

INTEGRATED HEADQUARTERS OF MINISTRY OF DEFENCE (NAVY)
DIRECTORATE OF ELECTRICAL ENGINEERING (DEE)

INVITATION FOR EXPRESSION OF INTEREST (EoI)

INDIGENOUS DESIGN, DEVELOPMENT AND
MANUFACTURE OF DIGITAL BEAMFORMING BASED SATELLITE TV

File No. EE/05/1960/Make

12 Feb 19

Reference : Defence Procurement Procedure - Chapter III A of DPP 16

Appendices & Annexure:

- Appendix A :** Indigenous Content Aspect
- Appendix B :** IPR of Government
- Appendix C :** Association of Persons Agreement
- Appendix D :** Evaluation of Financial and Commercial Criteria
- Appendix E :** Evaluation of Technical Capability Criteria
- Appendix F :** Information Performa/ Additional Information
- Appendix G :** Certificate.
- Annexure H :** PSQRs of DB²ST

Introduction

1. Indian Navy has been focusing on developing indigenous platforms, equipment and systems towards achieving enhanced self-reliance. This Expression of Interest (EoI) invites responses from eligible Indian Companies for **Indigenous Design, Development and Manufacture of 'Digital Beamforming Based Satellite TV (DB²ST)' system for Indian Naval Ships** here and after referred to as 'Project DB²ST' for Indian Navy. The DB²ST system will be developed under 'Make II' sub category of the 'Make' category. Project DB²ST is envisaged to engage in-house industries to participate in Make in India Initiative and thereby decreasing the dependence of Indian Navy on foreign firms for important subsystems which will go a long way in enhancing self reliance capabilities to the Navy. The Ministry of Defence (MoD), Govt of India, shall own Project DB²ST. The information regarding the project will be shared strictly on 'Need to Know' basis. The prototype (**Qty 01**) development of DB²ST has been approved as 'Make II' category project. Subsequent procurement will be under the '**Buy (Indian-IDDm)**' category. This project is reserved for MSMEs as stipulated in Para 7 of Chapter III-A of DPP 2016. In case no MSME responds, then the proposal of other firms will be considered for evaluation.

Objective

2. The objective of this EoI is to seek responses from eligible Indian industries and to shortlist potential companies. Responses to EoI will be evaluated as per the assessment criteria given in the EoI. Project shall be progressed even if only one EoI respondent is found meeting eligibility criteria.

Layout

3. The EoI has been covered under the following parts:-

- (a) Part I - General Information
- (b) Part II - Technical Requirements
- (c) Part III - Critical Technology Areas
- (d) Part IV - Guidelines for formation of Association of Persons (AoP) i.e. consortium
- (e) Part V - Eligibility Criteria
- (f) Part VI - Assessment Parameters
- (g) Part VII - Evaluation Criteria of Assessment Parameters
- (h) Part VIII - Documents to be submitted by EOI Respondents
- (j) Part IX - Queries and Clarifications
- (k) Part X - Miscellaneous

PART I: GENERAL INFORMATION

4. The project on indigenous design, development and manufacture of DB²ST has been approved under the 'Make II' category for prototype development of (Qty 01) and for subsequent procurement under the 'Buy (Indian-IDDMM)' category as per DPP 2016. Details of the stages involved in the development process are enumerated in Chapter III-A of DPP 2016. The progress of the project will be monitored by the Project Facilitation Team (PFT) of Indian Navy/ MoD constituted for the purpose. PFT will act as interface between Indian Navy and Industry during the design and development stage of the project. **No reimbursement of development cost is permissible under Make II scheme.**

5. **Eligibility to Respond to an EoI as Individual Entity or as Consortium.** The EoI can be responded to, at the option of an EoI recipient, by any of the following entities:-

- (a) Individual EoI Recipient; or

(b) **Association of Persons (AoP)** i.e. Consortium of Indian Companies consisting of two or more than two EOI recipients undertaking joint and several liability and an EOI Recipient designated as the lead member through a '**Association of Persons (AoP) Agreement**'. All EOI Recipients as the members of the AoP will sign the contract with MoD. This Agreement will be applicable for the entire project including but not limited to Production Phase and Lifecycle/Technology Refresh Contract placed by MoD, if any.

6. **Indigenous Content.** In accordance with Para 6 of Chapter 1 of DPP 2016 products indigenously designed, developed and manufactured (**IDDM**) should have minimum of 40% Indigenous Content (IC) on cost basis of the total contract value. Apart from overall IC as detailed above, the same percentage of IC will also be required in (a) Basic Cost of Equipment; (b) Cost of Manufacturers Recommended List of Spares (MRLS) and (c) Cost of Special Maintenance Tools (SMT) and Special Test Equipment (STE), taken together at all stages, including FET stage. For IC on cost basis, vendor should ensure compliance as detailed in **Appendix A**.

7. **Intellectual Property Rights (IPRs).** Intellectual Property Rights of Government in "Make" projects is placed at **Appendix B**. Development Agency/ Agencies (DA/ DAs) shall retain title or ownership and all other rights in intellectual property generated during the development of project. However, the Government shall have March-in rights under which the Government can require the contractor to grant, or may itself grant license for, inter alia, the following reasons:-

(a) Where health and safety requirements so require the Government to act in public interest.

(b) For National Security Reasons.

(c) To meet requirements for public use not reasonably satisfied by the contractor.

(d) For failure of the contractor to substantially manufacture the products embodying the subject invention in India

or

(e) For failure of the contractor to comply with any of the requirements laid down under these guidelines.

8. **Foreign Collaboration.** If the DA(s) collaborate(s) with a foreign firm as a technology provider in a certain technology area for the project, the nature of such collaboration and the technology areas being transferred must be clearly stated in the response. The contribution of the Indian industry in acquiring, developing and indigenising critical technologies shall be one of the key criteria in assessment of various proposals.

9. No component or any sub system of DB²ST shall be subjected to any type of inspection or audit by any Foreign Govt or Agency without prior approval of MoD, Govt of India.

10. A trusted supply chain that will include the engineering support requirements would be established for all components of DB²ST. All documents related to the DB²ST project are liable to be audited by Indian Govt or its nominated agency.

11. Detailed information about blacklisting of the company/ consortium partners and foreign technology partner by any Govt Agency in India/ any other country would be provided as part of the response. Companies currently blacklisted by any Indian Govt Agency are ineligible for participation. Any such information not disclosed but revealed at a later stage would render the Company/ Consortium ineligible for further participation.

12. **Time frames and critical activities.** The important time frames and critical activities for the Project DB²ST is as follows:-

Ser	Activity	Time in weeks from submission of EoI (T ₀)
(a)	EoI Response submission	T ₀
(b)	EoI Response Evaluation	05
(c)	Issue of Project Sanction Order	02
(d)	Design & Development of prototype	12-30
(e)	Conversion of PSQRs to SQRs/ Solicitation of Commercial offer	04
(f)	User trails & Staff evaluation	08 - 26

13. **Milestones of the Project**

(a) **Evaluation of EoI Responses.** EoI responses will be evaluated in accordance with assessment parameters and evaluation criteria as given in Part VI & VII of this EoI. All the shortlisted companies will be called Development Agencies (DAs). Project shall be progressed ahead even if only one EoI respondent is found meeting the eligibility criteria.

(b) **Project Sanction Order.** PFT will issue Project Sanction Order for the development of prototype with **Nil** financial implication for Indian Navy/ MoD. In case of only single vendor having offered the prototype within timelines stipulated in the Project Sanction Order, not more than two time extensions will be accorded and thereafter the case is to be progressed as resultant Single Vendor Case (SVC).

(c) **Design and Development of Prototype.** PFT will act as the primary interface between the Indian Navy and the industry during the design and development stage under Make-II subcategory projects and facilitate the following:-

- (i) Finalization of trial methodology.
- (ii) Provision of requisite professional inputs/ documentation to industry.

(iii) Providing clarifications related to functional or operational aspects of the equipment under development, as may be sought by the DAs from time to time, during the design and development of prototype.

(d) **Finalisation of SQRs.** PFT will facilitate the finalisation of SQRs based on inputs from the DAs during the development stage, prior to commencement of user trials. The SQRs of the equipment would thereafter be a part of the trial directives, and only the essential parameters as detailed in the SQRs will be tested.

(e) **Solicitation of Commercial Offers.** A commercial Request for Proposal (RFP) for 'Buy (Indian-IDDMM)' phase, will be issued to all Development Agencies for submission of their commercial offer prior to commencement of User trials.

(f) **User Trials.** User trials would be carried out by the Indian Navy to validate the performance of the system, against the parameters/ specifications approved, after the development of prototype. Indian Navy will formulate the trial directives and constitute the Trial Team. The 'trial directive' will specify the fundamental points that need to be addressed for validating the 'essential' parameters. The validation of the support system and maintainability trials, integral to and complimenting the trial programme of the defence equipment/ upgrades/ product/ system will be held simultaneously, wherever feasible. The user can recommend modification to the system for ease of handling and its maintainability.

(g) **Staff Evaluation.** Based on the User Trials, the Indian Navy would carry out a Staff Evaluation, which gives the compliance of the demonstrated performance of the equipment vis-a-vis the SQRs. On acceptance of Staff evaluation report, the SQRs shall form the basis for the 'Buy (Indian-IDDMM)' category of acquisition. If the prototype of only a single firm/individual clears the trials will be progressed as resultant single vendor.

(h) **Award of Contract.** Commercial Offers of only those vendors will be opened whose equipment has been short-listed consequent to Staff Evaluation and the L1 bidder would be determined based on the provisions of the Commercial RFP and awarded the contract for manufacture.

