

EOI Ref: HMV/Simulator/EOI/2026/01, Date: 23.12.2025

TECHNICAL QUESTIONNAIRE : DRIVING SIMULATOR HIGH MOBILITY VEHICLE (HMV)

S/No	Specification/Parameter	Vendor Reply
Operational Parameters		
Physical Specifications		
1	Configuration. What will be the configuration of the BEML HMV Driving Simulator?	
2	Driving Cabin. What all would be provided in the driving cabin?	
3	Instructor Station. What all would be provided in the instructor station?	
4	Visual Projection. What all would be provided in the visual projection system?	
5	Overall dimensions. What is the overall dimensions of simulator cabin, including length, width and height? Additionally, clearance required for maintenance access should be defined.	
6	Material. Whether the material used for simulator cabin is fire retardant, durable, low maintenance?	
7	Ergonomics. Whether the vehicle specific ergonomics as per actual vehicle cabin are provided?	
8	Aesthetics & branding. Whether the exterior design, color schemes are consistent with existing BEML HMV?	
Motion Platform		
9	9.1. What will be the configuration of motion platform?	
	9.2. What will be the type of motion platform? Electric or hydraulic?	
	9.3. What all degree of freedom will be provided in the motion platform?	
	9.4. Can 6 DOF Motion Platform be provided?	
	9.5. Is the motion platform capable of relocating off road dynamics specific to the HMV such as terrain induced vibrations, pitch, roll & suspension behaviour?	
	9.6. What is the response time (latency) of the motion platform in synchronizing	
	9.7. Are the noise and vibration levels generated by motion platform during operation are within limits?	
Processing Type		
10	10.1. What kind of processing type will be provided?	
	10.2. What all accessories/peripherals will be provided?	
	10.3. How the processing system will be integrated with the entire simulator?	
Computers		
11	11.1. What will be the configuration of the computers provided?	
	11.2. How many computers will be provided?	
	11.3. How the processing system will be integrated with the entire simulator?	
Simulated Features		
Activated Controls		
12	12.1. What all activated controls will be provided in the simulator?	
	12.2. Will there be any lag between realistic response of actual vehicle and simulation wrt Steering, Gearing, Accelerator and Brake pedal inputs?	
	12.3. How the processing system will be integrated with the entire simulator?	
	12.4. Can following controls be fully activated and simulated without lag :-	
	12.4.1. Steering wheel	
	12.4.2. Gears	
	12.4.3. Clutch	
	12.4.4. Accelerator	
	12.4.5. Brake	
	12.4.6. Handbrake	
	12.4.7. Wind shield wiper	
	12.4.8. Lighting Combination Switch	
	12.4.9. Mirror adjustment switch	
	12.5. Are the pedals (accelerator, brake, clutch) pressure sensitive with variable feedback to simulate real life resistance?	
	12.6. Are the activated controls designed to be durable for repeated use and what is the expected service life or maintenance cycle for these components?	
	12.7. Is there a provision for customizing the layout if required?	
Instrument Cluster		
13	13.1. Can following elements of instrument cluster of actual vehicle be fully integrated and activated with simulator graphics :-	
	13.1.1. Speedometer	

