

**Notice Inviting Expression of Interest (Eol)
for
Strategic Tie-up for Design and Development of
Autonomous Solutions for BEML's Current and Future
Platforms.**

EOI Reference No: CTPAM/Eol/Autonomous Solutions/2026/38
Date of Issue 13-10-2026
Eol closing date: 12-11-2026

Issued by

BEML LIMITED

(Schedule 'A' Company under Ministry of Defence, Govt. of India)

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SECTION-1

Disclaimer

The information contained in this Expression of Interest (Eol) document provided to the Prospective Collaborator(s), by or on behalf of BEML or any of its employees, advisors, agents etc is provided to the Prospective Collaborator(s) on the terms and conditions set out in this Eol document and all other terms and conditions subject to which such information is provided.

1. The purpose of this document is to provide the Prospective Collaborator(s) with information to assist the formulation of their proposal. This Eol document does not purport to contain all the information each Prospective Collaborator may require and does not by implied or expressed terms and conditions intend to establish an offer to the prospective Collaborator. This Eol document may not be appropriate for all persons/entities, and it is not possible for BEML, its employees or its advisors to consider the business/investment objectives, financial situation and particular needs of Prospective Collaborator who reads or uses this Eol document. The assumptions, assessments, statements and information contained in this Eol may not be complete, accurate, adequate or conclusive. Each Prospective Collaborator should conduct its/their own investigations, due diligence and analysis and should check the accuracy, reliability and completeness of the information in this Eol document and where necessary, obtain independent advice from appropriate sources.
2. BEML, its employees and advisors make no representation or warranty to full completeness or makes any representations, express or implied, in relation to the adequacy or accuracy of the information contained herein and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability or completeness of the Eol document.
3. BEML may, in its absolute discretion, but without being under any obligation to do so, modify, amend or supplement the information in this Eol document.
4. BEML reserves the right to not proceed with the Eol, or to alter the timelines reflected herein, or alter its' procedure for the selection of Prospective Collaborator. Even upon

selection of suitable Prospective Collaborator, BEML is not bound to proceed ahead with the Prospective Collaborator and in no case be responsible or liable for any commercial and consequential liabilities in any manner whatsoever.

5. The Prospective Collaborator(s) shall bear all costs associated with or relating to the preparation, business/technical discussion/presentation and submission of response against this Eol. BEML shall in no case be responsible or liable for these costs regardless of the conduct or outcome of the Eol process.
6. Canvassing in any form by the Prospective Collaborator(s) or by any other agency on their behalf shall lead to disqualification of their Eol.
7. Notwithstanding anything contained in this Eol, BEML reserves the right to accept or reject any application and to annul the Eol process and reject all applications, at any time without any liability or any obligation for such acceptance, rejection or annulment and without assigning any reasons, thereof. In the event that BEML rejects or annuls all the applications, it may at its discretion, invite all eligible Prospective Collaborator to submit fresh applications.
8. BEML reserves the right to disqualify any Prospective Collaborator during or after completion of Eol process, if it is found there was a material misrepresentation by any such Prospective Collaborator or the Prospective Collaborator fails to provide within the specified time, supplemental information sought by BEML.
9. BEML reserves the right to verify all statements, information and documents submitted by the Prospective Collaborator in response to the Eol. Any such verification or lack of such verification by BEML shall not relieve the Prospective Collaborator of his obligations or liabilities hereunder nor will it affect any rights of BEML.

SECTION-2

Schedule of Eol process & Contact details

A. Schedule of Eol process

The schedule of activities during the Eol Process shall be as follows -

Sl. No.	Description	Date
01	Issue of Eol Document	13.10.2026
02	Last date of Submission of Eol response	12.11.2026

B. Contact Details for clarification related to Eol

Mr. Poli Narasa Reddy,
Asst General Manager – (Product Engg Low
End Dozer KGF)
SBU Construction
BEML Ltd.,
Bangalore, Karnataka, INDIA
Email: narasareddy.p@bemltd.in
Mobile: +91-9742903562

C. The response to Eol shall be submitted on or before the Eol closing date (as mentioned above) only **through email to bemleoi@bemltd.in** . The subject of the email shall mention Eol reference: **"CTPAM/Eol/Autonomous Solutions/2026/38 dtd 13.10.2026, Response to Eol for Strategic Tie-up for Design and Development of Autonomous Solutions for BEML's Current and Future Platforms"**

D. In case of any amendment/ corrigendum to this Eol is issued, it shall be notified only at BEML website (<https://www.bemlindia.in/active-tenders/>).

SECTION-3

ABOUT BEML LIMITED

1. BEML Limited, a “Schedule - ‘A’” company under the Ministry of Defence (MoD), Government of India, was established in the year 1964. The Company has a state-of-the art, well established and dedicated Research & Development Department, Product Design, Manufacturing Facilities, Assembly Shops for Equipment and Aggregates, Testing facilities etc. The Company is backed with a strong and well experienced skilled manpower in the areas of Defence & Aerospace, Maritime, Mining & Construction and Rail & Metro equipment.
2. BEML Limited has three business verticals viz., Defence & Aerospace, Rail & Metro and Mining & Construction which are divided into 14 SBUs & 2 Micro Strategic Business Units, with four manufacturing complexes located at Bengaluru, Kolar Gold Fields (KGF), Mysuru and Palakkad. All the manufacturing divisions of BEML Limited have been accredited with ISO 9001 – 2015 and ISO 14001 (HSC) certification. Apart from this, BEML Limited has its own world-class composite R&D establishment for Design & Development of various products.

