

**REQUEST FOR INFORMATION (RFI)**  
**FOR MEDIUM RANGE RADAR**

Dear Sir / Madam,

1. The Ministry of Defence, Government of India, intends to procure **Medium Range Radars along with associated equipment** from registered Indian vendors.
2. This Request for Information (RFI) consists of three parts as indicated below:-
  - (a) **Part-I.** The first part of the RFI incorporates operational characteristics and features that should be met by the equipment. Few important technical parameters of the proposed equipment are also mentioned.
  - (b) **Part-II.** The second part of the RFI states the methodology of seeking response of vendors. Submission of incomplete response format will render the vendor liable for rejection.
  - (c) **Part-III.** Guidelines for Framing Criteria for Vendor Selection / Pre-Qualification in Buy (Indian-IDDM) and Buy (Indian).

**PART-I**

3. **Intended Use of Equipment (Operational Requirements).** The Radars would be used for Air Defence Surveillance. The radar should be 4D Active Phased Array System based on GaN with solid state T/R modules and integrated IFF system capable of providing high quality Air Situation Picture with 360° coverage under tough environmental conditions including capability of deployment at an altitude of 5000 m. Primary and secondary surveillance capability should include an ability for stare mode operation. **In addition to main radar, X-band radar co-mounted with main antenna should be included FOR DRONE DETECTION, with the common associated/fused display.** The system should be vehicle mounted and capable of mobility in all terrains and air transportable. The Radar Energy System should be independent with UPS and captive power capable of high altitude operations. System should support 'Graceful Degradation' not resulting in disproportionate deterioration in overall detection capability.
4. **Quantity Required and Anticipated Delivery Timelines.** The Medium Range Radars along with associated sub systems to be installed and commissioned at Buyer specified locations within India. The anticipated timeline for commissioning of the Radars along with requisite sub systems and allied work services should commence by 18 months from the date of award of contract with an envisaged rate of 12-18

radars/year. Vendor to confirm the maximum annual capacity of supply and installation of radars to support his claim of meeting anticipated delivery timelines.

5. **Important Operational and Technical Parameters.** Broad operational requirements and Technical Parameters for Medium Range Radars are placed at **Appendix A** to this RFI. The vendors are to attach detailed technical specifications of the equipment being offered as response to this RFI. Wherever possible, the technical specifications of the available system/ product along with the details of the equipment configuration should be mentioned. In case of partial compliance to the requirements, details of the existing capabilities of the system along with the feasibility of achieving full compliance should be indicated. Capabilities, features and specifications that can be incorporated and supplied along with the system should also be mentioned.

6. **Cost.** The vendors are to indicate rough estimate of cost for Medium Range Radars along with associated sub systems including commissioning. Taxes and duties for all items / works are to be quoted separately. The detailed breakup of the costs for basic equipment, associated equipment, ESP, SMT/ STE, Training, installation and commissioning , AMC as well as any other cost information should be provided.

7. Vendors should confirm that following conditions are acceptable:-

(a) The solicitation of offers will be as per 'Single Stage-Two Bid System'. It would imply that a 'Request for Proposal' would be issued soliciting the technical and commercial offers together, but in two separate sealed envelopes. The validity of commercial offers would be at least 18 months from the date of submission of offers.

(b) The technical offers would be evaluated by a Technical Evaluation Committee (TEC) to check its compliance with RFP.

(c) The equipment of all TEC cleared vendors would be put through a trial evaluation in India on a 'No Cost No Commitment' basis. A staff evaluation would be carried out to analyse the result of field evaluation and shortlisting the equipment for introduction into service.

(d) Amongst the vendors cleared by evaluation, a Contract Negotiation Committee would decide the lowest cost bidder (L1) and conclude the appropriate contract.

(e) Vendor would be bound to provide product support for time period specified in the RFP, which includes spares and maintenance tools/ jigs/ fixtures for field and component level repairs.

(f) The vendor would be required to accept the general conditions of contract given in the Standard Contract Document at Chapter VI of DAP-2020.

(g) **Integrity Pact.** An integrity pact along is a mandatory requirement in the instant case. (Refer Annexure I to Appendix O of Schedule I of DAP-2020).

(h) **Performance-cum-Warranty Bond.** Performance-cum-warranty Bond both equal to 5 % value of the contract inclusive of taxes and duties is required to be submitted after signing of contract.

## **PART-II**

### **8. Procedure for Response.**

(a) Vendors must fill the form of response as given in **Appendix B** and Annexure II to Appendix A to Chapter II of DAP-2020 (placed at **Appendix C**). Apart from filling details about company, details about the exact product meeting generic technical specifications should also be carefully filled. Additional literature on the product can also be attached with the form. Other features, if available may be indicated as optional equipment/capability.

(b) The filled form should be dispatched at under mentioned address

Air Cmde C<sup>4</sup>ISR  
Room No. 421  
Air Headquarters (Vayu Bhawan)  
Rafi Marg, New Delhi-110106, India  
Fax: +91-11-23014514  
Email: general418@nic.in

ADG Acq Tech (Air)  
Room No - 469  
Air HQ (VB)  
Rafi Marg, New Delhi - 110106  
Tel:- 011-23012068  
Fax:-011-23013754  
Email: awingair-mod@nic.in

(c) Last date of acceptance of filled form is **08 July 2024**. The vendors shortlisted for issue of RFP would be intimated.

9. The Government of India invites responses to this request only from Indian vendors / Indian Original Equipment Manufacturers (OEM). The end user of the Equipment is the Indian Air Force. Non conformity / no response to any query in the RFI would in no way debar Indian vendors / Indian Original Equipment Manufacturers (OEM) from issue of RFP.

10. This information is being issued with no financial commitment and the Ministry of Defence reserves the right to change or vary any part thereof at any

stage. The Government of India also reserves the right to withdraw it should it be so necessary at any stage. The acquisition process would be carried out under the provisions of DAP 2020.

### **PART III**

11. The guidelines prescribed for short-listing / pre-qualification of Indian vendors are given in Annexure IV to Appendix A Chapter II of DAP 2020. The extract is placed at **Appendix D**.

