still, Video or Embedded audio with Video.
- Standard interface for multiple external device control, including routers, and VTR/VDCP units via RS-422.
- 16 inputs are standard, expandable to 24 with optional HD/SD-SDI card.
- It should have 10 outputs standard with at least 6 assignable and 4 selectable outputs.
- Switcher should be capable with 2 AUX Output and can do the Primary Color Correction as well as AUX MIX Transition between the Aux buses.
- Key Transitions like (CUT, MIX, WIPE, DME Wipe, NAM, CLIP transition, Super MIX, and Colour MIX) with KEY Priority should be available for switching.
• Switcher should be capable to store up to 250 Macro, 99 key frames, 99 Snapshot and 99 Shot Box.
• Switcher should be equipped with dedicated Menu Touch Panel to operate Menu function in easy way for Engineering Setup, M/E setup, Store and recall Frame memory, Timeline like operations.

4. Dual Sync Pulse Generator with Auto Changeover

Features Required

- The Digital dual HD/SD Sync Pulse Generator and Test signal generator should conform to ITU-R BT 601; SMPTE 259M, 625/50 Standard and HD Serial digital 1.485 Gbps SMPTE 292M.
- It should provide the Analogue Black Burst, SD-SDI Black Burst, HD Tri-level Sync & HD SDI Test signals, including full and split field colour bars, Ramp, Blanking markers & Checkfield etc.
- The system should be complete in all respects for proper working.
- It should be possible for the two SPG units to work with automatic change over unit without any matching difficulty.
- The offered system should have capability of providing output SD SDI, HD SDI, composite, time code and audio simultaneously.
- The offered system should support linear time code (LTC), Vertical interval time code (VITC) and DVITC.
- The offered system should have capability of timing of outputs independently.
- The offered system should support analog and digital audio. The audio outputs should always be synchronous with all video outputs.
- The offered system should be mountable in 19" (inch) rack frame.
- The offered system should have redundant power supplies. The offered system should include options for GPS receiver with antenna and NTP server.
- The system offered should be complete in all respects to meet the specifications requirement.
Technical specifications

Reference Input
Input Signal: Two BNC connectors, PAL composite video, Black burst or Tri-level Sync.
Return loss: Better than 30 dB

Serial Digital Video Outputs
Standard: HD Serial Digital 1.485Gb/s SMPTE 292M
          SD Serial Digital 270 Mb/s SMPTE 259M
Impedance: 75 Ω
Return loss: Better than 30 dB
Jitter: Less than 0.2UI
Connector: BNC
No. of Outputs: Two or more.

Tri-Level Sync Outputs
Signal Type: Tri-level sync
Output DC: ± 50 mV
Return loss: > 30 dB
Connector: BNC
No. of Outputs: Two or more.

Composite Outputs
Signal type: PAL
Impedance: 75 Ω
Fsc stability: < ± 1Hz
SCH phase: 0 degrees ± 5 degrees
Connector: BNC
No. of Outputs: Two or more

Serial Digital Audio Outputs
Standard: AES 3, SMPTE 276M
Resolution: 24 bit
Sample Rate: 48 KHz

Timecode:
Timecode: D-VITC on the SDI outputs, VITC on the composite PAL Black outputs, LTC on D-sub connector with optional breakaway cable with XLR connectors, or on BNC.

GPS Receiver option
Time Accuracy: Within 150 ns to GPS/UTC
Acquisition Time: From Cold Start, <46Sec (50%), <50Sec (90%)
Antenna Input: BNC
Fault Protection: Yes, for short circuit

**GPS Antenna**: Waterproof, L1-L2 Dual Band, Small form factor, with surge arrestor.
Azimuth Coverage: 360
Elevation Coverage: 90
Cable Length: 50 ft.

**NTP Server option**: Required

**Input Power voltage**: 240 AC, 50Hz.

**Mounting**: Standard 19” Rack mounting for each unit.

5. **32 X 32 Digital Video Router**

**No. of Input X Output**: 32 X 32

**Video data**
Auto sensing for HD SDI/SD SDI input, Input equalization and Re-clocking of all video output. Transparent to Embedded audio.

**Supported format**: SD-SDI, 270 Mbps- SMPTE 259M

<table>
<thead>
<tr>
<th></th>
<th>HD-SDI, 1.485 Gbps-SMPTE 292M</th>
<th>3G-SDI, 2.97 Gbps- SMPTE 424M</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Jitter</strong></td>
<td>&lt;0.2UI</td>
<td></td>
</tr>
<tr>
<td><strong>Input &amp; Output Level</strong></td>
<td>800mV pp, ±10%</td>
<td></td>
</tr>
<tr>
<td><strong>Input &amp; output impedance</strong></td>
<td>75 Ohms</td>
<td></td>
</tr>
<tr>
<td><strong>Return loss for Input &amp; Output</strong></td>
<td>&lt;-15dB up to 1.5GHz</td>
<td></td>
</tr>
<tr>
<td><strong>Cable equalization</strong></td>
<td>0-300m for SD and 0-100m for HD SDI</td>
<td></td>
</tr>
<tr>
<td><strong>Connectors</strong></td>
<td>BNC</td>
<td></td>
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<tr>
<td><strong>Signal Polarity</strong></td>
<td>Non-inverting electrical with respect to inputs.</td>
<td></td>
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</tbody>
</table>

**General Data**

**Ethernet**: 10/100Base-T, Full Duplex, RJ45 connector

**Protocol**: Serial, ARP, TCP/IP, Telnet, HTP etc.

**Rack mounting of main frame**: 19” Rack

**Input Power**: 240V AC, 50Hz

**Reference Input**: Analog BB/Tri-level Sync.

**Router Control Panels**: X-Y and Single Bus, External

**Mounting of Control panels**: 19” rack & Production Desks
6. Wave Form Monitor

Features:
(a) High precision, single unit HD and SD broadcast digital Waveform Monitor having digital signal processing capability of highly accurate measurement.

(b) Waveform monitor should display waveform, vector, picture and status. In addition to these basic features, it should measure and monitor Eye pattern, Jitter, Colour gamut and audio.

(c) Waveform monitor should be modular in design for the monitoring and the measurement capability having following modules:
   (I) HD-SDI and SD-SDI input module.
   (II) Embedded & AES/ EBU including Dolby- E Audio monitoring & measurement module.
   (III) Ancillary Data Analysis and Display module.

(d) Waveform monitor should display the wave form of both the input signals (HD/ SD-SDI) simultaneously or the selected input as per the user requirement.

(e) Waveform Monitor should have a colour TFT-LCD display with XGA resolution (1024 x 768) suitable for live monitoring.

(f) The Waveform Monitor should have frame capture function, store the video data from an entire video frame and display this captured frame data on waveform, vector, gamut and picture displays.

(g) The Waveform Monitor should be able to automatically capture frame data on the occurrence of specific faults or errors.

(h) The Waveform Monitor should have front-panel USB Connector to store the presets and data.

(i) Should be complete with power adapter, if any.

Reference input: PAL BB/Tri-level Sync, Looped
Input: HD SDI/ SD SDI X 2

7. HD/SD Rasterizer & LED Monitor

Features:
(a) DC Power Option
(b) Quad tile display
(c) Colour Gamut Display
(d) Diamond and arrowhead display.
(e) Error Log for 10,000 Events
(f) Fully Digital Processing for Accurate, Repeatable, Drift-free Operation
(g) Ethernet Port for download of Screenshots and Error Log
(h) Freeze Mode for Trace and Picture Displays
(i) Monitoring Capacity for 16 Channels of Embedded Audio (up to 8 Simultaneously)
(j) User-definable Safe Area Graticules Facilitate Editing Tasks
(k) Front-panel USB Port for Instrument Presets and Screenshots
(l) SNMP Control for Easy Systems Integration
(m) HD-SDI (SMPTE 292M) and SD-SDI (ITU-R BT.601) auto-detect.

**Inputs:** HDTV 1080/50i and SDTV 625/50i with embedded audio X 2
**Output:** DVI-I 1024x768
**LED Monitor:** 21” IPS

### 8. 4-Input Multiformat Trackless Virtual Studio

**Switcher Channels:** 15 – 6 external, 5 internal, 4 M/E buses
**Video Input:** 4 or more simultaneous live video sources, in any combination of supported connection types, resolutions and frame rates (including PsF selections): HD-SDI, HD Component, SD-SDI, SD Component, Y/C or Composite
**Network Sources:** At least 2 live inputs via Gigabit connection, software support to select from any networked computers or wireless devices.
**Robotic Camera Sources:** Access up to 4 live Pan-Tilt-Zoom (PTZ) robotic cameras via standard serial and network protocols, with preset system and user interface control over camera orientation, zoom, focus and iris.
**Media:** At least 4 integrated digital media players (2 DDRs, GFX and Sound) + network-shareable buffers
**Buffers:** Animation buffers and still & title buffers to store and playback video, animations, titles and graphics
**M/E :** 4 freely configurable M/E channels for video mixing, compositing, effects and virtual sets, each with independent Key layer and support for Trans warp effects.
**Macros:** Record configurations and operation sequences to various control methods for recall and automation, with built-in macro editor.
**DSKs:** 2 primary DSK channels, plus 1 additional Key layer per M/E bus, each with independent transition controls, 3D DVE, scaling, cropping and integrated TransWarp effects.
**Effects and Transitions:** Integrated Trans Warp effects engine on all effects channels supports standard transitions, customizable animation store
transitions with audio, and overlay effects; Animation Store Creator for custom animations.