More details about the entire range of BEML's products and operations can be viewed by visiting our web site www.bemlindia.in

SECTION-4

Details of Expression of Interest (Eol)

- 4.1 This Expression of Interest (Eol) seeks response from eligible and technically competent Prospective Collaborator(s) who possess proven experience and solutions in autonomous operation of heavy off-highway and special-purpose vehicles and are willing to collaborate with BEML through strategic partnership for the design, development, integration, validation, manufacturing (wherever applicable), testing, installation, commissioning and after-sales service of autonomous solutions.
- 4.2 BEML primarily intends to accelerate the adoption of autonomous solutions across its existing and future product portfolio, which includes dozers, dumpers, high mobility vehicles, loaders, excavators and other Defence and commercial platforms. The objective is to develop indigenous capability for (a) retrofitting autonomy on existing BEML equipment, both new production and in-service fleet, and (b) developing autonomy-ready greenfield platforms with drive-by-wire architecture, while maintaining performance, durability and safety standards.
- 4.3 The Autonomous solutions may address phase wise following levels of operation, depending on the application segment:
- 4.5.1. Tele-operation: Remote operation of the vehicle by a human operator from a remote station.
 - 4.5.2. Operator-assist / semi-autonomous operation: Autonomy of selected functions, such as steering assist, obstacle warning, automated work cycles or leader-follower convoy.
 - 4.5.3. Supervised autonomous operation: Driverless operation within a defined Operational Design Domain (ODD) under remote supervision.
- 4.4 The proposed autonomous solutions should be adaptable to diverse duty cycles, terrains and environmental conditions, particularly in mining, construction, Defence and infrastructure sectors, including unstructured off-road terrain, dust, vibration, and day and night operation. They may include both modular, retrofit-ready kits and

completely new autonomy-enabled platform solutions. Prospective Collaborators must also support localization, training and regulatory compliance initiatives.

4.5 The supply to be effected under this collaboration shall include, but not be limited to, the following systems and sub-systems:

4.5.1. Perception & Sensing: Ruggedized sensors such as LiDAR, radar, cameras (including thermal / low-light), ultrasonic sensors and inertial units, with sensor cleaning, protective housings and self-diagnostics suited to high shock, vibration and dust environments.

4.5.2. Localization & Positioning: GNSS/RTK-based positioning (including NavIC compatibility), inertial and odometry fusion, and map-based or SLAM-based localization for GNSS-degraded or GNSS-denied areas, with resilience to GNSS jamming and spoofing.

4.5.3. Autonomy Software Stack: Sensor fusion, obstacle and human detection, terrain traversability assessment, mapping, path and motion planning, task and mission planning (e.g., dozing passes, haul cycles, convoy movement) and behaviour management tailored to the specific application duty cycle.

4.5.4. Drive-by-Wire / Actuation Systems: Electronic and electro-hydraulic actuation for steering, throttle, braking, transmission, parking brake and implements (e.g., blade, ripper), with manual override and safe fallback, suitable for retrofit as well as OEM-integrated installation.

4.5.5. Vehicle Control, Computing & Communication: Autonomy compute units, interface with the Vehicle Control Unit (VCU) and existing vehicle controllers, robust communication protocols (CAN / SAE J1939, Ethernet), redundant networks and data links (e.g., private LTE/5G, mesh radio).

4.5.6. Safety & Compliance Systems: Emergency stop, safety-rated stop and fail-safe logic, geofencing and exclusion zones, redundant or safety-rated braking and steering, a dedicated safety controller, speed limiting, hazard analysis for the operating domain, human-detection performance,

validation of AI/ML models, software change control and traceability, functional safety, ISO compliances (as applicable) and cybersecurity.

- 4.5.7. Remote Operation, Fleet Management & Telematics: Tele-operation / remote supervision consoles, mission dispatch and fleet management system, data acquisition and logging, remote diagnostics, over-the-air (OTA) software updates and analytics.
- 4.5.8. Simulation, Digital Twin & Validation Tools: Simulation environments, Software-in-Loop (SIL) / Hardware-in-Loop (HIL) set-ups, scenario libraries and data logging and annotation toolchains for development and validation of the autonomy stack.
- 4.5.9. Site Infrastructure Interface: Site mapping and survey tools, communication and positioning infrastructure (e.g., RTK base stations), control room set-up and interface with customer site-management systems.
- 4.5.10. Machine-Specific Functions & Mixed-Fleet Operation: Implement and work-cycle automation (e.g., blade auto-grade and ripper control for dozers; load-spot-dump cycle and payload sensing for dumpers; cross-country mobility and convoy operation for high mobility vehicles), collision avoidance and right-of-way management with manned vehicles and personnel, seamless transition between manual and autonomous modes, status indicators and warning devices, and an operator-in-cab option.
- 4.5.11. Vehicle Integration & Maintainability: Power supply interface for the autonomy kit, diagnostics and calibration procedures, and service tools to enable maintenance by BEML and customer personnel.
- 4.5.12. Environmental, EMI/EMC & Defence-Grade Requirements: Electromagnetic compatibility (e.g., ISO 13766 for earth-moving machinery), environmental and military-standard qualification for Defence platforms (e.g., MIL-STD-461, MIL-STD-810 or equivalent), and secure communications and data security for Defence applications.

