

**BEML LIMITED**

(A Government of India Mini Ratna Company under Ministry of Defence)

"BEML SOUDHA", 23/1, 4<sup>TH</sup> Main, S.R. Nagar, Bangalore - 560027

Phone: 080-22963151 / 179 / 315

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**TENDER DOCUMENT**

**SRM BID NO: 6300035688**

**REQUEST FOR QUOTATION FOR IMPLEMENTATION OF INDUSTRY 4.0 PROJECT  
AT H&P DIVISION, BEML, KGF COMPLEX**

PRE-QUALIFICATION BID – EMD & INTEGRITY PACT

TECHNICAL BID - BIDDER HAS TO UPLOAD THE TECHNICAL DOCUMENTS AS  
PER THIS TENDER DOCUMENT (Page no 9 & 10)

**Tender closing date & Time : 05.04.2021 @ 14:00 Hrs**

**BEML Limited,  
Corporate Office,  
BEML Soudha, 23/1, 4<sup>th</sup> Main, SR Nagar,  
Bangalore – 560027**

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## **1. INTRODUCTION**

BEML Limited, a leading Multi-technology and multi location, 'Miniratna- Category -1 company under the Ministry of Defence for manufacturing a wide range of mining, earthmoving, railways and Defence Truck & Equipment.

## **2. SCOPE OF WORK**

BEML intends to implement standard enterprise wide IR4.0 (Industrial Revolution) Solution across its shopfloor at BEML H&P Division for proposed initial 25 Machines & 02 Test Rigs to start with, including but not limited to real time plant monitoring, digital quality inspection, tracking equipment performance, predicting equipment failure and continuous replenishment. IR4.0 should enable obtaining better, real time information about equipment status and performance and improve operations by providing insights using analytics that will help support and automate the decision-making process.

BEML seeks a comprehensive solution that can integrate well with its existing equipment and software and can leverage existing equipment as much as possible. The IR4.0 platform should serve as a single source of truth, compiling data from equipments such as, CNCs, PLCs, Sensors, SCADA systems and other structured and unstructured data sources across the organization and provide analytics and visualization capabilities. Based on requirements from divisions and identified use cases, in future there may be a requirement to install additional sensors, establish network connectivity, and provide advanced analytics and visualization capabilities. However, the IR4.0 platform shall support data import and export to enable all such future use cases.

This tender document defines the scope of work for development, deployment and subsequent maintenance of:

- A. Enterprise-wide Digital Thread.
- B. Historical Data Storage for factories and supporting infrastructure.
- C. Dashboards for visualization of the ingested data – illustrated through analytics and dashboarding for data from manufacturing units.
- D. Digital Work Instruction – Utilizing existing drawings and Converting to 3D based for digital work instructions, servicing, marketing use cases.

BEML invites proposals from prospective vendors with expertise and track record of success in Design, Development, Implementation and Sustenance of Industry 4.0 (IR4.0) tools, technology, applications and solutions for various data sources not limiting

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to CNC machines, PLCs, SCADA systems from heterogenous makes and models such as not limiting to FANUC and SIEMENS controls.

The successful bidder shall provide end-to-end solution to be hosted at BEML's private cloud (Data Center). The bidder shall also help BEML maintain the supplied solution at their DR site as well, for their Business Continuity Plan (BCP) as and when a DR server is procured by BEML.

The IP / Source Code / Work / analytical models /dashboards created / written by the successful bidder over the product, for the proper implementation of the solution, would be the property of BEML and no claim whatsoever can be made by the bidder on the same. The bidder shall also ensure that no BEML specific information acquired by them directly or indirectly as a part of this project shall be shared with an external third party.

### **Scope of work and Detailed Technical specifications:**

The project covers the following main areas:

1. Setup of a standardized enterprise-wide data management platform to capture, store and process IT and OT data, and other structured data from sources across H&P, BEML.
2. Descriptive & Predictive (optional) analytics and dashboarding on the captured data – illustrated through:
3. Digital Work Instructions for machine operations through adopting latest technologies but not limited to such as Augmented Reality (AR), Industrial Internet of Things (IIOT) etc.
4. Development of dashboards for different Senior Management Levels to view relevant KPIs.

### **Enterprise-wide Digital Thread - Data Acquisition & Analytics for BEML H&P Division:**

Currently, data from CNCs, PLCs, existing systems at BEML KGF site is all standalone and in silos. This data is currently captured and stored locally and there is no central data acquisition and monitoring platform. There is a need for a central data acquisition for H&P division. Vendor shall provide this central storage to store historical data which will be hosted on BEML network.

The platform shall support data acquisition from various data sources not limiting to CNC machines, PLCs, SCADA systems from heterogenous makes and models such as not limiting to FANUC and SIEMENS controls, as mentioned in **Annexure 1**.

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### **Historical Data management platform:**

The bidder shall provide a historical data management platform that will capture data from:

1. Multiple data sources (including the BEML H&P division described above and other divisions at KGF plant for later expansion), without additional cost
2. Corporate data sources such as SAP, CRM, PLM etc. (Future Plan)
3. Other data sources from divisional headquarters, local offices, and field sites. (List of the type of connectors needed is available in **Annexure 2**).

The said connectors shall support both on demand extraction as well as bulk transfer and storage of the data. The data management platform shall support on-premises of BEML based storage for the purpose of this scope of work. Data from this data management platform will be used for analytics and visualization.

### **Analytics and visualization applications:**

The solution shall support export of data to other third-party applications for analysis and dashboarding, as well as provide the capability to do basic descriptive & predictive analytics and dashboarding. To illustrate this capability, the bidder shall:

- a) Implement at least one use case for descriptive and predictive analysis and dashboarding for H&P division in KGF Complex, as described below.

The platform shall be capable and scalable to collect and manage data securely from H&P, Earth Movers, Rail Coach & Heavy Fabrication units and instrument sensors at KGF complex and other manufacturing units spread across India such as from Mysore, Bangalore and Palakkad. The data shall be ingested into the platform for the purpose of analytics. The solution shall monitor the specified parameters and provide descriptive & predictive analytics-based insights on a dashboard.

- b) Development of dashboards for senior management to view relevant KPIs

The solution shall create dashboards for the use of the senior management that provide insights on various KPIs which can be measured through analysis of the data collected from the various data sources as mentioned in this document. An indicative list of the KPIs is available in **Annexure 4**.

Following the successful implementation of the solution, and implementation of the use cases defined in this scope of work, BEML would extend the solution's usage beyond what is mentioned in this scope of work by either: a) adding additional sensors and equipment on a use case basis b) adding use case specific analytics and visualization

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solutions, (c) or both. The vendor shall support BEML in such extension of the usage of the platform as part of their ongoing services.

Some of the use cases (not exhaustive) that are currently being explored are:

1. Continuous replenishment & retrofitting for machines in shopfloor
2. Predictive maintenance of equipment at KGF complex - H&P and other divisions
3. Improved operations using Digital Transformation strategy such as IoT & AR technologies

The bidder shall support BEML in data extraction from/ through its platform for the implementation of **future** use cases, which would actively use IT and OT data sources from across the organization

### ***Specifications of machines:***

Refer *Annexure 1* for list of machines which are in current scope of this RFP. However, these are just few machines selected from one of the divisions from one of the units to start Digital Transformation initiative. It is expected that the platform to cater the current scope and capable and enabled to support addition of more machines from other divisions within the same manufacturing unit as well as other units.

Energy meters shall be installed for each machine and required KPIs shall be derived for each machine.

### **3. PROCEDURE FOR SUBMISSION OF BIDS**

This Tender consisting of

**Part A** – Pre-Qualification Bid i.e. Submission of EMD (Through SRM platform) and Integrity Pact

**Part B** – Submission of Technical Bid (Through SRM)

**Part C** – Submission of Price Bid (Through SRM)

#### **3.1. PART A – PRE-QUALIFICATION BID i.e. submission of EMD & Integrity Pact**

**The EMD amount can be submitted in either way as detailed below:**

#### **Earnest Money Deposit (EMD):**

EMD amount of Rs 2,00,000/- can be paid online or can be submitted in the form of Demand Draft / Banker's Cheque/ Online payment.

**Online Payment of EMD amount can be made as mentioned below:**

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i) Open the following link:

<https://www.onlinesbi.com/sbicollect/icollecthome.htm?corpID=9359>

- ii) Read the terms & conditions, tick the acceptance box and click on Proceed.
- iii) In 'Select State' dropdown, select All India and click on the Go button.
- iv) In 'Select Payment Category', select EMD/ Tender Fee.
- v) Enter details of payment, details of Bank Account for refund and click on Submit to make the online payment of the required EMD amount of Rs 2,00,000/-.

Please ensure that online payment of EMD amount is made well ahead of the EMD Submission Date & Time mentioned in the Tender.

### Payment of EMD amount through DD / Banker's Cheque :

- a) EMD in the form of Account Payee Demand Draft (DD) / Banker's Cheque for **Rs. 2,00,000/-** (Rupees two lakhs only) drawn in favor of BEML Ltd, Bangalore payable at Bangalore.
- b) The above said **Demand Draft DD / Banker's Cheques/ EMD Exemption Certificate/ Online payment** shall be submitted in **Sealed envelope** duly superscribing the **Bid Invitation No. 6300035688 dated 17.03.2021, Closing date 05.04.2021 Time 14:00 Hrs** at the top of the envelope. The words "**PRE-QUALIFICATION BID**" shall also to be written in bold letters at the top of the envelope. The name and address of the bidder shall be printed or written legibly on the left hand bottom corner of the envelope.

Please attach the details duly filled-up for refund of EMD amount in the following format along with the DD / Banker's Cheque for EMD:

BANK NAME	
BRANCH NAME	
CITY	
IFSC CODE	
ACCOUNT NO	
BENEFICIARY NAME	

The above sealed envelope has to reach the address as mentioned below on or before the closing date & time of the tender.

