REQUEST FOR INFORMATION
SPATIAL DISORIENTATION SIMULATORS

1. The Ministry of Defence, Government of India, intends to procure quantity **TWO (02) Spatial Disorientation Simulators** under **'Buy Global'** category of Defence Acquisition Procedure 2020 (DAP-2020) (generic nomenclature of equipment and approximate quantity) for training of aircrew.

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. The second part of the RFI contains Guidelines for Framing Criteria for Vendor Selection/ Pre Qualification.

PART - I

3. Intended use of equipment (Operational Requirements). The Spatial Disorientation Simulators are intended for training of aircrew from all streams of flying (fighter/ transport/ helicopter) in various climatic scenarios of flying in Indian Air Force and Indian Navy.

4. Important Technical Parameters. The qualitative technical requirements and ancillary parameters are placed at Annexure – I to this RFI.

5. 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 last 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 field **trial evaluation on a 'No Cost - No Commitment' basis**. A staff evaluation would be carried out by the Service HQs to analyse the result of field evaluation and shortlist the equipment for introduction into service.

(d) Amongst the vendors cleared by staff evaluation, a Contract Negotiations 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. Vendors may also provide a phased obsolescence management plan.

(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 available at www.mod.nic.in.

(g) Integrity Pact. An integrity pact along with appropriate Integrity Pact Bank Guarantee (IPBG) is a mandatory requirement in the instant case (Refer Annexure - I to Appendix M of Schedule – I of the DAP - 2020).

(h) Performance-cum-Warranty Bond. Performance-cum-Warranty Bond both equal **to 3% value** of the contract inclusive of taxes and duties is required to be submitted after signing of contract.

6. The vendor needs to elaborate the following aspects in their response to this RFI:-

(a) Vendors are to state clearly whether the Spatial Disorientation Simulator is proven and already in use or under development. Vendors are also to indicate whether they have supplied the same or similar equipment to any other customer.

(b) **Tentative Delivery Schedule**. Vendors are to indicate the delivery schedule with stage wise breakup of the entire project, post conclusion of contract.

(c) **Maintenance Aspects**. 'Operator' level maintenance of the equipment will be undertaken by IAF personnel for which necessary training to IAF personnel and spares/ consumables along with tools & testers to be provided by the vendor.

(d) **Comprehensive Annual Maintenance Contract (CAMC)**. MoD may opt for CAMC for Five years post completion of warranty period. The AMC would be required for maintaining **minimum 90% availability** of the equipment with **downtime not exceeding 72 hrs at a stretch**. Vendors may propose the scope and estimated cost for the CAMC.

(e) **Training of Operators and Maintenance Personnel**. Vendors are to indicate the manpower with skill level required to operate and maintain the simulator. Vendor would be required to train the operations and maintenance crew at suitable facilities in the country to enable quick operationalisation of the simulator in the IAF. Details of training including duration may also to be indicated in the RFI response.

(f) **Operational Life**. Vendors are to indicate the operational life of the simulator. The expected minimum life of the simulator is 20 years

(g) **Warranty**. Warranty would be required for **two years** from the date of commissioning of the equipment. Mean Time between Failures (MTBF) and Mean Time to Repair (MTTR) for the simulator may be indicated.

(h) **Payment Terms.** Vendors are to indicate 'Terms of Payment' vis-à-vis milestones of the contract progression.

7. **Cost Estimate**. Vendors should provide the **Budgetary Estimate** for the simulator including all the duties and taxes for delivery term - Delivered Duty Paid (DDP) INCOTERM 2020. **Cost of CAMC for five years post warranty period may be separately specified**. The information may be provided in the tabular form as per format given in **Annexure - IV** of this RFI.

8. Earliest date, by which OEM/ vendors are willing to give a presentation at Air Headquarters, New Delhi to be included in response to this RFI.

9. Vendors may consider this RFI as advance intimation to obtain requisite government clearances. Formal procurement procedure is likely to commence in the fourth Quarter of year 2021.