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**REQUIRED OPERATIONAL AND TECHNICAL PARAMETERS: MEDIUM RANGE RADARS**

<b><u>Ser No</u></b>	<b><u>Parameter</u></b>	<b><u>System Description</u></b>	<b><u>Vendor to Specify</u></b>
1.	<b>Band of Operation</b>	'S' Band (Freq band of 400-600 MHz as specified by buyer) supporting Staggered PRF utilisation. The band of operation should be within the approved Defence Band.	<b>Vendor to Confirm</b>
2.	<b>Technology</b>	Radar should be 4D Active Phased Array system based on GaN with Solid State T/R Modules providing high quality of Air Situation Picture (ASP) under tough operational and environmental conditions expected in the existing and future arenas. System should support 'Graceful Degradation' not resulting in disproportionate deterioration in overall detection capability. Radar should be able to scan 360° in azimuth for primary and secondary in surveillance mode preferably using rotational antenna with an ability for stare mode operation also. System should be compatible for integration into IACCS in Real time with no loss of data.	<b>Vendor to Confirm</b>
3.	<b>Instrumented range</b>	(a) Instrumented Primary range: ≥200 Kms upto 300 kms.	<b>Vendor to Confirm</b>
		(b) Minimum range for the incoming target 1.5 Kms (Subject to coverage volume).	<b>Vendor to Confirm</b>
		(c) Instrumented Secondary range: ≥ 300 Kms upto 450 Kms at Boresight.	<b>Vendor to Confirm</b>
4.	<b>Range</b>	Primary Detection Range of Radar to be at least <b>200 kms or more</b>	<b>Vendor to specify the</b>

<u>Ser No</u>	<u>Parameter</u>	<u>System Description</u>	<u>Vendor to Specify</u>
		and Secondary Detection Range of Radar to be at least <b>300 kms or more.</b>	<b>maximum range</b>
		(a) Maximum detection ranges for following RCS with a Probability of Detection (PD) of 0.9:-  (i) RCS of 2 m <sup>2</sup> or less.  (ii) for Low RCS (RCS ≤0.2 m <sup>2</sup> ).	<b>Vendor to specify</b>
		(b) Minimum detection ranges for following RCS with a Probability of Detection (PD) of 0.9:-  (i) RCS of 2 m <sup>2</sup> target.  (ii) for Low RCS target (RCS ≤0.2 m <sup>2</sup> ).	<b>Vendor to specify</b>
5.	<b>Capability</b>	Ability to resolve target in four dimensions (4D) namely Range, Azimuth, Height and Doppler Velocity.	<b>Vendor to Confirm</b>
6.	<b>Radar Mode</b>	Rotation and Stare Mode.	<b>Vendor to Confirm</b>
7.	<b>RPM</b>	Antenna rotation rate.	<b>Vendor to specify</b>
8.	<b>RPM Change</b>	Track Maintenance will be provided (within ± 45° from bore sight for staring to rotation mode and vice versa).	<b>Vendor to Confirm</b>
9.	<b>Target Update rate</b>	Target update rate in Rotation and Stare mode.	<b>Vendor to specify</b>
10.	<b>Target Tracking capability</b>	<b>Target Tracking capability</b> in Rotation and Stare mode.	<b>Vendor to specify</b>

<u>Ser No</u>	<u>Parameter</u>	<u>System Description</u>			<u>Vendor to Specify</u>
11.	<b>Coverage</b>	<u>Ser No</u>	<u>Coverage</u>	<u>Remarks</u>	
		(a)	Azimuth : 360°	<b>Vendor to confirm</b>	
		(b)	Elevation	<b>Vendor to specify</b>	
		(c)	Altitude	<b>Vendor to specify</b>	
		(d)	Manual tilting of antenna	<b>Vendor to specify</b>	
		(e)	Programmable Electronic Tilt	<b>Vendor to specify</b>	
12.	<b>IFF</b>	(a) Provision of IFF Mk XII (A) upgradable to Mode 5 with ability to interlace with other modes of IFF. This should be backward compatible to IFF Mk X and Mk XI with ISM (indian Secure Mode).			<b>Vendor to confirm</b>
		(b) Indian Secure Modes 1 upgradable to Mode 2 (NATO mode 4 and 5) or equivalent.			<b>Vendor to confirm</b>
		(c) IFF to be compliant to STANAG 4193 complaint.			<b>Vendor to confirm</b>
		(d) Vendor should specify the max range of IFF.			<b>Vendor to specify</b>
		(e) IFF operations should be continuous irrespective of modes of radar eg. Rotation or stare mode.			<b>Vendor to confirm</b>
13.	<b>PFA</b>	Probability of False Alarm (PFA).			<b>Vendor to specify</b>

<u>Ser No</u>	<u>Parameter</u>	<u>System Description</u>	<u>Vendor to Specify</u>
14.	<b>Resolution</b>	<b><u>System resolutions:</u></b> - (a) Azimuth (b) Range (c) Elevation (d) Doppler	<b>Vendor to specify</b>
15.	<b>Accuracies</b>	<b>System accuracies:</b> - (a) Azimuth (b) Range (c) Doppler (d) Height	<b>Vendor to specify</b>

<u>Ser No</u>	<u>Parameter</u>	<u>System Description</u>	<u>Vendor to Specify</u>
16.	<b>Radar Data Processor (RDP)</b>	The RDP and display hardware to have the following characteristics:-	<b>Vendor to specify</b>
		(a) Track Capability	
		(b) Speed Accuracy	
		(c) Height Accuracy	
		(d) Heading Accuracy	
		(e) Track Maintenance in turn	<b>Vendor to confirm</b>
		(f) Data format : To support track and plot data in ASTERIX 048 or 062.	<b>Vendor to specify</b>
		(g) Plot handling capacity.	
		(h) Radar to have no blind speed up to 3000 m/s.	
		(j) Minimum number of track display on OWS.	
17.	<b>Operator Work Station (OWS)</b>	(a) The radar shelter and op shelters should have separate workstations but with similar functions. Minimum two OWS in Ops Cabin and one OWS inside radar cabin.	<b>Number of OWS to be specified by the vendor</b>
		(b) All work stations should be capable of working in either operational or maintenance configuration.	<b>Vendor to confirm</b>