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General Manager (Corporate Materials)

**BEML LIMITED.**, Room No.1

BEML SOUDHA, 23/1, 4<sup>th</sup> Main,

S.R. Nagar,

Bangalore – 560 027

KARNATAKA, India

**Alternatively it can also be dropped in the Tender Box which is kept in Room No.1, Ground Floor, BEML Soudha, SR Nagar, Bangalore.**

- c) Bidders exempted from Earnest Money Deposit (EMD) shall submit exemption certificate from competent authority.

**Note:** Bidder shall ensure that their EMD (DD)/EMD Exemption Certificate/ Online payment is dispatched well in advance so that it reaches this office before the time and date stipulated. Requests will NOT be entertained for late receipts.

### **General Instructions with regard to EMD:**

- a) Quotation submitted online without submission of EMD/EMD Exemption Certificate/ Online payment in-time will not be considered.
  - b) EMD submitted in any other form will not be accepted and the offer is liable to be rejected.
  - c) EMD lesser than Rs. 2,00,000/- will not be accepted and the quotation is liable to be rejected.
  - d) EMD of technical disqualified bidder's will be returned. EMD of successful bidder will be released after supply and installation.
  - e) EMD does not carry any interest on return.
  - f) EMD will be forfeited if any firm withdraws the tender submitted or refuses to execute the order for reasons whatsoever.
  - g) EMD in the form of online payment is to be made before the bid closing date and time. EMD in the form of DD / Banker's Cheque / NSIC certificate,/ MSME Certificate/ Online payment (firms claiming EMD exemption) etc to be submitted through courier/post in a sealed cover, super scribing the bid number and closing date, address etc. before the bid closing date. Failure to do so will result in rejection of the bid.
  - h) No responsibility will be taken for postal or non-delivery/nonreceipt of EMD/firms claiming EMD exemption.
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### Integrity pact:

#### **PART A – Pre-Qualification Bid (Submission of Integrity Pact) through Manual Mode.**

Integrity Pact is enclosed at Annexure-B. The bidder should download the Integrity Pact and duly sign the Integrity pact and submit in sealed envelope duly super scribing the Bid Invitation No. **6300035688**, Closing Date: 05.04.2021 time 14:00 Hrs at the top of the envelope.

The words "PART-A (Submission of Integrity Pact) shall also be written in bold letters at the top of the envelope. The name and address of the bidder shall be printed or written legibly on the left hand bottom corner of the envelope.

The prescribed Integrity pact should be dropped in the tender box placed in the Corporate Materials Department (Room No: 1) at the above address.

"The Integrity Pact envisages an agreement between the prospective vendor/bidder and the buyer committing the persons/officials of both the parties not to exercise any corrupt influence on any aspect of the contract. Only those vendor/bidder who have entered into such an Integrity Pact with the buyer (BEML) Would be competent to participate in bidding with BEML wherever the value of each contract is Rs. 50 Lak and above.

The Pact is a preliminary qualification for entering into any contract with BEML for value **Rs. 1 Crore** and above.

Address of IEM is as follows:

1. Shri Akhilesh kumar  
CES retd, 1042, B-1, Basant Kunj (near Fotis Hospital)  
New Delhi-110071.  
Mobile no.09811420440  
Email : [er.akhilesh@yahoo.co.in](mailto:er.akhilesh@yahoo.co.in)
2. Shri E.K Bharat Bhushan,  
IAS retd.  
Flat no 5151,Sobha city,Puzhukkal,  
Thrissur,Kerela-680553  
Mobile no : +91 9400797777  
Email ID : [bbhushan55@gmail.com](mailto:bbhushan55@gmail.com)

**a.** Please upload all the technical bid documents in SRM portal and ensure that no price details are mentioned in any of the documents uploaded as part of the Technical Bid.

**b.** Corrigendum regarding the tender if any will be published in SRM portal, BEML Website only before the tender closing date. Bidders to make note of the above and check before tender closing date / time to know the latest communication / updates. The

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same to be signed with company seal and scanned copy to be uploaded with the technical bid documents.

c. (Commercial bids of the bidder will be opened only if all the technical requirements are fulfilled and qualified through technical evaluation. Hence the bidders are advised to upload all the required documents carefully.)

d. The tender documents will be considered at the sole discretion of M/s BEML Ltd, whose decision in the matter will be Final & Binding.

**The Bidder is advised to carefully go through the terms & conditions of tender before submitting the tender.**

### **3.2 PART B – Submission of Technical Bid (Through SRM)**

Bidder will be technically qualified based on providing documentary proof for each of the below eligibility criteria clause along with the Technical Bid.

<b>SI No</b>	<b>Criteria Details</b>	<b>Documents required to be uploaded SRM</b>
<b>MANDATORY CLAUSE</b>		
<b>1</b>	The Bidder shall be approved/ authorized partners of OEM.	Please upload supporting / necessary document.
<b>2</b>	Experience of having successfully completed one similar work for Rs.50 Lakhs during last 2 years.	Documentary proof i.e. Purchase order OR Completion certificate clearly indicating the value of the order shall be uploaded.
<b>3</b>	Bidder confirmation to carry out the work as per scope of work	Confirmation document as per <b>Annexure – C</b> to be uploaded
<b>4</b>	An Undertaking has to be submitted by the bidders stating that they have read, understood and agreeing to all tender terms and conditions.	Undertaking document as per <b>Annexure – D</b> to be uploaded
<b>5</b>	The vendor should not have been blacklisted by any government/ PSU/Reputed Listed company for corrupt or fraudulent practices or non-delivery, non-performance.	Undertaking document as per <b>Annexure – E</b> to be uploaded .
<b>6</b>	Bidder should upload the filled & signed, sealed compliance report	Compliance Report as per <b>Annexure – F</b> to be uploaded
<b>NON MANDATORY CLAUSE</b>		

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<b>7</b>	Brief Details about the Firm	Please upload filled-in format as per <b>Annexure - G.</b>
<b>8</b>	Average annual financial turnover during the last three years, ending 31 <sup>st</sup> March of the previous financial year (i.e.2017-18, 2018-19 & 2019-20) should be minimum <b>Rs. 30 Lakhs</b>	2017-18 Rs. 2018-19 Rs. 2019-20 Rs. Copies of audited balance sheet (indicating turnover) for last three years shall be uploaded.  <b>Note:</b> If the audited balance sheet for the FY 2019-20 is under audit, then provisional balance sheet to be provided otherwise the average annual turnover during the previous three years shall be considered for evaluation i.e. 2016-17, 2017-18, 2018-19.
<b>9</b>	Special Conditions arising out of implementation of GST Tax Indemnity clause	<b>Annexure – H</b> to be signed and uploaded.
<b>10</b>	The bidder/OEM must possess all valid certificates as mentioned below and should upload copies of the same:  i. PAN Number ii. GST Registration details/ Certificate	Please upload scanned copies of  i. PAN Number ii. GST Registration details/ Certificate

**Note:**

(1) The Bidders must ensure that the documentary proofs to substantiate clauses above are given, without which their bid will not be considered.

(2) Relevant documents are to be meticulously uploaded by the bidder and the bid will not be considered if any of the documents is not uploaded.

(3) Technical bid will be opened first subject to receipt of original DD for EMD **OR** EMD Exemption certificate /document and Integrity Pact as **Pre-qualification bid**. If bidder is not submitted any of these (DD or EMD exemption certificate /document and Integrity Pact) as **Pre-qualification bid**, their technical bid will not be considered for further evaluation

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### **3.3 PART C – Submission of Price Bid (Through SRM)**

<b>Sl. No.</b>	<b>Description</b>	<b>Quantity</b>	<b>Total Cost</b>	<b>GST</b>
1	IOT Hardware required for the project	1 LOT		
2	Wifi networking for 25 machines (24 Port Switches – 4 Nos / Wifi AP – 12 Nos / CAT6 Cabling / OFC) for 04 Nos of Shop Floors	1 LOT		
3	Android Tablets 10.1 inch	22 Nos		
4	Andon display TV – 55 inch	4 Nos		
5	Software License Cost (If any)	1 LOT		
6	Development Cost for 25 machines and 2 test rigs with one year warranty from the date of commissioning	1 AU		
7	Installation and Commissioning	1 AU		
8	1 <sup>st</sup> year Maintenance Support after warranty for change requests and ongoing complete support	1 AU		
9	2 <sup>nd</sup> year Maintenance Support after warranty for change requests and ongoing complete support	1 AU		
10	Energy meter for each machine (Optional)	1 LOT		
11	Source Code (With mutually agreed terms) (Optional)	1		

L1 will be arrived on package basis i.e., lowest quote received - Sum (item 1 to 9) except optional items.

Price bid of only technically accepted / qualified offers will be opened subsequently.

Incomplete/invalid tenders will be rejected and no correspondence will be entertained in case of rejection.

#### **4. Query:**

In case, if any clarifications are required for any topic related to the RFQ, the same may be submitted in writing, via e-mail to the designated Point of Contact through email address on or before **24.03.2021 @ 1400 Hrs.**

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### **Contact Name & Address:**

The following officer can be contacted for any clarifications and / or bid submission:

#### **CIO Office**

BEML Limited, BEML Soudha,

23/1, 4<sup>th</sup> Main, SR Nagar,

Bengaluru – 560027

Phone: 080-22963190/ 267

E-mail id: [anithak@cto.beml.co.in](mailto:anithak@cto.beml.co.in), copy to [purchase@purchase.beml.co.in](mailto:purchase@purchase.beml.co.in)

### **5. Pre-BID MEETING:**

Pre-bid Meeting is scheduled on **25.03.2021 @ 1100 Hrs** at BEML Soudha, Bangalore.

### **6. Delivery Schedule:**

Within 5 Months from the date of award of contract.