14. Once the prototype is successfully validated, **100** such systems shall be procured by MoD, Govt of India under Buy (IDDMM) category. Delivery of DB²ST shall be in a phased manner at the rate of **20 systems per year**.

15. Other successful development agencies that have developed the prototype successfully but have not qualified as L1, would be issued a certificate by DDP indicating that product/ system has been successfully trial evaluated.

16. **Multiple Technological Solutions.** Any other technological solution meeting the PSQR specifications without mechanical movement of the Antenna would be acceptable.

PART II: TECHNICAL REQUIREMENTS

17. **Scope of the Project.** Design, development and manufacture of Digital Beamforming Based Satellite TV System for Indian Naval Ships.
18. **Technical Requirements.** Detailed Technical requirements of the project are brought out in PSQR at Appendix H. The same are discussed briefly in succeeding paragraphs.
19. **Technology.** The DB²ST system should utilize Digital Beamforming along with Adaptive beam steering so as to ensure that no mechanical movement of the antenna is required.
20. **Polarisation.** The antenna system is required to receive signals in linear (with different skew angles) or circular polarization mode from any of the geosynchronous TV satellites around the world at Ku band. This input will be distributed to the satellite TV receivers which will provide the Audio/Video to the televisions.
21. **Frequency of Operation.** 10-14 GHz.
22. **Antenna.**
- (a) Type - Multiple Patch Array Antennas with Digital Beamforming Algorithm.
 - (b) Gain - 38.5 dBi at 12.5 GHz.
 - (c) Size (including Radome) - Less than 1m (maximum diameter) *1m (height).
 - (d) Weight (including Radome) – Less than 50 Kg
23. **Automatic Satellite Switching.** The DB²ST system should include a pre-programmed satellite library of all the satellites providing TV services in the world along with their service region. An option to switch satellites manually or automatically should be provided. In automatic switching, the DB²ST system should switch satellites as the ship moves from service region of one satellite to the other satellite. Further, the system should automatically cater for polarization of the satellite signals while switching satellites. The user should also have an option of adding more satellites and their service regions in the library.
24. **Distribution.** The system should consist of a below deck distribution network (multiswitch) capable of generating a minimum of 64 RF outputs which could be used to connect to 64 Satellite Receivers (Set Top Boxes) for provision of Satellite TV Channels. There should also be a capability of multiplexing and converting output from 8 Set Top Boxes into analog signals for distribution of Satellite TV to various locations. This would enable procurement of only 08 international licenses / subscriptions and availability of the Satellite TV at all locations.
25. **Enclosure.** The Above Deck Equipment (ADE) should be enclosed in a Radome for protection of the sensitive electronics from Rain, Spray and Icing.

26. **Motion Data.** The DB²ST system should be self sufficient and have an inbuilt GPS and Motion Sensors/ Compass (if required). However, there should be a facility to accept the Ships House Hold Data in serial format. The system should be able to operate satisfactorily under following motion conditions of the ship:-

Ser	Motion Type	Values
(a)	Roll	Upto $\pm 30^\circ$ with 8 sec period Operational
(b)	Pitch	Upto $\pm 10^\circ$ with 20 sec period- Operational
(c)	Yaw	Upto 1.75° per s^2 - Operational
(d)	Tilt	Upto 15° (permanent) in any direction - Operational
(e)	List	Upto 20° from vertical (permanent)- survival
(f)	Surge	± 0.2 g
(g)	Sway	± 0.2 g
(h)	Heave	± 4 m with 7 sec period- Operational
(j)	Trim	Max 5°
(k)	Turning Rate	30 deg/sec

27. **Environmental Conditions.** The DB²ST system should meet the following environmental conditions:-

Ser	Condition	Values
(a)	Temperature, Operating	-10° C to $+55^\circ$ C (-40° C to $+55^\circ$ C for weather deck equipment/modules)
(b)	Temperature, Storage	-20° C to $+70^\circ$ C
(c)	Relative Humidity	95% at 40° C
(d)	EMI/EMC	MIL STD 461E
(e)	Environmental Specification	JSS55555:2012 Table N1 (protected equipment) and N 2 (for exposed equipment)
(f)	Ship Speed	40 knot
(g)	Wind speed, Operational	100 knot
(h)	Wind speed, Survival	130 knot

28. **Power supply.** The system should operate on 220V, 50/60 Hz, 1 Phase AC supply. The system should also have an option on 24 V DC.

29. **Lifting Arrangement.** If the Equipment weighs more than 20 kg then it shall be provided with collar eyebolts or suitable lifting lugs. If the eyebolts cannot remain in situ after the equipment has been installed in the ship, provision is to be made for their securing arrangement on the equipment.

30. **Mounting Arrangement.** All the subsystems shall be with suitable base plate/ frame and shock mounts for fitment onboard (decks) ships.

31. **Tally Plate & Circuit Diagram Plate**. Anodized Aluminum/brass tally plates as stated below will be supplied along with the equipment as per NES 723:-

- (a) Equipment Tally
- (b) Manufacturer Tally
- (c) Circuit Diagram Tally Plate
- (d) Switching ON/ OFF procedure
- (e) Additional details as necessary

Electrical Requirements

32. **ESD Protection**. The system design will take into account adequate measures for Electro Static Discharge (ESD) control and protection at PCB/module/assembly and unit level. Each Electro Static Discharge sensitive part/assembly will be duly marked with a symbol/warning. The manufacturer will use ESD protective materials for handling, packaging storage and transport.

33. **Lightning Protection**. The system design is required to cater for lightning protection.

34. **Grounding Requirement**. All units will be grounded in such a manner so as to minimize ground loops and common ground returns for signal and power circuits and provide effective shielding for signal circuits. A separate connector pin should be provided for each wire shield unless suitable grounding is provided in external cable back shells. Interface cables should use EMI back shells to circumferentially ground the cable RF over braid to the connector.

35. **Component Ground**. All externally exposed metal parts, shield control shafts, switch handles, and connectors, bushings etc. should be grounded to chassis.

36. **Bonding**. A means of electrically bonding the to platform mounting surface or vehicle chassis should be provided as per Para 5.10 of MIL-STD- 464.

Safety Requirement

37. **System Safety**. DB²ST, including its software should be designed for minimum risk to personnel and equipment using risk reducing and risk management processes defined in MIL STD 882. The system should be designed for human engineering and personnel safety according to MIL-STD-1472. The system including its software will be assessed for hazards and functional criticality and appropriate mitigation consistent with system safety process objectives defined in MIL STD 882. The system design should preclude functional failure resulting in critical or catastrophic hazards to personnel or equipment.

38. **Electrical Safety**. DB²ST should incorporate safe electrical design and hazard mitigation using MIL-HDBK-454 as a guide. It should protect against the risk of electrical shock and other hazards under all conditions of normal use (installation, operation and maintenance). The system should protect against the risk of electric

shock and other hazards under a likely fault condition including human error. The system should prevent operators from having access to components with voltages exceeding 30 Volts RMS or DC in accordance with MIL-HDBK-454. The system should protect operators from exposure to stored energy shock as per MIL-HDBK-454. All high voltage circuits (>500 Volts) and capacitors (>30 V and >20 Joules (J)) should be terminated to ensure human safety. Non-current carrying surfaces and parts are to be at ground potential as per MIL-HDBK-454. Grounding path is to have the capacity to conduct any currents that might be imposed onto the equipment as per MIL-STD-454. Redundant equipment grounding conductors should be provided where currents exceed 3.5 mA. Electrical overload protection should be as per MIL-HDBK-454.

39. **Mechanical Safety.** DB²ST should be designed for minimum risk to personnel during installation, operation and maintenance as per MIL-STD-882 and MIL-STD-1472F. Operator accessible parts should comply with temperature exposure limits as per MIL-STD-1472F. The system should meet design requirements as per MIL-STD-1472F so that it can be removed, handled and lifted safely. Equipment power switches should be protected so as to prevent inadvertent actuation as per MIL-STD-1472F.

40. **Standardisation.** Each broad class of equipment and assembly is to be **standardized** to the extent feasible. All applicable military and other standards are to be used in design of DB²ST.

PART III: CRITICAL TECHNOLOGY AREAS

19. The capability assessment of the Development Agencies DAs will largely depend on their ability to design and develop and implement critical technologies in the field of satellite technology and antenna design for defence, aerospace, research and industrial applications. It is imperative that the project attains a higher technological threshold and minimises the dependence on foreign technology partners. **The contribution of the Indian industry in acquiring and developing technologies in critical areas shall be a key criterion in assessment of the proposal.**

20. The assessment of critical technologies for the Project DB²ST offered by the DA(s)/Consortium must be supported with all Rights and Licenses (IPR) as mentioned at **Appendix B.**

**PART IV: GUIDELINES FOR FORMATION OF
ASSOCIATION OF PERSONS (AoP) OR CONSORTIUM**

21. Where an AoP/Group of EoI recipients ("Consortium") comes together to implement the project in accordance with the mechanisms outlined under Para 6 (b) of Chapter III (Defence Procurement for Make Category) of DPP 16 there must exist, at the time of responding to EoI, a '**Association of Persons (AoP) Agreement**' to form an AoP i.e. Consortium to execute and implement the complete "Make" project. This agreement will be applicable for the entire project including but not limited to Production Phase and Lifecycle/Technology Refresh Contract placed by MoD, if any.

22. Where the EoI Respondent is an AoP/Consortium, it shall, while responding to the EoI, comply with the following additional requirements:-

- (a) Number of members in a consortium shall not exceed 05 (five).
- (b) The EoI Response should contain requisite information for each member of the AoP/Consortium.
- (c) Members of the AoP/Consortium shall nominate one member as the Lead Member (the "Lead Member").
- (d) The EoI Response should include a description of the roles and responsibilities of individual members, particularly with reference to production arrangements in India and R&D activities for which IPRs will vest with MoD as per **Appendix B**.
- (e) An individual EoI respondent cannot at the same time be member of an AoP/Consortium responding to the EoI. Further, a member of a particular responding AoP/Consortium cannot be member of any other Consortium responding to the EoI.
- (f) Members of the AoP/Consortium shall enter into a legally binding Agreement, substantially in the form specified at **Appendix C** for the purpose of responding to the EoI. The Agreement to be submitted along with the EoI Response, shall, *inter alia*:-
 - (i) Form the basis for the AoP members to enter into a contract and perform all the obligations of the Development Agency in terms of the contract, in case a development contract to undertake the "Make" Project is awarded to the Consortium;
 - (ii) Clearly outline the proposed roles and responsibilities, if any, of each member;
 - (iii) Include a statement to the effect that members of the AoP/Consortium shall be liable jointly and severally for all obligations of the development agency in relation to the "Make" Project as required under these Guidelines.

Change in Membership of a Consortium

23. Change in the composition of an AoP/Consortium will not be permitted after the submission of EoI responses until the award of a Development Contract for Prototype Development.
24. Where the EoI Respondent is an AoP/Consortium, change in the composition of a Consortium AoP may be permitted by the Authority after the award of a development contract only where:-
- (a) The Lead Member continues to be the Lead Member of the AoP/Consortium and shall not be changed under any circumstances;
 - (b) The non-lead substitute member(s) shall continue to meet eligibility criteria for membership of an AoP/ Consortium;
 - (c) The new Member(s) expressly adopt(s) the EoI Response and the Development Contract already made on behalf of the AoP/Consortium as if it/they were a party to it originally and is/are not a Member of any other Consortium short-listed for the "Make" Project, while undertake the joint and several or joint liabilities (as applicable) of the member it/they are replacing.
25. Any change in the composition of an AoP/Consortium shall require prior approval of MoD/ DDP.
26. The approval to such changes shall be at the sole discretion of MoD/ DDP and must be approved by them in writing for the approval to take effect.
27. The modified AoP/Consortium/Partners shall submit a revised 'Association of Persons Agreement'.

Miscellaneous Provisions

28. Any violation of any of the guidelines by any company shall render it liable to initiation of proceedings for suspension and/or banning of business dealings as per the Guidelines for Putting on Hold, Suspension, Debarment and any other penal action on the Entities dealing with the Ministry of Defence, as promulgated by Government from time to time, will be applicable on procurement process and bidders.

PART V: ELIGIBILITY CRITERIA

29. The project DB²ST is earmarked for MSMEs. In case no MSME expresses interest, MoD may open the project for other participants in accordance with Para 7 of chapter III-A of DPP 2016.

30. Indian entity satisfying all of the following criteria shall be considered as eligible 'Indian Vendor' for issue of EoI by the PFT:-

(a) Public limited company, private limited company, partnership firms, limited liability partnership, one Person Company, sole proprietorship registered as per applicable Indian laws. In addition, such entity shall also possess or be in the process of acquiring a license as per DIPP's licensing policy.

(b) The entity has to be owned and controlled by resident Indian citizens; entity with excess of 49% foreign investment will not be eligible to take part in Make category of acquisition.

(c) Start-ups recognised by the Department of Industrial Policy & Promotion (DIPP) and registered on start-up India portal under Aeronautics / Aerospace and Defence domains of Engineering or Manufacturing category.

31. This EoI is being published on MoD/ DDP website inviting Company(ies) to participate in the "Make-II" Project. The EoI is also issued to the DA(s) who have indicated willingness to participate in the Development of DB²ST since hosting of the requirements on 'www.makeinindiadefence.com' and/ or firms which participated in Feasibility Study.

32. **Vendors are required to be compliant to Chapter III-A of DPP 2016.**

PART VI: ASSESSMENT PARAMETERS

33. The assessment of the EoI responses would be based on the following Evaluation Criteria, details of which are elaborated in the succeeding paragraphs:-

(a) Financial and Commercial Criteria.

(b) Technical Capability Criteria.

34. **Financial and Commercial Assessment Criteria.** The Eol respondents would furnish their response to the Financial and Commercial Criteria as per **Appendix D**. The company shall possess a license or be in the process of acquiring a license as per DIPP's licensing policy under Ministry of Commerce and Industry. The Eol respondents would submit their responses and furnish necessary authenticated and verifiable documents in support of the claims. **In case Eol respondents are a Consortium, they are required to execute the AoP Agreement as per Appendix C. Failure to do so will result in treating the offer as non-responsive and will be summarily rejected. Further, in their offer letter, Consortium are required to mention details of Consortium members, their respective share-holding in the AoP and it must be signed by authorised signatories of all members.**

35. **Technical Capability Criteria.** The project DB²ST is a system which will require sound knowledge of design, development and manufacture of electronic systems, its integration and quality control. The DAs should have had experience in research and development of electronic systems for the Indian Navy/Army/ Air Force. The DAs should have adequate expertise in the field of 'Digital Beamforming' or other equivalent technologies. The DAs should have a good understanding of Project Management, required for DB²ST. Further, the DAs should have adequate manpower/ infrastructure so as to provide complete life cycle support for the equipment. The contribution of the DA in acquiring and developing technologies in critical areas shall be an important criterion in assessment of the proposal. The respondents to this Eol are required to furnish information about their technical capabilities as per **Appendix E**.

PART VII: EVALUATION CRITERIA OF ASSESSMENT PARAMETERS

36. **Evaluation Criteria.** The response to this Eol will be evaluated based on the assessment parameters given at **Appendices D and E** to identify Companies/ Consortia with proven Commercial and Technical strengths and capabilities as follows:-

- (a) Financial and Commercial Criteria
- (b) Technical Capability Criteria.

37. The assessment would be done based on following parameters:-

(a) **Financial and Commercial Criteria for All Entities Other Than Start-ups.**

- (i) Average annual turnover of the firm for the last three financial years ending 31st Mar of the previous financial year should not be less than Rs 3.245 Cr.
- (ii) Net worth of all the entities ending 31st March of the previous financial year should be "Positive".

(b) **Technical Capability Criteria For All Entities.** The company should demonstrate domain expertise in the fields of Satellite communication and Antenna technology with ability to design, develop and implement critical technologies for Defence, Government organisations, Research and Industrial applications by submitting supporting supply orders / work orders executed by the company. The company should possess the following:-

- (i) Qualified team, working in the areas of Satellite Communication and Antenna design.
- (ii) Past experience & deliveries pertaining to Satellite Communication and Antenna design.
- (iii) In house R&D facility.
- (iv) Adequate supply/repair of Satcom equipment/ Antennas in the past three years.
- (v) Infrastructure with availability of Test Instruments to support repairs and maintenance.
- (vi) Availability/Access to Clean room facilities.

38. MoD, Govt of India reserves the right to disqualify a respondent/ consortium if he/ they fail to comply with specific criteria at any stage of the evaluation process by the PFT. **No amendment/ change in response to EoI will be accepted under any circumstances once the EoI response is submitted.**

Note1. Details regarding proposed expenditure/ establishment of facilities/ lab etc. are liable to be included in the contract in case the Company/ Consortium get shortlisted for development of DB²ST.

Note 2. Company/ Consortium giving False/ Misleading information will be barred from participation in the project DB²ST.

PART VIII: DOCUMENTS TO BE SUBMITTED BY EOI RESPONDENTS

39. Following documents are required to be submitted by EOI respondents:-

- (a) Annexure I of Appendix A
- (b) Appendix C, if applicable
- (c) Appendices D and E
- (d) Information Performa as per Appendix F
- (e) Certificate as per Appendix G
- (f) Documents in proof of Evaluation Criteria (ie Financial and Commercial and Technical capability)

40. The EOI respondents shall submit three (03) copies of response to EOI, clearly marking one copy as 'Original Copy' and the remaining two as 'Copy No 2 & 3'. The respondents are also required to submit a soft copy of the response to EOI in a CD/ DVD. In the event of any discrepancy between the content in copies of documents submitted, the contents in the 'original copy' shall govern/ prevail. Each page of the response will bear the signatures of the authorized signatory of the Company/ Lead Member in a Consortium.

41. **Guidelines for Submitting EOI Responses.**

(a) The responses should be submitted strictly as per the formats given in respective appendices. Should a Vendor/ Consortium need to mention any other information, a separate column may be added as the last column only.

(b) All response appendices should be submitted in a single file/ folder. Supporting documents/ additional reference should be submitted in a separate folder with proper reference mentioned against each parameter/ sub parameter in respective appendices.

(c) Any supporting document/ evidence without any reference to specific parameter of criteria will not form part of the assessment.

42. The envelopes shall be addresses as under:-

The Chairman, PFT
Project DB²ST
Directorate of Electrical Engineering (DEE)
IHQ MoD (Navy), Room 403
DII Wing, Sena Bhawan
New Delhi – 110 011

TeleNo : 011-23011101
Fax No : 011-23011212
Email: dee@navy.gov.in

43. The response to this EOI must be submitted by **1400 hrs** on 26 Mar 19 at the address mentioned above.

44. A Company/ Consortium can submit only one response to this EOI. If a company submits more than one response, then all responses of the Company will be rejected and the Company/ Consortium, to which the Company belongs, would not be assessed further.