4.6 Submission and Process of Eol Evaluation:

- 4.6.1 The Prospective Collaborator meeting the Pre-qualification requirements (PQR) as specified in clause 4.7 below are invited to submit their response to this Eol.
- 4.6.2 Upon receipt of response(s) against this Eol, BEML will review the response(s) through a Technical Evaluation Committee (TEC) to ascertain suitability and shortlist Prospective Collaborator for further discussions.
- 4.6.3 On evaluation, only selected OEMs will be informed about their shortlisting.

4.7 Pre-qualification requirements (PQR)

The Prospective Collaborator shall meet following qualification requirements as on the date of submission of Eol (to be substantiated by a documentary evidence):

- 4.7.1. The Prospective Collaborator shall be an OEM, technology company, system integrator, robotics/automation company or specialized technology provider having demonstrated expertise in the development, integration or deployment of remote-controlled, semi-autonomous or autonomous solutions for heavy off-highway equipment. The Prospective Collaborator shall submit documentary evidence of its relevant technical capabilities, previous projects, field experience and system integration expertise.
- 4.7.2. Prospective Collaborator must be a registered entity in accordance with the law, with continuous operation as on the date of publication of this Eol.

4.8 Instructions:

- 4.8.1. The interested Prospective Collaborator(s) should submit their response(s) along with enclosed annexures.

Annexure-1 Prospective Collaborator Information

Annexure-2 Eligibility Criteria and Compliance Declaration

Annexure-3 Technical Compliance Checklist for Autonomous Solutions

Annexure-4 Eol response format

Annexure-5 Certificate as to Authorized signatories

Annexure-6 Declaration by the prospective collaborator regarding any pending litigation, arbitration cases

Annexure-7 Declaration by the prospective collaborator regarding blacklisting

Annexure-8 Certificate for Land Border Sharing

Appendix-A Reference List

Appendix-B Undertaking 100 Hp Dozer as First Autonomous Solution Project

4.8.2. **Language:** All correspondences and documents related to the Eol response shall be in English language, provided that any printed literature furnished by the Prospective Collaborator may be written in another language, as long as such literature is accompanied by a translation of its pertinent passages in English language in which case, for purposes of interpretation of the response to the Eol, the English translation shall govern. However, if the translation is found to be incorrect subsequently, BEML will have right to take appropriate action against the Prospective Collaborator as may be deemed fit.

4.8.3. The person signing the response to the Eol should have due written authorization from the Prospective Collaborator to sign the documents and should duly authenticate any errors or corrections in the Eol. Over writing should be avoided. Copies of the credentials/ documents which are to be annexed must be self-attested and bear the signature and seal of the authorized signatory / authorised representative of the interested Entity/Firm/Company. The interested Entity/ Firm/Company will be requested to produce the originals of all information / documents as and when so required by BEML.

4.8.4. Multiple proposals from the same Prospective Collaborator should not be submitted.

4.8.5. BEML at its discretion shall inspect the Prospective Collaborator's works/ office/ reference site premises for the purpose of evaluation, as deemed necessary before selection of Prospective Collaborator. BEML's decision in this regard shall be final.

4.8.6. Any Prospective Collaborator which has been declared insolvent, bankrupted, debarred/blacklisted by Central/State Governments of India or by any entity controlled by Central/State Governments of India from participating in any of their project/tender, as on date of submission of Eol shall not be eligible to submit the Eol.

4.8.7. BEML shall receive responses/applications pursuant to this Eol in accordance with the terms set forth herein, as may be modified, altered, amended and clarified from time to time by BEML and all applications shall be submitted in accordance with such terms on or before the date specified in this Eol for submission of applications.

4.8.8. Restrictions on Prospective Collaborator from a Country which shares a Land Border with India:

- a) Interested Prospective Collaborator from a country which shares a land border with India will be eligible to respond to this Eol only if interested Prospective Collaborator is registered with Competent Authority (Registration Committee constituted by the Department of Promotion of Internal Trade (DPIIT) of Govt. of India). Such registration should be at least valid for the entire period of Eol due date or any extension thereof.
- b) Interested Prospective Collaborator from a country which shares a land border with India means:
 - i. An entity incorporated, established or registered in such country sharing a land border with India; or
 - ii. A subsidiary of an entity incorporated, established or registered in such country; or
 - iii. An entity substantially controlled through entities incorporated, established or registered in such country; or
 - iv. An entity whose beneficial owner is situated in such a country; or
 - v. An Indian (or other) agent of such an entity; or
 - vi. A natural person who is a citizen of such a country; or
 - vii. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above.