### **7. Contract Period:**

Warranty for 01 year from the date of commissioning and acceptance and AMC for 2 years.

### **8. Warranty:**

Warranty period shall be for 12 months from the date of commissioning and acceptance. Firm has to upgrade to the latest software if any, free of cost within the warranty period.

### **9. Setting up of IT infrastructure:**

Bidders shall step IT infrastructure for machines by WiFi network where ever necessary, which includes switches, access points, etc.

Wifi switch need to be connected to BEML LAN Switch available within 150 Mtrs. Necessary edge devices, network switches, security of data shall be taken care by bidders as per security requirements in this document.

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### **10. Training and handover:**

Bidders shall provide structured training to BEML users post go-live of the project. This training, learning and adoption services are to part of overall solution ensuring BEML use platform the way it was meant to be used with the right processes every day. Project/ platform adoption to be include:

1. eLearning
2. Instructor- led Training
3. Self-paced learning, etc.

### **11. Change Requests:**

Support team of bidder should ensure to handle minor change requests / modifications on a pro-active basis through detailed documentation and hand over meetings with BEML at no extra cost.

### **12. Ownership & Licenses:**

- a) Ownership of software developed/ customized/ configured/ procured for the BEML under this Project would lie with the BEML. All licenses of software would be in the name of BEML i.e. BEML Limited (BEML) with registered address at 'BEML Soudha' No. 23/1, 4th Main, S R Nagar, Bangalore - 560027.
- b) Licensing is the main part of any software based tools. Hence, proper licensing is the required for all software based tools.
- c) All the licenses should exclusively be in the name of the BEML. In this regard a certificate from the OEM mentioning the end user and its validity period should be provided by the bidder.
- d) All the licensing details also have been brought out at individual specification of the proposed tools.
- e) All software / Hardware to be supplied shall be new, licensed to BEML Limited with latest version as on date of submitting of tender.
- f) Customizations done will be owned by BEML.
- g) Source code to be handed over at the time of Go-Live (With mutually agreed terms).

### **13. Acceptance of supply & implementation:**

Successful conduct and conclusion of the acceptance tests for the installed components shall also be the sole responsibility of the bidder. During acceptance test the bidder must demonstrate all the features of the respective software items.

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### **14. Service Level Agreement (SLA)**

- a) The successful bidder shall execute a Service Level Agreement (SLA), which would include all the services and terms and conditions of the services to be extended as detailed herein and any other conditions as may be prescribed by BEML Limited.
- b) The Bidder shall provide a draft Service Level Agreement (SLA) for BEML's review and approval. The SLA shall not be considered finalized until the BEML Limited has approved the SLA.
- c) The Bidder shall execute the SLA within one month from the date of purchase order. The contract shall be executed by the authorized signatory of the Bidder. A power of attorney to that effect shall be submitted by the successful bidders.
- d) Service Level Agreement (SLA) shall become the part of contract between BEML and the Successful bidder. SLA shall define the terms of the successful Bidder's responsibility in ensuring the timely delivery of the deliverables and the correctness of the same based on the agreed Performance Indicators as detailed in this RFP.
- e) Bidder shall make sure that calls are responded within 1 hour and resolved within 6 hours.
- f) SLA with full support for 24x7x365.

### **15. Other terms & conditions of tender:**

- a. **Payment terms:** 100% payment on 45<sup>th</sup> day for MSEs and for others on 60<sup>th</sup> day from date of Supply of commissioning and acceptance duly certified.

However if the Bidders not agreeing with BEML standard Payment terms, then their quotations will be suitably loaded with applicable cash credit interest while evaluating the bids.

#### **b. Performance Bank Guarantee**

- i. Within 30 days of receipt of the Purchase order from the BEML Limited, the successful Bidder shall furnish a Security in the form of Performance Bank Guarantee issued by any Scheduled Commercial Bank authorized by RBI for an amount of 10% of the Contract value (without taxes) as per format enclosed at **Annexure - I**.

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- ii. The Performance Bank Guarantee should be valid for a period of 42 months from the date of issue of purchase order.
  
  - c. Award of Contract:** The contract will be awarded to the Bidder whose bid has been determined to be eligible and to be substantially responsive to the bid documents and who has offered the lowest evaluated bid.
  
  - d. Liquidated Damages (LD):** If the Supplier exceeds any agreed delivery date (s) or period(s), purchaser shall levy LD for such delay @ 0.5% per week (7days) and part thereof, subject to a maximum of 5% of the value of the delayed portion of the Purchase Order. GST at applicable rates shall be charged extra on the liquidated damages recovered.
  
  - e. BEML Ltd need not necessarily accept the lowest offer.
  
  - f. Right of Buyer:** BEML reserves the right to accept or reject any bid in part or full without assigning any reason which shall be binding on the bidder.
  
  - g. Termination:** BEML shall exercise the option to terminate the contract within one month notice in the event of Non-Performance/Poor Performance and en-cash the EMD. BEML also reserve the right to review and modify the contract at any point of time during the contract period.
  
  - h. Risk Purchase Clause:** In the event of Non Performance of the order, BEML reserves the right to avail the services from alternate source at the bidder risk and cost apart from recovery/encash of EMD.
  
  - i. Security:** The Bidder shall not disclose any information pertaining to BEML. The password/encryption keys/other secrets should be kept confidential. The Bidder should provide the list of personnel handling the password/encryption keys/other secrets if any. They should adhere to the security policies established by BEML.
  
  - j. Canvassing by bidders in any form including unsolicited letters on tenders submitted or Post tender corrections shall render their tender liable for rejection.
  
  - k. Incomplete offers are liable for rejection.
  
  - l. Offers not confirming to the above terms are liable to be ignored.
  
  - m. There can be only 1 set of bids from each Bidder.
-

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- n. BEML reserves the right to verify / confirm all original documentary evidence submitted by vendors in support of the eligibility criteria. Upon verification, evaluation / assessment, if any information furnished by the bidder is found to be false / incorrect, their total bid will be liable to be rejected and no correspondence on the same shall be entertained.
  
- o. The bidder shall provide all other services not explicitly mentioned herein, but are required by the bidder to full-fill the intended specifications, to make the system operational and to meet the functionality mentioned in the bid.

### **16. Price Variation Clause:**

The rates quoted by the Bidder shall be firm throughout the contract period and there shall be no upward revision of the rates quoted by the Bidder for any reason what so ever.

### **17. Liability / Accident:**

The Bidder shall indemnify and keep indemnified BEML Limited against all losses and claims for injuries and damages to any person or property whatsoever which may arise out of or in consequence of the construction or maintenance of the work and against all claims, demands, proceedings, damages, costs, changes, expenses whatsoever in respect thereof in relation thereto.

### **18. Security:**

The Bidder shall not disclose any information pertaining to BEML. The password/ encryption keys/ other secrets should be kept confidential. The Bidder should provide the list of personnel handling the password/ encryption keys/ other secrets if any. They should adhere to the security policies established by BEML

The Bidder shall not tap/view/modify/ route it to third party/ disclose any information that is being handled in the BEML Network perimeter under any circumstances.

### **19. Documentation:**

The service provider should provide complete documentation of the installation, design document, user manual, troubleshooting procedure, escalation matrix and contingency plan to BEML LTD for the project. The service provider should enter into a separate SLA agreement for both the project before the submission of Invoice for any payment.



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### **20. Termination:**

BEML shall exercise the option to terminate the contract with one month notice in the event of Non-Performance/ Poor Performance and en-cash the PBG. BEML also reserve the right to review and modify the contract at any point of time during the contract period.

### **21. GENERAL TERMS & CONDITIONS:**

#### **(i) ARBITRATION :**

**For PSUs:** In the event of any dispute or difference relating to the interpretation and application of the provisions of this Agreement, such dispute or difference shall be referred by either party for Arbitration to the Sole Arbitrator in Department of Public Enterprises to be nominated by the Secretary to the Government of India, in charge of the Department of Public Enterprises. The Arbitration and Conciliation Act, 1996 shall not be applicable to the arbitration under this clause. The award of the Arbitrator shall be binding upon the parties to the dispute, provided, however, any party aggrieved by such Award may make further reference for setting aside or revision of the Award to the Law Secretary, Department of Legal Affairs, Ministry of Law and Justice, Government of India. Upon such reference, the dispute shall be decided by the Law Secretary or the Special Secretary/Addl. Secretary, when so authorized by the Law Secretary, whose decision shall bind the parties finally and conclusively. The parties to the dispute will share equally the cost of Arbitration as intimated by the Arbitrator.

**For firms other than PSUs:** In the event of any dispute or difference relating to the interpretation and application of the provisions of this Agreement, such dispute or difference shall be referred by either party for Arbitration to the Sole Arbitrator to be appointed by BEML. The Arbitration proceedings shall be in accordance with the provisions of Arbitration and Conciliation Act, 1996 and Rules framed there under. The place of Arbitration shall be at Bangalore and all Arbitration proceedings shall be conducted in English language and governed by the above said Act and Rules.

Courts at Bangalore shall alone have sole jurisdiction to decide any issue arising out of the Arbitration or this Agreement.

#### **(ii) FORCE MAJEURE CLAUSE:**

Notwithstanding anything contained in the Contract, neither the Supplier nor the Purchaser shall be held responsible for total or partial non-execution of any of the contractual obligations, should the obligation become unreasonably onerous or

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impossible due to occurrence of a 'Force Majeure' conditions which directly affect the obligations to be performed by the Purchaser or the Supplier. Such events include war, military operations of any nature, blockages, revolutions, insurrections, riots, civil commotions, insurgency, sabotage, acts of public enemy, fires, explosion, epidemics, quarantine restrictions, floods, earthquake, or acts of God, restrictions by Govt. authorities over which the Supplier or the acts on which the Purchaser has no control.