<u>Ser No</u>	<u>Parameter</u>	<u>System Description</u>	<u>Vendor to Specify</u>
		(c) Synthetic video should be available on each workstation. The OWS to have rugged PC based MFC (Multi Function Console) with 24" monitor Multi colour display for presenting and updating Air Situation Picture with all tracks parameters and associated features like maps, locations, picture in picture etc.	<b>Vendor to confirm</b>
		(d) Ability to generate and display user defined points, lines and area on the display along with map, track, plot information.	<b>Vendor to confirm</b>
		(e) The operator should be able to select/program Operational modes, Silent Sectors, NAI Zones, ECCM Modes and Electronic Tilt Sectors from OWS.	<b>Vendor to confirm</b>
		(f) <b>Map Format:</b> Provision should be there with user to upload maps including 3D maps in desired formats. Compatible format to be specified.	<b>Vendor to specify</b>
		(g) Ops cabin (20 ft ISO standard container) should cater space and power requirements to install following:-  <ul style="list-style-type: none"> <li>(i) Upto four SDR compatible V/UHF R/T sets.</li> <li>(ii) HF Sets</li> <li>(iii) IACCS equipment</li> <li>(iv) Two PCs</li> <li>(v) UPS for Ops cabin</li> </ul>	<b>Vendor to confirm</b>
		(h) The rack for positioning communication and IACCS	

<u>Ser No</u>	<u>Parameter</u>	<u>System Description</u>	<u>Vendor to Specify</u>
		equipment should be integrated in the cabin.  (j) The equipment kept in the rack should be easily accessible for removal and fitment during maintenance.	
		(k) Details of space availability inside Ops cabin after positioning OWS.	<b>Vendor to confirm</b>
		(l) The GUI device should have separate entities like mouse & keyboard and can be easily replaceable.	<b>Vendor to confirm</b>
		(m) The OWS mother board module & other accessories should be future upgradable and its spare parts must be easily available in markets.	<b>Vendor to confirm</b>
		(n) The compatibility for extended OWS Pic at remote location (at least 500 Mtr) with provision of GUI feature should be made available. <b>Maximum displacement to be specified.</b>	<b>Vendor to confirm</b>
18.	<b>PRF</b>	PRF	<b>Vendor to specify</b>
19.	<b>Side Lobes (1<sup>st</sup>)</b>	Low (-25 dB or better)	
20.	<b>Max Altitude Deployment</b>	The radar should be capable of being sited up to an altitude of <b>5000m</b> Above Mean Sea Level.	<b>Vendor to confirm</b>
21.	<b>Frequency agility</b>	Frequency agility	<b>Vendor to confirm</b>
22.	<b>Mobility</b>	(a) The radar & associated equipment should be highly mobile in all terrains.	<b>Vendor to confirm</b>
		(b) Specify the time required for Travelling Position (TP) to Combat Position (CP) and vice-versa.	<b>Vendor to specify</b>
		(c) The radar and associated equipment should be transportable by C -17 class of aircraft.	<b>Vendor to confirm</b>
		(d) All the jacks provided with cabins of the radar should be	<b>Vendor to confirm</b>

<u>Ser No</u>	<u>Parameter</u>	<u>System Description</u>	<u>Vendor to Specify</u>
		hydraulic / electromechanical with levelling facility. The radar should be capable to operate from vehicle and from the jacks with a provision of removing the vehicle.	
		(e) Total number of vehicles and gross weight of each vehicle.	<b>Vendor to specify</b>
		(f) Turning radius of vehicles.	<b>Vendor to specify</b>
		(g) Maximum deployment time and minimum manpower required for installation and operation.	<b>Vendor to specify</b>
		(h) Antenna Focal Height after raising the antenna.	<b>Vendor to specify</b>
23.	<b>ECCM Capabilities</b>	<p>(a) <b><u>Good ECCM features with ARM Mode:-</u></b></p> <p>(i) Least Jammed Frequency (LJF).</p> <p>(ii) Jammer Sector Detection.</p> <p>(iii) Jammer Strobe display.</p> <p>(iv) Smooth Angular Data (SAD) for tracking of Jammer.</p> <p>(v) Display of Jammer plot to indicate effect of jamming on detection range of radar.</p> <p>(vi) Presentation of range degradation due to jamming on OWS.</p> <p>(vii) Emission Control (EMCON) allowing total radar silence or radar silence in selected sectors only (Transmitter</p>	<p><b>Vendor to confirm</b></p> <p>Additional features available to be specified.</p>

<u>Ser No</u>	<u>Parameter</u>	<u>System Description</u>	<u>Vendor to Specify</u>
		<p>Sector Blanking).</p> <p>(viii) ARM mode with indication to operator.</p> <p>(ix) Provision for interfacing with active decoy to be provided to cater for future integration with active decoy.</p> <p>(b) <b><u>ToT enhancement in the direction of Jamming.</u></b> Enhance the ToT to alleviate the effect of low power jammer in the direction of jammer.</p> <p>(c) <b><u>Adaption of Jamming Environment Automatic.</u></b> Identification of receiver saturation due to high power jammer and apply the STC in order to avoid saturation.</p> <p>(d) The ECCM features should be selectable/ modifiable after password based authentication to avoid unsolicited and unintentional invocation of these features.</p> <p>Details regarding ECCM capability and operator selectable features may be provided.</p>	
24.	<b>Receiver Features</b>	<p>The following receiver features are required:-</p> <p>(a) Sector Blanking</p> <p>(b) Digital MTI/MTD</p> <p>(c) Zero Velocity Filter</p>	<p><b>Vendor to confirm.</b></p> <p>Additional features available if any to be specified.</p>

<u>Ser No</u>	<u>Parameter</u>	<u>System Description</u>	<u>Vendor to Specify</u>
		(d) Pulse Compression (PC) (e) Side Lobe Banking (SLB) (f) Digital MTI/MTD (g) FFTs (Fast Fourier Transform) (h) Side Lobe Canceller (j) Display of Jamming Plots to indicate effect of Jamming on detection range of radar. (k) Anti Chaff capability to counter effects to Chaff. (l) Wind Turbine Generator (WTG) clutter mitigation feature.	
25.	<b>Electronic Tilt</b>	The operator should be able to select/ program Operational Modes, Silent Sectors, NAI Zones, ECCM Modes and Electronic Tilt Sectors from OWS.	<b>Vendor to confirm</b>
26.	<b>Tracking Negative (-ve) elevation targets</b>	Capability of tracking target at low elevation upto $-1.05^{\circ}$ .	<b>Vendor to confirm</b> Specify max negative elevation
27.	<b>North Alignment</b>	<b>Radar Alignment.</b> INS GPS based accurate system for North alignment should be provided with alignment accuracy of $\pm 1$ degree or less. System should be capable of migrating to Indian Regional Navigation Satellite System (IRNSS) based North	<b>Vendor to confirm and specify accuracy</b>