4.9 **REJECTION:** An Expression of Interest is liable to be rejected for any of the following conditions:

- 4.9.1. The Expression of Interest is not accompanied by required documentation and has failed to provide clarifications related thereto, when sought by BEML.

4.9.2. Misrepresentation, lack of proper documentation, fraud, coercion, undue influence, canvassing etc., by the prospective collaborator.

4.9.3. The Expression of Interest is received after the closing time and date.

4.9.4. Any information which would have entitled BEML to reject or disqualify the Prospective Collaborator becomes known to BEML after the Prospective Collaborator has been qualified.

4.10 Eol PROCESS TO BE CONFIDENTIAL:

Information relating to the examination, clarification, evaluation and comparison of Eol and recommendations shall not be disclosed to Prospective Collaborator(s). Any effort by Prospective Collaborator(s) to influence BEML in processing of Eol or selection decisions may result in the rejection of the response against Eol.

4.11 GOVERNING LAWS & JURISDICTION:

The Eol process shall be governed by, and construed in accordance with the laws of India and the Courts at Bangalore (India) shall have exclusive jurisdiction over all disputes arising under, pursuant to and / or in connection with the Eol process.

SECTION – 5: SCOPE OF THE COLLABORATION

The scope of strategic collaboration between BEML and the selected Prospective Collaborator(s) shall include, but not be limited to, the following areas of engagement related to the design, development and deployment of autonomous solutions on BEML's vehicle platforms:

- 5.1 Prospective Collaborator(s), upon being shortlisted through this Eol, shall be willing to enter into a Definitive Agreement (DA) with BEML for offering customized autonomous solutions tailored to BEML's vehicle platforms. This includes support for retrofitting autonomy on existing vehicles as well as development of new autonomy-enabled vehicle platforms for both Indian and global markets, aligned to specific customer RFIs/RFPs/tenders.
- 5.2 Prospective Collaborator(s) shall associate with BEML to design, develop, integrate, test and supply complete autonomous solutions suitable for:
 - a. New autonomy-enabled vehicle platforms, and
 - b. Retrofit of existing BEML vehicles, including dozers, dumpers and high mobility vehicles, with autonomy kits.
- 5.3 Prospective Collaborator(s) shall support the end-to-end development of Proof of Concept (PoC) vehicles, including drive-by-wire integration, system-level integration, commissioning, simulation-based validation, proving-ground testing and field validation trials under real-world operating conditions.
- 5.4 Prospective Collaborator(s) shall assist BEML in achieving compliance for relevant approvals and certifications with applicable Indian and international regulatory standards and customer requirements such as, but not limited to, DGMS, CMVR/AIS (where applicable), ISO and IEC standards for functional safety of earth-moving and mining machinery and autonomous systems, cybersecurity standards and wireless/spectrum regulations.

- 5.5 Prospective Collaborator(s) shall provide all updated and project-specific technical documentation, safety case and hazard analysis, integration manuals and compliance reports required for project execution and customer submission.
- 5.6 Prospective Collaborator(s) shall enter into project-specific Definitive Agreement/(s) with BEML and extend full support to BEML under each agreement for the preparation and submission of techno-commercial bids and successful execution of contracts in case of award of tender/contract. This support shall include but not be limited to:
- a. Support during pre-bid and bid phases by deputing technical experts and participating in customer interactions, site visits, clarification meetings and evaluations.
 - b. Providing cost-related data and inputs necessary for BEML to prepare competitive commercial offers aligned to customer specifications and formats.
 - c. Furnishing a price list with long-term validity, including a Price Variation Clause, for assemblies, subassemblies, components, software licences, spares and recommended spare parts for 5 years, where applicable.
 - d. Providing all updated and customized technical documentation, test certificates, integration drawings, performance data and compliance reports for their scope of supply.
 - e. Furnishing any additional technical or commercial information reasonably required by BEML to respond to customer RFPs/tenders or to execute awarded contracts.
- 5.7 The above-mentioned requirements are indicative and may be supplemented with any other documentation, deliverables, or inputs necessary to enable BEML to participate in and execute projects successfully involving autonomous vehicle platforms or individual systems/subsystems/aggregates against specific BEML's requirements.
- 5.8 Prospective Collaborator(s) shall provide after-sales support including on-site service assistance, training to BEML engineers and customer personnel, spares provisioning, sensor re-calibration, software updates (including OTA), cybersecurity

patches and remote diagnostics for deployed autonomous solutions or individual systems/subsystems/aggregates against specific BEML's requirements.