The party claiming to be affected by Force Majeure shall notify the other party in writing without delay, within two weeks on the intervention and on the cessation of such circumstance. Extension of time sought by the Supplier along with supporting evidence and so granted by the Purchaser for the supply/ work affected, if any, shall not be construed as waiver in respect of remaining deliveries.

Notwithstanding above provisions, Purchaser shall reserve the right to cancel the order/ Contract, wholly or partly, in order to meet the overall delivery schedule and make alternative arrangements including arrangements with third party for completion of deliveries and other schedules. Purchaser may takeover partly processed material at a mutually agreed price.

### **(iii) APPLICABLE LAWS AND JURISDICTION OF COURTS:**

Indian laws both substantive and procedural, for the time being in force including modifications thereto, shall govern Contract. The competent Indian courts shall have sole jurisdiction over disputes between purchaser and the Supplier.

### **(iv) INTELLECTUAL PROPERTY RIGHTS; LICENSES :**

If any Patent design, trademark or any other intellectual property rights apply to the delivery or accompanying documentation, Purchaser shall be entitled to the legal use thereof free of charge by means of a non-exclusive, worldwide, perpetual license. All intellectual property rights that arise due to the execution of the delivery by the Supplier and by its employees or third parties involved by the Supplier for performance of the agreement belong to Purchaser.

The Supplier shall be obligated to do everything necessary to obtain or establish the above mentioned rights. The Supplier guarantees that the delivery does not infringe on any of the intellectual property rights of third parties. The Supplier shall also be obligated to do everything necessary to obtain or establish the alternate acceptable arrangement pending resolution of any (alleged) claims by

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third parties. The Supplier shall indemnify the Purchaser against any (alleged) claims by third parties in this regard and shall reimburse Purchaser for any damages suffered as a result thereof. "The Supplier shall comply with all applicable Labor Laws, particularly Contract Labor (Regulation & Abolition) Act, 1970, ESI Act, Gratuity Act, Payment of Bonus Act, Payment of Minimum Wages Act, Provident Fund Act etc., and Rules framed therein from time –to- time and the Supplier shall indemnify the Company for any loss caused to it by reason of inaction, non-compliance etc., of the provisions of any Law by the Supplier".

(v) **BRIBES AND GIFTS:**

Any bribe, commissions, gift or advantage given, promised or offered by or on behalf of the supplier or his partner, agent or servant or anyone on his or on their behalf to any officer, servant, representative or agent of BEML or any person on his or their behalf in relation to the obtaining or to the execution of or any other contract with BEML Ltd., shall in addition to any criminal liability which the supplier , may incur, subject the supplier to the cancellation of this and all other contracts with BEML and also for payment of any loss or damage resulting from any such cancellation to like extent, the supplier shall be liable for any loss which BEML may sustain on that account. Any question or dispute as to the commissions of any offence under the present clause shall be settled by BEML in such manner and on such evidence of information as they may think fit and sufficient and their decision shall be final and conclusive.

(vi) **JURISDICTION:**

Courts at Bangalore alone shall have jurisdiction to decide any issue/dispute arising out of the Arbitration or this Purchase Order in exclusion of all other Courts. However, jurisdiction of any other court may be accepted by mutual discussion and agreement by and between the Company and the Supplier.

(vii) **DRAWINGS AND DOCUMENTS:**

Drawings, technical documents or other technical information received by one party shall not, without the consent of the other party, be used for any other purpose than that for which they were provided. They may not, without the consent of the submitting party, otherwise be used or copied, reproduced, transmitted or communicated to third parties.

The Supplier shall, as per agreed date/s but not later than the date of delivery, provide free of charge information and drawings which are necessary to permit the Purchaser to erect, commission, operate and maintain the product. All

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intellectual properties, including designs, drawings and product information etc. exchanged during the formation and execution of the Contract shall continue to be the property of the submitting party.

(viii) **NON-DISCLOSURE AND INFORMATION OBLIGATIONS:**

The Supplier shall provide Purchaser with all information pertaining to the delivery in so far as it could be of importance to Purchaser. The Supplier shall not reveal confidential information to its own employees not involved with the tender / Contract & its execution and delivery or to third parties. The Supplier shall not be entitled to use the Purchaser's name in advertisements and other commercial publications without prior written permission from Purchaser.

Further to above, the supplier shall not divulge/share any data/information collected through the survey/findings of the survey to any person /firm. The complete process/assignment shall be treated as confidential.

(ix) **DURING ARBITRATION**

"Supplies under this Purchase Order, if reasonably possible, may continue by mutual agreement during the dispute / Arbitration proceedings".

(x) **PROGRESS REPORT:**

The supplier shall regularly inform the progress of work and in such form as may be called for by the Purchaser from time to time. The submission and acceptance of such reports shall not prejudice the rights of the Purchaser in any manner.

(xi) **CONTRACT VARIATIONS: INCREASE OR DECREASE IN THE SCOPE OF SUPPLY:**

Purchaser may vary the contracted scope. If the supplier is of the opinion that the variation in scope has an effect on the agreed price or delivery period, purchaser shall be informed of this immediately in writing along with technical details, and in the event of additional work, submit a quotation with regards to the price and delivery period and the effect this scope will have on the other contracts under execution by the supplier. The supplier shall not perform additional work/ altered scope of work without the written instructions/amendment to the Purchase Order to that effect. The Purchaser also reserves its rights to decrease the scope of supply placed against Purchase Orders under due intimation to the supplier.

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Such decrease may be warranted due to defective goods or Policy Decisions of the Management of the Purchaser. And in such an event, the Supplier shall not have any claims or right against the Purchaser.

(xii) **NON-WAIVER OF DEFAULTS**

If any individual provision of the Contract is invalid the other provisions shall not be affected. The failure of BEML to insist upon performance of the Contract, to enforce any of the terms and conditions of this Contract or to exercise any right or privilege granted to BEML under this Contract or under law, shall not be construed as a waiver and the same shall continue in full force and effect.

(xiii) **ASSIGNMENT OF RIGHTS AND OBLIGATIONS; SUBCONTRACTING:**

The supplier is not permitted to subcontract the delivery or any part thereof to third parties or to assign the rights and obligations resulting from this agreement in whole or in part to third parties without prior written permission from Purchaser. Any permission or approval given by the Purchaser shall, however, not absolve the supplier of the responsibility of his obligations under the contract.

(xiv) **INTEGRITY COMMITMENT IN THE EXECUTION OF CONTRACTS:**

**Commitment by Purchaser:**

Purchaser commits to take all necessary steps to prevent corruption in connection with the execution of the Contract.

**Commitment by the Contractor:**

The Contractor (s) commit (s) to take all measures to prevent corruption and will not directly or indirectly try to influence any decision for the benefit for which he is not legally entitled. The contractor (s) will not commit any offence under the relevant Acts. The Contractor (s) will not use improperly, for purpose of competition or personal gain or pass on to others, any information or documents provided by Purchaser as part of business relationship.

The Consultant (s) will not enter with other Firm (s) / Consultant(s) into any undisclosed agreement or understanding or any actions to restrict competition. If the Consultant(s), before award or during execution of the consultancy Contract commit(s) a transgression of the above or in any other manner such as to put his reliability or credibility in question, Purchaser is entitled to disqualify the consultancy contractor(s) from the consultancy process or terminate the contract and / or take suitable actions as deemed fit.

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**Annexure - A**

**BID GUARANTEE FORMAT**

Ref:

To,  
BEML LIMITED  
BEML Soudha  
No: 23/7, 4<sup>th</sup> Main, S.R. Nagar  
Bangalore - 560027

Dear Sirs,

.....

.....  
In accordance with your 'Tender Enquiry' under your Tender No: .....date-----

M/s..... herein after called the Bidder, with the following Directors on their Board of Directors / partners of the Firm.

- |    |     |
|----|-----|
| 1. | 2.  |
| 3. | 4.  |
| 5. | 6.  |
| 7. | 8.  |
| 9. | 10. |

Wish to participate in the said tender for  
.....  
.....  
.....

As an irrevocable Bank Guarantee against Bid Guarantee amount of Rs.....(In words and figures) valid for ..... days from..... is required to be submitted by the Bidder as a condition for participation in the said bid, which amount is liable to be forfeited by the BEML Limited (herein after called PURCHASER) (1) the withdrawal or revision of toe

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offer by the Bidder as a condition within the validity period. (2) Non-acceptance of the 'Letter of Intent / Purchase Order' by the bidder when issued within the validity period. (3) Failure to furnish the valid contract performance guarantee by the bidder within one month from the receipt of the Purchase Order and (4) on the happening of any contingencies mentioned in the bid documents.

We, the .....Bank at.....

having our Head office at

.....(Local address) Guarantee

and undertake to pay immediately on first demand by BEML LIMITED, the amount of

Rs.....

(in figure and words) without any reservation, protest, demur and recourse. Any such demand made by the Purchaser shall be conclusive and binding on the Bank irrespective of any dispute or difference raised by the purchaser.

The guarantee shall be irrevocable and shall remain valid up to

..... (This date shall be 60 days after the date for which the

bid is valid). If any further extension of this guarantee is required the same shall be

extended to such required period (not exceeding one year) on receiving instruction from

M/s..... on

whose behalf this guarantee is issued.

In witness whereof the Bank, through its authorized officer has set its hand and stamp

on this .....day of.....at

.....

Witness (Signature)

WITNESS

(Signature) ....

Name in (Block letters)

Designation .....

(Staff No.) .....

(Bank's common Seal)

Official address

Attorney as per power of Attorney No

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Date:



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**Annexure – B**

(To be executed on plain paper and applicable for all tenders of value  $\geq$  Rs1Crores)

**INTEGRITY PACT**

**Between**

**BEML Limited (BEML) hereinafter referred to as “The Principal”**

**and**

**.....hereinafter referred to as “The Bidder/Contractor”**

**Preamble**

The Principal intends to award, under laid down organizational procedures, contract/s for .....The Principal values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness / transparency in its relations with its Bidder(s) and / or Contractor(s).