PART - II

10. Procedure for Response.

(a) Procedure for response is given at Annexure – II to this RFI. Vendors must fill the form of response as given in Annexure – III to this RFI. Apart from filling details about company, details about the exact product meeting other generic technical specifications should also be carefully filled. The parameters/ broad specifications of the item are mentioned in the questionnaire attached as per Annexure – V. Additional literature on the product can also be attached with the form.

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

Directorate General of Medical Services (Air)
Air HQ (RKP)
West Block – VI, RK Puram
New Delhi – 110 066
Fax: +91-11-26163407 Email ID: davmed.rkp@gov.in

(c) Last date of acceptance of filled form is **27 May 2022**. The vendors short listed for issue of RFP would be intimated through appropriate means of communication.

11. The Government of India invites responses to this request only from Original Equipment Manufacturers (OEMs)/ Authorised Vendors/ Government Sponsored Export Agencies (applicable in the case of countries where domestic laws do not permit direct export by OEMs). The end user of the equipment is the Indian Air Force.

12. The vendor is to clearly state in the proposal, **the requirement of land, building and other ancillary infrastructure for housing and operation of the simulator**. The vendor is also to specify in the RFI, their **willingness to undertake construction of the building and provisioning of other ancillary infrastructure along with the simulator.** The **minimum requirement of infrastructure beyond the one specified by OEM, should include a classroom with seating capacity of 20 students, 01 toilet and 01 staff room with ancillary furniture**.

13. The vendor is to clearly state in the proposal, the plan and tentative timelines for providing the simulators. Necessary Govt clearances would need to be obtained, where applicable, by the vendor for supply of equipment to Govt of India. Vendor is to provide cost for one simulator under the following options :-

(a) Cost for direct purchase of one simulator.

(b) Cost for an annual comprehensive maintenance (including spares) support for a period of 05 years, along with terms and conditions for performance based support.

(c) Cost of one simulator along with required infrastructure and ancillary furniture as a turnkey project.

14. 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 if should it be so necessary at any stage. The acquisition process would be carried out under the provisions of DAP – 2020.

PART-III

15. The guidelines prescribed for short-listing/ pre-qualification of vendors are enumerated in Annexure - VI. Vendors are requested to provide the information sought in Annexure - VI.

Sd/-
(GS Bhatia)
Air Cmde
Air Cmde MS (S)

Annexure : As stated

Annexure - II

REQUEST FOR INFORMATION: PROCEDURE FOR RESPONSE

Request for Information for -

1. The Ministry of Defence, Government of India is planning to procure quantity two Spatial Disorientation Simulator with the view to identify probable vendors who can undertake the said project. OEMs/ Authorised Vendors are requested to forward information on the product which they can offer. The parameters/ broad specifications of the item are mentioned in the questionnaire attached as per Annexure - V. In addition, the vendors are required to furnish details as per proforma at Annexure - III.

2. Apart from the information as per the Appendices the vendors may also forward technical details/ product brochures/ literature etc pertaining to the item in question.

3. The required information/ details may please be forwarded at the following address by **27 May 2022** :-

(a) Directorate General of Medical Services (Air)
Air HQ (RKP)
Wrest Block VI, RK Puram
New Delhi – 110 066
Tele : +91-11-23010231
Fax : +91-11-26163407
Email ID – davmed.rkp@gov.in

Annexure - III

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: _____
Pin Code: _____
Tele: _____
Fax:_____
URL/Web Site:_____
Email: _____

4. Local Branch/Liaison Office/Agent (if any).

Name & Address:
Pin code: _____
Tel: _____
Fax: _____
Email: _____

5. Financial Details.

Category of Industry (Large/Medium/Small Scale):_____

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 Govt 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 (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

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

11. Any other relevant information:

12. Declaration.

It is certified that the above information is true and any changes will be intimated at the earliest.

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

(Authorised Signatory)

Annexure - IV

BUDGETARY ESTIMATES

Sl. No.	Items	Qty	Cost (including Taxes and Duties)		Remarks
			Unit Cost	Total Cost	
(i)	(ii)	(iii)	(iv)	(v)	(vi)
A	Cost of Simulator (This should include cost of all the subsystems, cost of installation and integration).	01			
B	Cost of Spares (for 5 years), consumables (for two years) Tools and Testers (for operations).				
C	Cost of Operator's Manual and Technical Literature				
D	Cost of Training Aids (If any required such as cut out models, films, charts etc)				
E	Cost of Training of operations and Maintenance crew				
F	Any other cost (to be specified)				
G	**Total Cost (Total of Serial A to F)**				
H	Cost of required infrastructure for housing the simulator alonh with ancillaries (if the vendor is willing for the same)				
J	Cost of AMC for Five years post completion of Warranty period of two years.				

NOTE

The above estimates to be provided for delivery term - **Delivered Duty Paid (DDP) INCOTERM 2020**

Annexure - V

REQUEST FOR INFORMATION: QUESTIONNAIRE

(Details desired from the Vendor w.r.t technical, performance, maintenance, environmental, raw material and other characteristics may be obtained in form of a questionnaire)

The vendor to provide nomenclature and functional capabilities of offered system as per following details.

Sl. No.	Specifications/ Parameters	Reply/ Remarks
1.	**General Description** The Spatial Disorientation simulator used for pilot training should provide the following basic and functional capabilities:	
1.1	Demonstration of Spatial Disorientation	
1.2	Disorientation Training in Flight Situations	
1.3	Flight Simulation and Night Vision Training	
2.	**General Functions** The Spatial Disorientation Trainer should have facility to simulate following disorientation illusions:- • Coriolis • Somatogyral • Oculogyral • Graveyard spin • Nystagmus • Leans • Autokinesis • Runway width • Black hole approach • False Horizon • Dark take off • Sloped runway • Oculo and somatogravic illusion	
3.	**Motion Based Platform**	
3.1	The trainer should provide preferably a 6-degrees of freedom but minimum requirement is 3 degrees of freedom in roll, yaw the pitch axis. The movement should be preferably smooth with sudden stop facility. The motion base should have following performance capabilities at the minimum:-	
3.2	Yaw Axis. Range of motion 360º continuous rotation, acceleration ±0.2º-15º per second² RPM 0 - 30.	

3.3	Pitch Axis. Range of motion 0º to ± 15º horizontal plane. Acceleration ±0.2º – 15º per second. Speed 0º – 10º per second.	
3.4	Roll Axis. Range of motion ± 30º from strap ht and level acceleration ±0.2º -10º per second² Speed 0º- 10º per second.	
3.5	Sub threshold motions in all three axes should be computer controlled.	
3.6	Additional Yaw Range of motion 360º continuous rotation. Velocity 150º per second and acceleration 15º per square second	
3.7	Heave Range of motion – 0.34 to + 0.38 m. Velocity ± 0.4 m/s and acceleration ± 8 m/s²	
3.8	Surge Range of motion -0.56 to + 0.47 m. Velocity ± 0.4m/s and acceleration ± 8m/s²	
3.9	Sway Range of motion ± 0.48 m. Velocity ± 0.4m/s and acceleration ± 8m/s²	
4.	**General Architecture**	
4.1	Dual Cockpit with adjustable pilot seats	
4.2	Open two way communication with voice recording	
4.3	CCTV observation facility for Instructor (IR for low illumination)	
4.4	Program Initiation and Reset Selector	
5.	**General Architecture**	
5.1	Cockpit Simulation	
5.2	Pilot seat Adjustable	
5.3	Interactive flight controls should include changeable re centering forces and dampening.	
5.4	Visual Displays should include increased field of view and infrared projection for Night Vision image.	
5.5	Aircraft Sound and vibration simulation.	
5.6	Chin window to be available for landing on platforms like an oil rig.	
5.7	Cockpit instrumentation and lighting to be NVG Compatible.	
5.8	Flight Controls:	
5.9	Control Stick	
5.10	Rudder Pedals with toe brakes	
5.11	Landing Lever	
5.12	Flaps Lever	

5.13	Trim control	
5.14	Collective & Cyclic	
5.15	Throttle	
5.16	Cockpit Instruments	
5.17	Air Speed Indicator	
5.18	Attitude Direction Indicator (ADI)	
5.119	Altimeter	
5.20	Vertical Speed Indicator (VSI)	
5.21	Directional Gyro (DG)	
5.22	Engine Performance Instruments	
5.23	Stall warning on control station	
5.24	Artificial horizon	
5.25	RADALT	
5.26	Incorporate MFD s as an option, as available in newer aircraft.	
6.	**Software Simulation**.	
6.1	Realistic Ground objects and includes all terrain variations including desert and dunes. Ground objects provided should include power lines, wind power stations, power plants, houses, trees, rivers, dam, roads, railroads, bridges, ship, oil rig and lighthouses. The hill and mountains near the airport should have adjustable heights, shadows and houses.	
6.2	Target aircraft that can fly by a recorded track and also can be flown by the instructor from the desk for fighter aircraft and helicopters.	
6.3	The cultural lighting should have adequate lights with adjustable brightness level.	
6.4	The helicopter illusions to be realistic using physical model of particulate system.	
6.5	Environmental effects simulated should be from clear sky to full IMC condition and visibility, cloud height, cloud type and coverage, precipitation (rain and snow), intensity and phase of moon with illumination fully adjustable and variable.	
6.6	Enhanced Simulated Environment for SD Training	
6.7	-The visibility adjustable from 0 to 65 km. -Cloud height (base and top including a transition level) and cloud tilt (for a false horizon illusion) adjustable. -Provisioning for cloud type and coverage to be selected (cirrus, cumulus, stratus or nimbostratus).	

	-Provisioning for the time of day to be selected. -Provisioning for precipitation (rain and snow) to be simulated. -Provisioning for the intensity of moon and stars as well as the position and phase of the moon to be adjusted; shadows produced with the different moon position on the terrain and blooming produced in the NVG FOV by moon when heading towards it.	
6.8	**Enhanced Scenery Database.** -It should provide the following:- -3 Levels of detail depending on distance from object. -Elevation girds (resolution 100m). -Area types with different texture resolution. -Generic water texture for water areas. -Geo-typical generic texture for ground areas with -8m resolution for medium detailed areas. -4m resolution for highly detailed areas. -The helicopter illusions for brownout, whiteout, vection illusion over desert, grass and vection illusion over water should be greatly enhanced using a physical model of a particle system for maximal realism.	
7.	**Night vision Compatibility**	
7.1	Should be a fully NVG compatible, flight training and mission rehearsal platform.	
7.2	Should permit full motion flight in dynamic flight environment using Night Vision Goggles including hover in ground effect and out of ground effect.	
7.3	Should provide the aircrew the opportunity to gain practical experience with NVG flight environment and illusions, limitations and capabilities of NVGs while operating an aircraft including degradation in performance of NVG when not properly focused, excessive graining, spotting, edge glowing etc.	
7.4	Should provide the capability to fly realistic night tactical mission in either fast jet or helicopter mode whilst wearing NVGs. It should have capability to simulate inadvertent IMC and its implications on SD.	

7.5	The OTW (Outside Window) should be capable of simulating NVG environment and its effects in different terrains (including desert, hills, over water and snow).	
7.6	Should be capable of simulating low moon angles and illumination level at different moon conditions and phases.	
7.7	The system should provide a comprehensive NVG flight-training curriculum to give the aircrew, a thorough understanding of NVG operations.	
7.8	Should cater for Gen III+ and higher generations of NVG and should include the facility to change the configuration depending upon the generation and capabilities of the NVG in use.	
7.9	A provision for failure / degraded state of NVG or NVG cockpit lighting should be made. Must be able to simulate bloom effect caused by use of conventional light source inside cockpit, flare launch or brilliance weapon firing etc.	
7.10	The communication system should be compatible with that of the helmet on which NVGs will be used.	
8.	**Control System:**	
8.1	Computerized Control System with following functions:-	
8.2	Interactive flight control using an adjustable aero-model and input from flight control.	
8.3	Image generation of cockpit instruments and only side visual scenes.	
8.4	Sound generation of aircraft noise / ATC command and instructional command.	
8.5	Motion System Control	
8.6	Automated training program storage editing and play back facilities	
8.7	Mission management automatic with automated verbal instructions throughout the demonstration.	
8.8	Flexible scenario selection and management modification and saving facility.	
8.9	Mission definition to include predefined sequence of effects and scenarios that includes a default predetermined set up for each flight model and target track thus	