- 5.9 Prospective Collaborator(s) shall conduct structured training programs for BEML engineers, service staff and customer operators/supervisors on autonomy system architecture, operation, remote supervision, calibration, diagnostics, maintenance and safety practices.
- 5.10 Prospective Collaborator(s) shall support BEML during customer field evaluation trials, service interventions, lifecycle support (including software maintenance and component obsolescence management) and ensure long-term product reliability.
- 5.11 The Prospective Collaborator(s) shall acknowledge and agree that BEML reserves the right to engage the Prospective Collaborator for the independent supply of any of its individual system or sub-system or aggregates listed in Section 4, without requiring the supply of a complete, integrated autonomous solution. The Collaborator must provide competitive pricing and full technical documentation and support for such modular sourcing requirements. This obligation extends to necessary software licensing and communication protocols essential for BEML's standalone operation of the component.

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Annexure-1

PROSPECTIVE COLLABORATOR INFORMATION

1. Name, Address, and Unique ID (if any) of the Prospective Collaborator.
(Profile may include Share Holding pattern, etc., in brief, to be attached).
2. Type (Tick the relevant category).

Original Equipment Manufacturer (OEM): Yes/No

Authorized Vendor of OEM Yes/No (attach details, if yes)

Others (give specific details) _____
3. Contact Details:

Postal Address:
City: State:
Country: Pin/Zip Code.....
Tele: Fax:
URL/Web site:
4. Local Branch / Liaison Office / Authorised Representatives.

Name & Address:
City: State:
Country: Pin/Zip Code.....
Tele: Fax:
5. Category of Industry (like Medium /Small / Micro Enterprise and others):
Company Registration certificate, Udyam Registration certificate whichever
applicable is to be furnished.
6. Certification by Quality Assurance Organisation.

Name of Agency	Certification	Applicable from (date & year)	Valid till (date & year)

7. Declaration:

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

(a) I / We hereby declare that the information given above is true, correct, and complete in every respect to the best of my/our knowledge and belief and no material facts have been concealed and any changes will be intimated within one month of occurrence.

(b) I am / We are authorized to sign this information.

For Prospective Collaborator

Signature of the Authorized signatory
of the Prospective Collaborator with Seal

Note: All the above information shall be submitted in the firm's letterhead along with supporting documents.

Annexure-2

ELIGIBILITY CRITERIA AND COMPLIANCE DECLARATION

Sl. No.	Eligibility Parameter	Response (Yes/No)	Supporting Document(s) to be Enclosed*
1	Whether the Prospective Collaborator is a Foreign / Domestic Original Equipment Manufacturer of autonomous solutions/systems or technology developer of autonomous solutions/systems for heavy off-highway or special-purpose vehicles and has a minimum of five (05) years of continuous operation and experience in the field of design, development, supply and integration of autonomous or semi-autonomous vehicle systems, as on the date of publication of this Eol. In case of a foreign firm, proposed model for supporting developmental activity in India during various stages of project execution such as data acquisition, feasibility study, conceptual design, prototyping, in-house testing, certification from authorities, commissioning & testing at customer premises, after-sales support, etc. should be submitted. Note: In case of an Indian MSME participating as an OEM, in exercise of Para 16 of Public Procurement Policy for Micro and Small Enterprises Order 2012, the condition of prior turnover and prior experience may be relaxed with respect to Micro and Small Enterprises provided that all the quality and technical specifications are met	☐ Yes ☐ No	1. Certificate of Incorporation; 2. Brief Company Profile; 3. Reference customer list; 4. R&D capability and development / manufacturing facilities; 5. For a foreign firm – Proposed model for supporting developmental activity in India; 6. For an Indian MSME participating as an OEM – Udyam Certificate / Registration;
2	Whether the Prospective Collaborator has successfully executed or field-tested at least two (02) autonomous or semi-autonomous vehicle solutions (either for greenfield autonomy-enabled vehicles or retrofit on existing vehicles) in last five (05) years, of which at least one (01) project should be on a heavy off-highway / mining / construction / Defence-class vehicle and should have completed satisfactory performance for at least six (06) months as on the date of publication of this Eol.	☐ Yes ☐ No	Work Order or Completion Certificate or Proof of Successful execution (for at least one project) along with Project summary with client details as per Appendix A.
3	Whether the Prospective Collaborator is willing to take up the 100 HP Dozer with hydrostatic Transmission as a first project for development of Autonomous Solution.	☐ Yes ☐ No	Consent Letter on Letter Head along with the Appendix B.
4	Whether the Prospective Collaborator has an average annual turnover of at least INR 25	☐ Yes	Audited financial statements and net worth of FY:2025-26.