In order to achieve these goals, the Principal will appoint an independent External Monitor (IEM), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

**Section 1 – Commitments of the Principal**

- (1) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:
  - a. No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

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- b. The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
  
- c. The Principal will exclude from the process all known prejudiced persons.

(2) If the principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions.

### Section 2 – Commitment of the Bidder(s)/ contractor(s)

- (1) The Bidder(s)/ Contractor(s) commit themselves to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.
  - a. The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
  
  - b. The Bidder(s)/ Contractor(s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
  
  - c. The Bidder(s)/ Contractor(s) will not commit any offence under the relevant IPC/PC Act; further, the Bidder(s) / Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or documents provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

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- d.** The Bidder(s)/ Contractor(s) of foreign origin shall disclose the name and address of the Agents/ Representatives in India, if any. Similarly, the Bidder(s)/ Contractor(s) of Indian Nationality shall furnish the name and address of the foreign Principals, if any. Further, as mentioned in the "Guidelines on Indian Agents of Foreign Suppliers" shall be disclosed by the Bidder(s)/Contractor(s). Further, as mentioned in the Guidelines all the payments made to the Indian agent/representative have to be in Indian Rupees only. Copy of the "Guidelines on Indian Agents of Foreign Suppliers" is placed at placed at Enclosure.
- e.** The Bidder(s) / Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

(2) The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

### **Section 3 – Disqualification from tender process and exclusion from future contracts**

If the Bidder(s)/Contractor(s), before award or during execution has committed a transgression through a violation of Section 2, above or any other form such as to put his reliability or creditability in question, the Principal is entitled to disqualify the Bidder(s)/Contractor(s) from the tender process or take actions per the procedure mentioned in the "Guidelines on Banning of business dealings".

### **Section 4 – Compensation for Damages**

- (1) If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.
- (2) If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages of the contract value or the amount equivalent to Performance Bank Guarantee.

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### **Section 5 – Previous Transgression**

- (1) The Bidders declares that no previous transgressions occurred in the last three years with any other Company in any country conforming to the anti corruption approach or with any other Public Sector Enterprises in India that could justify his exclusion from the tender process.
- (2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or action can be taken as per the procedure mentioned in "Guidelines on Banning of business dealings".

### **Section 6 – Equal treatment of all Bidders /Contractors /Sub-contractors**

- (1) The Bidder(s)/ Contractor(s) undertaker(s) to demand from all subcontractors a commitment in conformity with this Integrity Pact, and to submit it to the Principal before contract signing.
- (2) The Principal will enter into agreement with identical conditions as this one with all Bidders, Contractors and subcontractors.
- (3) The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

### **Section 7 – Criminal charges against violating Bidder(s) / Contractor(s) / Subcontractor(s)**

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or of the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer

### **Section 8 – Independent External Monitor / Monitors**

- (1) The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

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- (2) The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. It will be obligatory for him to treat the information and documents of the Bidders/Contractors as confidential. He reports to the CMD, BEML.
- (3) The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Subcontractor(s) with confidentiality.
- (4) The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.
- (5) As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.
- (6) The Monitor will submit a written report to the CMD, BEML, within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise submit proposals for correcting problematic situations.

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(7) If the Monitor has reported to the CMD, BEML, a substantiated suspicion of an offence under relevant IPC/PC Act, and the CMD, BEML has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.

(8) The word 'Monitor' would include both singular and plural.

### **Section 9 – Pact Duration**

This pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the contract, and for all other Bidders 6 months after the contract has been awarded. Except awardee of contract, all others are considered as other bidders.

If any claim is made/lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/determined by CMD of BEML.

### **Section 10 – Other provisions**

- (1) This agreement is subject to Indian Law. Place of performance and jurisdiction is the Corporate Office of the Principal, i.e. Bangalore.
- (2) Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
- (3) If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.
- (4) Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

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(5) In the event of any contradiction between the Integrity Pact and its Annexure, the Clause in the integrity pact will prevail.

-----

(For & On behalf of the Principal)  
(Office Seal)

(For & On behalf of Bidder/Contractor)  
(Office Seal)

Place-----

Place-----

Date -----

Date -----

**Witness 1:**

**Witness 1:**

(Name & Address) -----

(Name & Address) -----

-----

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**Witness 1:**

**Witness 1:**

(Name & Address) -----

(Name & Address) -----

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### **Enclosure to Annexure –B**

#### **GUIDELINES FOR INDIAN AGENTS OF FOREIGN SUPPLIERS**

- 1.0 There shall be compulsory registration of agents for all Global (Open) Tender and Limited Tender. An agent who is not registered with BEML LTD shall apply for registration in the prescribed Application-Form available on [www.bemlindia.in](http://www.bemlindia.in)
  - 1.1 Registered agents will file an authenticated Photostat copy duly attested by a Notary Public/Original certificate of the principal confirming the agency agreement and giving the status being enjoyed by the agent and the commission/remuneration/salary/ retainer ship being paid by the principal to the agent before the placement of order by BEML LTD.
  - 1.2 Wherever the Indian representatives have communicated on behalf of their principals and the foreign parties have stated that they are not paying any commission to the Indian agents, and the Indian representative is working on the basis of salary or as retainer, a written declaration to this effect should be submitted by the party (i.e. Principal) before finalizing the order.
- 2.0 DISCLOSURE OF PARTICULARS OF AGENTS/ REPRESENTATIVES IN INDIA, IF ANY:
- 2.1 Bidders of Foreign nationality shall furnish the following details in their offer:
    - 2.1.1 The name and address of the agents/representatives in India, if any and the extent of authorization and authority given to commit the Principals. In case the agent/representative be a foreign Company, it shall be confirmed whether it is real substantial Company and details of the same shall be furnished.
    - 2.1.2 The amount of commission/remuneration included in the quoted price(s) for such agents/ representatives in India.
    - 2.1.3 Confirmation of the bidder that the commission/ remuneration if any, payable to his agents/ representatives in India, may be paid by BEML LTD in Indian Rupees only.
  - 2.2 Bidders of Indian Nationality shall furnish the following details in their offers:
    - 2.2.1 The name and address of the foreign principals indicating their nationality as well as their status, i.e, whether manufacturer or agents of manufacturer holding the
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(A Government of India Mini Ratna Company under Ministry of Defence)

"BEML SOUDHA", 23/1, 4<sup>TH</sup> Main, S.R. Nagar, Bangalore - 560027

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Letter of Authority of the Principal specifically authorizing the agent to make an offer in India in response to tender either directly or through the agents/representatives.

- 2.2.2 The amount of commission/remuneration included in the price (s) quoted by the Bidder for himself.
- 2.2.3 Confirmation of the foreign principals of the Bidder that the commission/remuneration, if any, reserved for the Bidder in the quoted price (s), may be paid by BEML LTD in India in equivalent Indian Rupees on satisfactory completion of the Project or supplies of Stores and Spares in case of operation items.
- 2.3 In either case, in the event of contract materializing, the terms of payment will provide for payment of the commission /remuneration, if any payable to the agents/representatives in India in Indian Rupees on expiry of 90 days after the discharge of the obligations under the contract.
- 2.4 Failure to furnish correct and detailed information as called for in paragraph-2.0 above will render the concerned tender liable to rejection or in the event of a contract materializing, the same liable to termination by BEML LTD. Besides this there would be a penalty of banning business dealings with BEML LTD or damage or payment of a named sum.

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**Annexure - C**

**Confirmation on Scope of work**

To:

The General Manager (Corporate Materials),

M/s. BEML LTD

Bangalore-27

Dear Sir,

We, M/s. ....have gone through the scope of work of the tender document for **IMPLEMENTATION OF INDUSTRY 4.0 PROJECT AT H&P DIVISION, BEML, KGF COMPLEX**. We are hereby confirming our acceptance to all points of scope of work without any deviation and we will execute the assignment as per the scope of work at the time of bidding.

Signature with date of Authorized signatory

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Firm's Seal: \_\_\_\_\_

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**Annexure - D**

**Undertaking**

To:

The General Manager (Corporate Materials),

M/s. BEML LTD

Bangalore-27

Dear Sir,

Having examined the tender document for **IMPLEMENTATION OF INDUSTRY 4.0 PROJECT AT H&P DIVISION, BEML, KGF COMPLEX**, the receipt of which is hereby duly acknowledged, we, the undersigned, hereby confirming that we read, understood and accepting all the terms & conditions available in the tender. Further, we indicate that upon selection, we will execute the assignment as per the tender terms and conditions.

We, also hereby confirm that our team members do not connect or make any attempt to connect BEML's intranet to any external network.

Signature with date of Authorized signatory

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Firm's Seal: \_\_\_\_\_

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**Annexure - E**

**UNDERTAKING**

This is to certify that \_\_\_\_\_ (Name of the Firm) has not been banned / black listed / debarred from Trade by any Central /State Govt. Dept. / Autonomous Institution / PSUs in India at the time of bidding.

I / we hereby certify that all the information given above is factual.