<u>Ser No</u>	<u>Parameter</u>	<u>System Description</u>	<u>Vendor to Specify</u>
		Alignment. System should also be capable of taking data from IACCS / nearby similar radars for North alignment data. In addition, Radar antenna system should have facility to align to magnetic north in case of IN GPS failure or being jammed.	
28.	<b>ADS-B Connectivity</b>	Commercial target information is captured using ADSB and displaying fused picture in OWS.	<b>Vendor to confirm</b>
29.	<b>Environmental Specifications</b>	<b>Temperature.</b> Minus 30°C to Plus 55°C	<b>Vendor to confirm</b>
		<b>Wind Velocity Limitations.</b> Upto 50 Knots (90 kmph) Operations up to 70 Knots (125 kmph) Survival.	<b>Vendor to confirm</b>
		<b>Humidity.</b> <95% at 40° C	<b>Vendor to confirm</b>
		<b>Deployment Terrain.</b> Capability to operate on sea-side/desert/ mountains terrain.	<b>Vendor to confirm</b>
		The Radar system should conform to the Environmental specifications of JSS 55555 or MIL STD 810 G or any equivalent National / International Military standard.	<b>Vendor to confirm</b>
30.	<b>Source Code and Listing of Application Software</b>	<b>Source Code and Listing of Application Software.</b>	<b>To be provided</b>
31.	<b>Communication Sets</b>	The following communication facilities are to be catered for each radar in the proposal. They may be integrated in the existing shelter.	
		(a) <b><u>V/UHF RT communication sets</u></b>  (i) Qty-02 (two) V/UHF R/T set with IP interface for remote operations across a WAN and to interface with VCCS at IACCS Node. One out of two V/UHF set to be positioned inside Radar Sensor Vehicle cabin.	<b>Vendor to confirm</b>

<u>Ser No</u>	<u>Parameter</u>	<u>System Description</u>	<u>Vendor to Specify</u>
		(ii) Qty- 01 (one) Software Defined Radios (SDR) with two V/UHF band RF heads having encrypted and non encrypted R/T compatible with SDRs of IAF and facility to integrate into IACCS network (Buyer Nominated Equipment).	<b>Vendor to confirm</b>
		(b) <b>H/F RT sets.</b> Qty 02 (two)VOIP based HF R/T set (Minimum Range 300 Km).	<b>Vendor to confirm</b>
		(c) <b>SMART Plus Equipment Qty 02 (two).</b> SMART Plus Equipment & Accessories compatible with SMART Plus equipment of IAF (Buyer Nominated Equipment).	<b>Vendor to confirm</b>
		(d) 10 Line intercom- Qty 01	<b>Vendor to confirm</b>
		(e) <b>Voice and Communication Control Switch (VCCS).</b> A VCCS console should be integrated with each work station, capable of integrating all R/T channels, intercom and telephone lines to one console. The VCCS should have an Ethernet port for enabling remote operations across a WAN.	<b>Vendor to confirm</b>
		(f) <b>Personnel Communicator and Data Units</b> Qty -10 (ten) VHF Handheld Personnel Communicator with Base Station and with facility of secure communication and with inbuilt GPS tracker. One repeater station to be provided with every unit for extended ranges.	<b>Vendor to confirm</b>
		(g) <b>Digital Voice and Data Recorder (DVDR).</b> Qty - 01 (one) DVDR for recording R/T, OWS picture and radar data which has a storage capacity to preserve the data for two month or of least one Terabite (1TB) whichever is more.	<b>Vendor to confirm</b>
		(h) Handheld GPS with electronic compass and moving map display.	<b>Vendor to confirm</b>
		(j) Provision High speed data connectivity through Satellite with	<b>Vendor to Specify</b>

<u>Ser No</u>	<u>Parameter</u>	<u>System Description</u>	<u>Vendor to Specify</u>
		high throughput and low latency with small form factor.	
		(k) Whether Antenna of high speed data connectivity through Satellite can be mounted on radar or energy system vehicle.	<b>Vendor to confirm</b>
32.	<b>UPS</b>	Specify back up time for complete radar system and Ops cabin.	<b>Vendor to specify</b>
33.	<b>Max endurance</b>	Specify max endurance for break free radar operations.	<b>Vendor to specify</b>
34.	<b>Air Conditioning</b>	Equipment for environment control / air conditioner (HVAC) should meet following requirement:-  (a) Cooling requirement of equipment and comfort of personnel inside Shelters. Should be able to maintain temp between 16°C to 30°C.	<b>Vendor to confirm</b>
		(b) Uninterrupted operation with preventive maintenance.	<b>Vendor to confirm</b>
		(c) ACs should have vibration resistant mountings.	<b>Vendor to confirm</b>
		(d) Meet environmental condition requirements.	<b>Vendor to confirm</b>
35.	<b><u>Built In Test Equipment (BITE).</u></b>	All the hardware to be mapped into the BITE and any degradation or un-serviceability to be presented in a colour coded format. The BITE should record and maintain log of all faults. The BITE to have the following capability:-  (a) Self-Power 'ON' test for all sub systems.  (b) Local BITE of each sub system.  (c) Central BITE should collect BITE from each sub system and apply correlation rules to find out the fault.	<b>Vendor to confirm</b>