Sl. No.	Eligibility Parameter	Response (Yes/No)	Supporting Document(s) to be Enclosed*
	Crores over the last three (03) financial years and has maintained a positive net worth in last previous financial year as on the date of publication of this Eol.	☐ No	
5	Whether the Prospective Collaborator agrees to hold joint ownership of Intellectual Property Rights (IPR) with BEML for all systems, products, or technologies jointly developed under this collaboration.	☐ Yes ☐ No	Consent Letter on Letter Head
6	Prospective Collaborator should not have any pending litigation, arbitration cases or disputes against BEML before any court, tribunal or statutory authority in connection with any past or current contracts or tenders issued by BEML.		Declaration as per Annexure-6
7	Prospective Collaborator should not have been declared insolvent, bankrupt, debarred or blacklisted by any Central / State Government or public sector undertaking in India or any entity controlled by such governments, as on the date of submission of the Eol.		Declaration as per Annexure-7
8	Whether the Prospective Collaborator is restricted under GFR Rule 144(xi) or any other rules notified by the Government of India, as amended from time to time.	☐ Yes ☐ No	
9	Whether the Prospective Collaborator agrees that submission of incomplete, false or misleading information, or failure to furnish required documents will result in its immediate disqualification	☐ Yes ☐ No	
10	Whether the Prospective Collaborator is ready and willing to fulfil scope of collaboration as mentioned in Section 5 of this Eol.	☐ Yes ☐ No	
11	Whether the Prospective Collaborator agrees that it has read, understood, accepts and abides by the Terms & Conditions of this Eol	☐ Yes ☐ No	

*** NOTE: Supporting document(s) enclosed should be in a readable pdf format. Any submissions in form of links will not be accepted as a valid response.**

For Prospective Collaborator

**Signature of the Authorized signatory
of the Prospective Collaborator with Seal**

Annexure-3

Technical Compliance Checklist for Autonomous Solutions

Prospective Collaborators shall indicate response against each requirement to confirm whether the respective system is designed and/or supplied by them. Relevant supporting documents must be enclosed as specified.

Sl. No.	Technical Requirement	Response	Supporting Document(s) to be Enclosed*
1	Perception & Sensing: a. LiDAR, radar, camera (including thermal / low-light) and ultrasonic sensors suitable for the dust, shock, vibration and temperature range of off-highway and Defence environments (IP67 or equivalent). b. Sensor fusion for detection of obstacles, humans, vehicles and terrain features, with sensor cleaning and self-diagnostics. c. Redundancy / degraded-mode strategy on sensor failure.	☐ Yes ☐ No	a. Sensor range, type and relevant product brochures with ingress-protection and environmental test details. b. Perception architecture and detection performance data. c. Degraded-mode description.
2	Localization & Positioning: a. GNSS/RTK positioning (NavIC-compatible, where available) with inertial and odometry fusion. b. Map-based or SLAM-based localization for GNSS-degraded / GNSS-denied areas. c. Site mapping and map update capability. d. Resilience to GNSS jamming and spoofing.	☐ Yes ☐ No	a. Product brochures with positioning accuracy data. b. Localization approach for GNSS-denied areas. c. Site mapping workflow. d. Anti-jamming / anti-spoofing approach.
3	Autonomy Software Stack: a. Path and motion planning for tracked and wheeled vehicles in unstructured terrain. b. Obstacle avoidance, terrain traversability assessment and speed management. c. Task / mission planning for application duty cycles (e.g., dozing, haul cycle, convoy movement). d. Modular software architecture with defined APIs for integration.	☐ Yes ☐ No	Software architecture overview, functional description, API / interface documentation, supported Operational Design Domain (ODD) statement.
4	Drive-by-Wire / Actuation Systems: a. Electronic / electro-hydraulic actuation for steering, throttle, braking, transmission, parking brake and implements. b. Retrofit capability on existing BEML vehicles with manual override and safe fallback.	☐ Yes ☐ No	a. Product brochures and technical specifications. b. Retrofit installation reference / approach. c. Manual override and fail-safe design description.

Sl. No.	Technical Requirement	Response	Supporting Document(s) to be Enclosed*
	c. OEM-integrated drive-by-wire capability for new platforms.		
5	Vehicle Control, Computing & Communication: - Ruggedized autonomy compute units suitable for high shock and vibration environments. - Interface with VCU / existing controllers (CAN / SAE J1939, Ethernet). - Wireless data link (private LTE/5G, mesh radio or equivalent) with redundant networks.	☐ Yes ☐ No	Compute specifications, communication architecture, protocol details, wireless equipment approvals / certifications.
6	Remote Operation, Fleet Management & Telematics: - Tele-operation / remote supervision console. - Mission dispatch and fleet management system. - Data acquisition, logging and remote diagnostics. - Over-the-air (OTA) software update capability.	☐ Yes ☐ No	Product brochures, telematics architecture, data capture / reporting capability, OTA capability.
7	Machine-Specific Functions & Mixed-Fleet Operation: - Implement and work-cycle automation (e.g., blade auto-grade and ripper control for dozers; load-spot-dump cycle and payload sensing for dumpers; cross-country mobility and convoy operation for high mobility vehicles). - Collision avoidance and right-of-way management with manned vehicles and personnel. - Seamless transition between manual and autonomous modes, with status indicators, warning devices and operator-in-cab option.	☐ Yes ☐ No	Functional description per vehicle class, mixed-fleet interaction approach, mode-transition and indication design overview.
8	Safety & Compliance: - Emergency stop, safety-rated stop, speed limiting, geofencing and fail-safe logic. - Redundant or safety-rated braking and steering with a dedicated safety controller. - Hazard analysis for the operating domain, human-detection performance and safety case aligned to ISO 17757 / ISO 19014 / ISO 13849 / IEC 61508 or equivalent, as applicable. - Validation of AI/ML models, software change control and traceability. - Cybersecurity measures (e.g., IEC 62443 or equivalent).	☐ Yes ☐ No	Copy of certifications, safety design overview / safety case summary, hazard analysis summary, software change-control and AI/ML validation approach, cybersecurity approach.