Signature with date of Authorized signatory

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Firm's Seal: \_\_\_\_\_

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### Annexure - F

### COMPLIANCE REPORT

#### *Functional requirements:*

FUNCTIONAL AND TECHNICAL REQUIREMENTS:				
Sr. No	Requirement	Priority: E - Essential D - Desirable	Complied / Not Complied	Remarks with Justification
1.	<b>Enterprise-wide Digital Thread - Data Acquisition &amp; Storage for BEML H&amp;P division</b>			
	<b>Connectors</b> The platform shall support connecting heterogenous OT systems and shall communicate proprietary industrial protocols for various makes and models available in the manufacturing units. The types of connectors required are mentioned in the <b>Annexure 2</b> .	E		
1.1	<b>Data Sources</b> The solution shall connect to all existing data sources including but not limited to IT, OT, and other data. The types of data sources are available in <b>Annexure 3</b> .	E		
1.2	<b>Data Ingestion</b>			
	The Historical data management platform shall be capable of ingesting data from multiple types of databases, data warehouses and servers including but not limited to SQL, Oracle, DB2 and from applications including but not limited to SAP, CRM, PLM, etc.	E		
	It shall also be able to ingest data formats including but not limited to log files, flat files, csv files, excel files, ODBC, JDBC, DB-links, APIs.	E		

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	The solution shall be capable of ingesting data in real-time as well as in batches. It shall perform full, partial or incremental data load on a daily, periodic or on-demand basis.	E		
	The solution shall connect to data sources as mentioned in <b>Annexure 3</b> using existing or new connectors that will be developed/procured by the bidder. The bidder shall provide a list of the connectors that its solution provides to BEML.	E		
	The system shall generate log files for each operation that can be used for troubleshooting and auditing purposes.	E		
	The bidder shall provide clear and well-defined architecture diagrams detailing the flow of structured, IT, OT data need to be furnished along with complete list of opensource software/ platforms and technologies used in the ingestion layer.	E		
	The solution shall provide update management tools to remotely manage connectivity.	E		
	<p>Solution shall support at least the following standard protocols to implement the use cases:</p> <p><b>Wired and wireless protocols / technologies</b> Bluetooth, ZigBee, WiFi, etc.</p> <p><b>Data communication &amp; control</b> Modbus TCP, BACnet, Fanuc Focas, Siemens TCP/IP, DNP3, ABCIP, EUROMAP 63, MTConnect</p> <p><b>Data &amp; device management</b> SNMP, HTTP, REST, API, SOAP, MPM links</p> <p><b>Other standards</b> including but not limited to ODBC, JDBC, IEC 60870-5-104, ASCII, XML, FTP, OData, OPC Unified Architecture (OPC UA) specification and many of the OPC Classic specifications, including OPC</p>	E		

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	Data Access (OPC DA) to allow easy integration with OPC compliant devices. The details of connectors and data sources are mentioned in <b>Annexure 2 &amp; Annexure 3</b> respectively.			
	The platform shall support, and store structured, IT, OT and timeseries data in large amounts and shall be scalable in nature	E		
	The data storage shall be compatible with different storage means	D		
2	<b>Analytics &amp; visualization</b>			
	The platform shall support descriptive and predictive analytics and dashboarding using the collected data.	E		
	As a part of this scope of work, the bidder shall illustrate the platforms capabilities for analytics and dashboarding through: a) analytics and dashboarding of data collected from CNCs, SCADA, PLCs of the H&P division in BEML KGF complex. Others would be shared later). The bidder shall first do the analysis for respectively.  b) Creation of dashboards to monitor key performance indicators of relevance to senior leadership. The bidder shall collect data from required sources, analyse the data and display results in custom dashboards to illustrate the KPIs mentioned in <b>Annexure 4</b> .	E		
	The solution shall collect data from H&P division as defined in <b>Annexure 1</b> , and provide descriptive & predictive analytics based dashboarding on the collected data. Details on the KPIs to be tracked, and the dashboard details will	E		

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	be shared with the successful bidders.			
	The solution shall read data from multiple sources and map them to desired schemas.	E		
	The solution shall support data export to third party software for analytics and dashboarding.	E		
	The platform shall support machine learning, anomaly detection and native advanced analytics capabilities – For future.	D		
	The dashboarding application shall be hosted on the BEML's on-premises server to facilitate anywhere, anytime access of the analytics results.	E		
	<p>The bidder shall dedicate adequate resources with the right blend of engineering, agile, DevOps and platform skills to manage and execute the data governance.</p> <p>These resources shall have an experience of at least 3 years in this field. The number, area of specialization and total experience of such resources shall be specified by the bidder at the time of bid submission.</p>	E		
	The bidder shall provide maintenance for a period of 3 years post Go-Live and defect liability period.	E		
	The platform shall include and support Software updates & upgrades and maintenance for the data management platform and supporting hardware (if any) post completion of Defect Liability Period (One year) without additional charges.	E		



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	<p>Operator should be able to visualize operator data, design drawings, should be able to key in quality parameters through operator login with a mobile / tablet application.</p> <p>Operator shall be able to login through QR code at each machine.</p>	E		
3	<b>Security &amp; User Access Management</b>			
	<p>Solution shall support integration with authentication mechanisms including Active Directory, LDAP, O-Auth, SSO.</p>	E		
	<p>The access to solution shall be role based and the roles shall be as per the hierarchy of the BEML organizational structure for roll-up and roll-down.</p>	E		
	<p>The solution shall support encrypted and secured two-way communication channel between itself and the IoT devices and vice versa.</p>	E		
	<p>Clear and well-defined architecture diagrams detailing the measures taken to ensure system security for each layer shall be specified by the bidder.</p>	E		
	<p>The solution shall support encryptions like TLS, SSL, etc. to prevent the data in transit from being compromised.</p>	E		
	<p>The solution shall support Security Log records a timestamp and username for security-related events, including all authentication successes and failures. Access to these logs shall be configurable, and by solution design and shall be only available to administrators. Users shall be also configured logging levels and criteria for</p>	E		

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	other types of events and activities. Solution shall write logs to disk after a pre-determined time has passed or size of the logs has been reached.			
<b>4</b>	<b>Digital Work Instruction and Digital Thread</b>			
	The solution shall have Work instruction for providing user friendly and intuitive interfaces to operators to improve their productivity.	E		
	The platform shall provide for data exchange and Integration with SAP and PLM systems for accessing Production plan & work orders from SAP, 2D/3D drawings / models, Quality plans and process plans (Work instructions) and NC programs.	E		

### ***Machine Interconnectivity***

<b>Sl. No.</b>	<b>Description</b>	<b>Complied / Not Complied</b>	<b>Remarks with Justification</b>
<b>1.1</b>	The connectivity platform shall support connectivity to a wide variety of assets across industry verticals.		
<b>1.2</b>	The connectivity platform shall be able to connect to and communicate with multiple assets at the same time.		
<b>1.3</b>	The connectivity platform shall allow for communications with assets to be optimized.		
<b>1.4</b>	The connectivity platform shall make data from connected devices available over a variety of server and publish interfaces.		

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1.5	The connectivity platform shall offer industry standard options for user and data security.		
1.6	The connectivity platform shall offer rich diagnostics of platform activities.		
1.7	Integration via Database / Webservice / JSON Packets.		
1.8	The connectivity platform shall be tightly integrated with the IoT platform in order to facilitate rapid IoT application development		
1.9	Establish Network/LAN connection: Connections shall be made for all the machines as specified in Appendix 1 using OPC-UA over TCP/IP		
1.10	The connectivity platform shall be multilingual.		
1.11	The platform shall support the connectors mentioned in the <i>Annexure 1</i> and support data sources mentioned in <i>Annexure 2</i> .		

### **Software platform requirements**

<b>1.0 Application Modeling Environment</b>			
<b>Sl. No.</b>	<b>Description</b>	<b>Complied / Not Complied</b>	<b>Remarks with Justification</b>
1.1	The platform shall allow users to import/export the data in their application in various formats.		
1.2	The platform shall provide an end-to-end architecture. Which shall be the digital representation of an actual physical - a true digital twin of a		

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	device or process made up of real-time data.		
1.3	The platform shall be powerful enough to meet the needs of the most skilled developer, but it also can be created without/low code (via the development user interface) to support high quality applications, dashboards, workspaces, and mobile interfaces. It shall enable developers to easily integrate powerful capabilities - including analytics and augmented reality - into the solutions they create		
<b>2.0 User Interface Development</b>			
2.1	The platform shall enable the fast creation of Internet of Things applications in a usable, drag-and-drop development environment without the need for code.		
2.2	The platform shall allow for the creation of applications that can be run on a web or mobile browser.		
2.3	The platform shall allow for the creation of personalized dashboards to visualize any data in the system.		
2.4	The platform shall allow for customizable language, currency, dates, and other localized elements to be used in applications.		
2.5	The platform shall allow for custom branding of the end IoT application (customer-specific branding, layout, color, theme, etc.)		
2.6	The solution shall provide pre-built applications for specific IoT business use cases.		
2.7	The platform to support wide range of widget library for faster development of applications. These include but not limited to Event Chart, Grid, Label Chart, Pie Chart, Progressive Gauge, Proportional Chart, Range Chart, Tag Cloud,		

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	Time Series Chart, and XY Chart, X-axis label, Bubble chart, LED label, Breadcrumb, Icon, Image, Slider, etc.		
2.8	The system shall allow for easy enterprise deployment of applications to multiple environments/sites.		
<b>3.0 Reporting and Descriptive &amp; Predictive (Optional) Analytics</b>			
3.1	The Platform shall provide the following reporting functionality: a. Custom report creation b. Reporting on a real-time/near real-time/periodical basis		
3.2	The Platform shall provide the functionality to export data in the form of XML, CSV, XLS, email.		
3.3	The platform shall allow data to be made available to external systems for reporting purposes.		
3.4	The platform shall provide analytics tools to visualize collected data in reports.		
<b>4.0 System Integration Services</b>			
4.1	The platform shall be able to integrate with third-party platforms and systems through a variety of methods.		
4.2	Integration via Database / Webservice / JSON Packets.		
4.3	The platform shall provide out-of-the-box connectors to common third-party systems and orchestrate the flow of information among these systems and devices in support of business processes.		
4.4	The platform shall allow for collaboration between developers and technology ecosystem partners to enhance the features of the		

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	platform.		
4.5	The platform shall be able to integrate with third-party platforms for the purpose of data analytics.		
<b>5.0 Business Logic and Event Processing</b>			
5.1	The platform shall allow the user to configure their own business logic into their applications.		
5.2	The platform shall allow users to create and configure their own alerts.		
5.3	The platform shall provide workflow capabilities i.e. the capability to send information about devices when triggered by an action.		
5.4	The platform shall allow users to orchestrate the flow of information among enterprise systems through graphical business logic flow. The platform shall enable business analysts to quickly build an automated repeatable workflow. Workflows shall be initiated from an alert or event from a remote-connected product. Once initiated, the workflow follows the defined route to completion. Platform shall provide a means to manage the state of the workflows and identify the completed steps, the active step, and the incomplete steps		
5.5	The platform shall allow for events and calculations to be performed both in the platform and on the device.		
5.6	The platform shall provide email alerts and other notifications based on events.		
<b>6.0 Identity and Access Management</b>			
6.1	The platform shall provide access control based on users, roles, and		

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	permissions.		
<b>6.2</b>	The platform shall support the concept of configurable user groups and organizations for access to specific objects.		
<b>6.3</b>	The platform shall allow for user creation in both an automated and manual fashion.		
<b>6.4</b>	The platform shall provide configurable password management capabilities.		
<b>6.5</b>	The Platform shall provide single sign-on capabilities - Desirable.		
<b>7.0 IoT Data Management</b>			
<b>7.1</b>	The platform shall provide flexible options for data ingestion.		
<b>7.2</b>	The platform shall be able to access data in process historians (such as OSI PI)		
<b>7.3</b>	The platform shall provide flexible options for data storage. Such as Time-Series, Relational tables, Collaboration like blogs, wikis and discussion forums etc.		
<b>7.4</b>	The platform shall allow for the storage of multiple data types.		
<b>7.5</b>	The platform shall provide secure storage for sensitive data.		
<b>7.6</b>	The platform shall support unstructured and dissimilar data types.		
<b>7.7</b>	The platform shall provide encrypted storage for sensitive data. Passwords are stored encrypted at all components within the platform & solution. This includes passwords stored at the platform for user accounts, and passwords at the edge components for use in connecting back to the server. Additional data can be encrypted for persistence if desired through		

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	available encryption functions		
<b>8.0 Digital Work Instruction:</b>			
<b>8.1</b>	The platform shall utilize a model-based design approach, to create a true 3D Digital Work Instruction of a physical product. The platform shall extend the concept of digital twin to include everything about the asset, from CAD/PLM to manufacturing to service state. These can all be represented and consumed in the solutions through the IOT and AR blocks. In essence, the platform shall create a digital Work Instruction representation for applications and analytics to interact with, abstracting the details of connectivity and the nuances of machine specifics so that upstream business systems have an elegant API and associated set of advanced tools to build and evolve the solution.		
<b>9.0 Miscellaneous</b>			
<b>9.1</b>	To reduce the duration of outages for critical IoT systems, Platform shall support Active-Active clustering for High Availability (HA), which eliminates any single point of failure.		
<b>9.2</b>	The platform shall have flexible option to be deployed on On-premise, On-Private cloud of BEML, etc.		
<b>9.3</b>	IOT Solution should be On-Premise.		

Signature with date of Authorized signatory

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Firm's Seal: \_\_\_\_\_



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### Annexure - G

#### DETAILS TO BE FILLED/ UPLOADED BY THE PARTICIPATING FIRM

Sl. No.	Description	Details to be filled/uploaded
1	Name of the Firm & Postal address for correspondence (With name of the Contact Person) with telephone number, fax and email ID	
2	Bank Details like Bank account numbers & IFSC code with Banker's Name, Address & Contact No.:	Bank account numbers :-  IFSC Code:  Banker's Name :-  Address :-  Contact Number :-

I / we hereby certify that all the information given above is factual.

Signature with date of Authorized signatory

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Firm's Seal: \_\_\_\_\_

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### **Annexure - H**

#### **Special Conditions arising out of implementation of GST (Which is to be signed and submitted along with the offer)**

##### **Tax Indemnity clause**

1. The supplier of Goods / Services shall comply with all the procedural requirements and relevant provisions under GST Law so as to enable BEML Limited (BEML) to avail Input Tax Credit (ITC) in a timely manner. BEML has the right to recover tax loss along with consequential interest and penalty suffered by BEML due to any non-compliance of tax laws by the supplier. Any GST liability arising on the supplier on account of loss of GST credits for reasons such as failure of the supplier to provide the details for raising invoice with necessary particulars, delay in payment of consideration beyond stipulated time period and the interest thereon would be on the suppliers themselves and BEML shall not be liable to compensate the same.
2. The supplier shall ensure that the Taxes which have been collected / with-held on behalf of BEML have been duly paid / will be paid to the Government account within the due dates specified under various Tax Laws in India and Rules made there under. It may please be noted that if BEML is not able to avail any tax credit due to any short coming on the part of the supplier (which otherwise should have been available to BEML in the normal course), then the supplier at his own cost and effort will get the short coming rectified. If for any reason the same is not possible, then the supplier will make 'good' the loss suffered by BEML due to the tax credit it lost in that transaction.
3. Under the GST Law, any economic or tax benefit arising out of the implementation of GST is mandatory and required to be passed on to BEML by the supplier. Similarly, the benefits enjoyed by the supplier and other players in the supply chain are also required to be passed on to the supplier by them, which in turn shall be passed on to BEML by way of price reductions. The suppliers shall indemnify BEML against any direct or indirect loss arising out of not passing on the aforesaid benefits. As responsible suppliers of BEML, the responsibility to pass on the above benefits vests with the supplier and BEML reserve the right to seek the manner in which such benefits is passed on to BEML.
4. Any amount paid to the suppliers including job-workers / sub-contractors shall be first attributable to the GST Tax charged in the invoice and the balance shall be considered towards the 'value' of supply of goods / services.

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5. Timely provision of invoices / Debit Note / Credit Note: The supplier has to timely provide invoice / Debit Note / Credit Note to enable BEML to claim tax benefit on or before stipulated time period as per GST Law. All necessary adjustment entries (Credit Note, Purchase Returns, Debit Notes) shall be made before September of the succeeding Financial Year.
  6. HSN for goods shall be specifically included to avoid disagreement on classification at a later stage.
  7. BEML shall identify the Place of supply to enable to avail the GST credit at right location.
  8. Advance payment if any made before supply of goods/services or raising of invoices, would attract GST. In case of receipt of advance, the supplier undertakes to raise the necessary statutory document. Further the supplier declares to raise the prescribed documentation governing the movement of goods.
  9. Any known discount shall form part of terms of the agreement to enable Supplier / BEML to claim tax adjustment.
  10. THREE copies of the invoices are mandatory and need to be provided by the suppliers and **wherever the law requires, an Electronic Reference Number for each invoice should be provided**. Further, the invoices for supplies shall clearly bear the GSTIN No. / UID No. along with purchase order number and date accompanied by despatch advice and date of packing list.
  11. Wherever applicable, BEML has the right to deduct "Tax deducted at source" at the rate prescribed under the GST law and remit the same to the Government of India.
  12. Any local levies and or other charges levied by any Central / State / Local authorities wherever applicable shall be extra and supplier shall be liable to discharge the same.
  13. The supplier shall be responsible to issue documents required for movement of goods and the logistic partner shall not be liable for any loss arising due to confiscation of goods by government agencies on account of lack of proper documents, deficiencies in documentation or any wrong declaration.
  14. Any Liability arising out of dispute on the tax structure, computation and payment to the Government will be to the Supplier's account.
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15. Where the supply of goods / services are liable to GST under reverse charge mechanism, then the supplier should clearly mention the category under which it has been registered and also that "the liability of payment of GST is on the Recipient of Service".
16. The invoice should be clearly specified with any abatement, if any claimed or otherwise from the Taxable Value, while calculating the GST.
17. The Bid evaluation criteria will include but not limited to 'GST Compliance rating' when introduced and operational by GSTN. The Purchase Order shall be void, if at any point of time the supplier is found to be a blacklisted dealer as per GSTN rating system and further no payment shall be entertained.

Place:

Date:

for M/s.....  
Signature

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**Annexure - I**

**FORMAT OF PERFORMANCE BANK GUARNATEE**

Bank Guarantee No.....  
Dated .....  
Amount .....  
Valid upto .....  
Claim upto .....

The Asst. General Manager (...)  
BEML Limited  
.....  
.....

M/s .....(Name of the Firm) having their office at  
.....and its Registered office at  
.....( hereinafter called the Service  
Provider) has entered into an agreement No:.....  
(hereinafter called the said agreement) with M/s BEML Limited, Bangalore  
(hereinafter called the Company) for under mentioned Contract-----  
-----  
----- on  
the terms and conditions in the said agreement.

In terms of the said agreement the Service Provider is required to and has  
agreed to furnish to the company a Bank Guarantee for a sum of Rs.....  
(Rupees..... only) towards security for the due and faithful performance of  
the terms of the said agreement and against any loss ordamage caused to or  
would be caused to or suffered by the company by reason of any breach by  
the said Service Provider of any of the terms or conditions contained in the  
said agreement.

(Name of the BANK) having its office at .....  
..... has agreed at the request of the Service  
Provider to give the guarantee hereinafter contained.

We, (Name of the BANK) do hereby undertake to pay the amounts due and  
payable under this Guarantee without any demur or protest merely on a  
demand from the company in writing stating that the amount due by way of  
any loss or damage caused to or would be caused to or suffered by the  
company by reasons of any breach by the said contractor(s) of any of the

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terms & conditions contained in the said agreement or by reason of the said contractor's failure to perform the said agreement. Any such demand made on the Bank by the company shall be conclusive as regards the amount due and payable by the Bank under this Guarantee upto **xx/xx/xxxx (date)** or the extended period if any. However, our liability under this Guarantee shall be restricted to an amount not exceeding Rs. .... (Rupees. .... only). Any change or variation in the constitution of the company shall not discharge the Bank from its liability to pay the amount under this Guarantee.

We, (Name of the BANK) further agree that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the company or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till the company certifies that the terms and conditions of the said agreement have been fully and properly carried out by the said contractor(s).

Unless a demand or claim under this Guarantee is made on us in writing on or before **xx/xx/xxxx (date)** or the extended period if any, we shall be discharged from all liability under this Guarantee thereafter.

We, (Name of the BANK) further agree with the company that the company shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said agreement or to extend the time of performance by the said contractor(s) from time to time or to postpone from any time or from time to time any of the powers exercisable by the company against the said contractor(s) and to for-bear or to enforce any of the terms & conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said contractor(s) or by any such matter of thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

We, (Name of the BANK) lastly undertake not to revoke this Guarantee during its currency except with the previous consent of the company in writing.

This Guarantee is effective from **xx/xx/xxxx (date) to xx/xx/xxxx (date)** or the extended period if any, including the claim period of 6 (six) months and the same shall be extended at the instance of the Company.

This Guarantee will remain valid for a period of 6 months from **xx/xx/xxxx (date) to xx/xx/xxxx (date)** or any extended time and any claim under this Guarantee must be preferred on the Bank in writing within 6 (six) months

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from the date of expiry i.e. on or before **xx/xx/xxxx (date)** or the extended period.

Notwithstanding anything contained herein above our liability under this Guarantee is limited to Rs..... (Rupees..... only) in aggregate and it shall remain in full force upto **xx/xx/xxxx (date)** unless extended. Any claim under this Guarantee must be received by us on or before **xx/xx/xxxx (date)** or the extended period and if no such claim is received by us within **xx/xx/xxxx (date)** or the extended period. Company's right under this Guarantee will cease and we shall be relieved and discharged from all liabilities under this Guarantee thereafter.

Date :

Place :

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**ANNEXURE-1****I IOT READY CNC MACHINES**

Sl. No.	Machine	Location	CNC System	Switch / AP
1	SBCNC -35	TRANS-1 SHOP	FANUC OI TF	24 Port 1 Switch – 1 No  AP – 5 Nos
2	YDC-96 DRILL CENTRE	TRANS-1 SHOP	FANUC OI MF	
3	LEIBERR LFS100 SHAPER	TRANS-1 SHOP	SIEMENS 840D	
4	PFAUTER HOBBING	TRANS-1 SHOP	SIEMENS 840D	
5	PRAGA-630	TRANS-1 SHOP	FANUC OI MF	
6	YDC-96 DRILL CENTRE	TRANS-1 SHOP	FANUC OI MD	
7	TC-500 HMC	TRANS-1 SHOP	FANUC OI TF	
8	WSU12 TURN	TRANS-1 SHOP	FANUC OI TF	
9	SAMPUTENSILI	TRANS-1 SHOP	SIEMENS 840DS2	
10	WSU12 TURN	TRANS-1 SHOP	FANUC OI TF	
11	GDM-42	TRANS-1 SHOP	FANUC OI TF	
12	FELLOWS GEAR SHAPER	TRANS-1 SHOP	SIEMENS 828D	
13	GDM 65 TURN CENTRE	HYD SHOP	FANUC OI TF	24 Port 1 Switch – 1 No  AP – 5 Nos
14	KELLENBERGER GRIND - 1	HYD SHOP	FANUC OI TF	
15	KELLENBERGER GRIND - 2	HYD SHOP	FANUC OI TF	
16	VTC-I VMC	HYD SHOP	FANUC OI TF	
17	PRAGA 800 HMC	HYD SHOP	FANUC OI MD	
18	SB CNC-35	HYD SHOP	SIEMENS 828	
19	GDM-90	HYD SHOP	FANUC OI TF	
20	PRAGA-630	HYD SHOP	FANUC OI MF	
21	VTC VMC	HYD SHOP	FANUC OI MF	
22	SBCNC-55 TURN	POWER LINE SHOP	FANUC OI TF	24 Port 1 Switch – 1 No
23	HMT DRILL CENTRE	POWER LINE SHOP	SIEMENS 828	AP – 1 No
24	BFW VMC BMV-65	TRANS-2 SHOP	FANUC OI TF	24 Port 1 Switch – 1 No
25	BFW VTL - CNC	TRANS-2 SHOP	FANUC OI TF	AP – 1 No



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### **TEST RIGS**

<b>Sl. No.</b>	<b>Machine</b>	<b>Location</b>	<b>Controller</b>
1	BD-155/ 355 TRANS TEST RIG	TRANS-2 SHOP	PC BASED
2	T-72 GEAR BOX TEST RIG	POWER LINE SHOP	PC BASED

### **ANNEXURE-2**

### **LIST OF CONNECTORS**

The solution shall have standard integration adapters / connectors for at least the following:

<b>Sl. No.</b>	<b>Protocol / Format</b>
1	OPC DA
2	OPC UA
3	FANUC FOCAS
4	SIEMENS TCP
5	Profibus
6	OLE DB
7	Serial Communication
8	MODBUS
9	ASCII
10	ODBC
11	XML
12	REST APIs
13	Message Queuing Telemetry Transport (MQTT)
14	MTConnect
15	SNMP
16	Omron FINS
17	SOAP
18	HTTP
19	HTTPS
20	JDBC

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### ANNEXURE-3

#### LIST OF DATA SOURCES

The following table provides a non-exhaustive list of the potential data sources from which the solution shall collect information. The bidder shall demonstrate the ability to collect data from at least the following types of sources.

Sl. No.	Data Sources
1	CNC
2	PLC
3	SCADA
4	DCS
5	LIMS
6	EUROMAP 63
7	PLM
8	Other standard sources like Oracle database, MS SQL Server, ODBC, CSV, Web Services, etc.
9	ERP such as SAP
10	RDBMS
11	CAD data
12	AEC & BIM
13	QMS
14	RPMS
15	Excel
16	Biometric /Attendance System
17	HRMS
18	CRM
19	Weighing Scales
20	Barcode Scanners
21	LabView
22	Test Rigs
23	Quality Inspection tools such as Digital Vernier calipers, Micrometer, DC nut runners, etc.
24	Collaboration tools such as office 365, DropBox, Github,FTP, Twillio, PubNub, Google Drive, Gmail, Salesforce, etc.
25	Dev Ops such as Spreadsheet, JDBC, HTTP, Swagger, RAML, etc.
26	MES

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### ANNEXURE-4

#### DASHBOARD REQUIREMENT

Sl. No.	Integrated KPI Dashboard requirement	Remarks
1	No. of KPIs required	Solution shall include KPIs covered (refer sheet KPI list).
2	No. of Data sources available for data gathering	Data source includes RDBMS, SAP, AMS, Excel Sheets. As described in Annexure 3
3	KPI Calculation details	All KPI calculations will be done at division/unit level and stored in respective division/unit data storage.
4	Number of cascading Dashboard levels required	Total 4-5 levels of cascading Dashboard screens required at highest level. Cascading levels like Overview, Individual Units, Unit Sectional view and Individual equipment
5	No of hierarchical roles desired in Dashboard system	Total 4 hierarchical roles viz. Executive Management (ED/CGM/GM/CIO), Functional Head (DGM/CM), Functional Manager (SM/M/DM), Functional Users (AM/Engr)
6	Various roles at corporate level and manufacturing unit level along with the details of the roles	Corporate level role: Key parameters monitoring and follow-up. Plant & Unit level role: Target plans on daily / weekly/ monthly basis. Liasioning with RHQ/ Pipelines /Marketing agencies.
7	Number of dashboards at corporate level	min 15 dashboards at corporate level.
8	Number of dashboards at unit level	min 15 dashboards at Plant & Unit/Division level.
9	Accessibility of Dashboard application	KPI dashboard application should be accessible through mobile devices such as Tablets, smartphones, Laptops, Computers etc.
10	Current templates of dashboards and KPIs	There are no templates for dashboard.

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### DETAILS OF KPI REQUIRED TO BE BUILT IN DASHBOARD SYSTEM

Sl. No.	Operations Management System - Production KPIs	Associated database
<b>Physical</b>		
1	Production Counts - Good and Rejected parts	<b>CNC</b>
2	Energy Consumption	<b>Energy Meters</b>
3	Overall Equipment Efficiency (OEE) %	<b>RDBMS</b>
4	Machine Availability	<b>RDBMS</b>
5	Performance	<b>RDBMS</b>
6	Quality	<b>RDBMS</b>
7	Top 5 Downtimes - Reasons wise distribution such as Idle time, breakdown, etc.	<b>RDBMS</b>
8	Operational Availability Factor (OA) %	
<b>MIS</b>		
9	Overall efficiency of Factory	<b>RDBMS</b>
10	Throughput - Hourly/Shift/Daily/monthly	<b>RDBMS</b>
11	Number of Interruptions in H&P division and KGF complex	<b>Alarm Management System</b>
12	Number of total power failures effecting H&P division and manufacturing units.	<b>RDBMS</b>
<b>Maintenance Management System - KPIs</b>		
13	MTTR	<b>RDBMS</b>
14	MTBF	<b>RDBMS</b>
15	Machine Status - History of failure	<b>RDBMS</b>
16	Instant Alerts & Notifications - # of machine in warning, breakdown, up etc.	
17	Maintenance schedules - # of machines due for PM	
18	Turn Around Time (TAT)	<b>RDBMS</b>
<b>Traceability - Expected platform to support for future use cases</b>		
19	Operator Wise Traceability	<b>RDBMS</b>
20	Machine wise Traceability	<b>RDBMS</b>
<b>Digital Work Instruction (On Tablet)</b>		

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21	Digital Standard Operating Procedure	<b>CAD</b>
22	3D drawings and work instructions to operators	<b>CAD</b>
23	3D guided servicing procedure	<b>CAD</b>