<u>Ser No</u>	<u>Parameter</u>	<u>System Description</u>	<u>Vendor to Specify</u>
		<p>(d) Online monitoring of BITE information.</p> <p>(e) Test signal generation to test antenna, transmission and receiving system.</p> <p>(f) BITE to localize the faulty LRU with flexibility to perform checks online and offline.</p> <p>(g) Un-serviceability of the BITE should not render the radar non-operational.</p> <p>(h) Monitoring capabilities for radar parameters like Frequency, PRF, power output and other essential parameters should be provided.</p>	
36.	<b>Tracking of Manoeuvring Targets</b>	Availability of Track While Scan Mode and tracking capability. Ability to track manually designated and manoeuvring targets with 6'G' or more.	<b>Vendor to specify</b>
37.	<b>Radar State</b>	<p>Radar should have standby mode with the following capabilities:-</p> <p>(a) <b><u>Cold start.</u></b> Specify time required to bring the system from 'OFF' state to transmission.</p> <p>(b) <b><u>Quick Startup.</u></b> Specify time required to bring the system from Transmission 'OFF' state to transmission 'ON' state.</p>	<b>Vendor to specify</b>
38.	<b>Spectral Management</b>	Radar should have an operational bandwidth of 400 MHz or more	<b>Vendor to confirm</b>

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		with capability to select frequencies during burst to burst or scan-to-scan. The radar should have user defined peace time and war time frequencies.	
39.	<b>Clutter Reduction Capability</b>	Specify the capabilities to reduce clutter generated from sea, cloud, hills and Wind Turbine Generators.	<b>Vendor to specify</b>
40.	<b>Non Automatic Initiation (NAI) Zones</b>	It should be possible to define and implement (operate) 4D (Azimuth, Elevation, Range and Doppler) Non Automatic Initiation (NAI) zones.	<b>Vendor to confirm</b>
41.	<b>Cabin Noise level</b>	Acoustic treatment to absorb cabin noise.	<b>Vendor to confirm</b>
42.	<b>Simulator</b>	The system should have simulator facility with track symbology (as per MIL STD) to be similar to live tracks and should have provision of scenario creation along with record and replay facility. This should be capable of porting to IACCS.	<b>Vendor to confirm</b>
43.	<b>Record &amp; Replay</b>	Specify the storage capacity in hrs for recording & replaying of air situation picture.	<b>Vendor to specify</b>
		System should be able to store/move the data on external storage device. The recorded data format should be able to replay on any PC and Laptop. The system should have provision of library and archiving tool for retrieving the recorded data.	<b>Vendor to confirm</b>
		In record & replay system, facility to be provided for fast forwarding, rewinding and selection of time for replaying recorded data.	<b>Vendor to confirm</b>
44.	<b>Integrated Air Command &amp; Control System (IACCS) Interface compatibility/NCW Compliance</b>	Integrated Air Command & Control System (IACCS) Interface Compatibility/NCW Compliance. The radar should provide data in ASTERIX Cat 048 / 062 Euro Control document format for integration with IACCS.	<b>Vendor to confirm</b>
45.	<b>Vehicles</b>	Specify number of vehicles/trailers and configuration including	<b>Vendor to specify</b>

<u>Ser No</u>	<u>Parameter</u>	<u>System Description</u>	<u>Vendor to Specify</u>
		laden and unladen weight.	
46.	<b>Energy System</b>	(a) The energy system (DG sets) should be capable of providing uninterrupted power supply to the radar and other associated equipment like air conditioner, Ops Room, R/T eqpt etc. The DG sets should have type approval and comply with Conformity of Production (CoP) for emission limits as per prevailing Central Pollution Control Board (CPCB) guidelines or equivalent standards, meeting the national emission and noise standards.	<b>Vendor to confirm</b>
		(b) Provision of system operation on Indian standard 400/230 V $\pm$ 5% voltage, 50 Hz $\pm$ 5%, 3/1 phase, 4 wire commercial electric supply with auto changeover facility between DG set and Commercial supply without affecting radar operations.	<b>Vendor to confirm</b>
		(c) The radar to have an option to be able to operate with fuel cells.	<b>Vendor to confirm</b>
47.	<b>Maintenance Aspects</b>	(a) Specify the frequency and time duration of preventive maintenance.	<b>Vendor to specify</b>
		(b) Specify maximum duration for non-stop operation of the radar.	<b>Vendor to specify</b>
		(c) Specify Mean Time Between Critical Failures (MTBCF).	<b>Vendor to specify</b>
		(d) Specify Mean Time To Repair (MTTR).	<b>Vendor to specify</b>
48.	<b>Report Generation</b>	The radar should be able to automatically generate following reports:-  (a) Running Hours of Radar and sub-systems.  (b) Number of tracks picked up along with IFF details.	<b>Vendor to confirm</b>

<u>Ser No</u>	<u>Parameter</u>	<u>System Description</u>	<u>Vendor to Specify</u>
		<p>(c) Number of tracks picked up in an operator defined area including target details.</p> <p>(d) Operational status of the system with details.</p> <p>(e) Possibility to generate flight profile of a specified track or tracks with operator selectable details including background with or without map.</p> <p>(f) Visibility diagram in a graphical form based on radar location with expected pickup ranges at various target altitudes.</p> <p>(g) Generate details of picked up tracks along with all parameters.</p> <p>(h) Height Accuracy Analysis Tool.</p>	
49.	<b>EMI/ EMC</b>	<b>EMI/ EMC.</b> Compliance to MIL-STD-461 F or equivalent international standard.	<b>Vendor to confirm</b>
50.	<b>General Requirement</b>	<p><b>General Requirements.</b> The following should be provided:-</p> <p>(a) Smoke Detection System, Fire Alarm System should be provided in the Radar cabins / shelters. Provision for automated extinguishing system should be provided.</p> <p>(b) Lightening protection for the system should be provided.</p>	<b>Vendor to confirm</b>

<u>Ser No</u>	<u>Parameter</u>	<u>System Description</u>	<u>Vendor to Specify</u>
		<p>(c) PC system along with suitable Printer and Mapper/ Digitizer should be provided.</p> <p>(d) All the Important control buttons / switches / indications / Function etc, required for Radar operations should be visible even during minimum visibility i.e. with pillar lamps.</p> <p>(e) Radar to have an active decoy deployable at a distance of not less than 300 meter.</p> <p>(f) The source code of systems software to be given to IAF and the software to be upgradable.</p> <p>(g) The OS used in the system to have preferably Open source architecture.</p> <p>(h) The radar should be able to network/ share the detection data with nearby similar sensors.</p> <p>(j) The radar to have Integrated Smart Security System for field deployment.</p> <p>(k) Provision of mobile radome along with radar.</p> <p>(l) Provision of SDATTs for IACCS integration.</p> <p>(m) Provision of mobile Satcom Communication.</p>	