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	13.1.2. L/R turn indicator	
	13.1.3. Hand brake indicator	
	13.1.4. Head light indicator	
	13.1.5. High beam indicator	
	13.1.6. Hazard switch	
	13.1.7. Temperature indicator	
	13.1.8. Parking brake indicator	
	13.1.9. Seatbelt indicator	
	13.1.10. Odometer	
	13.1.11. High Coolant temp	
	13.1.12. Low Oil Pressure	
	13.1.13. Low Air pressure (For brake system)	
	13.1.14. Driver and Co-Dvr door ajar	
	13.1.15. Battery not charging	
	13.1.16. Engagement of differential locks	
	13.1.17. Winching operation ON	
	13.2. Instrument console. Can Instrument console be provided inside the cabin to provide realistic feeling?	
	13.3. Force Feedback Steering Can the simulator be provided with a motorized steering to give same feeling of turning as observed in actual vehicle?	
	13.5. Simulation of various test parameters of HMVs.	
	13.5.1. Gradient & Parking Brake	
	13.5.1.1. 15 Degree	
	13.5.1.2. 20 Degree	
	13.5.1.3. 25 Degree	
	13.5.2. Articulation test	
	13.5.3. Side slope stability at different Degrees (7 Degree, 10 Degree & 17 Degree)	
	13.5.4. Vertical step climbing	
	13.5.5. Crossing ability (Ditch width)	
	13.5.6. Movement with towing of trailer	
	13.5.7. Op with HAK & w/o HAK	
	13.5.8. Foldability	
	13.5.9. Endurance running	
	13.5.9.1. High Speed/ Highway testing	
	13.5.9.2. Cross country	
	13.5.9.3. Belgian Pave Track	
	13.5.9.4. Pot Holes	
	13.5.9.5. Corrugated Track 50 & 100mm	
	13.5.9.6. Long wave pitching	
	13.5.9.7. Serpentine	
	13.5.10. Steering Pad test	
	13.6. Are warning lights (low fuel, engine, overheating and handbrake engaged, low oil pressure, Hand brake applied) functional and programmable within different training scenarios?	
	13.7. Is there a provision to simulate potential instrument cluster faults (eg. Speedometer failure, incorrect readings) as part of advanced defensive driving training modules?	
Visual Environment		
14	14.1. 3D environment Can 3D environment as per Indian road conditions be provided ?	
	14.2. Can Augmented reality / virtual reality module be provided with the system?	
	14.3. Can actual terrain be depicted, if route and destination is provided.	
	14.4. Terrains. Can following terrains be depicted in the 3D environment	
	14.4.1. City Terrain. Including commercial area, residential area, featuring schools, parks, zebra crossings, speed breakers and flyovers etc.	
	14.4.2. Highway Terrain. Including tunnels and railway crossings etc.	
	14.4.3. Hill Terrain. Including steep turns and tunnels etc	
	14.4.4. Desert Terrain	

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	14.5. Realistic Sound Environment. Can Simulator provide high quality stereophonic representation of sound without clutter and capture following elements	
	14.5.1. Engine switch on and switch off	
	14.5.2. Engine sound synchronous to vehicle speed	
	14.5.3. Gear change	
	14.5.4. Starting ignition sound	
	14.5.5. Vehicle engine sound	
	14.5.6. Surrounding traffic noise	
	14.5.7. Horn	
	14.5.8. Rain drops	
	14.5.9. Wind shield wiper	
	14.5.10. Screeching brake sound	
	14.5.11. Indicator"s ticking sound	
	14.5.12. Road Bump Sound	
	14.6. Simulated Modes/Time of Day. Can Simulator provide driving experience in different simulated modes of day and night.	
	14.7. Adverse Weather Conditions. Can Simulator provide provision to drive/practice in adverse weather conditions and experience.	
	14.8. Varying Fog Conditions. Can Simulator provide provision to drive/practice for driving with fog conditions with varying visibility options i.e. Low, Medium and Full visibility and in different intensity of rainfall i.e. Low, Medium and High.	
	14.9. Enemy Action. Can Simulator provide safety measure during convey movement & please give detailed brief ?	
	14.10. Does the visual system support night driving scenario and night vision simulator to replicate tactical operations under limited visibility? Night driving with Blackouts arrangements also to be provided?	
	14.11. What is the native resolution of the visual display (eg Full HD, 4K)	
Training Modules		
15	15.1. Progressive Training for Driving Skills. Can Simulator be provided with Progressive training modules to cover comprehensive training curriculum for Drivers with License starting from acquiring basics to advanced driving skills and will be developed on an actual city terrain and not test tracks for realistic driving feel.	
	15.2. Can following progressive training modules be provided:-	
	15.2.1. Training Modules- For Novice Driver and Trained Driver.	
	15.2.2. Cabin Training Video Module	
	15.2.3. Defensive Driving Module Defensive Driving Module (City, Hill, Highway and Deserts)	
	15.3. Defensive Driving Test. Can a module that will test the driver in multiple driving scenarios giving learner an opportunity to drive in different risky situations anticipating the hazards (Minimum 30 risky scenarios) correctly and hone his defensive driving skills be provided ?	
	15.4. Performance Evaluation and Report Generation. Can Simulator generate a test report in the form of soft copy and hard copy for accessing the performance of trainee against a set benchmark ?	
	15.5. Training Cues. Can written and vocal messages of basic rules for habitual safe driving. Training cues in English or Hindi be provided ?	
	15.6. Can a software capable of fault finding, simulation of forced collision /accident/ vehicle breakdown etc be provided ?	
	15.7. Can a software capable to amend the benchmark be provided ?	
	15.8. Can Simulator evaluate the driver throughout the training process?	
	15.9. Will the evaluation criteria be as per approved standards in India?	
	15.10. Will the system have capability to generate a printed report at the end of each session?	
	15.11. Will the system have capability to generate/print a consolidated report of the drivers entire training period?	
	15.12. Are the dedicated modules for emergency, procedures, including vehicle malfunction, brake failure, tire blowout, skidding or overturn scenarios.	