	able to create and modify missions.	
9.	**Instructors Station**:	
9.1	Dual Control system with a key board to initiate programme. Edit the programme and terminate the programme.	
9.2	Emergency stop Button to stop all motions immediately	
9.3	Programme Initiative Switch	
9.4	Program selection and profile editing facility.	
9.5	Reset Switch.	
9.6	Two way open communication facility between Instructor and Trainee.	
9.7	Video monitoring and recording facility (CCTV System) on HDD (hard disk).	
9.8	Medical Monitoring System to record ECG Blood Pressure Pulse Oxygen Saturation Standby Channel	
10.	**Additional Requirements**	
10.1	The simulation facility should be available for helicopter mode as applicable.	
10.2	Motion Sickness Desensitization program to be available with the following features: Drop down menu for MSD Switching off of cabin light. Featured with increasing axis of rotation at 5/ 10 rpm	
10,3	Specifications and details of the Biological signal transmission and recording system must also be offered, as optional.	
10.4	Maintenance and Technical specifications in terms of Warranty (min 2 years), Obsolescence Management and Product support options etc may be provided.	
10.5	Training of simulator instructors, operators and technicians to enable conduct of ‘O’ level maintenance.	
10.6	Facility for upgradation in future (open architecture).	
10.7	Provision of suitable operating environment including buildings and infrastructure with required temperature and humidity conditions, captive power supply (DG Sets & UPS), Earthing, Training Room, Workshop, Storage room etc.	

Annexure - VI

INFORMATION FOR FRAMING CRITERIA FOR VENDOR SELECTION/ PRE-QUALIFICATION

Sl. No.	Parameter	Information Required
1.	**General Parameters**	
(a)	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 in India.	Vendors to confirm.
(b)	None of the Promoters and Directors of applicant entity should be a willful defaulter.	
(c)	"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. Provide details.
2.	**Technical Parameters**	
(a)	Manufacturing entity/ system integrator.	Vendors to confirm whether they are a manufacturing entity or a system integrator of defence equipment. Vendors to confirm that they are not a trading company, except in cases where the OEM participates only through its authorised Vendors. In such cases, vendors to provide a certificate from the OEM.
(b)	Experience in broad areas like manufacturing/ electronics etc.	Vendors to specify the areas and period of experience.
(c)	Previous experience on projects in integration of systems/ equipment.	Vendors to provide details.
(d)	Previous experience of Turnkey Projects	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.
(e)	Certification and Compliance	Vendors to provide information on certification, if any, like Gartner Quadrant/ ISO9001/ CMMi/ ISO27001 and compliance to standards such as IEEE, ITU, if any.
3.	**Financial Parameters**	
(a)	Average Annual Turnover.	Vendors to provide average annual turnover for last three financial years, ending 31st March 2021.
(b)	Net Worth.	Vendors to provide Net worth as on 31st March 2021. In case of Group of companies, the Net worth of group companies may also be provided.

Sl. No.	Parameter	Information Required
(c)	Insolvency.	Vendors to confirm they are not under insolvency resolution as per Indian Bankruptcy Code.
(d)	Credit Rating (Desirable Financial Parameter).	Vendors to provide credit rating, if any, as on 31 Mar 2021. (Long term credit rating equivalent to CRISIL rating on Corporate Credit Scale **or** credit rating for SMEs issued by credit rating agencies recognized by SEBI).
4.	**Other Parameters**	
(a)	Industrial License (IL).	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 and confirm holding of IL before commencement of FET. (Items requiring IL will be as per DIPP Press Note 3 of 2014 as amended from time to time).
(b)	**Registration**. 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.