Sl. No.	Technical Requirement	Response	Supporting Document(s) to be Enclosed*
	f. F. DGMS, CMVR/AIS (where applicable) and wireless/spectrum approvals or equivalent.		
9	Environmental, EMI/EMC & Defence-Grade Requirements. a. Electromagnetic compatibility compliance (e.g., ISO 13766 for earth-moving machinery). b. Environmental and military-standard qualification for Defence platforms (e.g., MIL-STD-461, MIL-STD-810 or equivalent). c. Secure communications and data security for Defence applications.	☐ Yes ☐ No	EMC and environmental test reports / certificates, secure communication and data security overview.
10	Vehicle Integration & Maintainability. a. Power supply interface for the autonomy kit. b. Diagnostics and calibration procedures. c. Service tools and maintenance documentation for BEML and customer personnel.	☐ Yes ☐ No	Integration and interface overview, diagnostics and calibration procedure samples, service tool details.
11	Simulation, Digital Twin & Validation Tools. SIL / HIL set-ups, simulation environments, scenario libraries, data logging and annotation toolchains.	☐ Yes ☐ No	Tool overview, sample validation reports.
12	Site Infrastructure Interface. Site survey and mapping tools, RTK base stations, communication infrastructure, control room set-up and interface with customer site-management systems.	☐ Yes ☐ No	Infrastructure specifications, integration examples.
13	Testing & Validation. Field / lab validation results, IP rating, autonomous operation performance data (e.g., operating hours, availability, operator interventions).	☐ Yes ☐ No	Validation summary, selected test report excerpts.
14	Other Relevant Subsystems. Any additional component or control system essential for full vehicle-level autonomy and integration.	☐ Yes ☐ No	Technical specifications with system overview, if applicable.

*** NOTE: Supporting document(s) enclosed should be in a readable pdf format. Any submissions in form of links will not be accepted as a valid response.**

For Prospective Collaborator

**Signature of the Authorized signatory
of the Prospective Collaborator with Seal**

Annexure-4

{To be printed and submitted on Prospective Collaborator's official letterhead}

Eol RESPONSE FORMAT

To,
BEML Limited
SR Nagar, Bangalore 560027
E-mail: bemleoi@bemltd.in

Dear Sir,

Ref: Expression of Interest to collaborate with BEML Limited for Strategic Tie-up for Design and Development of Autonomous Solutions for BEML's Current and Future Platforms.

Having examined the Expression of Interest (Eol) document dated _____, downloaded from the BEML Limited portal. We, the authorised signatories of the Prospective Collaborator, intend to submit the response/proposal to the aforesaid Eol document.

We attach hereto the response/proposal to Eol as required as per the Eol document, which constitutes our response to Eol.

The Primary and Secondary contacts for the prospective Collaborator in respect of the Eol are as under:

Particulars	Primary Contact	Secondary Contact
Name:		
Title:		
Address:		
Phone:		
Mobile:		
Fax:		
E-mail:		

We confirm that the information contained in this response or any part thereof, including its exhibits, and other documents and instruments delivered or to be delivered to BEML Limited are true, accurate, verifiable and complete. This response includes all information necessary to ensure that the statements therein do not in whole or in part mislead BEML Limited in its short-listing process nor suppressed any material facts.

We fully understand and agree that on verification, if any of the information provided herein is found to be false /misleading, at any point of time, our response / proposal is liable to be disqualified / rejected from the selection process or termination of the definitive agreement, if the Prospective Collaborator is selected, besides other action as may be required as per the BEML Limited Purchase Manual, as available in BEML Website.

We agree to the unconditional acceptance of all the terms and conditions set out in the Eol document.

It is hereby confirmed that I / We are entitled and duly authorised to act on behalf of the Prospective Collaborator and empowered and authorised to sign this document as well as such other documents, which may be required in this connection.

Dated this

For Prospective Collaborator

Signature of the Authorized signatory
of the Prospective Collaborator with Seal

Duly authorized to sign the Eol Response for and on behalf of:

(Name and Address of the authorised representative/signatory with Seal / Stamp of the Prospective Collaborator)

Witness Signature:

Witness Name:

Witness Address:

Annexure-5

{To be submitted in the letter head of the Prospective Collaborator}

CERTIFICATE AS TO AUTHORIZED SIGNATORIES

I/We, ..., the Company Secretary of
.....(Name of the
Prospective Collaborator), do hereby certify that Mr./Ms
..... who signed the Eol floated by BEML Ltd for Design and
Development of Autonomous Solutions for BEML's Current and Future Platforms is
authorized to do so and bind the Prospective Collaborator by virtue of the authority granted
by board / governing body and the reference number, if any.