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Instructor Station Features		
16	16.1. Customized Scenario Settings. Can the instructor station provide the instructor to customize the following in various combinations:	
	16.1.1. Selection of routes	
	16.1.2. Daylight conditions	
	16.1.3. Weather conditions	
	16.1.4. Traffic density	
	16.1.5. Health of vehicle	
	16.2. Calibration of the Vehicle. Can the instructor station provide unlimited calibration of the following controls for easy self-maintenance:	
	16.2.1. Steering	
	16.2.2. Brake	
	16.2.3. Accelerator	
	16.2.4. Clutch	
17	Specifications of Motion Platform. What will be the Specifications of Motion Platform	
	17.1. Dynamic?	
	17.2. Static?	
18	Dynamics of Degree of freedom. What will be the dynamics of the following degree of freedom :-	
	18.1. Pitch	
	18.2. Roll	
	18.3. Surge	
	18.4. Sway	
	18.5. Heave	
	18.6. Yaw	
19	Design Parameters. What will be the following Design Parameters :-	
	19.1. Closed height : in mm	
	19.2. Operating height : in mm	
	19.3. Maximum height : in mm	
	19.4. Frame size : in feet	
	19.5. Velocity	
	19.6. Pitch, Roll & Yaw (in mm /Sec)	
	19.7. Heave, Sway & Surge (in mm /Sec)	
20	Service Life. What would be the service life of the system (in years)?	
21	CAMC. Can in - situ CAMC be provided?	
22	Indigenous Content/ Production.	
	22.1. Can the simulator be produced indigenously by the Indian Industry? If yes, what will be the Indigenous Content provided & verification process? Is the eqpt indigenously designed and developed (IDDM)?	
	22.2. Provide details of overall IC content with former break down in form of material/ Components/software that are manufactured in India.	
	22.3. What are the critical technologies which the industry has taken from their global partners or Joint Venture, if any? Or what are the essential critical technologies which are required to be obtained ?	
	22.4. How much time will the startup / Joint Venture take to start production ?	
	22.5. Does the Indian Industry have the capability to design, develop, manufacture, test and integrate the system including the critical technology?	
	22.6. What are the enhanced parameters/specifications that can be provided?	
	22.7. Do you have Industrial Licences for the production of the ? If not, have you applied for the same and when (date) and by which it is likely to be granted ?	
	22.8. Details of indigenous Military materials already being manufactured in the country.	
23	Please furnish details of IPR documentation / patents / design registration / copyright etc registration with the Authorized agency in respect of the vehicle.	
24	Is the complete set of design and production drawing and source code for all software applications/ programmes available with your company. Can they be produced for verification ?	