**Virtual Sets:** At least 10 HD live virtual sets supporting up to 2 switchable live sources, with presets, multiple camera angles, real-time reflections, and animated pan, zoom and pedestal moves.

**Holographic Live Virtual Sets:** Support for custom virtual environments generated from panoramic smartphone, camera or DSLR images (VSE 2.5 required).

**Video Output:** Configurable for up to 9 output connections, with support for key output and per-connection signal settings - 2 x SDI - 2 x Analog (configurable for Component or Y/C + Composite) - HDMI output, - Network output for live streaming.

**Recording:** Multi-track, multi-format recording of up to 4 simultaneous channels, including native recording in up to 1080p with timecode and encoding format selectable per source: QuickTime® (XDCAM HD compatible, 4:2:2 encoding, 24-bit audio), MPEG-2 (high or normal profile), AVI (Speed HQ), and H.264 (high or Web quality).

**Grab:** Grab still images from all inputs and outputs, with toggle option to add grabs to Publish queue, Media Player presets and Buffer destinations

**Live Streaming:** HD live streaming with simultaneous archive, presets in up to 720p, and support for most common streaming profiles and custom multi-bitrate streaming profiles.

**Media Publishing:** Support for direct content upload to YouTube™, Facebook, Twitter™, FTP, local or external volumes, and network servers.

**Audio Inputs:** 4 SDI Embedded, 3 x 2 Balanced 1/4” (Mic/Line) 1 x 2 Balanced XLR (Mic/Line), Phantom Power Support.

**Audio Outputs:** 2 SDI Embedded, 1 x 2 Balanced XLR, 1 x 2 Balanced 1/4” (AUX), 1 Stereo 1/4” (phones) or more.

**Audio Mixing:** Integrated multi-channel audio mixer for internal and external audio sources, outputs, stream and headphones.
**Formats:**


**Playback Media Formats:**

Multi-Standard: NTSC 1080/30p, 1080/24p, 1080/60i, 720/60p, 720/30p, 720/24p, 480/60i; NTSC-J 1080/30p, 1080/24p, 1080/60i, 720/60p, 720/30p, 720/24p, 480/60i; AVI, DV, DVCPro, DVCProHD, FLV, F4V, H.263, H.264, MOV, MKV, MJPEG, MPEG (1, 2, all profiles, program or transport streams), MP4, WMV, WebM, PSD, PNG, TGA, BMP, JPEG, EXR, RAW, TIF, AIFF, MP3, WAV, and more.

**Monitoring:**

DVI and HDMI monitor outputs for user interface and multiview displays, with selectable layouts and dual-monitor display combinations via Workspaces control panel.

**Signal Monitoring:**

Integrated Waveform and Vectorscope, full field rate with digital calibration, colour preview and support for ITU-R Rec. 601 and 709.

### 9. Professional HD Monitor

<table>
<thead>
<tr>
<th>Size:</th>
<th>17” to 21”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display technology:</td>
<td>OLED/ LCD</td>
</tr>
<tr>
<td>Image Aspect Ratio:</td>
<td>16:9 and 4:3</td>
</tr>
<tr>
<td>Native Aspect Ratio:</td>
<td>16:9</td>
</tr>
<tr>
<td>Resolution:</td>
<td>1920 X 1080</td>
</tr>
<tr>
<td>Processing:</td>
<td>RGB 10 bit</td>
</tr>
<tr>
<td>Viewing angle:</td>
<td>178 degree horizontal and vertical</td>
</tr>
<tr>
<td>Input / output:</td>
<td>Composite, SD/ HD-SDI (2 Nos), HDMI</td>
</tr>
</tbody>
</table>

**Supported signal format:**

HD-SDI 1080i, 50 Hz
HD-SDI 1080p at 25 Frame rate
HD-SDI 720p at 25 Frame Rate
SD-SDI 576i, 50Hz

**Other required features:**

- Waveform monitor, vector scope, and audio level meter display
- Provision of Audio input/ output
- Built-in speaker
• Tally indicator
• Time code display
• Safe area marker
• On screen menu
• Computer signal input capability etc.

10. **42” LED Display**

**Display Technology:** LED IPS panel  
**Resolution:** Full HD 1920 X1080  
**Inputs:** USB Full HD DIV X support  
HDMI Full HD  
Analog component/ composite

11. **Professional HD Video Monitor 9”**

**Picture Panel**  
a-Si TFT Active Matrix LCD

**Picture size (diagonal)**  
227.0 mm/ 9 inches

**Effective picture size (H x V)**  
198.7 x 111.8 mm  
7 7/8 x 4 1/2 inches

**Resolution (H x V)**  
1920 x 1080 pixels (Full HD)

**Aspect**  
16:9

**Colours**  
Approx. 16.7 million colours

**Viewing angle**  
89°/89°/89°/89° (typical)  
(up/down/left/right contrast > 10:1)

**Input**

- **Composite**  
BNC  
1.0 Vp-p ±3 dB sync negative

- **SDI**  
BNC

- **HDMI**  
HDMI (HDCP correspondence)
Output

Composite BNC
SDI BNC
Audio monitor out Stereo mini jack
Speaker (built-in) 0.5 W (mono)
Headphones output Stereo mini jack

12. Audio Mixer

Mic Input: At least 12 balanced XLR with switchable Phantom power,
Input level: -72dBu to -6dBu

Line Input: At least 2 balanced, XLR stereo and 2 TR IN
Input Level: -54dBu to +12dBu

AD converter: 24 bit 128 time oversampling
DA converter: 24 bit 128 time oversampling
Line outputs: Stereo out, Monitor out, Omni out
Channel insert out: RCA unbalanced
Digital I/O: ADAT (8IN/8OUT) 2TR IN/OUT
Internal Processing: 32bit
Signal Delay: Less than 2.5 ms at fs = 44.1 kHz, CH INPUT to ST OUT
Total Harmonic Distortion: Less than 0.1% 20 Hz to 20 kHz, at +14 dB into 600 ohm;
Less than 0.02% 1 kHz, at +18 dB into 600 ohm, CH IN to ST OUT
Equalization: ± 15 dB for Low, Mid and High frequencies
Control and others: To Host USB, MIDI, Word clock I/O

Hardware Features

- Motorized faders to set levels for Input Channels, Aux send levels and Bus Outs
- LCD Display
- Buttons and controls in the SELECTED CHANNEL section to enable direct editing of channel EQ parameters
Software layers to determine the function of channel faders

**Frequency response:** 20Hz - 20 kHz @+4dBu into 600Ω (@Sampling frequency = 48 kHz)

**Internal processing:** 32 bit

**Dynamic range:** 106 dB typical

**Power Input:** AC 240V

**Other features:**
- Facility of mixing Input channels and Stereo IN channels at a time
- Facility of grouping multiple channels and pairing of stereo channels
- Channel library for storing and recalling the channel settings for each Input Channel and Output channel
- Four band EQ on each channel
- Scene memories for storing and recalling mix settings as Scenes(Snapshots)

13. **Microphone Shotgun Condenser directional (Type-I)**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transducer</strong></td>
<td>Condenser</td>
</tr>
<tr>
<td><strong>Pickup Pattern</strong></td>
<td>Directional, Supercardioid/ Lobar</td>
</tr>
<tr>
<td><strong>Frequency response (microphone)</strong></td>
<td>40 - 20000 Hz</td>
</tr>
<tr>
<td><strong>Sensitivity in free field, no load (1kHz)</strong></td>
<td>25 mV/Pa +- 1 dB</td>
</tr>
<tr>
<td><strong>Nominal impedance</strong></td>
<td>25 Ω</td>
</tr>
<tr>
<td><strong>Min. terminating impedance</strong></td>
<td>800 Ω</td>
</tr>
<tr>
<td><strong>Equivalent noise level</strong></td>
<td>13 dB</td>
</tr>
<tr>
<td><strong>Equivalent noise level weighted as per CCIR 468-3</strong></td>
<td>24 dB</td>
</tr>
<tr>
<td><strong>Maximum sound pressure level (passive)</strong></td>
<td>130 dB</td>
</tr>
<tr>
<td><strong>Windshield</strong></td>
<td>required</td>
</tr>
</tbody>
</table>
### 14. Microphone Shotgun Condenser directional (Type-II)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transducer</strong></td>
<td>Condenser</td>
</tr>
<tr>
<td><strong>Pick-up Pattern</strong></td>
<td>Highly directional, super cardioid/lobar</td>
</tr>
<tr>
<td><strong>Frequency response (microphone)</strong></td>
<td>40 - 20000 Hz +/- 2.5 dB</td>
</tr>
<tr>
<td><strong>Sensitivity in free field, no load (1kHz)</strong></td>
<td>50 mV/Pa +/- 2.5 dB</td>
</tr>
<tr>
<td><strong>Nominal impedance</strong></td>
<td>200 Ω (K6)</td>
</tr>
<tr>
<td><strong>Min. terminating impedance</strong></td>
<td>1000 Ω (K6)</td>
</tr>
<tr>
<td><strong>Equivalent noise level</strong></td>
<td>10 dB</td>
</tr>
<tr>
<td><strong>Equivalent noise level weighted as per CCIR 468-3</strong></td>
<td>21 dB</td>
</tr>
<tr>
<td><strong>Maximum sound pressure level (passive)</strong></td>
<td>125 dB / 1 kHz (K = 1%)</td>
</tr>
<tr>
<td><strong>Windshield</strong></td>
<td>Required</td>
</tr>
</tbody>
</table>