45. MoD, Govt of India at its discretion can extend this deadline for the submission of responses to EOI and the same shall be notified in writing.

PART IX: QUERIES AND CLARIFICATIONS

46. Following aspects will govern the procedure for queries and clarifications:-

(a) **Companies/ Consortium may submit written queries/ clarification/ amplifications on specific issues by 14 Mar 19.** Consolidation and examination of the queries received will be carried out by the PFT and clarification will be given to all the industries during the pre-response meeting.

(b) **Pre-Response Meeting.** A pre-response meeting is scheduled on 19 Mar 19 at 1530h hrs at Directorate of Electrical Engineering (DEE), IHQ MoD (Navy), DII Wing, Sena Bhawan, New Delhi – 110 011 to clarify the issue/ queries raised to facilitate submission of response.

(c) If deemed necessary, a written reply may be given to all respondents after the meeting.


PART X: MISCELLANEOUS

47. This EoI is being invited with no financial commitment on part of the Govt. of India/ MoD. Govt of India reserves the right to withdraw or change or vary any part thereof at any stage. MoD, Govt of India also reserves the right to disqualify any company should it be so necessary at any stage on grounds of national security.

48. Respondent/ consortium would be disqualified if they make false, incorrect, or misleading claims in their response to this EoI. A certificate as per the format at **Appendix G** would be furnished as part of the response, including respective consortium partners, where applicable.

Note. The above guidelines are to be read in conjunction with the guidelines under Chapter III-A of DPP 2016.

91.2019 22


(Vivek Sharma)
Captain
Capt (EE)
Chairman PFT

Enclosure:- Appendix 'A' to 'G'

Distribution:- Shortlisted vendors & hosted in MoD/DDP website

Appendix A

(Refers to Part I Para 6)

INDIGENOUS CONTENT ASPECTS

Definitions

1. "Indigenous Content"(IC) for an equipment or an item shall be arrived at by excluding from the total cost of that equipment/ item the following elements at all stages (tiers) of manufacturing/production/assembly:

(a) Direct costs (including freight/transportation and insurance) of all materials, components, sub-assemblies, assemblies and products imported into India.

(b) Direct and Indirect costs of all services obtained from non-Indian entities/citizens.

(c) All license fees, royalties, technical fees and other fees/payments of this nature paid out of India, by whatever term/phrase referred to in contracts/agreements made by vendors/sub-vendors.

(d) Taxes, duties, cesses, octroi and any other statutory levies in India of this nature.

2. Further, "on cost" basis for 'Buy (Indian IDDM)' cases, shall imply the IC is required as specified under Para 5 of Chapter III-A of DPP 2016 read with additional specific requirements in this regard, if any, mentioned in the EO/ RFP.

Reporting Requirements

3. IC as defined in Para 1 and 2 above shall be mandatorily reported by all stages (tiers) of manufacturing/ production/ assembly to their higher stages (tiers). All stages (tiers) are required to aggregate indigenous content based on certifications and inputs from lower tiers, as well as on the basis of their own procurement actions and manufacturing activities undertaken. The final aggregation of IC shall be undertaken by the prime (main) contractor with whom an acquisition contract is signed by the Ministry/SHQ.

4. All contracts, sub-contracts, agreements and MoUs made by prime (main) contractors (and their lower tier suppliers/vendors) with their business partners/suppliers, insofar as these contracts, agreements or MoUs relate to the main acquisition contract, shall mandatorily incorporate the definition and reporting requirements for IC in terms of Para 3. Similarly, these business partners/suppliers shall sequentially incorporate these definitions and reporting requirements with their next levels of business partners/suppliers and so on, till the lowest tier in the manufacturing/production/assembly chain.

Audit

5. The Ministry of Defence can exercise its right to conduct an audit of all certifications and costs relevant to IC at all or any stages (tiers) of manufacturing/production/assembly, starting from the prime (main) contractor downwards. The audit(s) could be conducted by the Ministry itself and/or by an agency/institution/officer(s) nominated by the Ministry, as may be decided by the Ministry.

6. All contracts, sub-contracts, agreements and MoUs made by prime (main) contractors (and their lower tier suppliers/vendors) with their business partners/suppliers, insofar as these contracts, agreements or MoUs relate to the main acquisition contract, shall mandatorily incorporate the right of Ministry of Defence to conduct an audit in terms of Para 5. Similarly, these business partners/suppliers shall sequentially incorporate these definitions and reporting requirements with their next levels of business partners/suppliers and so on, till the lowest tier in the manufacturing/production/assembly chain.

Certification

7. All relevant deliveries made under contract shall be accompanied by a certificate of IC issued by the Chief Financial Officer (CFO). All final deliveries under contract shall be accompanied, in addition to the certificate issued by the CFO of the prime (main) contractor as aforesaid, by its Company Auditor's certificate. An Indigenisation Plan for Buy (Indian-IDD), will be required to be submitted by the vendor to meet the requirement of IC as specified in Para 5 of Chapter III-A of DPP 2016. Further, the equipment offered for trial shall be accompanied with a certificate of IC issued by the CFO of the prime (main) bidder. The format for certification of IC by the CFO/Company Auditor shall be as per **Annexure to this Appendix**.

8. Final payments shall be released only after the submission of a certificate of IC furnished by the CFO of the prime (main) contractor and a certificate from its Company Auditor, in addition to any other requirements specified elsewhere in the DPP or in the contract.

9. Deliveries at each stage of contract must conform to IC requirements and categorization relevant to that particular stage. The Performance-cum-Warranty Bank Guarantee shall not be released before completing an audit of the IC in all relevant deliveries by the Ministry or its nominated agency/institution/officer(s), if such an audit is ordered.

Withholding of Payments and Imposition of Penalties

10. In case a particular delivery is deficient in achieving mandatory IC for that stage, an amount of 5% of the cost of that stage delivery shall be withheld from payment for that stage. However, if the vendor achieves the mandatory IC on a cumulative basis by the next stage of delivery, the amount so withheld shall be released to the vendor without interest. All such payments withheld above shall be forfeited upon failure to achieve required IC by the stage of last delivery of the relevant product. In addition,

the Performance-cum-Warranty Bank Guarantee shall also be forfeited upon failure to discharge IC obligations as per contract.

11. In case mandatory IC is not achieved by a vendor and/or if a false certificate is furnished by a vendor/sub-vendor, the Ministry can initiate proceedings for banning or suspension of business dealings with the erring Indian vendor/sub-vendor and its allied firms for all future contracts for a period upto 5 years. This right can be exercised by the Ministry at any point of time; and initiation of banning or suspension proceedings, if ordered, shall be in addition to any other action that may be taken/ordered by the Ministry against the erring vendor/sub-vendor under any law(s) in force.

Miscellaneous

12. In the event of non-incorporation of the definitions and/or audit requirements laid down under Para 1 to 6 in contracts or agreements vendors with next tier at any stage (tier) of manufacturing/production/assembly, it shall be presumed that items/services provided by that stage/tier to the next (tier) have no IC for the purposes of the DPP. Similarly, in the event of non-certification of IC at any stage (tier) as required herein, it shall be presumed that items/services provided by that stage/tier to the next stage (tier) have no IC for the purposes of the DPP. In such cases, the Ministry of Defence can take any of the steps under Para 7 to 11 above against erring vendors/sub-vendors.

Annexure to Appendix A

FORMAT FOR CERTIFICATION OF INDIGENOUS CONTENT

This is to certify that we, _____ (Name of Prime/Main Vendor) have achieved/are offering the following IC in the accompanying delivery under contract/equipment being offered for trials/prototype, as defined under the Defence Procurement Procedure and as required under the RFP/Contract (tick whichever is applicable) No. _____ dated _____.

Description of Supplies and Indigenous Content Therein:

Sl.No.	Description of Supplies	IC achieved/ being offered	IC required to be achieved/ offered as per RFP/Contract
1			
2			

Signed by:

1. CFO

----- (Name of Prime/Main Vendor)

2. Statutory Auditor (if required under Appendix A)

----- (Name of Prime/Main Vendor)

INTELLECTUAL PROPERTY RIGHTS OF GOVERNMENT
IN “MAKE” PROJECTS

Guiding Principles

1. The Government shall retain only a license in the Intellectual Property being generated under contract; and the contractor retains title or ownership and all other rights in intellectual property that are not granted to the Government, subject to conditions prescribed herein.
2. During the development of prototype, if any technology/product is developed, which the Government considers to be sensitive or classified and needs to be restricted for use in other purposes or for export, the Government through IPMT or any other expert or body may identify such technology/product and shall retain the full ownership of IPRs in respect of such technology/product.
3. All technology licensing is divided up between two mutually exclusive categories of deliverables: (a) Technical Data (TD)¹ and (b) Computer Software (CS)². The Government shall also have certain rights to subject inventions and patents generated under the “Make” contract.
4. The EoI shall contain details of (a) the delivery requirements, storage formats and storage medium; and (b) the associated data rights, in all technologies required to be developed or delivered under the “Make” contract. Officials connected with award of “Make” projects shall ensure that all such delivery requirements are clearly stated in the EoI and the “Make” contract signed, if any, including delivery and form in which source code is required as a contract deliverable.
5. The Government’s standard license rights in (a) subject inventions and associated data; and (b) all other data generated under the “Make” contract, including technical data and computer software whether associated with such subject inventions or otherwise, shall be ‘Government-Purpose Rights’ (GPR). In respect of subject inventions, the Government shall hold a non-exclusive, non-transferable, irrevocable,

¹“Technical data” means recoded information, regardless of the form or method of the recording, of a scientific or technical nature (including computer software documentation). The term does not include computer software or data incidental to contract administration, such as financial and/or management information.

²(a)“Computer software” means computer programs, source code, source code listings, object code listings, design details algorithms, processes, flow charts, formulae and related material that would enable the software to be reproduced, recreated or recompiled. Computer software does not include computer data bases or computer software documentation. (b) “Computer program” means a set of instructions, rules, or routines recorded in a form that is capable of causing a computer to perform a specific operation or series of operations. (c) “Computer software documentation” means owner’s manuals, user’s manuals, installation instructions, operating instructions, and other similar items, regardless of storage medium, that explain the capabilities of the computer software or provide instructions for using the software. (d) “Computer data base” means a collection of data recorded in a form capable of being processed by a computer. The term does not include computer software.

paid up (royalty-free) license to practice, or have practiced for on its behalf, the subject invention throughout the world.

6. These guiding principles shall apply at both the prime and subcontract levels; i.e., the prime DA(s) shall incorporate the rights of the Government as prescribed in this Annexure in all their subsequent sub-contracts and agreements insofar as technology development under "Make" projects is concerned.

Government Rights

7. The Government shall have "Government-Purpose Rights" and "Unlimited Rights" as explained below:-

8. For all subject inventions³ under the "Make" Contract, including technical data and computer software associated with such subject inventions, the Government shall hold "Government-Purpose" Rights (GPRs), in that it shall hold a non-exclusive, non-transferable, irrevocable, paid up (royalty-free) license to practice, or have practiced for on its behalf, the subject invention throughout the world. These GPRs shall automatically convert to "Unlimited Rights" as defined under this section upon the expiry of ten years.

9. For the purpose of all technical data and computer software, whether related to subject inventions or otherwise, GPRs shall imply the right to use such technical data and computer software within the Government without restriction and the right to authorize any other entity for any government purpose including re-procurement. More specifically, "Government-Purpose" rights includes the rights to:-

(a) Use, modify, reproduce, release, perform, display, or disclose technical data within the Government without restriction; and

(b) Release or disclose technical data outside the Government and authorise persons to whom release or disclosure has been made to use, modify, reproduce, release, perform, display, or disclose that data for Government purposes.

(c) Form, Fit and Function data; and Manuals or instructional and training materials for installation, operation, or routine maintenance and repair;

(d) Computer software documentation required to be delivered under the "Make" contract;

(e) Corrections or changes to computer software or computer software documentation furnished to the contractor by the Government;

(f) Computer software or computer software documentation that is otherwise publicly available or has been released or disclosed by the contractor or subcontractor without restrictions on further use, release or disclosure other

³"Subject Invention" implies any invention of the contractor conceived or first actually reduced to practice in the performance of work under a Government Contract. "Invention" implies any invention or discovery that is or may be patentable or otherwise protectable under the Patent Laws in force in India.

than a release or disclosure resulting from the sale, transfer, or other assignment of interest in the software to another party or the sale or transfer of some or all of a business entity or its assets to another party;

10. For the purposes of these guidelines, "Government Purpose" means an activity in which the Government of India is a party, including cooperative agreements with international or multinational Defence organizations, or sales or transfers by the Government of India to foreign Government or international organizations. Government purposes include competitive procurement, but do not include the rights to use, modify, reproduce, release, perform, display, or disclose technical data for commercial purposes or authorize others to do so.

11. In addition to standard GPRs, Government rights in computer software to be delivered under contract shall also include the right to:-

- (a) Use of a computer program with government computer(s);
- (b) Transfer to another Government computer;
- (c) Make copies of computer software for safekeeping; backup or modification purposes;
- (d) Modify computer software;
- (e) Disclose to service contractors;
- (f) Permit service contractors to use computer software to diagnose/correct deficiencies, or to modify to respond to urgent or tactical situations; and
- (g) Disclose to contractors or any other third-parties for proposes of emergency repair and overhaul.

March-In Rights

12. The Government shall have "March-In" rights for all items covered under its "Government-Purpose Rights". "March-In" Rights shall include the right to work the patent either by itself, or by another entity on behalf of the Government, in case the contractor fails to work the patent on its own within a specified and reasonable period of time.

13. Under its march-in rights, the Government can require the contractor to grant, or may itself grant license for, inter alia, the following reasons:-

- (a) The contractor fails to work the patent towards practical application within a reasonable time; or
- (b) Where health and safety requirements so require the Government to act in public interest;
- (c) For National Security Reasons;

- (d) To meet requirements for public use not reasonably satisfied by the contractor;
- (e) For failure of the contractor to substantially manufacture the products embodying the subject invention in India; or
- (f) For failure of the contractor to comply with any of the requirements laid down under these guidelines.

Miscellaneous

14. The contractor is required to have a timely and efficient disclosure system in place for reporting of intellectual property generation under the "Make" contract to the Ministry of Defence. Failure to disclose in timely manner, or failure on part of the contractor to invoke his/her default right of ownership, shall imply that all IPRs shall ab-initio vest in the Government of India. The contractor may elect to retain title of any invention made in the performance of work under a contract. If the contractor does not elect to retain title, the title shall ab-initio vest in the Government as stated above and the contractor shall only be entitled to a license on such terms and conditions that the Government may deem it fit. Such license to the contractor shall usually be (a) revocable, non-exclusive and royalty-free; (b) extend to its domestic subsidiaries and affiliates; and (c) include the right to sublicense; but (d) shall not be transferable without prior approval of the Government.

15. The contractor shall also be required to submit periodic reports above commercialization and manufacturing activities undertaken for products embodying the subject invention under "Make" contracts.

16. The Government's IPRs shall flow down from the prime contractor to all sub-contractors at all tiers; that is, every sub-contractor will have the same obligations vis-à-vis the Government as applicable to the prime contractor under the main procurement contract. To this end, the subcontractors shall have limited contractual privity with the Government solely for the purposes of their IPR obligations to the Government.

17. The ownership of any rights by the contractor does not include an absolute right to transfer of any software, product or documentation; and such transfer, including export thereof, shall continue to be governed by and be subject to the Export Policy, Export Guidelines and all applicable laws, rules, regulations, orders and instructions of the Government of India. All such transfers and exports shall require prior and explicit approval of the Ministry of Defence.

18. Where the DA is not a consortium, ownership rights in intellectual property being generated under the "Make" contract shall vest with the Government upon dissolution of such DA. Where the DA is a consortium, the ownership rights in the IP generated under the "Make" contract, upon dissolution of the consortium, shall vest amongst the partners as per their agreement on the subject contained in the joint partnership agreement of the consortium, without government rights as licensee being adversely affected in any manner.

Appendix C
(Refers to Part IV Para 22(f)
& Part VI Para 34)

ILLUSTRATIVE: 'ASSOCIATION OF PERSONS AGREEMENT'

THIS ASSOCIATION OF PERSONS (AoP) AGREEMENT is entered into on this the day of ____20.....

AMONGST

1. { Limited, a company incorporated under the Companies Act} and having its registered office at (hereinafter referred to as the "First Part" which expression shall, unless repugnant to the context include its successors and permitted assigns)

AND

2. { Limited, a company incorporated under the Companies Act} and having its registered office at (hereinafter referred to as the "Second Part" which expression shall, unless repugnant to the context include its successors and permitted assigns)

AND

3. { Limited, a company incorporated under the Companies Act and having its registered office at (hereinafter referred to as the "Third Part" which expression shall, unless repugnant to the context include its successors and permitted assigns)}

AND

4. { Limited, a company incorporated under the Companies Act and having its registered office at (hereinafter referred to as the "Fourth Part" which expression shall, unless repugnant to the context include its successors and permitted assigns)} The above mentioned parties of the FIRST, SECOND, {THIRD and FOURTH} PART are collectively referred to as the "Parties" and each is individually referred to as a "Party".

WHEREAS,

(a) The Ministry of Defence, Government of India (hereinafter referred to as the "Buyer" which expression shall, unless repugnant to the context or meaning there of include its administrators, successors and assigns) has invited responses (the "responses") to its Expression of Interest No..... dated..... (the "EoI") for short-listing of bidders for development of- Project (the "Project").

(b) The Parties are interested in jointly bidding for the Project as an Association of Persons ("AoP") in accordance with the terms and conditions of the EoI document and other documents in respect of the Project and

(c) It is a necessary condition under the EoI document that the members of the AoP shall enter into an Association of Persons Agreement and furnish a copy thereof with the Response.

NOW IT IS HEREBY AGREED as follows:-

1. **Definitions and Interpretations.** In this Agreement, the capitalized terms shall, unless the context otherwise requires, have the meaning ascribed thereto under the EoI.
2. **Association of Persons/Consortium.**
 - (a) The Parties do hereby irrevocably constitute an Association of Persons/consortium (the "Consortium") for the purposes of jointly participating in the bidding process for the Make Project and executing and implementing the complete "Make" project upto the completion of the Production Phase or any subsequent Lifecycle Support or technology Refresh/Upgrade Contract that MoD places on the Lead Member of AoP before completion of the Warranty Period, whichever is later.
 - (b) The Parties hereby undertake to participate in the "Make" Project only through this AoP Agreement and not individually and/or through any other AoP/consortium constituted for this Project, either directly or indirectly or through any of their Associates.
3. **Covenants.** The Parties hereby undertake that in the event the AoP is declared the selected Development Agency and awarded the project, the parties shall enter into a Contract with the Buyer for performing all its obligations as the Development Agency in terms of the contract for the Project.
4. **Role of the Parties.** The Parties hereby undertake to perform the roles and responsibilities as described below: -
 - (a) Party of the First Part shall be the Lead member of the Consortium for and on behalf of the Consortium during the bidding process and until the Appointed Date under the Contract.
 - (b) Party of the Second Part shall be responsible for
 - (c) Party of the Third Part shall be responsible for
 - (d) Party of the Fourth Part shall be responsible for
5. **Joint and Several Liabilities.** The Parties do hereby undertake to be jointly and severally responsible for all obligations and liabilities relating to the Project and in accordance with the terms of the EoI and subsequently in accordance with the development contract, if and when awarded.
6. **Lead Member.** Without prejudice to the joint and several liabilities of the parties, each party agrees that it shall communicate with the MoD in matters of the EoI and the Development and Production Contract, as applicable through the Lead

Member and the Buyer shall be entitled to communicate with such Lead Member as the representative of all the members. Each party agrees and acknowledges that:-

(a) The Lead Member shall take prior written consent by all participating AOP members before sending any communication regarding a decision (including without limitation, any waiver or consent), action or omission, before communicating the same to MoD. The AoP Members shall send their responses to the Lead Member and ensure that stipulated timelines of MoD are met with by the Lead Member;
and;

(b) Any decision (including without limitation, any waiver or consent), action omission communicated by the Lead Member on any matters related to the Contract shall be deemed to have been on its behalf and shall be binding on it. The Buyer shall be entitled to rely upon any such action, decision or communication from the Lead Member;
and;

(c) Any notice, communication, information or documents to be provided to the Development Agency shall be delivered to the authorised representative of the Development Agency (as designated pursuant to the Contract) and any such notice communication, information or documents shall be delivered to all the Parties by the Lead Member.

7. **AoP Bank Account/ Payments.** The Parties will open a separate single bank account ("**AoP Account**") for payments to be received from the Buyer in the name of the AoP which account shall be operated jointly by all the AoP members. Each of the Parties shall raise separate invoices on Buyer, which will be presented to the Buyer by the Lead Member under a Covering Letter. The Buyer shall make the payment(s) into the designated AoP account and the Buyer shall not in any manner be responsible or liable for the inter se allocation of payments, works etc. among the Parties. Disbursal of the amount lying in the AoP account to each of the Parties shall be made directly to such Party, from the AoP Account. Each Party shall be responsible for ensuring the Invoice and the accompanying documentation is complete and accurate.

8. **Representation of the Parties**

8.1 Each Party represents to the other Parties as of the date of this Agreement that:-

(a) Such Party is duly organized, validly existing and in good standing under the laws of its incorporation in India and has all requisite power and authority to enter into this Agreement;

(b) The execution, delivery and performance by such Party of this Agreement has been authorized by all necessary and appropriate corporate or governmental action and a copy of the extract of the charter documents and board resolution/power of attorney in favour of the person executing this Agreement for the delegation of power and authority to execute this Agreement on behalf of the Consortium Member is annexed to this Agreement and will not, to the best of its knowledge:-

- (i) Require any consent or approval not already obtained;
- (ii) Violate any Applicable Law presently in effect and having applicability to it;
- (iii) Violate the memorandum and articles of association, by-laws or other applicable organizational documents thereof;
- (iv) Violate any clearance, permit, concession, grant, license or other governmental authorization, approval, judgment, order or decree or any mortgage agreement, indenture or any other instrument to which such Party is a party or by which such Party or any of its properties or assets are bound or that is otherwise applicable to such Party; or
- (v) Create or impose any liens, mortgages, pledges, claims, security interests, charges or Encumbrances or obligations to create a lien, charge pledge, security interest, encumbrances or mortgage in or on the property of such Party, except for encumbrances that would not, individually or in the aggregate, have a material adverse effect on the financial condition or prospects or business of such Party so as in all matters before the Buyer, signing and execution of all contracts and undertakings consequent to acceptance of the Consortium's proposal and generally dealing with the Buyer in all matters in connection with or relating or arising out of the Project.

9. **Termination.** This Agreement shall be effective from the date hereof and shall continue in full force and effect until completion of the Make project and in accordance with the contract, in case the Project is awarded to the Consortium. However, in case the Consortium is either not prequalified for the Project or does not get selected for the award of the Project, the Agreement will stand terminated or upon return of the Bid Security, if any, by the Buyer to the Bidder, as the case may be. Upon completion of the Development Contract, this Agreement may be terminated by the Parties upon written mutual consent, if the AOP fails to win Contract from Mod, during the implementation of the 'Buy (Indian-IDDM)' Project.

10. **Miscellaneous.**

- (a) This Agreement shall be governed by the laws of India.
- (b) In the event of a dispute, the Parties shall attempt to amicably resolve the same, failing which the dispute shall be referred to arbitration which shall be resolved in accordance with the Arbitration & Conciliation Act, 1996. The venue for dispute resolution shall be New Delhi, India. The arbitration proceedings shall be conducted in English language. The arbitration award shall be final and binding upon the Parties.
- (c) The Parties acknowledge and accept that this Agreement shall not be amended by the Parties without the prior written consent of the Buyer.

IN WITNESS WHEREOF THE PARTIES ABOVE NAMED HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DATE FIRST ABOVE WRITTEN.

SIGNED, SEALED AND DELIVERED For and on behalf of Lead Member
by:

(Signature)
(Name)
(Designation)
(Address)

SIGNED, SEALED AND DELIVERED For and on behalf of SECOND PART

(Signature)
(Name)
(Designation)
(Address)

SIGNED, SEALED AND DELIVERED For and on behalf of THIRD PART

(Signature)
(Name)
(Designation)
(Address)

SIGNED, SEALED AND DELIVERED For and on behalf of FOURTH PART

(Signature)
(Name)
(Designation)
(Address)

In the presence of: 1.
 2.

Appendix D

(Refers to Part VI Para 34, Part VII Para 36
& Part VIII Para 39(c))

FINANCIAL AND COMMERCIAL ASSESSMENT CRITERIA

Name of the vendor:

Sl. No	Criteria and Sub- Criteria	Vendor Submissions				Remarks, if any
		Lead Bidder	Partner 1	Partner 2	Partner 3	
(i)	Average annual turnover of the firm for the last three financial years ending 31 st Mar of the previous financial year should not be less than Rs 3.245 Crs.					Submit documents in support of these claims.
(ii)	Net worth of all the entities ending 31 st March of the previous financial year should be Positive.					

Station:

Signature

Company Seal

Date :

Appendix E

(Refers to Part VI Para 35, Part VII Para 36 & Part VIII Para 39(c))

TECHNICAL CAPABILITY ASSESSMENT CRITERIA

Name of the vendor:

Sl. No	Criteria and Sub- Criteria	Vendor Submissions				Remarks, if any
		Lead Bidder	Partner 1	Partner 2	Partner 3	
(a)	The company should demonstrate domain expertise in the fields of Satellite communication and Antenna technology with ability to design, develop and implement critical technologies for Defence, Government organisations, Research and Industrial applications by submitting supporting supply orders / work orders executed by the company					
(b)	Qualified team, working in the areas of Satellite Communication and Antenna design.					
(c)	Past experience & deliveries pertaining to Satellite Communication and Antenna design.					
(d)	In house R&D facility.					
(e)	Adequate supply/repair of Satcom equipment/ Antennas in the past three years.					
(f)	Infrastructure with availability of Test Instruments to support repairs and maintenance.					
(g)	Availability/Access to Clean room facilities					

Station:
Date:

Signature

Company Seal

Appendix F

(Refer to Part VIII Para 39 (d))

INFORMATION PROFORMA: AN ILLUSTRATIVE LIST OF ELEMENTS

1. Name of the Company
2. Name of CEO with Designation
3. Address of the Registered Office
4. Address of the Factory/Factories
5. Company Website(s)
6. Date of Incorporation
7. Brief History of the Company
8. Category of Industry (Large Scale/Medium Scale/Small Scale)
9. Nature of Company (Public Limited/Private Limited)
10. Nature of Business (Please give broad product range against each)
 - (a) Manufacturer
 - (b) Trader
 - (c) Sole Selling or Authorised Agent
 - (d) Dealer
 - (e) Assembler
 - (f) Processor
 - (g) Re packer
 - (h) Service Provider
11. Details of Current Products
 - (a) Type/Description
 - (b) Licensed/Installed Capacity
 - (c) Annual Production for Preceding 3 Years
12. Details of Bought Out Items
 - (a) Main Equipment
 - (b) Component/Assembly/Sub Assembly/Processes
 - (c) Name and Address of the Sub-Contractor
13. Sources of Raw Materials
 - (a) Imported/Indigenous
 - (b) Brief Description
 - (c) Estimated CIF Value
 - (d) Percentage FE Content in Final Product
14. Details of Foreign Collaborations
 - (a) Product
 - (b) Name and Address of Collaborator
 - (c) Year of Collaboration
 - (d) Current Status of the Collaboration (whether expired or current)
15. Technology Received from Abroad and Assimilated
16. Technology Transfer MoUs Signed/Under Negotiation
17. Products Already Supplied
 - (a) To Indian Army/Air Force/Navy
 - (b) PSUs
 - (c) DRDO and its Laboratories
 - (d) Ordnance Factories
 - (e) Any other Defence Organisation
 - (f) To other Principal Customers

18. Details of Registration Certification held (along with product details)
 - (a) DGQA
 - (b) DGAQA / DGNAI
 - (c) CEMILAC
 - (d) DGS&D
 - (e) Other Defence Departments
 - (f) Other Government Department
19. Details of ISO Certification(Attach certificate, if any)
20. Details of Pollution Control Certificate(Attach certificate, if any)
21. Latest Certificate of Incorporation by the Registrar of Companies (RoC), if any
22. Details of Credit Rating Certificate (Attach certificate, if any)
23. Details of Patent/IPR certificates (Attach certificate, if any)
24. Details of Permanent Man Power (with the details of qualifications)
 - (a) Technical
 - (b) Administrative
25. Total Area of Factory
 - (a) Covered (sq. mtrs)
 - (b) Uncovered (sq. mtrs)
 - (c) Bonded Space Available (sq. mtrs)
26. Electric Power
 - (a) Sanctioned
 - (b) Installed
 - (c) Standby
27. Details of Important Facilities
 - (a) Production (including Heat Treatment, Dies, jigs and Fixtures)
 - (b) CAD, CAM, ROBOTS and Other Advanced Technology Tools
 - (c) Environmental Test Facilities.
 - (d) Tool Room, Metrology and Test Equipment and Facilities
 - (e) Type of Instrument
 - (f) Make and Model
 - (g) Date of Purchase
 - (h) Frequency of Calibration
28. Details of Developmental Facilities
 - (a) R&D Facilities Available
 - (b) Number of Technical Manpower
 - (c) Inspection and Quality Control of Raw Material, Components and Finished Products.
 - (d) Products.
 - (e) Assistance from Central Agency/Agencies for Testing/Calibration
 - (f) Laboratory and Drawing Office Facility
 - (g) Percentage of Total Turn-Over Spent on R&D during the Last Three Years
29. Area of Interest for Future Expansion/Diversification (please provide adequate details)
30. Future Plan (if any) in respect of Expansion Program, Installation of Additional Machines/Test Facilities
31. Turn-Over during the last three Financial Years. (Attach relevant documents, if any)
32. Present Net Worth of the Company (Attach relevant documents, if any)
33. Any other Relevant Information

34. Contact Details of the Executive Nominated to co-ordinate with the Assessment Team (please provide telephone, mobile and e-mail address).

ADDITIONAL INFORMATION

1. Outline features of the proposal.
2. Recommended stages/ phases of development with priorities and time schedules.
3. Milestones that can be clearly demonstrated to facilitate project monitoring.
4. Estimated capital expenditure for prototype development.
5. Roles Responsibilities and expertise details of consortium members, if any.
6. Role of foreign technology provider, if any, including the agreement intended to be entered into on being shortlisted.
7. Requirement of specialized testing assistance where facilities are available only with DRDO/ DGQA/ DGQAQ/ DGNAI.
8. Indicate the minimum order quantity for execution after the successful completion of the project (prototype development).
9. Undertaking to furnish the cost of the final product during evaluation stage itself; once the final configuration of the end product under development is frozen.
10. Details of the proposed facilities being created for DB²ST.
11. Any existing facility proposed to be used for design, development and production/ manufacture of DB²ST components.

Appendix 'G'
(Refers to Part VIII Para 39 (e)
& Part X Para 48)

CERTIFICATE

It is certified that information submitted in the documents as part of the response to Expression of Interest for Project DB²ST is correct and complete in all respects. It is acknowledged that the company and / or all consortium members will be disqualified from further participation if any information provided is found to be incorrect.

Signature with Company Seal

Company No1

Company No 2

Company No3

Company No4



This document contains a total of 13 pages, including the cover page. The contents are classified and are not to be disclosed to any unauthorized person.

**PRELIMINARY STAFF QUALITATIVE REQUIREMENTS (PSQRs) FOR
DIGITAL BEAMFORMING BASED SATELLITE TV (DB²ST)**

1. Sponsor : Directorate of Electrical Engineering
2. Reference : EE/05/1960/MAKE II
3. Staff Requirement No : EE/05/1960/MAKE II/01
4. Nomenclature : DB²ST
5. Security Classification : RESTRICTED
6. Validity : Jul 22
7. Priority : Routine
8. The PSQRs for the Digital Beamforming Based Satellite TV (DB²ST) are enumerated in the succeeding chapters
 - (a) Chapter I - Introduction
 - (b) Chapter II - Design and Technical Requirements
 - (c) Chapter III - PLCS Specifications
 - (d) Chapter IV - Suppliers Scope of System Supply

CONDITIONS OF RELEASE

1. This PSQR Specification has been prepared for the use of the Indian Navy and of its contractors in the execution of contracts for supply of Digital Beamforming Based Satellite TV (DB²ST) to the Indian Navy.
2. This document is a Copyright of the Indian Navy. The information contained in this document is not to be released, reproduced or published without written permission of the Integrated Headquarters Ministry of Defence (Navy).
3. Indian Navy reserves the right to amend or modify the contents of this specification without consulting or informing any holder.
4. This specification may call for the use of processes, substances and procedures that may be injurious to health, if adequate precautions are not taken. It refers only to technical suitability and in no way absolves either the supplier or the user from statutory obligations relating to health and safety at any stage of manufacture or use.
5. Where attention is drawn to hazards, those quoted may not necessarily be exhaustive.
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7. When the specification is issued in connection with a tender or contract, the user should ensure that he is in possession of the correct version of documents relevant to the particular tender or contract. Inquiries in this connection may be made from IHQ MoD(N), Sena Bhawan, New Delhi. Tele (011) 23010798, Fax: 011-23011212.
8. Unless otherwise specified, reference in this specification to any document means the latest version of the document and all amendments promulgated thereafter.

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CHAPTER-I

INTRODUCTION

1. Satellite TV Satellite programming originates from an "uplink" facility on Earth wherein the facility receives many signals from different sources, combines the signals digitally and transmits to the satellites. The satellites (22,300 miles above Earth) receive the uplink signal, amplify it and then transmit it back to earth in the Ku frequency band. This signal is received by the Satellite TV Antenna which is pointing towards the Satellite. The Antenna is required to amplify and convert the Ku band signal to the 950 to 2050MHz range. The signal is then passed through a coaxial cable to the receiver (Set Top Box) where individual channel selection and processing take place.
2. With increased tempo of operations and sustained presence of warships out at sea for prolonged durations, the need for the crew to keep abreast of the situation in and around the country cannot be over emphasized. Further, requirement of television at sea is essential for high morale of men onboard. The Satellite TV Antenna on land (stationery platform) is adjusted manually to point towards the desired Satellite. However, Satellite TV antennas onboard ship (which is underway) are required to point towards the Satellite (for maximum gain) under conditions of forward motion, Roll, Pitch, Yaw and Heave. The conventional Satellite TV antennas onboard ship use Servo drives along with the ship motion data to stabilize the Antenna and make it point continuously towards the desired Satellite. The system has an inherent disadvantage due to mechanical motion of the Antenna and ageing of the Servo drives, which leads to intermittent tracking during rough sea. Further, the mechanical parts are prone to frequent failures. The DB²ST system aims to obviate the requirement of mechanical motion of the Antenna so as to provide uninterrupted TV reception at Sea.
3. The development of Satellite TV system using 'Digital Beamforming Technology' would facilitate availability of indigenous alternatives to presently imported hardware, using advanced technology (Digital Beamforming) for obviating the requirement of mechanical parts and ensuring uninterrupted satellite TV reception at Sea.
4. This PSQR covers the design, manufacture, testing and onboard commissioning requirements of 'Digital Beamforming Based Satellite TV' Systems to be fitted on Indian Naval Warships and other Naval ships/crafts.
5. **Applicability of PSQR.** The PSQRs will be applicable for DB²ST systems for all new induction ships, onboard in-service ships without Stabilised Satellite TV System and as a replacement of the Gyro/GPS Stabilized Satellite TV systems (TVRO) fitted onboard ships.
6. **Applicable Standards.** The documents to be referred for this PSQRs are discussed in the succeeding chapters. While every effort has been made to ensure the completeness of the list, vendors are cautioned that they are obliged to meet all specified requirements of the documents and standards cited in this PSQRs.

7. **Order of Precedence.** Unless otherwise noted in the contract, in the event of conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

CHAPTER II

DESIGN AND TECHNICAL REQUIREMENTS

1. **Technology**. The DB²ST system should utilize Digital Beamforming technology so as to ensure that no mechanical movement of the antenna is required.
2. **Polarisation**. The antenna system is required to receive signals in linear (with different skew angles) or circular polarization mode from any of the geosynchronous TV satellites around the world (as per details fed in the library by the user) at Ku band.
3. **Frequency of Operation**. 10-14 GHz.
4. **Antenna**.
 - (a) Type - Multiple Patch Array Antennas with Digital Beamforming Algorithm.
 - (b) Gain \geq 38.5 dBi at 12.5 GHz.
 - (c) Size (including Radome) – Less than 1m (maximum diameter) *1m (height).
 - (d) Weight (excluding Radome) –Less than 50 Kg
5. **Automatic Satellite Switching**. The DB²ST system should include a pre-programmed satellite library of various satellites providing TV services in the world along with their service region. An option to switch satellites manually or automatically should be provided. In automatic switching, the DB²ST system should switch satellites as the ship moves from service region of one satellite to the other satellite. Further, the system should automatically cater for polarization of the satellite signals while switching satellites. The user should also have an option of adding more satellites and their service regions in the library.
6. **Distribution**. The system should consist of a below deck distribution network (multiswitch) capable of generating a minimum of 64 RF outputs which could be used to connect to 64 Satellite Receivers (Set Top Boxes) for provision of Satellite TV Channels.
7. **Enclosure**. The Above Deck Equipment (ADE) should be enclosed in a Radome for protection of the sensitive electronics from Rain, Spray and Icing.
8. **Motion Data**. The DB²ST system should be self sufficient and have an inbuilt GPS and Motion Sensors/ Compass (if required). However, there should also be a facility to accept the Ships House Hold Data in serial format. The system should be able to operate satisfactorily under following motion conditions of the ship:-

Ser	Motion Type	Values
(a)	Roll	Upto +30° with 8 sec period Operational
(b)	Pitch	Upto +10° with 20 sec period- Operational

(c)	Yaw	Upto 1.75° per s ² - Operational
(d)	Tilt	Upto 15° (permanent) in any direction - Operational
(e)	List	Upto 20° from vertical (permanent)- survival
(f)	Surge	Upto + 0.2 g
(g)	Sway	Upto + 0.2 g
(h)	Heave	Upto +4 m with 7 sec period- Operational
(j)	Trim	Max 5°
(k)	Turning Rate	Upto 30 deg/sec

9. **Environmental Conditions.** The DB²ST system should meet the following environmental conditions:-

Ser	Condition	Values
(a)	Temperature, Operating	-10° C to +55° C
(b)	Temperature, Storage	-10° C to +70° C
(c)	Relative Humidity	Upto 95% at 40° C
(d)	EMI/EMC	MIL STD 461E/F
(e)	Environmental Specification	JSS55555:2012 Table N1 (protected equipment) and N 2 (for exposed equipment)
(f)	Ship Speed	Upto 40 knots
(g)	Wind speed, Operational	Upto 100 knots
(h)	Wind speed, Survival	Upto 130 knots
(j)	Ingress Protection	IP65 for Above Deck Equipment

10. **Environmental Stress Screening (ESS).** The system should be able to clear ESS as per the severities promulgated by DQA (N) vide letter no. 66301/Policy-07/DQA(N)/QA-07 dated 09 Aug 16 or latest guidelines.

11. **Endurance (Burn-In).** The system should be able to clear Endurance (Burn-In) test as per guidelines promulgated by DQA (N) vide letter no. 66301/Policy-10/DQA(N)/QA-10 dated 14 Jun 13 or latest guidelines.

12. **Power supply.** The system should operate on 220V, 50/60 Hz, 1 Phase AC supply. The system should also have an option to operate on 24 V DC power supply. It should be able to withstand Surge and Transients as per IEC 60000-4-5 Class 2 (2KV) and IEC 60000-4-4 Class 2 (2KV) standards respectively.

13. **Lifting Arrangement.** If the Equipment weighs more than 20 kg then it shall be provided with collar eyebolts or suitable lifting lugs. If the eyebolts cannot remain in situ after the equipment has been installed in the ship, provision is to be made for their securing arrangement on the equipment.

14. **Mounting Arrangement.** All the subsystems shall be with suitable base plate/frame and shock mounts for fitment onboard (decks) ships.

15. **Tally Plate & Circuit Diagram Plate.** Anodized Aluminum/brass tally plates as stated below shall be supplied along with the equipment as per NES 723:-

- (a) Equipment Tally
- (b) Manufacturer Tally
- (c) Circuit Diagram Tally Plate
- (d) Switching ON/ OFF procedure
- (e) Additional details as necessary

Electrical Requirements

16. **ESD Protection.** The system design shall take into account adequate measures for Electro Static Discharge (ESD) control and protection at PCB/module/assembly and unit level. Each Electro Static Discharge sensitive part/assembly shall be duly marked with a symbol/warning. The manufacturer shall use ESD protective materials for handling, packaging storage and transport.

17. **Lightning Protection.** The system design is required to cater for lightning protection.

18. **Grounding Requirement.** All units shall be grounded in such a manner so as to minimize ground loops and common ground returns for signal and power circuits and provide effective shielding for signal circuits. A separate connector pin should be provided for each wire shield unless suitable grounding is provided in external cable back shells. Interface cables should use EMI back shells to circumferentially ground the cable RF over braid to the connector.

19. **Component Ground.** All externally exposed metal parts, shield control shafts, switch handles, connectors, bushings etc. should be grounded to chassis.

20. **Bonding.** A means of electrically bonding the to platform mounting surface or vehicle chassis should be provided as per Para 5.10 of MIL-STD- 464.

Safety Requirement

21. **System Safety.** DB²ST, including its software should be designed for minimum risk to personnel and equipment using risk reducing and risk management processes defined in MIL STD 882. The system should be designed for human engineering and personnel safety according to MIL-STD-1472. The system including its software shall be assessed for hazards and functional criticality and appropriate mitigation consistent with system safety process objectives defined in MIL STD 882. The system design should preclude functional failure resulting in critical or catastrophic hazards to personnel or equipment.

22. **Electrical Safety.** DB²ST should incorporate safe electrical design and hazard mitigation using MIL-HDBK-454 as a guide. It should protect against the risk of electrical shock and other hazards under all conditions of normal use (installation, operation and maintenance). The system should protect against the risk of electric shock and other hazards under a likely fault condition including human error. The system should prevent operators from having access to components with voltages exceeding 30 Volts RMS or DC in accordance with MIL-HDBK-454. The system should protect operators from exposure to stored energy shock as per MIL-HDBK-454. All high voltage circuits (>500 Volts) and capacitors (>30 V and >20 Joules (J)) should be terminated to ensure human safety. Non-current carrying surfaces and parts are to be at ground potential as per MIL-HDBK-454. Grounding path is to have the capacity to conduct any currents that might be imposed onto the equipment as per MIL-STD-454. Redundant equipment grounding conductors should be provided where currents exceed 3.5 mA. Electrical overload protection should be as per MIL-HDBK-454.

23. **Mechanical Safety.** DB²ST should be designed for minimum risk to personnel during installation, operation and maintenance as per MIL-STD-882 and MIL-STD-1472F. Operator accessible parts should comply with temperature exposure limits as per MIL-STD-1472F. The system should meet design requirements as per MIL-STD-1472F so that it can be removed, handled and lifted safely. Equipment power switches should be protected so as to prevent inadvertent actuation as per MIL-STD-1472F.

24. **Standardisation.** Each broad class of equipment and assembly is to be standardized to the extent feasible.

CHAPTER III

PRODUCT LIFE CYCLE SUPPORT (PLCS) SPECIFICATIONS

1. **Reliability.** The system design should be based on standard engineering principles to provide a reliable product. The reliability figures in terms of MTBF / MTTR shall be estimated by the OEM and submitted as part of the technical proposal. The system performance will degrade gracefully in the event of a failure. The system shall contain no 'single point' control, whose malfunctioning would result in a catastrophic failure. The system shall operate satisfactorily without failure within specified performance limits in Naval environment for a Mission Time of **1080 hours (45 days)** with a Duty Cycle of **100%**.
2. **Mission Time.** The time for which the equipment is required to be available for use to the platform, during which no preventive maintenance period is allowed that effects the availability of the equipment for exploitation is **1080 hrs (or 45 days)** with A Duty Cycle of **100%**.
3. **System Life.** The expected service life of the equipment from commissioning is minimum **12.5** years. The equipment is also to be designed such that its reliability will not be reduced due to the effects of being shipped by land, sea or air or by periods of storage up to **5** years.
4. **Reliability Demonstration.** The seller has to demonstrate through tests that the equipment meets functional and quantitative reliability performance requirement stated above.
5. **Maintainability.** All the values specified below are the minimum acceptable values at a confidence level of **90%** for repairs at the LRU level:-
 - (a) **Less than 20 minutes** MTTR for a single fault.
 - (b) **Less than 30 minute's** onboard corrective maintenance time for multiple faults.
 - (a) The system should be available for operation post switching ON within **03 minutes**.
 - (b) **5%** maximum False Alarm Rate for BIT.
 - (c) **100%** Fault detection through integrated diagnostics – POST and in Service Monitoring (BIT).
 - (d) The design shall be such that:-
 - (i) There is a digital **running hour indicators** for the whole system and individual digital running hour indicators for life limited items wherever technically feasible.

- (ii) Event log which records starts, stops, and failures etc with associated time stamps to be provided.
- (iii) Functionally different items cannot be interchanged.
- (iv) Diagnostic feature (BITE) of the system is to provide defect identification up to the Least Repairable Unit (LRU) level.
- (v) Equipment should be available for operation without the necessity for re-adjustment of any controls which are inaccessible to the operator(s) during normal use or without break for preventive maintenance.
- (vi) The probability of catastrophic hazard to personnel during normal operation and maintenance is essentially zero.
- (vii) Maintainability will not be reduced due to the effects of being shipped by land, sea or air or by periods of storage up to **5 years**.

CHAPTER IV

SUPPLIER'S SCOPE OF SYSTEM SUPPLY

1. The supplier should provide the "Digital Beamforming Based Satellite TV System" which should receive Satellite TV reception from Satellites around the world in Ku band and provide 64 RF outputs in L Band for usage with Commercial Set Top Boxes (purchased separately by the user).
2. The supplier's scope of system supply shall cover the supply of equipment, Installation Material, Spares, Drawings and Documentation of the system in addition to the system. The complete scope of supply of the system by supplier shall include material as given in succeeding paragraphs.
3. **Installation Material.** One set of installation material that includes connectors, shock mounts, special fasteners, special tools, special fittings etc. which shall be supplied by the supplier as applicable.
4. **Special Tools and Test Equipment.** The OEM will be required to provide details of Onboard test equipment and Special Test Equipment based on *IN's* maintenance philosophy which will be decided at a later date.
5. **Preservation, Packaging and Shipping.** The stores (including OBS and B&D Spares) shall be supplied in long-term preserved condition that is suitable for storage under tropical high humidity conditions for a period of 5 Years.
6. **Block Diagram Indicating Equipment Scope of Supply.**