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Trials/ Prototypes.		
25	25.1. Is the prototype readily available or has to be designed/manufactured ?	
	25.2. What will be the time penalty and fall out if additional features/higher technology is asked in the prototype? OR If the equipment is to be fielded in 4 months/6months, what level of technology (or type of prototype) would be made available?	
	25.3. Is the OEM/Vendor willing to participate in trials as per DAP-2020 in India on „No Cost No Commitment (NCNC)“ basis?	
	25.4. What maximum equipment quantity can be made available in India for trials on „NCNC basis“? Does OEM agree to submit type approval certificate with NABL Accredited/ Govt Approved Lab Certificate for Performance related parameters, Main Assy and its aggregates as per IS/JSG/national Std Mounted on vehicle before NCNC Trial?	
	25.5. What is the suitability of simulator for deploy in various weather condition in India?	
	25.6. What is the likely time and clearances required for import of equipment for trials in India?	
	25.7. When will the vendor be able to deposit the equipment for trials on intimation by the user post successful clearance of TEC?	
	25.8. Whether vendor certification can be given for major parameter e.g. operating temperature and weather condition etc?	
	25.9. Whether crew required for operating the equipment for user trials shall be provided by the vendor?	
	25.10. EMI/EMC & Other Standards. Provide accredited laboratory (Indian/ International) details for your equipment and relevant IS/AS for EMI/EMC?	
Commercial Terms & Cost		
26	26.1. All the elements which need to be structured in the costing of the weapons/equipment system (including comprehensive maintenance/ product support package)	
	26.2. What will be the estimated price of the complete simulator?	
	26.3. What will be the estimated cost of the „Equipment Support Package“ (ESP) recommended by the OEM/vendor?	
	26.4. What INCOTERMS 2020 are suitable/ preferred by your company and for what reasons? (Global & Indian vendors)?	
Product Support		
27	27.1. What kind of „Product Support“ will you ensure? What will be the „Time Period“?	
	27.2. Have you supplied the equipment to any other country? If yes, furnish details of quantity supplied to the country and year of supply?	
	27.3. Does the company have major repair and overhaul facility for major assemblies and component level repair?	
	27.4. What is the likely „Shelf Life“ of the equipment produced by your company?	
	27.5. What kind of „Engineering Support Package“ will you be offering?	
	27.6. What type of AMC will be provided? Likely Cost?	
	27.7. What life time support can be provided by the vendor?	
	27.8. Are you willing to provide upgrades for the software (as applicable)?	
	27.9. Does the equipment have capability of backing up data? What all redundancies are provided for the same?	
	27.10. Will the vendor provide NATO Stock Numbers (NSN) for each of the item/ part/ equipment in the bill of material, MRLS and Jigs/ Fixtures duly linked to the OEM Part No using NATO Codification system (NCS) adopted by Directed of Standardisation (DOS) with DoS functioning as National Codification Bureau (NCB), India.	
	27.11. In case the NSN number is not available, will vendor obtain the initiate the process for codification in consultation with DoS.	
	(I) Will comprehensive technical manuals, maintenance documents, operator training be provided to enable the user to sustain the simulator through its service life.	

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Production Capacity		
28	28.1. What is your annual production capacity? Can it be scaled up to meet increased requirement?	
	28.2. How much time is required by you to deliver the equipment after conclusion of contract ?	
Time Schedule		
29	29.1. Would your company be able to adhere to the laid down time lines for FoPM & Trials?	
	29.2. Would your company be able to deliver ordered quantities in the time frame decided by GoI? Production output per month & and year be intimate	
Budgetary Estimate		
30	30.1. Approximate basic cost of the simulator?	
	30.2. Estimated Cost per simulator including cost of product support package and training cost?	
	30.3. Are you willing to accept the Option Clause? Give the duration for which the clause would be valid?	
Vendor Selection Criteria/ Pre- qualification		
31	Is the Applicant Entity an Indian Company as defined under Companies Act 2013?	
32	Has the Applicant Entity of any of its allied entities ever been banned or suspended by MoD/ SHQ of any Government Department of Organisation? Details of vigilance action viz ongoing investigations by any Department/ agency of Central Government may be provided.	
33	Is the Applicant Entity a Manufacturing Entity or System Integrates or Trading Company?	
34	Does your Company have any previous experience/ expertise in this field?Specify the field of expertise/ experience of your company and duration of experience in years.	
35	Specify the turnover and net worth of your Company in the last three (03) years.	
36	Is your Company under insolvency resolution as per Indian Bankruptcy Code?	
37	What is the Credit Rating of your Company equivalent to CRISIL rating?	
38	Does your Company quality under Start Up or MSME Category?	
Buy Back Policy		
39	Will the firm be providing by back policy for spares provided along with the eqpt?	
Vendor Managed Inventory for Spares		
40	Will the vendor be interested in maintaining stocks of spares in Indian Army Central/ distributed ordinance echelons on a Vendor Managed Inventory Model?	
41	What faults will the BITE highlight?	
42	Will OH facility for major assemblies & component level repairs be provided by OEM?	
43	Utilisation of easily available indigenous oils and lubricants should be confirmed. Use of in-service oils & lubricants also intimated in response.	
Miscellaneous		
44	Is the equipment in use in the Defence/Para Military Forces in the country and since when?	
45	Is the vendor capable of delivery at Buyer premises?	
46	Any other relevant inputs.	
	46.1. Does the vendor offer technology refresh or component replacement plans to extend service life?	
	46.2. What measures are in place to manage the obsolescence of both hardware & software components during the service life?	
	46.3. Data security & confidentiality	
	46.4. How will data security, user privacy and scenario confidentiality be ensured?	
	46.5. Power supply & environmental requirements	
	46.6. What are power supply requirements (single phase/ three phase, voltage, frequency) and environmental conditions (Temp humidity) necessary for smooth simulator operation	