### 15. Microphone Cordless Dynamic

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pick up pattern</strong></td>
<td>Super cardioid</td>
</tr>
<tr>
<td><strong>Frequency response (microphone)</strong></td>
<td>80 - 18000 Hz</td>
</tr>
<tr>
<td><strong>Compander</strong></td>
<td>HDX</td>
</tr>
<tr>
<td><strong>Audio connector</strong></td>
<td>XLR</td>
</tr>
<tr>
<td><strong>Presets</strong></td>
<td>32</td>
</tr>
<tr>
<td><strong>Microphone</strong></td>
<td>dynamic</td>
</tr>
<tr>
<td><strong>Sound pressure level (SPL)</strong></td>
<td>154 dB (SPL) max.</td>
</tr>
<tr>
<td><strong>THD, total harmonic distortion</strong></td>
<td>&lt; 0.9 %</td>
</tr>
<tr>
<td><strong>AF sensitivity</strong></td>
<td>1.6 mV/Pa</td>
</tr>
<tr>
<td><strong>Signal-to-noise ratio</strong></td>
<td>&gt; 115 dB(A)</td>
</tr>
</tbody>
</table>
RF frequency range 516...865 MHz
RF output power 10/30 mW
Transmission/receiving frequencies Minimum 1500
Switching bandwidth 42 MHz
Antenna connector 2 BNC, 50 Ω
Audio output level (balanced) XLR : +18 dBu max

16. Microphone Wired Lavelier

Transducer Permanently polarized condenser
Pick up pattern Omni-directional
Frequency response (microphone) 20 - 20000 Hz +- 3 dB
Sensitivity in free field, no load (1kHz) 5 mV/Pa +- 3 dB
Nominal impedance 1000 Ω
Min. terminating impedance 4700 Ω
Equivalent noise level 26 dB
Equivalent noise level weighted as per CCIR 468-3 39 dB
Maximum sound pressure level (passive) 142 dB

17. Microphone Wireless Lavelier

Pick up pattern Omni-directional
Frequency response (microphone) 80 - 18000 Hz
Compander HDX
Microphone electret
Sound pressure level (SPL)  142 dB(SPL) max.
THD, total harmonic distortion  < 0.9 %
AF sensitivity  6.3 mV/Pa
Signal-to-noise ratio  > 115 dB(A)
RF output power  10/30 mW
Transmission/receiving frequencies  Minimum 1500
Switching bandwidth  42 MHz
In compliance with  ETS 300422, ETS 300445, CE, FCC
Antenna connector  2 BNC, 50 Ω

18. Audio Speakers with Power Amplifier (Amplispeaker)

Speaker type:  Biamp, 2-way powered speaker, with Sub-woofer
Frequency response:  50Hz-40 kHz
Cone size:  6”
Sub-woofer size:  10”
Crossover:  2.5 kHz
Output power:  LF: 80W, HF: 50W
I/O connectors:  XLR 3-Pin
Processors:  Low cut- Flat/80/100Hz; 12dB/oct
High trim- 15 kHz; +1.5/0/-1.5dB
Low trim- 45Hz; +1.5/0/-1.5/-3dB
Magnetic shielding:  Required

19. Professional Studio Monitoring Speaker & Power Amplifier (Type-I)

a) Amplifier

Type  2 channel power amplifier
Frequency response  10Hz-50KHz
Input  • Line input balanced 2
       • Line input unbalanced 2
Output  2 channels
RMS power output 4 ohm  2 X 180W
RMS power output 8 ohm 2 X 120 W

b) Speaker
Woofer size 8”
Tweeter size 1”
Frequency response 48-22 KHZ
Impedance 8 ohm
Loudspeaker system Two way

20. Professional Studio Monitoring Speaker & Power Amplifier (Type-II)
a) Amplifier
Type 2 channel power amplifier
Frequency response 10 – 24K Hz
Input
• Line input balanced 2
• Line input unbalanced 2
Output 2 channels
RMS power output 4 ohm 2 X 600W
RMS power output 8 ohm 2 X 300 W

b) Speaker
Woofer size 12”
Tweeter size 1.4”
Impedance 8 ohm
Frequency response 48- 22K Hz
Loudspeaker system Two way

21. Professional Quality Headphone
- Closed-back, circumaural headphones designed for professional monitoring applications.
- 32 dB or more attenuation of external noise.
- Coiled cable.
22. 32 or 36 Port Digital Matrix Studio Intercom

**Essential Features:**

a) The talkback systems should have central matrix with digital signal processing and self-contained power supply, in 19” rack mounting.

b) All the interconnections should be made through this central matrix. The central matrix should be of modular type and frame mounted. The frame/chassis itself should have provision for expansion of inputs/outputs ports from 16 X16 ports to 64 X 64 ports. There should be digital transmission between central matrix and control panels.

c) The central matrix should be reliable, robust and with redundant power supply and redundant master control card with auto-change over facility.

d) All the control panels and headsets should be rugged in design to withstand professional use.

e) Belt packs and remote panels should be shielded against hum, RFI and thyristor switched dimmer noise.

f) Dual muff Noise attenuating headsets with dynamic noise cancelling microphones should be used to reduce the ambient noise and minimize feedback.

f) The intercom unit should use wide bandwidth system to maximize the intelligibility of the human voice.

g) Apart from communication from producer to floor Managers and producer to camera persons, it should have control panels for various areas like CCU, Audio, CAR, Ingest etc.

h) Remote control panels should be equipped with wide frequency professional quality gooseneck microphones, built in amplifier and speaker, channel select buttons, intercom and program level volume control. Facility to connect headsets should also be available. The microphone preamplifier should have compressor/limiter and speech bandwidth filters to improve intelligibility and reduce feedback.

i) The system should allow two way communications between all remote control panels, producer station and Floor Manager and IFB belt packs for Anchors.

j) The Control Panels required being equipped with electronically latching push ON and pushing OFF selector switches to enable hands free operation and sigma mode of calling (All select).

k) The system should have belt pack unit and headset for Floor Managers for two way communication with the producer.
l) The system should be able to interface with cameras, CCUs/base stations via 4wire systems.

m) Talkback system should be designed to ensure that remote control panels can be situated at about 100 meters or more.

n) The matrix should have auto switchable redundant power supply.

Technical Specifications:

a) Matrix Size: Minimum 32 X 32 with redundant power supply and redundant controller card.
b) Audio Inputs : Balanced inputs, Hi Z (10K ohms or more)
c) Maximum level : +18dBu
d) Gain Adjustment: Should be available for Individual cross point.
e) Audio outputs : Balanced outputs, Low Z (<50ohms)
f) Frequency response : ±3dB or better 200 Hz to 7.5 KHz
g) S/N Ratio : Better than 60 dB
h) Cross talk : Better than -60 dB
i) Power supply : 230±5% V AC, 50 Hz
j) Operating Temperature : 5 to 40 deg. Celsius

k) The system should also have IFB (Interrupted fold back) configuration to provide communication to the talent/anchor in the studio through mini earphone jack.

l) The system should be complete with the licensed operating software pre-installed along with all accessories, cables & connectors which are necessary to complete the system.

m) The firm should also provide the schematic/map depicting all the talkback stations of the offered system to help understand the completeness of the system.
n) All the remote panels should have alphanumeric display of at least four characters/digits for each button/switch for display of destination against that button/switch.
o) Optional interfacing with Wireless communication system can also be offered.

23. **GLUES**

All glues for Audio and Video should be housed in frames with redundant PSUs. Video glues are required to be re-clocking type wherever necessary.

24. **Telephone Hybrid**

General
- Digital Hybrid.
- Feedback Reduction Functions.
- Send-to-Caller Processing: High-pass Filter, Frequency Shifter, AGC/Limiter, Sample Rate Conversion (with AES option).
- Receive-From-Caller Processing: High-pass “Hum” Filter, Smart AGC / Platform Leveler, Noise Gate, Telos DDEQ (Digital Dynamic Equalization) 3-band Adaptive Spectral Processor, Sample Rate Conversion (with AES option).

**Analog Inputs**
- Send Analog Inputs: 1 for Hx1, 2 for Hx2 (one per hybrid)
- Connector: XLR Female, Pin 2 High (Active Balanced with RF Protection)
- Input Range: Selectable between MIC and LINE levels
- Line Input Level: Adjustable from -10dBV to +8 dBu (nominal)
- Analog Clip Point: +21 dBu
- Impedance: Bridging, > 50 Ohms
- Analog-to-Digital Converter Resolution: 24 bits

**Analog Outputs**
- Receive Analog Outputs: 1 for Hx1, 2 for Hx2 (one per hybrid)
- Connector: XLR Male, Pin 3 High (Active Balanced, RF suppressed)
- Output Level: Nominal +4 dBu, fixed
- Impedance: < 50 Ohms
- Digital-to-Analog Converter Resolution: 24 bits
- Headroom Before Clipping: 20 dB headroom above 4 dBu nominal levels

**Audio Performance**
- Frequency Response: 200 to 3400 Hz, +/- 1 dB
- THD+N: < 0.5% THD+N using 1 KHz sine wave
- Dynamic Range: Analog in to Analog out, studio loop mode, 10Hz-20Khz. A-weighted: > 92 dB
- SNR: Analog output, referred to -12dBm phone line signal (+4dBu studio out), 10Hz-20Khz a-weighted: > 72 dB
- Trans-Hybrid Loss: Analog phone line with ducking, gate, AGC, EQ
- all OFF relative to +4dBu input level: >55 dB

**Analog Telephone Line Connectivity**
- Universal interface. Programmable loop current, ring signaling, and flash time. Should include caller ID decoding using Bellcore 212 modem standard.

25. **Integrated Media Asset Management (MAM) and Archive Solution**

**Required system Features:**

a) The total system must work under a powerful, comprehensive and enterprise class solution.
b) The offered MAM solution should be field proven and in use by international broadcasters. The bidder should essentially enclose the international broadcasting user list along-with the tender.

c) An industry standard Database engine supporting SQL or Oracle or DB2 database system should be part of the MAM.

d) The MAM is being the core of the system and should take care of ingest, metadata creation, browsing search, tracking, Transcoding, frame accurate proxy generation, movement of the content and end to end content management functionally in the envisaged work flow.

e) It should also be upgradable and to be integrated with data tape library or other near line storage system, digital right management HSM etc.

f) The core function of MAM should be fully integrated one, with minimum recourse to the third party solutions. The bidder needs to explain the work flow with the help of various MAM modules in full details.

g) The system should allow both importing of metadata (Alpha numeric) from other systems and manual creation. The metadata insertion should be possible for the entire video or for any clip.

h) The MAM solution should provide open interfaces for system access and control for third party software.

i) The MAM solution should provide powerful metadata management capability for effective cataloguing and retrieval. It should support time coded metadata handling capability.

j) The integrated functionality, power and its extensibility in terms of size of the system are the critical requirements of the MAM software. The MAM should also be expansible for use in other areas of broadcast workflow. The bidder should explain the complete utility of this software in detail.

k) The MAM should envisage a powerful search engine that returns accurate results for user search with high speed. The search could be based on keywords, name of artists and metadata or unique ID.

l) The MAM should support file import form one defined area and export to another defined area by using (FTP) File Transfer Protocol.

m) The MAM should support creation of high resolution and low resolution copies. The low resolution copy should be frame accurate and Timecode synchronized with the high
resolution content. In addition, the system should provide the capability of creation of thumbnails and sub clips based on automatic scene detection.

n) The required number of software licenses should be offered essentially.

o) The offered MAM software should work on a stable operating system platform like Windows, Linux, Mac OS X, etc. The offered MAM solution should provide cross platform support for both Windows and Mac clients.

q) The cost of additional licenses for Ingest, Browse/Catalogue users etc. should be quoted separately.

26. Automatic QC for File based content

Should support SD, HD and Mixed workflows

**Container:** MXF, Quick Time, ASF, MPEG TS/PS, GXF, AVI, 3GPP, MP4,

**Video Codecs:** MPEG-2 (IMX, XDCAM), H.264/AVC, MPEG-4, H.263, VC-1/WMV, DV/DVCPRO25/50/100/HD

**Audio Codecs:** MPEG-1/2, AAC, HE AAC, PCM (AES, BWF, AIFF, WAV), DV, WMA, Dolby, WAV, DV Audio

**Image Format:** JPEG, GIF

**Container level tests:** Correct Standard and Integrity, File Size, Bit Rate, Playtime, Number of Video and Audio Streams in Transport Container.

**Video Tests:** Correct Encoding Standard, Profile, and Syntax Checks. GOP Structure, Quantization, Frame Rate, Bit Rate, Frame Size, Interlaced/Progressive, Aspect Ratio. Baseband Tests including Gamut levels, Luma, Chroma, Signal levels, Letterbox/Pillarbox, Playtime Colour Depth, Colour Format (4:2:0, 4:2:2) Black Frames (Lead In, Lead Out, and During the Video), Video Quality (Blockiness), Frozen Frames, Duplicate frames, Field Order, Motion jerk, Video dropout.

**Audio Tests:** Correct Encoding Standard, Profile, Syntax Checks, Sample Rate, Bit Rate, Playtime. Number of Channels, Peak and Minimum Signal levels on Each Channel, Level mismatch, Silence, Crackle, Background noise, Coloured noise, High frequency noise, Jitter noise. Audio Silence (Lead In, Lead Out, and During the Video), Clipping, Mute, Test Tones, Misplaced channels, Phase detection.
27. **Media/Video Server/ Ingest & Play out System**

**General Features**

i) Scalable Ingest/Playout Server System, with two ingests, 72 TB or more RAW storage (at least 60TB usable).

ii) Fully automated play out system in 1+1 mirror mode for studio play out.

iii) Provision for more Ingest/Playout ports in future.

iv) Required client stations for ingest and play back.

v) Enterprise level hardware based encoder and decoder set for transporting the content to remote location in future. The content can be transferred via a suitable method like FTP etc.

vi) Video/ audio monitoring for ingest and play back.

vii) Server Storage will be used for collaborative editing also. It is proposed to connect Non Linear Editing systems.

viii) The system should be capable of working both in HDTV and SDTV standards. The SDTV standard is 625 line (4:3 aspect ratio) conforming to SMPTE 259M and ITU-R BT 601 (amended up-to date) (SD-SDI 270Mbps). While the HDTV standard is 1920x1080/50i conforming to SMPTE 292M and ITU-R BT. 709 (CIF) (amended up-to date) (HD-SDI: 1.485 GB/s).

ix) The envisaged system should support Video @ 50 mbps for HD 4:2:2 formats.

x) The offered system should be modular and expandable for future requirement. Its architecture should support continuous working and no single or multiple failures should affect the system.

**Ingest:**

a. Base band signal HD/SD SDI with embedded audio from Studio, VTRs, will be ingested to the system.

b. Two simultaneous ingests for baseband signal and one file ingest are required at this stage, There should be provision of add on additional ingest ports in case required in future. Bidirectional ports are preferable.

c. Simultaneous recording of the content A/V ingest and proxy video.
d. Simultaneous monitoring of the audio/video is also required with a provision for close monitoring. Necessary monitoring facility for monitoring ingesting sources including respective audio channels & its level should be provided by the bidder.

e. System should have intuitive user interface for easy ingest operation with easy controls available in the hand of operators for resolving any eventuality.

f. System should provide current status of ingestion process to operator with an option to abort any time.

g. It should be possible for operator to define source and destination for ingest.

h. It should also provide high bandwidth networking capabilities so that video/audio sources are recorded on storage.

i. Operator may also preview & browse the content without disrupting the recording process. It should have comprehensive graphical over view/GUI with video overlays.

j. It should have separate window for metadata entry/editing.

k. Built in provision for simultaneous PVW of Video/Audio should be there.

l. Visual indications for the ongoing operations should also be available on the GUI.

m. Provision for file based ingest is also required, it should be possible to ingest full resolution AFP/FTP directly to the server without any additional gateway.

**Playout:**

a. Automated Play-out system with manual rider is required to meet the requirements for Studio production.

b. Though immediately for this tender it is required to control one playout channel but system should support multiple channel play-outs for future expansion.

c. System should have two playout ports (2 ports) for 1+1 playout at present. Bidirectional ports are preferable.

d. System ports should be easy to configure and with good manageability.

e. The playback of scheduled clips from the play list should be instantaneous without any delay.
f. It should resume the playout from the last known position in case of interruption and it should also allow the user to jump from one line in a playlist to another during production, regardless of whether or not the current event has finished. In that case remaining playlist should be automatically modified accordingly. The system should also have facility to pause and play the playlist manually.

g. Simultaneous monitoring of the audio/video is also required with a provision for close monitoring. Necessary monitoring facility for monitoring play-back including respective audio channels & its level should be provided by the bidder.

h. System should provide current status of play-back process to operator with an option to abort any time.

i. It should be possible for operator to define the location for play-back.

j. It should also provide high bandwidth of 1 Gbps or more networking capabilities so that video/audio channels are played back smoothly.

k. System should support copying feature for clip copying.

l. GUI/window should show the play out progress with time code/visual bar etc.

m. The server should be free from virus and OS corruption issues to provide a smooth 24X7X365 service.

n. Remote control of the ingest and play out with client station with MS Windows, Mac OS and Linux OS should be supported by system.

o. Offered playout system should support third party integration by using interfaces such as API, MOS or FIMS.

p. Energy efficient systems are required, in no case it should consume more than 800 watt. Dual redundant Power supply to work on 220-240 Volt, 50Hz is required

**Baseband signal**

**Video channels (in each server):** 2 nos. of Ingest & 1no of Play-out

a) **Signal:**

   The video is in HDTV 1920x1080/50i (16:9 aspect ratio) conforming to
SMPTE 292M and ITU 709 (CIF) HD-SDI: 1.485 Gb/s and SDTV 625/50i (4:3 aspect ratio) conforming to SMPTE 259M and ITU 601 SDI: 270 Mb/s. Both the signals have 4:2:2 sampling and 10 bit quantization and minimum 4 discreet embedded audio channels.

b) **Reference:** Tri-level sync/ PAL Black burst.

c) **Time code:** LTC, VITC

d) **Video Compression:**

   SD: DVC PR050 & 25 , DV

   MPEG-2 @ML4:2:2, I-Frame 30/40/50

   HD: XDCAM HD 4:2:2 (50 Mb/s), XAVC (50/100), AVC Intra 50/100, DVC Pro HD Proxy: MPEG 4 AVC

e) **Input/Output:** HD/SD with embedded audio minimum 4 discrete channels.

28. **Central Storage:**

   a. The system should have 64TB usable storage with effective storage at 50 Mbps Video with audio and ancillary data.

   b. The storage should be easily scalable just by adding nodes.

   c. Each node of the central storage should have multiple enterprise level SAS/FC hard disk drives in suitable dual parity arrays and dual arrays of minimum RAID5 configuration.

   d. Each node of central Storage should have minimum 1.5 Gbps bandwidth/ throughput to meet the system encoding and decoding requirements. OEMS will be required to define the throughput of the system and tender should be supported with certificate to this effect to confirm the suitability of the system for smooth working.

   e. The storage should have all level of redundancy that in case of any failure of any array or node or disk, there should not have any impact on external applications.

   f. Central storage should also support policy driven data replication and access control capability.
g. Storage should have sufficient redundancy to give a trouble free service. It should have sufficient redundant disk, array, node, PSs, cooling arrangements.

h. System should have SSD drives for the OS and other functions.

i. Central storage should support access control capability at object level.

j. Storage will provide the capability of asset lifecycle management.

k. Storage will provide the rich standard interface including CIFS/SMB2, FTP, NFS, CDMI (industry standard RESTful programmatic interface), Amozon S3, Various SDK package interface (java, dotnet, python, android, ios).

l. Storage will provide object explorer to access and manage the assets in storage.

m. The storage requirement for the system software, application software and other management software should be provided additionally.

n. The SAS/FC drives should be of Enterprise class conforming to the latest specifications. The HDD should have very high MTBF ratings.

o. The storage subsystem should have Dual active RAID controller. It should have Controller cache of 4 GB or higher per controller.

p. The storage system should be configured with 2 Global hot spare HDD for rebuilding during drive failures.

q. The storage system should have automatic drive failure detection and rebuilding feature.

r. All the replaceable components like Drives, Controller, Battery, Power Supply and fan should be hot swappable.

s. The online storage should support expand ability to at least 100 TB in future.

29. Transcoders:

a. The offered system should envisage required numbers of transcoding servers that automatically transcodes the ingested DVCPRO 50, XDCAMHD 422 or other native format contents into low resolution formats like H.264/WM9 and MPEG2 at variable bit rates selectable by the user at the time of ingestion.

b. The transcoding system should be faster than real-time. The transcoders should be designed in such a way that the low-res files are available for viewing and metadata creation within one hour of the ingested full resolution content in the peak load condition, i.e., simultaneous ingest of 1 hour clip from all ingest terminals, assuming the time taken for QC to be zero (for the purpose of this calculation only). The bidder should submit the calculations undertaken to achieve this workflow for justifying the number of transcoders required.

c. During transcoding, it should be possible to extract the embedded audio tracks into separate audio files of standard formats.
d. The transcoder should not impose limit on the size of the video clips.
e. The facility to simultaneously extract key frame images while transcoding should be available on fixed intervals of the ingested clips.
f. The MAM software should facilitate advance queue system to ensure effective utilization of transcoders.

30. Browsing, Cataloguing, Search and Retrieval:

a. The bidder should offer 4 numbers of browsing workstations at present, based on standard PC platform with graphical user interface. This should facilitate various functions like low resolution browsing, searching and cataloguing of the contents being created or already existing in the online storage of the system. In case of the content backed up to the Offline storage, appropriate location link should be generated.
b. The browser should invoke the proxy media player to view the low res. content stored in H.264/WM9 format. The browsing software should provide all the standard operational features of the media player like play, pause, stop, fast forward, skip to begin/end, skip to timecode, skip configurable (number of frames forward/backward), jog and shuttle.
c. It should be possible to resize the video display area, reconfigure the screen layout and activate or deactivate audio by the user.
d. Each browsing workstation should be provided with LCD/TFT monitor and a high quality headphone to facilitate the user to listen to the audio of the ingested content. The browsing workstation should have at least 4 GB of high speed RAM & adequate local storage.
e. The browsing software loaded in all workstations should be an integral part of the MAM software and facilitate browsing, cataloguing, search & retrieval applications. The offered system should support up to **10 or more** browse users.
f. This software should facilitate creating & editing the metadata for the ingested low resolution content. The metadata can be quite comprehensive and hence the software should permit the expansion of the data structure of the database. It should have the flexibility for the users to define their own metadata fields in addition to the MAM's standard metadata database.
g. It should also be possible to import metadata and store in the offered MAM's database after adding newly created metadata to the imported metadata.
h. The MAM software should facilitate the browser to make mark in, mark out and capable of sequencing various clips from the ingested contents.
1. The bidder should furnish content retrieval time from archive, along with the bid.
31. **Remote Connectivity (Optional):**

a. The offered system should have optional remote access functionality for future. Remote user shall be able to access the low resolution content and metadata available in the Web server through the dedicated Private Network for entering metadata and transcripts from the other EMRC centres. The private network connectivity is not in the scope of this tender.

b. It should support minimum 3 remote users.

c. The bidder should provide complete details of the required software and hardware, including web server, licenses, firewall solutions etc. to facilitate the remote access functionality.

32. **Storage/Content Management Software:**

a. It should support Dynamic Array Expansion where new hard disk capacity can be added to select individual RAID array.

b. It should support Dynamic Volume Expansion where capacity of individual selected LUN/ volume in a RAID array can be expanded.

c. It should support Dynamic RAID level migration, Dynamic Segment size, changing of a logical drive and Dynamic Defragmentation without shutting down the system.

d. The storage management software should facilitate reallocating the storage capacity between high resolution and low resolution depending upon the requirement.

33. **Nearline Storage**

a. The bidder should offer a robust, reliable nearline storage solution essentially with open standard data tape technology like LTO 7.

b. The storage should have high read/write reliability with high data throughput.

c. The bidder should offer necessary cleaning cartridges and other accessories essentially required for the nearline storage media.

d. Necessary tape management software and licenses for the same should be offered.

e. The offered nearline storage should have at least a dual drive with minimum 24 cartridge slots. The sustained uncompressed data transfer rate should be 300MBps or more. The native uncompressed cartridge capacity should be 2.5 TB or more.

f. The bidder should offer rack mountable Tape library systems.

g. The offered storage solution should be capable of upgrading to next generation and should be backward compatible.
h. The proposed content management system/Tape management software should be integrated with the MAM solution seamlessly.

i. The content management system should support time code based partial retrieval of the archive content.

j. The proposed content management system should be capable to interface with different reputed tape library vendors like HP/IBM/SUN/Spectra Logic etc.

k. The system should support offline Tape Cartridge Management/ externalization of tapes for unlimited number of tapes on the shelf.

l. The content management should give performance history of all drives and media, as well as forecast of their performance. It should be possible to set triggers, to generate a variety of alerts when various performance thresholds have been exceeded.

m. The content management should be controlled by Automation system.

LTO Specifications

a) A multi-drive multi slot tape library with autoloader technology and at least 2 LTO 7 tape drives, expandable to 4 in future. The tape library should come with dual power supplies and should support LTFS file system. The tape library with SAS interface is preferable.

b) The Tape library should have at least 24 LTO7 Tape Slots

c) 50 Nos of LTO 7 Tapes should part of the quote along with the necessary barcode stickers

d) The Tape library should be able to Read/Write to LTO6 Tapes and Read LTO5 Tapes

e) The Tape library should be rack mountable and should be of a reputed brand. The Tape library should be compatible with the quoted MAM and any other necessary accessories required for the compatibility should be supplied along with the tape library.

34. Non Linear Editing

Essential Features of Non Linear Editing System

- 6(Six) numbers of NLEs are envisaged for the system.

- The NLE systems should allow multiple file conversion e.g. AVI, WMV, Q-time etc. It should allow capturing and publishing of XDCAM HD422 MXF data files in native file format through USB 2.0 & 3.0, Ethernet and FireWire/ I. LINK interface. It should therefore be equipped with USB 2.0/3.0, Ethernet and FireWire/i-LINK interfaces.
- One NLE system is a standalone system with its own media storage and meant for repurposing the media contents residing in the online storage or content retrieved from the LTO Tapes. This NLE performs the function of DVD and Blu Ray Authoring also.

- The offered hardware and software solution for NLEs should be fully integrated for the best performance. The hardware configuration of the NLEs should meet the requirements projected by the OEM and must be the latest available in the fast changing IT market.

- The offered NLE system should have real-time architecture and should have the capability of real-time simultaneous playback of two HD-SDI, four 10-bit SD-SDI uncompressed video streams and four graphic layers. Only moving video will be considered for counting video streams.

- The system should have all the functions of standard high quality reputed brand NLEs available in the broadcast industry which support editing of uncompressed HD/SD-SDI signals in real time. The editing software should be capable of generating various transition effects like classical box, diamond & circular wipes, rotary, tilt & slide wipes and dissolves with variable softness, border colour and border width. The system should provide unlimited video/graphics layers in fast rendering mode.

- The editing system should have various motion effects like freeze frame, field interpolate, slow & fast motion, strobing in forward & reverse etc.

- The system should have facility for real-time colour correction. RGB controls of hue, saturation, contrast, gamma, gain and offset adjustments should be in real-time. Colour effects like negative, posterization, solarization and tint should also be present. Selective correction of highlights, mid-tones or shadows and advanced colour selection matching should also be available. The system should have frame buffer for precise colour comparisons.

- The editing system should provide real-time 3D DVE effects which includes X, Y and Z axis rotation, Perspective, Picture-in-Picture, Mosaic and Image Blur, Coloured and Textured Borders, Drop Shadows, Border Outlining, Posterization, Matte, Fills, Freeze Frames etc. 3D DVE effects like page turn, warp, lighting and perspective ripples, tilts, zooms, and rotating cubes etc. also should be possible.

- The system should also have integrated facility of 3D text creation. The system should also provide real-time rolls and crawls of the text.

- The system should have character generation facility in all major Indian languages apart from English. Character generation should have a wide range of colours for texts, edges, backgrounds etc. Different fonts types including user definable are also to be made available (scalable fonts with drop offset or extrude shadows and outline) along with glow or
embossing effects. The system should have independent character adjustment of transparency, fill, shadow, outline, underline, bold, italics, kerning and axis control.

- Integrated real-time luminance and chrominance keyer should be present apart from having a graphic title keyer with keying facilities like alpha channel keying, luminance based keying, digital chroma keying, overlay hard keying etc. The system should offer basic compositing features.

- The offered system should support interoperability for EDL import and export. It should also support meta-data formats such as MXF, AAF to enable interchange of projects and media files with other editing system in the network.

- Facility for frame by frame trimming should be available for accurate edits.

- Split, cutaway editing, A/B roll editing, trim mode and transition mode editing, many levels of undo and redo etc. should be possible. Levels of video and audio should be independently adjustable during the editing process. The system should have clip editors and cut editors with storyboard.

- The system should support at least eight camera editing. It should be possible to switch the captured sequences from eight camera angles in real-time.

- The audio signal processing should also be in digital domain with the possibility of having multi track audio mixing facility. This facility of audio processing includes multi band equalization, echo, reverb, time scaling and multi-track wave edit facility. The audio processing should be up to 24 bit sampling.

- The system should have many pre rendered effects like perspective, speed change, reverse variable speed playback, cropping, keying, warping, transparency, 2D and 3D transitions etc.

- All the necessary features described above such as CG, DVE etc. should be accessible within the main editing application software without switching from one program to another.

- The print to tape and DVD/Blu ray burning should be possible directly from the timeline. Necessary DVD/Blu ray authoring system should be offered.

- The edited video should support other image formats such as AVI, Softimage (.pic), Quick Time, TGA, SGI, PCX, BMP, GIF, Alias, JPEG, PSD, and TIFF etc. It should also have unlimited number of bins.

- The system should have project and asset management capabilities such as multi-level find and sort functions as well as frame and text views.
- The system should have 3-point editing with unlimited lines and limitations.

**Technical Specifications for the Non-Linear Editing System**

**A. Signal Processing**
1. Uncompressed Video: Minimum two HD and four SD-SDI Video streams
2. No. Of fields: 2 fields per frame.
3. Sampling rate for video: Should be in the ratio of 4:2:2 YUV Format
4. Digital Audio: 48 kHz processing with 16-bit sampling.
5. Time code: SMPTE/EBU (LTC, VITS) with drop frame and non-drop frame.

**B. Hardware**

- **DESKTOP**
The system should be capable of performing all the features listed under essential features and should adhere to the minimum configuration recommended by the OEM. The indicative minimum configuration of the hardware required is as given:
  - **Processor**: Similar to Quad core Intel Xeon E5 3.7 GHz processors with 10MB L3 Cache and Turbo boost up to 3.9 GHz
  - **Graphics**: Dual port Graphics card with 2GB VRAM
  - **Operating System**: Latest version of MAC or Windows
  - **System memory**: 12 GB ECC or higher
  - **System HDD**: 256 GB Flash storage or 500 GB SATA
  - **External storage**: 2 TB thunderbolt HDD
  - **Display Monitors**: Two numbers of 22 inch LED IPS display
  - **Combo Drive**: DVD/CD writer
  - **Peripherals**: Mouse and Keyboard
  - **Connectivity**: USB 3, Thunderbolt, Dual Gigabit Ethernet, HDMI 1.4 Ultra-HD
  - **Wireless**: 802.11ac Wi-Fi wireless networking; IEEE 802.11a/b/g/n compatible, Bluetooth 4.0 wireless technology.

- **ALL-IN-ONE**
  - **Display**: 27 inch Display
  - **Processor**: Core i5 3.3 GHz
  - **RAM**: 8GB RAM
  - **System HDD**: 2TB Fusion drive
  - **Display Monitor**: Dedicated graphics card with 2GB memory
  - **Peripherals**: Other necessary accessories.
  - **Keyboard**: Separate wired keyboard and mouse.
35. **Rack Servers and Workstations:**

**RACKSERVERS**

- 19” Rack mount
- 1+1 redundant hot-swappable power supply, High CFM cooling for 24/7 operation

With preferable configuration as:

- 2 Latest Intel Xeon 64 bit multicore processors
- Minimum 32 GB DDR3 RAM, expandable to 64GB
- 2* 1TB 6Gbps SAS/SATA in RAID-1 or higher
- 1x DVI-I (dual-link), 1x Display Port with adapter to DVI-D (dual-link), 5 USB 3.0 ports
- 64-bit Embedded Server OS
- Optional GPU co-processing engine for advanced graphics and video compression

**WORKSTATIONS**

- Preferably Intel core i3-3220 or better, 8GB DDR-3 RAM, 1TB HDD
- 20” LCD/ LED IPS display

36. **KVM Switch**

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<tr>
<td>Console and Monitor:</td>
<td>Standard Console and 17”Monitor.</td>
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</table>

37. **PoEIP Digital Clocks**

The clock system shall be located and operated in an indoor environment, within the parameters of a standard network configuration and utilizing standard industry provided network equipment and distribution methods, including standardized POE distribution technology. The clock system shall operate autonomously and provide software configuration options for time zone offsets, automatic daylight saving time corrections without scheduled operator intervention or maintenance. The clock system shall be configured via software control and shall allow for remote configuration changes.
Type: 6-Digit, Single sided 7-Segment Red LED, Wall mount
Dimensions: Height 150mm and 100mm
Cabinet: Black, Powder coat painted Aluminum or Brushed stainless steel
Accuracy: within 50 milliseconds of the UTC time reference provided by the NTP server(s) when synchronized.
Protocol: SNTP, DHCP, SNMP
Power: PoE operation, with optional 240V, 50Hz, AC power
Compliance: IEEE 802.3af

38. PoE Network Switch

Interface: 10/100 base-T, RJ45 Ports
Cabling: CAT 5 or 6
PoE ports: Standard 802.3at/af compliant PoE+ Ports: 8 Ports
Input Power: 240 V AC
Design: Plug and Play

39. Uninterrupted Power Supply

1. GENERAL

UPS should be reliable and stable in operation under Indian tropical conditions, three-phase, true on-line double conversion continuous operation (defined as VFI in the IEC 62040-3, UPS specifications), solid-state uninterruptible power supply. The UPS system shall be capable of running in single stand-alone Module with 30-minutes back up time at full rated capacity. Projected requirement is for two such UPS in parallel operation (N+1 mode) for load sharing. All connectors, cables, etc., required for the UPS system & its installation should be supplied with the equipment. The UPS system quoted must conform to the latest international standards of safety and EMC. The conformance such standards (indicating standard’s name number must be stated in the compliance statement. The UPS and battery manufacturer must be ISO 9001-2008 certified for manufacturing of UPS and battery (respectively). A copy of the valid ISO 9001-2008 certificate should be enclosed with the offer.

The UPS shall produce high quality sinusoidal output. The UPS(s) shall be designed to operate as true on-line, double conversion type UPS, strictly as per the definition of IEC 62040-3. Modular and scalable system will be preferred.
2. TECHNICAL SPECIFICATIONS:

2.1.1 Normal Operation: The critical AC load should be continuously supplied by the UPS inverter. The rectifier & charger should take power from the AC input source, convert it into suitable DC and supply to the inverter as well as charge the batteries on Automatic Float cum Boost Mode.

2.1.2 Upon Mains Failure: Upon failure of AC input power, the critical AC load should continue to be supplied by the inverter, which should obtain power from the battery. There shall be no interruption in power to the critical load upon failure or restoration of the AC input source.

2.1.3 Upon Mains Restoration: Upon restoration of AC input power, the Rectifier/Charger should automatically restart walk-in and gradually take over the supply to inverter and charging to the battery.

2.1.4 Static Bypass: Each UPS Module should have inbuilt 100% rated static bypass line.

2.2 Static Transfer Switch: Static Transfer Switch and bypass circuit shall be provided as an integral part of the UPS. The static switch shall be naturally commutated high-speed static (SCR type) device rated to conduct up to 135% of full load current, continuously. The overload withstanding capacity of Static Bypass Path should be 125% for 10 minutes, 150% for 1 minute, 700% for 600 millisecond, 1000% for 100 millisecond.

2.3 Maintenance Bypass Isolator:
2.3.1 General: A manually operated maintenance bypass isolator shall be incorporated into each UPS cabinet to directly connect the critical load to the input AC power source, bypassing the rectifier/charger, inverter and static transfer switch.
2.3.2 Maintenance Capability: With the critical load powered from the maintenance bypass circuit, it shall be possible to check out the operation of the rectifier/charger, battery, inverter and static transfer switch.

2.4 UPS system:
2.4.1 Battery Capacity: The UPS system must be capable of providing supply to the UPS inverter/s full load for minimum 30 minutes of battery backup time. The battery bank shall be MF-VRLA type (Make GNB/Amara Raja/HBL Nife) consisting of 12 V cells installed in proper standard cabinets with proper connections and in factory-charged condition. The calculation sheet for battery capacity and the make, model, quantity of batteries should also be furnished.

2.4.2 Rectifier Input: 415 Volts, three-phase, 4-wire-plus-ground
Bypass Input: 415 Volts, three-phase, 4-wire-plus-ground
Output: 415 Volts, three-phase, 4-wire-plus-ground
2.4.3 Input Voltage Range: 320 V to 460 V (415 V nominal) for 100% load
2.4.4 Input Frequency: 50 Hz
2.4.5 Frequency Tolerance: 45 Hz-55 Hz
2.4.6 Power Walk-in: 1-90 seconds (selectable)
2.4.7 Rectifier hold-off: 1-180 seconds (selectable)
2.4.8 Input Power Factor: \( \geq 0.99 \) for 100% load
\[ \geq 0.99 \text{ for 75\% load.} \]
\[ \geq 0.99 \text{ for 50\% load.} \]
\[ \geq 0.98 \text{ for 25\% load.} \]

In order to achieve this, the Rectifier must be IGBT based, Power Factor Corrected and DSP-Controlled.

2.4.9 Input Current Harmonic Distortion: \( \leq 3\% \) THD at 100% load
2.4.10 Output Voltage Regulation: \( \pm 1\% \) steady state for a static 100% balanced load
\( \pm 2\% \) steady state for a static 100% unbalanced load.
2.4.11 Output Frequency: 50 Hz \( \pm 0.1 \) Hz free running (battery/mains operation)
2.4.12 Output Power Factor Range: 0.8 leading to 0.8 lagging at rated KVA
2.4.13 Output Harmonic Distortion: \( \leq 2\% \) THD maximum for a 100% linear load
\[ \leq 5\% \text{ THD maximum for a 100\% non-linear load} \]

The system should be capable of supplying energy to load from commercial mains without any break, in case of phase reversal at the input. It should also generate aural and visual alarm.

2.4.14 Overload Capability: 150% for 1 minute
125% for 10 minutes
110% for 60 minutes

2.4.15 Short Circuit Withstand: The UPS must withstand a short circuit on the output without damage to the UPS module.
2.4.16 Acouctical Noise: ≤ 67 dB (A) of noise typical, measured at 1 meter from the equipment surface.

2.4.17 Transient Voltage Surge Suppressor (TVSS) should be provided at the input & output of the UPS system.

2.5 Environmental Condition: The UPS shall be able to withstand the following environmental conditions without damage or degradation of operating characteristics

2.5.1 Operating Ambient Temperature: UPS Module: 0° C to 40° C

            Battery: 25° C

2.5.2 Storage/Transport Ambient Temperature: -30° C to +45°C

2.5.3 Relative Humidity: <90% in 20° C

2.5.4 Battery Recharge: In addition to supplying power for the inverter load, the rectifier/charger shall be capable of providing battery charging current to recharge the battery properly. Total battery management and monitoring should be available in the System. In addition to the above, automatic charging current control may also be provided.

2.5.5 Output Frequency: The output frequency of the inverter shall be controlled within a range of ± 0.1 Hz for steady and transient conditions.

2.5.6 Low Battery Voltage Protection: To prevent total discharge or damage to the battery, the UPS must transfer to standby operation when the battery voltage reaches a minimum voltage level (programmable).

2.5.7 Battery Disconnect: An external MCCB is to be provided for protection and isolation of the battery bank from the rest of the system.

3 DISPLAY AND CONTROLS:

3.1 Monitoring and Controls:

The UPS shall be provided with a status display and control section designed for convenient and reliable user operation. A system power flow diagram, a percentage load and battery time remaining display shall be provided as part of the monitoring and controls sections which depict a single line diagram of the UPS. The monitoring functions such as metering and alarms shall be displayed on a backlit LCD graphic display. Language features of the monitoring system shall be in English.

3.2 Metering: The following parameters shall be displayed:

        A] Input: Voltage & Currents, Frequency, Power Factor
B] Bypass: Phase Voltage, Line Voltages, Frequency

C] UPS Output: Phase Voltages, Currents, Line Voltages, Power Factor, Frequency

D] Local Load: Load of each Phase Active Power (KW), Apparent Power (KVA) of each phase, Load Crest Factor

E] Battery: Battery Bus Voltage, Battery Charge & Discharge current, forecasted battery back-up time, battery temperature battery capacity (AH)

3.3 Warning, Protection and Alarm Messages:

[a] Input/Mains : Charger Fault, Input Fuse Fail, Control Power 1 Fail, Mains Phase Reversed, Mains Voltage Abnormal, Mains Under-Voltage, Main Frequency Abnormal generator connected, Input Disconnect Open/Closed.


[c] Battery: Battery Over-Temperature, Battery Fault, Battery Low pre-warning, Battery end of Discharge, Battery contactor Fail, Converter Over-Current, Battery Capacity Testing, Battery Maintenance Testing, Battery Fuse Fail. Battery contactor Open/Closed, Battery Reverse, No Battery, Battery Float Charging, Battery Boost Charging.


[e] Bypass: Bypass, Bypass unable to trace, Bypass Abnormal, Maintenance Disconnect Open/Closed, Bypass disconnects Open/Closed, Bypass Abnormal Shutdown, Bypass Phase Reversed, Bypass Over-Current.

[f] Module’s Common: Normal Mode, Battery Mode, bypass Mode, Ambient over-Temperature, Fan Fault, System Overload, Manual Turn-ON/OFF, Unit Overload Timeout, Operation Invalid, Output Fuse Fail, Control Power Fail, Unit Overload, UPS Shutdown, Output Disabled, Transfer Confirm/Cancel, Unit OFF Confirm, System OFF Confirm, Fault Reset, Alarm Silence, Output Disconnect Open/Closed, Turn-On Fail, Output Over-Voltage (reserved), Alarm
Reset, Load Sharing Fault, Parallel ID Error, EPO, mains Neutral Lost, UPS System testing, Protocol Version Clash.

3.4 POWER STATUS DIAGRAM: A mimic panel shall be provided to depict a single line diagram of the UPS. Illuminating lights shall be integrated within the single line diagram to illustrate the status of the UPS. The three LEDs shall indicate the following status:
   A. Bypass voltage OK
   B. Load on Bypass
   C. Load on Inverter

CONTROLS: The following controls have to accompany the display unit

1. Silence on audible alarm
2. Display or program the time and date
3. Enable or disable the automatic restart feature
4. Transfer to or from static bypass operation
5. Transfer to or from forced battery operation
6. Program the battery charger
7. Calculate battery back-up time
8. Test battery condition on demand
9. Program the unit to periodically test battery condition
10. Program voltage and frequency windows
11. Calibrate metered parameters
12. Adjust set points for different alarms
13. Set the delay of the common fault contact
14. Program the unit for soft start for use with a generator

3.6 Remote UPS Monitoring Kits: Remote UPS monitoring must be possible via either RS-232 or contact closure of the UPS.

3.7 SNMP Adapter: A Web-Enabled SNMP adapter for one or more network management systems (NMS) to monitor and manage the UPS in TCP/IP network environments should be available. The management information base (MIB) must be provided. The SNMP interface adapter has to be connected to the UPS via the RS232 serial port.

3.8 UPS On & Off Switches: Momentary UPS on & off Switches must be provided in a user accessible area. Upon activation of the switches, the UPS must automatically connect the UPS output to the critical load. Upon de-activation of the switches, the UPS must remove power from the critical load.

3.9 The Integral maintenance: Bypass has to supply the load from the bypass source while the UPS is isolated for maintenance. UPS input, output, static bypass and maintenance bypass switch must be housed in the same cabinet. Each switch must be monitored and controlled by the UPS.

3.10 Battery charger temperature compensation: For units with external batteries, the battery charger temperature compensator has to monitor the temperature in one battery cabinet.

40. Installation Materials

Installation materials like Audio and Video Cables/Connectors, Patch Bays need to be of broadcast quality. Other items/materials need to be of very high quality and best available in the market.
SECTION III

ENCLOSURE

CONTENT

A. SYSTEM INTEGRATOR’S (SI) INFORMATION FORMAT [APPENDIX 3]

B. CUSTOMER’S REFERENCE FORMAT

C. CHECK LIST
A. SYSTEM INTEGRATOR’S (S.I.) INFORMATION

Short Responses can be placed within the cells provided in the tables below. Additional Information can be attached as appendices, but should be explicitly referenced from within the appropriate cells.

SYSTEM INTEGRATOR (S.I.) INFORMATION FORM

<table>
<thead>
<tr>
<th>GENERAL INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Integrator (S.I.) Name</td>
</tr>
<tr>
<td>Corporate Office</td>
</tr>
<tr>
<td>Address</td>
</tr>
<tr>
<td>Web</td>
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<td>E-mail</td>
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<tr>
<td>Telephone</td>
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<td>Fax</td>
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</table>

<table>
<thead>
<tr>
<th>COMMERCIAL INFORMATION</th>
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</thead>
<tbody>
<tr>
<td>PAN</td>
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<tr>
<td>Service Tax</td>
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<tr>
<td>VAT/CST No</td>
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<tr>
<td>Certificate of Incorporation</td>
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<tr>
<td>MoA and AoA</td>
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<tr>
<td>Latest Trade License</td>
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<tr>
<td>JV Agreement</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>PRIMARY SYSTEM INTEGRATOR (S.I.) CONTACT OR SALES REPRESENTATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name &amp; Title</td>
</tr>
<tr>
<td>Address</td>
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<td>Email</td>
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<td>Telephone</td>
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<td>Fax</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>PERSON(S) AUTHORIZED TO NEGOTIATE AND MAKE COMMITMENTS FOR SYSTEM INTEGRATOR (S.I.)</th>
</tr>
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<tbody>
<tr>
<td>Name &amp; Title</td>
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<td>Address</td>
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<table>
<thead>
<tr>
<th>DESIGNATED TECHNICAL CONTACT FOR RESPONSE CLARIFICATION AND QUESTIONS</th>
</tr>
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<tbody>
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</table>
Optionally, provide any additional background information about your company that the EMMRC KOLKATA would find useful in its deliberations.

### B. CUSTOMER REFERENCE

Provide at least THREE references with compatible network size and complexity for whom you have provided similar implementation and/or integration services. Please use this format for your response.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SYSTEM INTEGRATOR (S.I) RESPONSE</th>
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</thead>
<tbody>
<tr>
<td><strong>REFERENCE 1</strong></td>
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<tr>
<td>Company / Institution Name</td>
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<tr>
<td>Address</td>
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<tr>
<td>Scope of Project</td>
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<tr>
<td>Dates of Engagement</td>
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<tr>
<td>Contact Name and Title</td>
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<td>Telephone</td>
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<tr>
<td><strong>REFERENCE 2</strong></td>
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<td>Company / Institution Name</td>
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<td>Address</td>
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<td>Scope of Project</td>
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<td>Telephone</td>
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<tr>
<td><strong>REFERENCE 3</strong></td>
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<td>Company / Institution Name</td>
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<td>Address</td>
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<td>Contact Name and Title</td>
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</table>
C. CHECK LIST

Please ensure that following documents have been enclosed along with the Bid Proposal.

1. Proof of payment for fee of Rs. 5,000/- (Rupees five thousand only) for bid documents downloaded from site to be paid through RTGS/NEFT.

2. Earnest Money Deposit of Rs. 10,00,000/- (Rupees Ten Lakhs only) to be paid through RTGS/NEFT.

3. Documentary proof along with the completion certificate of the project executed successfully related to installation & commissioning of setup within the qualifying period i.e. three previous financial years (even though the work might have commenced before the qualifying period) at least one similar single work for a minimum value of 35% of the published estimated value of the work. Total Contract Amount received by the Bidder(s) during three previous financial years should be a minimum 150% of the published estimated value of the work.

4. The bidder should be registered under Indian Company Act 1956. A copy of registration should be submitted [A copy of the Incorporation Certificate of the Lead Partner & JV Partner, if applicable. should be enclosed]

5. The copy of PAN No., Service Tax No., CST/VAT No., MoA and AoA, Latest Trade License & JV Agreement, if applicable should be enclosed.

6. Letter of Authorization from OEM authorizing the bidder to quote the product ensuring installation / configuration and after sales support after project execution.

7. A point by point full compliance statement in respect to all parameters related to the concerned equipment/items from the respective principle manufacturers (OEM) should be submitted in the prescribed format given at Table 1.

8. A separate point by point compliance statement duly signed and stamped by bidder in respect to all points laid down in the specifications for all the equipment/item(s) must be submitted.


10. List with details (including name of client /channel) of similar work executed in India and abroad, products / services used and approximate value of the project in chronological order.
11. Particulars of the partners or related / inter-linked company in India for sales, installation / commissioning and support (for principals/OEM) OR, principals with whom you have a tie-up (in the case of integrators).

12. Separate list of items recommended by bidders, which in the opinion of the bidder have been left out.

13. Detailed bill of material duly filled in giving the offered material / equipment etc. strictly as per the bill of material included in the tender document.

14. Full technical details of the offered equipment.

15. BOQ must be strictly quoted as per serial No./Heading/Subheading given in bid document.

16. Schematic work flow diagram and Block Diagram must be provided.

17. Duly signed and stamped compliance statement, item-wise, with respect to technical specifications highlighting deviation, if any.

18. No cost details are to be included in the Technical Bid under any circumstances. The signed and stamped copies of the Technical Bid containing requisite documents are to be sealed in separate envelope and marked appropriately.

19. The Financial Bid shall contain exactly similar offered bill of material included in the technical bid but with full details on the rates, total cost. Only one copy of Financial Bid duly signed and stamped is to be sealed in a separate envelope and marked accordingly.

20. Both Technical & Financial Bids in respective sealed envelopes are to be further sealed in an envelope and should be superscripted at the top as:

   “Bid for SITC of HDTV Production Facility, Ingest/Playout Automation, Media Asset Management and Archive for EMMRC Kolkata”, against Ref No. EMMRC/SXC/AJAYNAGAR/SITC/2016 dated 09.05.2016, so as to reach us on or before 3.00 pm on 03.06.2016.

21. All pages of the Bid documents are to be signed by Authorized Person(s) of the Bidder.

22. The tender has to be addressed to:

   The Director  
   Educational Multimedia Research Centre  
   St. Xavier’s College (Autonomous)  
   50-Circus Avenue, Kolkata-700 017  
   West Bengal, INDIA

   And the delivery of the same must be ensured at this office before 3.00 pm on 03.06.2016.