<u>Ser No</u>	<u>Parameter</u>	<u>System Description</u>	<u>Vendor to Specify</u>
51.	<b>Life Span</b>	Specify life span of the equipment.	<b>Vendor to specify</b>
52.	<b>Warranty</b>	Specify duration of warranty.	<b>Vendor to specify</b>
53.	<b>Life cycle cost</b>	<b>Specify Life cycle cost of the radar.</b>	
		Provide details of maintenance support post warranty.	<b>Vendor to specify</b>
		Operator & Maintenance training for the personnel and provision of publications for the Units.	<b>Vendor to confirm</b>
		ROM cost of the complete system including AMC. MRLS, SMT and training (With Breakdown) for a lot of 25, 50 & 75.	<b>Vendor to specify</b>
		Additional details, if any.	<b>Vendor to specify</b>
54.	<b>AI based predictive maintenance</b>	<p>(a) All the modules and sub modules of the radar should be capable of providing individual health status with definite check point status.</p> <p>(b) To the extent possible, these checkpoints are to include the parameters and registers which can affect the health status of that module or can cause fault in that module. Facility should be there to forward the information of those parameters to the extent possible to higher echelon and to receive command from higher echelon for corrective action.</p> <p>(c) Facility to categorize modules as critical and non-critical should be there based on the measured parameters.</p>	<b>Vendor to confirm</b>
55.	<b>Additional X Band Radar for Drone detecion</b>	<p>Along with the S-Band radar, additional X-Band radar co-mounted with main antenna for drone detection, with the common associated / fused display. The parameters are:-</p> <p>(a) <b><u>Band of Operation.</u> X Band.</b> The band of operation should be within the approved Defence band.</p>	<b>Vendor to confirm</b>

<u>Ser No</u>	<u>Parameter</u>	<u>System Description</u>	<u>Vendor to Specify</u>
		<p>(b) <b>Maximum Range.</b> Maximum detection range to be specified by vendor:-            (i) RCS of 0.01 m<sup>2</sup>            (ii) RCS of 0.05 m<sup>2</sup>            (iii) RCS of 0.5 m<sup>2</sup>            (iv) RCS of 2 m<sup>2</sup></p> <p>(c) <b>Minimum Range.</b> Minimum detection range to be specified by vendor:-            (i) RCS of 0.01 m<sup>2</sup>            (ii) RCS of 0.05 m<sup>2</sup>            (iii) RCS of 0.5 m<sup>2</sup>            (iv) RCS of 2 m<sup>2</sup></p> <p>(d) Additional Info The radar should be a part of main radar. The system should be scalable and upgradable.</p>	<p><b>Vendor to specify</b></p> <p><b>Vendor to specify</b></p> <p><b>Vendor to confirm</b></p>
56.	Additional Information required	<p>(a) Foreign dependency details, Indigenisation status and plan for Critical and Niche technologies planned to be delivered.</p> <p>(b) In case of foreign collaboration, along with scope, depth &amp; range of ToT, details of formal acceptance by foreign partners government that any license required to transfer the technology will be granted in case selected.</p> <p>(c) Details of subsystems, LRUs and software that shall mandatorily be indigenously produced or developed along with the details of foreign dependencies for critical technologies/components etc.</p>	<p><b>Vendor to specify</b></p> <p><b>Vendor to specify</b></p> <p><b>Vendor to specify</b></p>

<u>Ser No</u>	<u>Parameter</u>	<u>System Description</u>	<u>Vendor to Specify</u>
		<p>(d) Mandatory indigenous capabilities required to carry out comprehensive maintenance, repair, obsolescence and life cycle management of the equipment/platform/system along with associated test setups/equipment required during design, development and service life of the system.</p> <p>(e) Life cycle support and obsolescence management aspects w.r.t both indigenous as well as foreign components of radar.</p>	<p><b>Vendor to specify</b></p> <p><b>Vendor to specify</b></p>

**Note:** - Vendor to attach detailed technical specification of the equipment being offered as response to this RFI.

**Appendix B**

(Refers to Para 8(a) of  
Part-II of RFI)

**REQUEST FOR INFORMATION: PROCEDURE FOR RESPONSE**  
**REQUEST FOR INFORMATION FOR MEDIUM RANGE RADARS**

1. The Ministry of Defence, Government of India is planning to procure **Medium Range Radars along with associated equipments**. With the view to identify probable Indian vendors who can undertake the said project, OEMs / Authorised Vendors are requested to forward information on the product which they can offer. The broad operational requirements and technical parameters of **Medium Range Radars along with associated equipments** are attached as per Appendix A. In addition, the vendors are required to furnish details as per Proforma at Appendix C.
2. Apart from the information as per the Appendices the vendors may also forward technical details / product brochures / literature etc. pertaining to **Medium Range Radars along with associated sub systems**.
3. The required information / details may please be forwarded at the following address by **08 July 2024**:-

Air Cmde C4ISR  
Room No. 421  
Air Headquarters (Vayu Bhawan)  
Rafi Marg, New Delhi-110106, India  
Fax: +91-11-23014514  
Email Id: general418@nic.in

ADG Acq Tech (Air)  
Room No - 469  
Air HQ (VB)  
Rafi Marg, New Delhi - 110106  
Tel:- 011-23012068  
Fax:-011-23013754  
Email: awingair-mod@nic.in

**Appendix C**  
(Refers to Para 8(a) of  
Part-II of RFI)

**VENDOR INFORMATION PROFORMA**

1. **Name of the Vendor/Company/Firm.**

\_\_\_\_\_

(Company profile including Share Holding pattern, in brief, to be attached)

2. **Type (Tick the relevant category).**

Original Equipment Manufacturer(OEM)	Yes/No
Authorised Vendor of foreign Firm	Yes/No(attach details, if yes)
Others (give specific details)	

\_\_\_\_\_

3. **Contact Details.**

**Postal Address:**

\_\_\_\_\_  
\_\_\_\_\_

City:\_\_\_\_\_ State:\_\_\_\_\_

PinCode:\_\_\_\_\_ Tele:\_\_\_\_\_

Fax:\_\_\_\_\_ URL/WebSite:\_\_\_\_\_

Email:\_\_\_\_\_

4. **Local Branch/Liaison Office/Agent (ifany).**

Name & Address:\_\_\_\_\_

Pincode:\_\_\_\_\_ Tel:\_\_\_\_\_ Fax:\_\_\_\_\_

Email:\_\_\_\_\_

5. **Financial Details.**

- (a) Category of Industry (Large/medium/small Scale): \_\_\_\_\_
- (b) Annual turnover for last three years: \_\_\_\_\_ (in INR)
- (c) Number of employees in firm: \_\_\_\_\_
- (d) Details of manufacturing infrastructure: \_\_\_\_\_
- (e) Earlier contracts with Indian Ministry of Defence/Government agencies:

Contract Number	Equipment	Quantity	Cost

6. **Certification by Quality Assurance Organisation.**

Name of Agency	Certification	Applicable from (Date & Year )	Valid till (Date & Year)

7. **Details of Registration.**

Agency	Registration No.	Validity (Date)	Equipment
GeM			
DGQA/DGAQA/DGNAI			
OFB			
DRDO			
Any other Government Agency			

8. **Membership of FICCI/ASSOCHAM/CII or other Industrial Associations.**

Name of Organisation

Membership Number

9. **Equipment/Product Profile (to be submitted for each product separately)**

- (a) Name of Product: \_\_\_\_\_  
 (IDDM Capability be indicated against the product)  
 (Should be given category wise for e.g. all products under night vision devices to be mentioned together)
- (b) Description(attach technical literature): \_\_\_\_\_
- (c) Whether OEM or Integrator: \_\_\_\_\_
- (d) Name and address of Foreign collaborator(if any): \_\_\_\_\_
- (e) Industrial Licence Number: \_\_\_\_\_
- (f) Indigenous component of the product: \_\_\_\_\_
- (i) Overall IC(in percentage): \_\_\_\_\_
- (ii) IC for material/components/software manufactured in India(in percentage): \_\_\_\_\_
- (g) Status (in service/design & development stage): \_\_\_\_\_
- (h) Production capacity per annum: \_\_\_\_\_
- (j) Countries/agencies where equipment supplied earlier (give details of quantity supplied):  
 \_\_\_\_\_  
 \_\_\_\_\_
- (k) Estimated price of the equipment \_\_\_\_\_
- (l) Indigenously produced subsystems, Line repair Units, software and critical spares of the product: \_\_\_\_\_
- (m) Device/Line repair units for which Input/output protocol are indigenously available for enabling replacement by indigenous equivalents or interfacing with equipment of own choice: \_\_\_\_\_
- (n) Capability for carrying out Comprehensive Maintenance, Repair and Overhaul, calibration and obsolescence management of the equipment/platform/system along with associated jigs, fixtures and test setups, during the designed service life of the equipment within India: \_\_\_\_\_

10. Alternatives for meeting the objectives of the equipment set forth in the RFI.

11. Any other relevant information:\_\_\_\_\_

12. **Undertaking.** It is certified that the Company/SME Unit has adequate capability in India for production/manufacturing /system integration for the product(s) being procured or for similar products as well as the capability for maintenance and life cycle support for such product(s).

13. **Declaration.**

(a) It is certified that the above information is true and any changes will be intimated within 05 working days of occurrence.

(b) The \_\_\_\_\_(name of firm) has been never been banned/debarred for doing business dealing with MoD/GOI/ any other Government Organisation and that there is no inquiry going on by CBI/ED/ any other Government agency against the firm.

**Note:** Paragraph 44 and Appendix F to Chapter II may be referred.

**(Authorised Signatory)**

**Appendix D**

(Refers to Para 11 of Part-III of RFI)

**GUIDELINES FOR FRAMING CRITERIA FOR VENDOR SELECTION/  
PRE QUALIFICATION IN 'BUY (INDIAN-IDDM)' & 'BUY (INDIAN)' CASES**

1. The guidelines prescribed for short-listing / pre-qualification of Indian vendors in Buy (Indian-IDDM) and Buy (Indian) cases are enumerated in the succeeding paragraphs. Paragraph 2 deals with the parameters that may be considered for short-listing of vendors, whereas Paragraph 3 amplifies the process for applying selected parameters to the process of Vendor Shortlisting.

2. **Parameters**

<b><u>Parameter</u></b>	<b><u>Information Required</u></b>
<b>(a) <u>General Parameters</u></b>	
(i) Applicant Entity should be an Indian Vendor as defined at Paragraph 20 of Chapter I of DAP 2020.	Vendors to confirm.
(ii) Business dealing with applicant Entity or any of its allied entities should not have been suspended or banned, by MoD/ SHQ or any Government Department or organization (as defined in Guidelines for Penalties in Business Dealings with Entities issued vide Ministry of Defence, D(Vigilance) MoD ID No 31013/I/2006-D(Vig) Vol II dated 21 Nov 2016). None of the Promoters and Directors of applicant entity should be a willful defaulter.	Vendors to confirm.
(iii) "Entities" will include companies, with whom the Ministry of Defence has entered into, or Intends to enter into, or could enter into contract or agreements.	Vendor to specify
(iv) "Applicant entity" may be a company, subsidiary, an associate company (as defined in the Companies Act, 2013), a consortium or a Joint Venture (JV).	Vendors to specify whether they are a company, a subsidiary, an associate company, a consortium or a JV. Details to be provided.
<b>(b) <u>Technical Parameters</u></b>	
(i) Vendor shall be a manufacturing entity or a system integrator of defence equipment and not a trading company, except in cases where the OEM participates only through its authorised Vendors.	Vendors to confirm whether they are a manufacturing entity or a system integrator of defence equipment.
(ii) Minimum two years' experience in broad areas like manufacturing/ electronics etc as applicable in the	Vendors to specify the areas and period of experience for

<u>Parameter</u>	<u>Information Required</u>
<p>instant procurement case.</p> <p>If not, then cumulative experience of at least three years in above areas, results in gaining of competence for manufacturing the proposed product. (In case the SHQ feels that for a particular equipment, a lesser experience could be accepted, then the same should be got approved by the competent authority before including the same in RFP).</p>	similar products.
(iii) Where product involves integration, previous experience of not less than one year/ one project in integration of systems/ equipment shall be required.	Vendors to provide details.
(iv) <u>Turnkey Projects</u> . Experience of successful completion of one Turnkey project of similar nature within last five years with value of at least 20% of AoN cost or currently executing a contract of similar nature with value of at least 30% of the AoN cost. In case of no experience in Turnkey projects, the vendor for main component of the Turnkey project may be selected if it has experience as per paragraph 2 (b) (ii) above and experience of installation or integration of similar equipment/system or system of systems.	Vendors to provide details, if any, on experience in successful completion of any Turnkey project in last five years. The value of such project may also be provided.
(v) ICT Cases.	Vendors to provide information on certification, if any, like Gartner Quadrant/ ISO9001/ CMMi/ ISO27001 and compliance to standards such as IEEE, ITU, if any.
(aa) Certification to be included if linked to scope of work – Gartner Quadrant / ISO9001 / CMMi3 or more (specifying development / service / acquisition models) / ISO 27001. For Information Security and large value projects preferably CMMi5 may be specified.	
(ab) Compliance with IEEE / ITU standards depending upon nature/type of project or solution required.	
<b>(c) <u>Financial Parameters</u></b>	
(i) <b><u>Average Annual Turnover</u></b> . Minimum average annual turnover for last three financial years, ending 31 <sup>st</sup> March of the previous financial year, should not be less than 30% of estimated cost of the Buy (Indian-IDDM).	Vendors to provide average annual turnover for last three financial years, ending 31 <sup>st</sup> March 2024.
(ii) <b><u>Net Worth</u></b> . Net worth of entities, ending 31 <sup>st</sup> March of the previous financial year, should not be less than 5% of the estimated cost of the Buy (Indian-	Vendors to provide Net worth as on 31 <sup>st</sup> March 2024. In case of Group of

<u>Parameter</u>	<u>Information Required</u>
IDDM). For orders above ₹ 5000 crores, the Net-worth of group companies can be considered on production of suitable documentary assurance.	companies, the Net worth of group companies may also be provided.
(iii) <b><u>Insolvency</u></b> . The entity should not be under insolvency resolution as per Indian Bankruptcy Code at any stage of procurement process from the issuing of RFP to the signing of contract.	Vendors to confirm they are not under insolvency resolution as per Indian Bankruptcy Code.
(iv) <b><u>Credit Rating (Desirable Financial Parameter)</u></b> . Long term credit rating equivalent to CRISIL rating on Corporate Credit Scale as <b>CCR-BBB or better</b> , and <b>SME-04 or better for SMEs</b> issued by credit rating agencies recognized by SEBI. Credit rating should be as on 31 <sup>st</sup> March of the previous financial year. <b>Note1:</b> All the above Financial Parameters, except Paragraph 2(c)(iii) above (Insolvency) will not be applicable for Capital Acquisition cases where estimated cost is ₹150 crores and below. However, Net worth of entities should not be <b>negative</b> . <b>Note 2:</b> The turnover and net worth of the vendor shall be rounded off to the nearest lower ten/ hundred crores so as to keep the estimated cost of procurement confidential).	Vendors to provide credit rating, if any, as on 31 Mar 2024. (Long term credit rating equivalent to CRISIL rating on Corporate Credit Scale <b>or</b> credit rating for SMEs issued by credit rating agencies recognized by SEBI).
(d) <b><u>Other Parameters</u></b>	
(i) <b><u>Industrial License (IL)</u></b> . Vendors should be either holding a valid defence industrial license or should have applied for the same before responding to RFP. Items requiring IL will be as per DIPP Press Note 3 of 2014 as amended from time to time).	Vendors to specify whether they are holding a valid Defence Industrial License. If so, details may be provided. If not, then vendors to confirm their willingness to apply for IL before issue of RFP . (Items requiring IL will be as per DIPP Press Note 3 of 2014 as amended from time to time).
(ii) <b><u>Registration</u></b> . Registered for a minimum of two years (one year for SMEs). Minimum number of years not applicable for JVs constituted specifically for a project.	Vendors to provide information on registration.
(iii) <b><u>Maintenace, Repair &amp; Overhaul</u></b> . Vnedors should be able to carrying out comprehensive Maintenance, Repair and Overhaul,caliberation and obsolescence management of the eaiupment/platform/system indigenously, along with associated jigs,fixtures and test	Vendors to provide information.

<u>Parameter</u>	<u>Information Required</u>
setups, during the designed service life of the equipment.	
(iv) <b><u>Input/Output Protocols</u></b> . Vendors should be able to provide indigenously, the Input/Output protocols of devices / Line repair Units envisaged to be replaced by indigenous equivalents or interfaced with equipment of own choice.	Vendors to provide information.

### 3. **Stipulations for Applying Parameters.**

(a) Areas like manufacturing/ electronics etc. referred to at Paragraph 2(b)(ii) should be defined in each case of procurement.

(b) Vendors should provide all necessary self-authenticated documentation in support of their achievement of criteria. Such documentation should inter-alia include:-

(i) Details of projects/ supply orders successfully executed in the last two years.

(ii) Annual reports for three years of applicant entity, parent and associate companies, consortium and JV partners.

(iii) Details of shareholders, promoters, associated, allied and JV companies.

(iv) Details of vigilance action, viz. ongoing investigation and suspension/debarment/blacklisting actions against the applicant entity or any of its allied entities, parent company or consortium and JV partners, if any by any Department/agency of Central Government.

(v) A certificate from CA/CS indicating the financial parameters for the last three years as per Paragraph 2(c).

**(Note:** If a vendor is already a supplier to MoD and/ or has already provided the above documents in such cases, it should be necessary for the vendor to resubmit only such documentations as is necessary to update the above).

(c) Any vendor furnishing false information will be liable for action as per existing guidelines.

4. **Start Ups/ MSMEs**. Startups would be defined as per G.S.R. 127 (E) dated 19 Feb 2019 (as amended from time to time). For procurement cases where the estimated cost is not exceeding ₹100 crores/ year based on delivery schedule at the time of seeking AoN or ₹ 150 crores, whichever is higher, to encourage the Start Ups/ MSMEs and build Industrial ecosystem, the recognized Start Ups/ MSMEs in the relevant fields may be considered for issue of RFP without any stipulation of Financial parameters, except Paragraph 2(c)(iii) above (Insolvency) and with General and Technical parameters to be decided on case to case basis.

**(Note:** Start Ups should not be confused with new entrants who may be high/ mid-sized groups having financial support and manufacturing experiences and now venturing into Defence Production).

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