For Prospective Collaborator

Signature of the Authorized signatory
of the Prospective Collaborator with Seal

Date:
Signature:
(Prospective Collaborator Seal)

Annexure-6

{To be submitted in the letter head of the Prospective Collaborator}

DECLARATION BY THE PROSPECTIVE COLLABORATOR

This is to certify that we, _____ (name of the Prospective Collaborator), do not have any litigation, arbitration cases, disputes or any litigation against BEML Ltd or any other organisation pending before any Court / Tribunal/ Statutory Authority/Arbitrator in connection with any contract / tender issued by BEML Ltd or in any other regard.

Or

This is to certify that we, _____ (Name of the Prospective Collaborator), have the following litigation/arbitration cases/disputes or any other litigation with BEML Ltd.:

Sr No	Petitioner /Respondent	Case number	CNR number	Court Name/place	Present Status/ Remarks, if any

The list of cases having monetary claims against the Prospective Collaborator, the result of which will have impact on its financial position, pending before any Court/Statutory Authority/Tribunal as on the date of submission of Eol are as under:

Sl. No.	Petitioner /Respondent	Case number	CNR number, if any	Court Name/ place	Present Status/ Remarks, if any	Claim Amount

It is further certified that, as on date, no Insolvency, liquidation or bankruptcy proceedings is pending before any Court/ Tribunal against the Prospective Collaborator.

For Prospective Collaborator

Signature of Authorized signatory of the
Prospective Collaborator (with Seal /Entity Seal)

Annexure-7

{To be submitted in the letter head of the Prospective Collaborator}

DECLARATION BY THE PROSPECTIVE COLLABORATOR

This is to certify we _____ (Name of the Prospective Collaborator), have not been banned / black listed / debarred from trade or from participating in any tendering process by BEML / Government of India or its State Governments or any of its Dept. / Autonomous Institution / PSUs/ any statutory authority/corporation in the last 05 years as on the date of submission of the response to the Eol.

I / we hereby certify that all the information given above are true and correct.

For Prospective Collaborator

Signature with date of Authorized signatory

of the Prospective Collaborator

Name: _____

Designation: _____

Prospective Collaborator's Entity Seal: _____

Annexure-8

CERTIFICATE FOR LAND BORDER SHARING

{To be submitted in the letter head of the Prospective Collaborator}

Applicant may refer to GOI office memorandum No. F.No.6/18/2019-PPD of Department of Expenditure Public Procurement Division, amended from time to time and its subsequent Orders/Notifications

The Prospective Collaborator Certifies as below:

"We(name of the Prospective Collaborator) have read the Govt. of India (GOI) Office Memorandum (OM) No. F.No.6/18/2019-PPD of Department of Expenditure Public Procurement Division, Government of India and/or its amendments and in particular the clause regarding restrictions on procurement from the entity of a country which shares a land border with India; Accordingly, we, _____ (Name of the Collaborator), do hereby certify that:

We are not from such a restricted country as detailed in the OM
OR,

(If the Collaborator is from such a restricted country),

We are from _____ (name of the country), which is a restricted country as per the said OM and that we have duly registered with Competent Authority (Registration Committee constituted by the Department of Promotion of Internal Trade (DPIIT) of Govt. of India) and the said registration is/shall be valid for the entire period of Eol due date or any extension thereof and the copy of the up-to-date Registration Certificate is appended herewith. We, hereby further Certify that we fulfil all requirements in this regard and is eligible to be considered for this Eol"

For Prospective Collaborator

**Signature of the Authorized signatory
of the Prospective Collaborator with Seal**

Appendix-A

Reference List

The Prospective Collaborator shall furnish a summary of their product reference as detailed below for major supplies in last 5 years

Sl. No.	Name of Country where Introduction of Autonomous Solutions on off-high way platforms / similar product which is working	No. of unit supplied	Year of Supply

I / we hereby certify that all the information given above is true and correct.

Signature with date of Authorized signatory

Name:

Designation:

Firm's Seal:

Appendix- E

Undertaking – 100 Hp Dozer as First Autonomous Solution Project

{With Cover Letter in Entity/Firm/Company's letterhead}

This is to certify that our Entity/Company/Firm, the Prospective Collaborator herein, shall take up the 100 HP dozer as the first project to develop an autonomous solution under this collaboration and shall develop it as follows:

Sl. No.	Particulars	Prospective Collaborator's Response
1	Platform	100 HP dozer with Hydrostatic Transmission
2	Proposed approach and level of autonomy (retrofit / OEM-integrated; tele-operated / semi-autonomous / supervised autonomous)	
3	Key sub-systems and solutions proposed (sensing, positioning, autonomy software, drive-by-wire, safety, remote operation)	
4	Development plan (phases, milestones and total duration in months)	
5	Team, development facilities and test site	
6	Support required from BEML	

We are aware that subsequent platforms, such as dumpers and high mobility vehicles, may be taken up under project-specific Definitive Agreements as described in Section 5 of this Eol.

I / we hereby certify that all the information given above is true and correct.

Signature with date of Authorized signatory

Name:

Designation:

Firm's Seal: