



Request for Proposal

Implementation of Data Warehouse & Business Intelligence/Analytics Solution

BHARAT HEAVY ELECTRICALS LIMITED



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1. Introduction:

BHEL is the largest engineering and manufacturing enterprise in India in the energy related/infrastructure sector, today. BHEL was established more than 50 years ago, ushering in the indigenous Heavy Electrical Equipment industry in India - a dream that has been more than realized with a well-recognized track record of performance.

BHEL manufactures over 180 products under 30 major product groups and caters to core sectors of the Indian Economy viz., Power Generation & Transmission, Industry, Transportation, Telecommunication, Renewable Energy, etc. The wide network of BHEL's 16 manufacturing divisions, four Power Sector regional centres, 15 regional marketing centres and 08 service centres enables the Company to promptly serve its customers and provide them with suitable products, Systems and services. The high level of quality & reliability of its products is due to the emphasis on design, engineering and manufacturing to international standards by acquiring and adapting some of the best technologies from leading companies in the world, together with technologies developed in its own R&D centres.

BHEL's vision is to become a world-class engineering enterprise, committed to enhancing stakeholder value. The company is striving to give shape to its aspirations and fulfil the expectations of the country to become a global player.

2. Objective:

BHEL intends to implement Data Warehouse, Business Intelligence (BI) & Advance Analytics solution to enhance and automate the information reporting and decision support system of the organization. The objective of this project is to deploy a scalable & agile advance analytics platform to have the capabilities of predictive analytics and shall cater BI & reporting for the management based on available data. i.e., ensuring the reporting framework has capabilities of high data exploration, slice & dice and availability of the reports on the mobile & tablets for quick decision making.

The Advance Analytics to help in deep insights to corporate level objectives, key performance indicators (KPIs) and in generating specific targeted results linked to these KPIs. These KPIs to be made available to concerned department in dashboard and it can be further drilled down to derive desired results. The system to enable notification to respective metrics owners in case of exceptions or deviation from the respective targets as well as provisions for providing explanation for the deviation.

Through implementation of this project, BHEL intends to build a modernized, new age platform and become analytics driven organization:

1. Implementation of solution for effective decision support for the functional groups and its key stakeholders.
2. Enable an automated, secured and robust platform that secure data from identified sources with no manual intervention.
3. Management of data availability for KPIs (Key Performance Indicators) from various sources - SAP, in-house applications, Oracle, etc.
4. Provide analytical capabilities through dashboards.
5. Deep drill downs of KPIs to have insights for analysis.
6. Effective internal communication based on information derived from BI analysis.
7. Automated tracking and alerts to stakeholders.
8. Collate data from various databases in a single system providing real time insights, metrics, and other valuable data.
9. Integrated with the multitude of databases for a seamless view across all data platforms.
10. Different personnel in the team can be provisioned for access to data differently.
11. Specific role-based dashboards and data to various people in the team to increase efficiency.
12. Statistical techniques from predictive modelling data mining to analyse the current perception and make predictions.
13. Capture relationships between explanatory variables and predicted variables from past occurrences

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and utilize them to predict the unknown outcome.

14. Use machine learning to predict, analyse and help to take informed decisions.
15. Seamlessly integrate with any or all of the existing legacy and core applications and shall support interface with other open-standard systems.

Primary users of the solution:

Top Management/ Senior Management	Timely availability of reports anywhere and anytime over mobile app/laptop/desktop with drill-down / drill-thru capabilities
Business User	Timely availability of reports related to their respective business domains
Power User	Ability to quickly customize a report and use analytics capabilities of the solution for the management presentation without support from the technology team
For the IT Team	Ensuring optimal use of IT resources and focusing on evolving the BI platform into valued analytics platform. Deploy data analytics and data warehouse platform for developing BI reporting and advance analytics use cases.

3. Eligibility Criteria (PQR)

S. No.	Eligibility Criteria	Document(s) to be provided as a proof
1	a) Average Turnover of the bidder during the last 3 years, ending 31 st March of 2022 to be minimum value of Rs. 511 Lacs b) The Bidder should have Positive Net worth for the last three financial years: 2019-2020, 2020-2021 and 2021-2022. Note: In case, the bidder is following calendar year as their accounting year, the equivalent period for considering annual turnover and Net worth is 2019, 2020 & 2021.	Audited Balance Sheet and Loss & Profit statement OR Certificate from statutory Auditors
2	The Bidder should have PAN No. and GST Registration No.	Documentary proof to be submitted
3	The Bidder should have a registered office in India.	Documentary proof to be submitted
4	The Bidder should not be black listed / banned for business dealings by any Govt. authority / department / agency or by any BHEL Unit / Region / Division / Office as on date of submission of Bid.	The undertaking on company letter is required by authorized signatory to be competent for bidding by the company or entity as per Annexure-VIII
5	The bidder may be OEM or SI of Data warehouse, Business Intelligence and Advanced Business Analytics Solution	Authorization Letter from OEMs in case of SI. OEM should provide details of Solution available with them.
6	OEM as well as SI if any, should have experience of delivering similar project with Data Size of 5 TB or more for the last 07 years ending the date of publishing the tender.	In case of OEM: Self declaration on company letter head is required by authorized signatory of OEM for solution being implemented for a project with a data size of 5 TB or more. In case of SI: Completion certificate from customer (along with Contact details including email and phone no. of the customer) clearly mentioning that the bidder has completed project with a data size of 5 TB or more.

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7	<p>The Bidder should have successfully completed similar works during last 7 years, ending on 30th Nov, 2022, of either of the following value: One project costing more than Rs. 1363 Lacs OR Two projects costing more than Rs. 852 Lacs, each OR Three project costing more than Rs. 682 Lacs, each</p> <p><i>Similar Works shall mean Data Lake / Data Warehouse, BI and advance analytics implementation and support on cloud / on-premise.</i></p>	PO copy and Successful Completion Certificates from Customer (Contact details including email and phone no. of the customer).
8	<p>The Bidder should have successfully completed project on data management / BI /Analytics /Application hosting on cloud platform during last 7 years of the following value: One project costing more than Rs. 545 Lacs OR Two projects costing more than Rs. 341 Lacs, each OR Three project costing more than Rs. 273 Lacs, each</p>	Successful Completion Certificates from Customer (Contact details including email and phone no. of the customer).
9	<p>The bidder should bid for providing Services only from those Cloud Service Providers (CSP) who have at least 2 data centers empaneled with Ministry of Electronics and Information Technology (MeitY).</p>	<p>MeitY empanelment should be verifiable on list available on MeitY website.</p> <p>A Certificate/ Documentary evidence to support that empanelled with MeitY along with Audit status and empanelment validity status.</p> <p>Undertaking on letter head from CSP that they have Data Centres within India and BHEL data will not be stored in any location outside India.</p>
10	<p>The bidder should be registered partner with the offered CSP</p>	<p>The bidder to submit the copy of partnership agreement with the CSP and also a letter of support from the CSP. The bidder to ensure that it remains partner for the proposed CSP during the entire duration of this contract - undertaking for the same to be provided by the bidder.</p>

Note:

1. Bidder is an OEM or System Integrator (SI) of the offered solution. In case the bidder is SI then PQR criteria will be evaluated for System Integrator and in case the bidder is an OEM then PQR criteria will be evaluated for OEM.
2. MSE /start-ups benefit shall be given as per government guidelines (regarding Prior Experience, Turnover), however there is no relaxation for point. No 6 of PQR.

4. Performance Requirements:

Definitions:

1191845/2022/CO-CDT-ITIN**4.1. Non-Availability:**

Is defined as the service is not available or service is available with degraded performance due to hardware failure, software issues, BI dashboard non-availability, non-resolution of any issue raised within stipulated time.

4.2. Service Level Agreement (SLA):

i) Vendor shall provide same business day support during business hours for 6 days a week with extended hours support requirement on exception basis (Approx. 3 times in a month).

ii) Solution Availability & Performance:

The performance parameters will be as under:

SI No	Service Level Parameter	Minimum BHEL requirement per quarter
1	Uptime for solution on cloud	99.9%

iii) Computation of Availability:

Availability of service shall be assessed by the following formula:

$$\text{Uptime} = 100 \times \left(1 - \frac{\text{Total outage duration in minutes during the quarter}}{\text{Maximum Available Time in minutes in a quarter}^*} \right)$$

* Maximum Available Time (in minutes) in a quarter = No. of days in a quarter X 24 X 60 – (Scheduled Maintenance Time + Downtime attributable to BHEL)

4.3. Penalties:

The penalties for non-compliance to SLA/ Support Engineer will be deducted on quarterly basis from the service charges. The penalty will be calculated as per the following formula:

$$\text{Penalty} = F \times (H \times D) + (3000 \times R)$$

Where,

F = Multiplication Factor as per table given below.

H = Minute wise Data Warehouse and BI solution charges

(i.e. Quarterly payable charges/ Total number of minutes in the quarter)

D = Downtime in minutes

Sl. No.	Uptime	Multiplication factor
1	>=99.9	0.00

2	<99.9 & >=97	2.00
3	<97	3.00

There should not be a downtime for more than one hour for the services/ solution in any calendar day throughout the contract period. In case the downtime is more than 1 hrs in a day, downtime will be calculated at double the rate for each hour more than the permissible limit i.e. 1 hr.

Total downtime for the day will be calculated as = 2X (Actual Downtime-Acceptable Downtime) +1 hrs

For example:

Suppose, the solution is down for 3 hrs on any calendar day.

Total downtime for the day will be calculated as = 2 X (3-1)+1 =5 Hrs

R= No. of days of support engineer absence

Additional clause:

- i. The total deduction due to SLA non-conformance per quarter will be limited to quarterly charges of the solution.
- ii. The SLA deduction shall be done from total payable quarterly charges of section A of price bid format.
- iii. Scheduled maintenance time should not be more than one hour per month and BHEL should be informed at least 48 hours in advance and subsequent approval / acceptance should be taken from BHEL.
- iv. If the uptime for solution falls below 95% on monthly basis, continuously for 3 months, BHEL reserves the right to terminate the contract, without any further cost implication to BHEL, in addition, risk purchase clause at section 23, shall be applicable.

5. Delivery and Installation Schedule:

The complete installation and configuration of solution should be completed on cloud within 7 months from the date of placement of PO.

6. Penalty for Late Delivery(LD):

For any delay in supply, installation, configuration and commissioning of the solution as per the delivery schedule and BOM, a penalty shall be levied on the bidder at the rate of 0.5% per week (or part thereof) subject to a maximum of 10% of the total order value (as per delivery schedule and BOM) for entire contract period. This penalty will be deducted from the first payment. In case the penalty amount to be deducted is more than the first payment charges (initial quarterly charge), the same will be adjusted from the subsequent payments. However, if the delay is due to any reason on BHEL's account, then that delay will not be counted on service provider's part and no penalty will be levied on the bidder.

7. Payment Terms:

- 7.1. The quarterly payment will be due after completion of the quarter from the date of successful completion of installation & acceptance of solution by BHEL. However, 1st quarter payment will be proportionate as per installation dates of various equipment, if required.
- 7.2. The charges payable per quarter shall be as Section A of Un-Priced Bid format (Annexure-IV). However, payment of line item 2 shall be regulated as per Note 4) of unpriced bid format that states “ As price quoted in line item 2 of section A is considering complete solution of 5 TB, the payment for line item 2 shall be done on pro-rata basis for data storage used for the solution in proportion to price quoted in line item 2 by the bidder.”
- 7.3. The charges payable for development of more KPIs, BHEL shall pay the development charges based on man-day rates (as mentioned in section B of Un-Priced Bid format) provided by the bidders. This shall be paid on completion of KPI dashboard development and acceptance by BHEL along with the quarterly payment for the quarter in which KPI dashboard has been developed.
- 7.4. Bidder shall submit the quarterly bill along with all supporting documents by 15th of the subsequent quarter.
- 7.5. All payment under the contract are subject to deduction of penalty/LD under the contract and applicable deduction on account of Taxes or any other amount recoverable by company from bidder under this contract or under any other contract.
- 7.6. Payment will be released within 60 days from the submission of bills complete in all respects after due verification subject to other terms & conditions as mentioned in clause of Taxes & Duties along with following document.
 - a) SLA reports for the quarter (certified by BHEL)
 - b) Tax payment proof
 - c) Documentary evidence for data storage usage and licenses.
 - d) Attendance of Support Engineer

Delayed payment, if any, shall not attract interest.

8. Taxes & Duties:

- i. Price quoted should be inclusive of all applicable Taxes/charges. The Contractor shall pay all other taxes, fees, royalty, commission etc. which may be levied on the contractor in executing the contract. In case BHEL is forced to pay any of such taxes, it shall be recovered from Contactor's bills or otherwise as deemed fit.
- ii. TDS under GST law as applicable shall be deducted.
- iii. In case of any recovery including LD/penalty, the GST (if applicable) shall also be recoverable from the supplier.
- iv. To enable BHEL to avail GST input tax credit, Vendor shall submit GST compliant invoice containing all the particulars as stipulated under Invoice Rules of GST Law. Payment shall be made to the Vendor only after submission of GST complaint invoice. The successful bidder shall raise GST compliant invoice affixing GSTIN of BHEL's unit availing the services. Vendor to ensure that details of such invoice is furnished by him in his GSTR-1 return and the same is appearing in GSTR-2B of BHEL.
- v. BHEL reserves the right to protect its interest against any loss on account of non-availability of GST credit.
- vi. GSTIN of BHEL will be provided to the Vendor along with the work order.

- vii. Any new/change in statutory levy as and when made applicable by the Government shall become applicable against documentary evidence.
- viii. Statutory variation for GST is payable to the Seller during validity of the contract. However, for period beyond the contract validity, BHEL may reimburse the actual applicable increased tax, in exceptional circumstances, in case BHEL is able to take the input tax credit. However, the decision of BHEL in this regard will be final and binding on the seller/ contractor otherwise vendor/ contractor has to bear the differential upward increase in tax.
- ix. Payment to the Vendor will be subjected to TDS as per rules in force from time to time. The Tax Deduction at Source (TDS) shall be done as per the provisions of Income Tax Act & GST, as amended from time to time and a certificate to this effect shall be provided to the Vendor by BHEL.
- x. GST (if applicable) shall also be recoverable from the Vendor in case of LD recovery/penalty on account of breach of terms of contract.
- xi. Invoice submitted should be in the format as specified under GST Laws viz. all details as mentioned in Invoice Rules like GSTIN registration number, invoice number, quantity, rate, value, taxes with nomenclature – CGST, SGST, IGST mentioned separately, HSN (Harmonized System of Nomenclature) Code / SAC (Services Accounting Code) etc.
- xii. The Vendor has to give an undertaking that GST as mentioned in the invoice has been / will be paid and also file return as per respective extant rule.

9. Scope of Work:

BHEL intends to implement centralized Data Warehouse, Business Intelligence and Advanced Analytics solution by integrating data from multiple heterogeneous sources across BHEL to support analytical reporting, structured and/or need based queries processing and decision making.

Initially solution will be implemented for tentative list of KPIs (Attached as **Annexure-II**) from different functions with approx. 100 concurrent sessions. In future based on performance and outcome of solution requirements for dashboards for more KPIs and concurrent sessions may increase.

The complete solution will be developed and deployed on Cloud. The vendor shall be System Integrator of the solution to provide end to end service to BHEL. Vendor shall provision data warehouse, business intelligence and advanced analytics cloud services from Cloud Service Provider, deploy and configure, monitor and maintain the solution during entire contract period.

Bidder shall take care of scalability as mentioned in clause 9.9 while designing and provisioning the hardware and software requirements for the solution from Cloud Service Provider.

Bidder shall require to perform following services as part of the overall scope:

- i) Availability of solution on cloud (Software, Hardware, Storage and Services) in compliance with technical specification as mentioned in **Annexure-I**.
- ii) The Bidder will be responsible for hosting required services on cloud and managing the cloud service offerings for the solution during entire contract period.
- iii) Bidder shall be responsible to monitor the cloud services (Resource Management, User Administration, Performance, Service Levels)
- iv) Establishing connectivity between BHEL's premise to Cloud Data Centre including on premise data source connectivity.
- v) Compute Services: Provisioning, installation, Configuration, Commissioning/De-commissioning and Management of the Virtual Machines and provide BHEL the access to the same via secured web browser / Command Line Interface.
- vi) Storage Services: Provisioning of scalable storage capacity as per requirements of BHEL and availability of services
- vii) Disaster Recovery Plan and Implementation: Setup and configuration of VMs, Storage, Network, Database, etc. at DR site meeting SLA requirements of BHEL
- viii) Implementation of Data Warehouse, Business Intelligence and Advance Analytics solution.
- ix) The Bidder shall provide required cloud infrastructure for deployment of Data Warehouse and BI solution as per specified technical specifications.
- x) Hosting of Data Warehouse and BI solution on cloud.

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- xi) Conducting capacity sizing and planning for complete requirement
- xii) The bidder should ensure IPv4 & IPv6 compliance for the entire solution.
- xiii) Implementation of Dashboards for data analytics of KPIs as mentioned in **Annexure –II.**
- xiv) The bidder shall work with BHEL team for identification of 10 problem statements for advanced business analytics use cases and implement 5 shortlisted problem statements.
- xv) The offered Analytics solution should be capable to transform and model data with the goal of discovering useful information, scenarios, predictions, forecasts, conclusions and support decision making.
- xvi) Assessment of data quality at source and developing data quality jobs to fix quality issues
- xvii) Design of data model for each KPI including drilldowns and analysis (descriptive/ predictive/ prescriptive).
- xviii) Identification of data source from different databases (structured / unstructured) and detailed plan for data flow for each KPI (i.e. configuration of connectors, frequency of data flow, parameter- mapping complete Extract Transform and loading (ETL) of data, master data design and creation etc). Vendor shall interact with individual locations for understanding the data- availability, quality and further, mapping of data.
- xix) Establishing connectivity with different types of data sources from approx. 30 locations such as SAP with version ECC 6.0 / ERP 6.0 EHP7, ECC 6.0 EHP5, ECC 6.0 EHP 0, Oracle locations versions Oracle 11g,12c,19c, MS-SQL, Postgres and MS Excel files etc.
- xx) The solution should be compatible with BHEL Security Operations Centre (SOC).
- xxi) Prior to implementation of KPIs for visualization in business intelligence and analytics solution, vendor shall do business requirement study with concerned functions. Vendor needs to understand the current processes as to know the current performance monitoring mechanism, types of MIS reports maintained and improve the suggested KPIs of the function. Vendor shall closely work with functional groups while developing the dashboards for each KPI and provide suitable solutions of advance analytics to improve the final outcome from the KPI.
- xxii) Design and Implement a platform that will scale to execute the require models and Algorithms with increasing data and scenarios.
- xxiii) Vendor shall document the requirements in detail, the layout of dashboards, the graphical details required, data mapping and methodology of data capture and integration.
- xxiv) The solution should be able to help the concerned function officials in taking appropriate decisions by performing various analysis – Scenarios Analysis, Variation Analysis, Root Cause and What-if Analysis, Forwards looking Analysis such as Forecasting, Predictive etc.
- xxv) Analysis of input data and metadata discovery.
- xxvi) Automated analysis from ingested data.
- xxvii) Vendor shall comply to security requirements of deployed solution including operating system, database, web applications etc.
- xxviii) Deploying manpower resources during implementation and post implementation.
- xxix) Provide trainings to concerned BHEL employees for management and usage of Data Warehouse, BI & analytics solution.
- xxx) Providing OEM Manuals for Users.
- xxxi) After implementation of solution, User Acceptance Test (UAT) shall be conducted.
- xxxii) The bidder shall provide solution architecture design including cloud hardware and software components and network.

1191845/2022/CO-CDT-ITIN**9.1. Data Analytics & KPI Visualization**

- 9.1.1. The offered solution should be a COTS (Commercially off the shelf) product with support and not be a custom-made software. The solution provided should be enterprise class reliable product. The software should have been commercially available for last 10 years and same software should have been supplied to other Indian Government department / PSUs.
- 9.1.2. The offered solution should have design and deploy advanced data visualization capability to allow end users to access business intelligence and analytics in ready to use formats.
- 9.1.3. The offered solution must have flexible, componentized end-to-end data and analytics architecture to scale and to meet the needs of a competitive, growing digital business.
- 9.1.4. The offered solution should have In-Memory Analytics solution and should enable users to conduct fast, thorough explorations and Analysis on data from different data sources specified in this tender.
- 9.1.5. Advanced data visualization capability to allow end users to access business intelligence and analytics in simple, informative, visually appealing formats for driving business decisions.
- 9.1.6. Output data in standard and user-selected tabular, graphical visualizations and other Instructive visualization formats.
- 9.1.7. In-built user permissions and access controls to make sure user only gets the information they need to see.
- 9.1.8. Provision for simple and user-friendly self-service and augmented analytics Data visualization tool should support the same dashboard and reports created on Web to be accessed from mobile devices.
- 9.1.9. Ability to export report and data to Word, Excel, PowerPoint (MS Office) formats as well as easily can be shared/downloaded in pdf and jpeg format.
- 9.1.10. Ability to drill down report data to the details at the lowest level and slice and dice data as require
- 9.1.11. Ability for the users to set threshold-based alerts and notifications
- 9.1.12. Drill down dash boards, reports are also required for Business specific use cases.

9.2. Solution Software:

To ensure completeness of solution the Bidder shall provide all relevant software with licenses, operating system with required licenses in subscription and pay as you use model as a part of solution. All software provided to BHEL needs to be quoted with premium enterprise support from the OEM of the proposed solution.

For implementation and usage of solution there will be a tentative requirement of 50 developer and 300 visualization licenses.

If any licenses are required for fetching of data from SAP locations, sharing of content, reports and dashboards with anyone (even outside the organization) shall be provided by bidder with no additional cost to BHEL.

The proposed software for the solution should meet technical requirements as mentioned in **Annexure-I**.

All licenses shall be on subscription and in the name of "Bharat Heavy Electricals Limited". Following are major software requirement:

S.No.	Software
1	Data Warehouse with Enterprise Database with all required software licenses on pay per use model, Enterprise support from OEM for a period of 5 years.
2	BI and Advance analytics solution with all required software licenses, enterprise support from OEM for a period of 5 years
3	Operating System for required software with 5 years support
4	Developer and Visualization user licenses for BI and Advance Analytics solution for 5 years on subscription basis
5	Any other required software for deployment of Data Warehouse & BI solution

9.3. Cloud Infrastructure services:

The Bidder shall provide required infrastructure services for Data Warehouse, BI and Advance Analytics solution on cloud. The sizing of the solution should be done in such a way that there should not be any performance issue during usage of Data Warehouse, BI and Advance Analytics solution.

To begin with data storage required for the solution should be 500 GB which may increase up to 5 TB over a period of 5 years. The deployment of solution shall be done on cloud.

MPLS based WAN link may be configured by BHEL at Cloud DC location for required connectivity between cloud and BHEL locations. The Bidder shall share following details related to cloud data centre:

1. Complete address of cloud DC
2. Point of contact for MPLS based WAN link termination and feasibility study

Provisioned cloud infrastructure should support operations such as data modelling, connection with all data sources, ETL/ELT, KPI dashboard development and seamless visualization of dashboards for 100 concurrent users.

For deployment, installation, ETL/ELT and other activity related to project, only provisioned cloud resources shall be used. Resources of BHEL data sources should not be used for any such activity.

While finalizing cloud infrastructure design of the solution aspects like failover, continuity, redundancy, performance, production environment, development environment etc. should be taken care and the SLA parameters as mentioned in SLA clause should be ensured.

Bidder shall share Complete BOM (Bill of Material) of the solution for 5 TB Data Warehouse storage duly vetted by the OEM required for complete installation, configuration, deployment and post deployment support of solution.

Successful Bidder to ensure that the cloud infrastructure for the application is made available within 07 days of award of the contract.

Resource Management-

a) Bidder should offer cloud services from CSPs MeitY Empanelled India Data Centre and must ensure that BHEL data resides only in India.

b) While the initial sizing & provisioning of the underlying infrastructure may be carried out based on the information provided in the RFP, subsequently, it is expected that the bidder, based on the growth in the user load (peak and non-peak periods; year-on-year increase), will scale up or scale down the compute, memory, and storage as per the performance requirements of the solution and meet the SLAs using the auto-scaling features provided by the CSP.

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9.4. Manpower Requirements

9.4.1. During Implementation Manpower

The successful Bidder shall complete deployment of Data Warehouse, BI and advance analytics solution within stipulated time as mentioned in **Clause 9.8 Project Timelines**. The Bidder shall deploy adequate manpower with required skill sets. Deployment of manpower resources are indicative only, bidder may depute more resources for timely completion of project:

Role	Relevant experience	Compliance	Proof
Project Manager (1 No.)	<ol style="list-style-type: none"> 1. Should have minimum 10 years' experience in project management. 2. Should have minimum 3 years' experience in project management of Data Warehouse and BI/ analytics project for implementation of minimum 25 KPIs with data from more than 10 locations 3. Should have led at least one BI/analytics deployment in Power/ Manufacturing/ Oil & Gas sector. 		Bidder must submit the CVs of the proposed manpower to be deployed for this project duly certified by authorized signatory.
Functional Expert (3 No.)	Should have minimum 5 years of experience in Power/ Manufacturing industry with ability to understand the functional metrics of BHEL		Bidder must submit the CVs of the proposed manpower to be deployed for this project duly certified by authorized signatory.
Database Engineer (1 No.)	<ol style="list-style-type: none"> 1. Should have a minimum 5 years' experience in Database administration 2. Should have completed one multi-location (more than 5), heterogeneous data sources implementation of Data Warehouse solution 		Bidder must submit the CVs of the proposed manpower to be deployed for this project duly certified by authorized signatory
Data Scientist (3 No.)	<ol style="list-style-type: none"> 1. 3 years of experience as a Data Scientist in Data Warehouse & BI Implementation project for implementation of minimum 25 KPIs. 2. Should be a certified Data Scientist 3. Should have completed one multi-location (more than 5), multi-functions implementation 		Bidder must submit the CVs of the proposed manpower to be deployed for this project duly certified by authorized signatory

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Data Analyst (3 No.)	<ol style="list-style-type: none"> 1. Should have 5 years of experience in data visualization and building data models/dashboards/reports for top management. 2. Should be a certified Data Analyst on offered OEM solution 		Bidder must submit the CVs of the proposed manpower to be deployed for this project duly certified by authorized signatory
DevOps Engineer	3 years of Experience as a BI Developer and Hands on knowledge of DevOps tools offered with the solution.	Bidder to specify no.	Bidder must submit the CVs of the proposed manpower to be deployed for this project duly certified by authorized signatory

9.4.2. **Post Implementation Manpower**

Once the solution is implemented and accepted by BHEL, one person with relevant expertise as mentioned below shall be deployed at BHEL for management of solution by the vendor for 5 years. The completion date of **M5** Milestone as mentioned in **clause 9.8 of Project Timelines** shall be considered as Date of Acceptance of the solution.

S. No	Resource	Relevant qualification and experience	Compliance	Proof
1	Support Engineer (1 No.)	<ul style="list-style-type: none"> • Support engineer should have a minimum qualification of BSC/BCA • To have minimum experience of 4 years in management of Data Warehouse & BI solution. 		Bidder must submit the CVs of the proposed manpower to be deployed for this project duly certified by authorized signatory

9.5. Post Implementation Activities by Vendor / support engineer

- 9.5.1. Vendor will carry out maintenance and service support of deployed solution during contract period.
- 9.5.2. Vendor shall provide support for five years for complete solution from the date of acceptance of implementation.
- 9.5.3. Vendor shall ensure backup of complete solution as per backup policy of BHEL.
- 9.5.4. Vendor shall adhere to SLA parameters as mentioned in SLA section of this Tender.
- 9.5.5. Vendor to support in ticket resolution and technical assistance/discussion wherever required for issues reported by BHEL for issues in hardware problems, dashboard viewing/publishing/accessing. Vendor shall troubleshoot and resolve the issues reported by the user of the dashboard.
- 9.5.6. Vendor must provide and install software upgrades, updates, software enhancements during this period at no extra cost to BHEL within two (2) weeks from the date of release.
- 9.5.7. Vendor must install any critical security patch with prior approval from BHEL on urgent basis with proper implementation and rollback plan.
- 9.5.8. Vendor shall update user manuals for any changes in the solution on a regular basis.
- 9.5.9. Vendor shall provide training on changes in deployed solution to designated members of BHEL IT team and respective BHEL functional teams.
- 9.5.10. Escalation matrix with contact details for resolution of issues in the solution shall be provided by the vendor. The same may be updated and communicated to BHEL as and when any change occurs in the matrix. In case of any escalated issue which cannot be sorted out through correspondence, on- site support of the expert shall be provided at no extra cost to BHEL.
- 9.5.11. Vendor shall conduct standard maintenance activities like service packs, updates and upgrades without impact on business. Any update requiring system downtime, Vendor will share the downtime window with BHEL for approval. Once approved the downtime to be carried out in that time frame. In case of failure, the system is to revert to the same state without any defects.
- 9.5.12. Vendor shall manage changes in configuration of servers, bug identification, root cause analysis, bug fixing, bug testing and deployment.
- 9.5.13. Vendor to ensure resolution of any hardware and software issue, failure, breakdown, upgrade, or in any way the hardware/software is not in working condition etc. The BHEL team will log a call and the same shall be tracked as per the SLA section.
- 9.5.14. BHEL conducts necessary Vulnerability Assessment & Network Penetration Testing on the system and observations will be shared with the vendor in a periodic manner. The vendor shall mitigate vulnerabilities within specified time as decided by the BHEL IT team.

- 9.5.15. Vendor shall be responsible for both planned and unplanned shutdowns. In case of a planned shutdown preferably in off hours, vendor needs to get approval from BHEL team and convey well in advance of the system downtime. The downtime window will be conveyed by vendor and scheduled maintenance will be carried out during that time period only. Vendor will up the system, with business as usual conditions, within the downtime window. Vendor shall ensure availability of OEM support during scheduled downtime including off hours.
- 9.5.16. Vendor shall modify the BI dashboards / reports as per the day to day needs of the user with no additional cost to BHEL. Also, in case of any change in integrated data source, vendor shall carry out the updation in the solution.
- 9.5.17. Vendor shall be carrying out additions, modifications & enhancements in the existing dashboards to improve utility and relevance to the functional users.
- 9.5.18. Vendor shall take necessary measures to prevent any data loss from the Data Warehouse and BI solution.
- 9.5.19. The arrangement for substitution for support engineer on leave or training should also be made.
- 9.5.20. The Vendor will arrange suitable support engineer in case their deployed support engineer is not available for more than 2 working days. If the Vendor fails to deploy the support engineer within allotted timeframe then the Vendor will be liable to pay the penalty as per SLA clause until the time suitable replacement arranged
- 9.5.21. If the service of deployed support engineer is not as per the norms and BHEL feels that the work of deployed support engineer is not satisfactory then the Vendor will replace the support engineer within seven days with written confirmation to the concerned Department.
- 9.5.22. The Vendor will provide insurance cover to its support engineer. The support engineer or their legal heirs shall not claim any insurance benefit from BHEL in case engineer suffer any loss or damage to their life or person or property while working in the BHEL premises.
- 9.5.23. The Vendor shall ensure compliance to all the obligations arising under the Contract Labour (Regulations & Abolition) Act, 1970, Minimum Wages Act, Workmen's Compensation Act, 1923 and other labour laws prevailing in the country. BHEL shall not be liable for any non-compliance on part of the Vendor.

9.6. **Future dashboard development:**

During post implementation contract period BHEL may request for new KPI dashboard development from vendor. Charges for the development shall be as per rate of Man-day quoted in **Annexure-IV** (Unpriced price bid format). Assuming an average of 15 Man-days for a normal dashboard development and a total of 20 more KPIs for a period of 5 years, a total of 300 Man-days shall be considered for evaluation.

BHEL reserves the right to use Man-day rates as per the requirement as and when required during the contract period.

9.7. Knowledge Transfer & Training

- 9.7.1. To enable understanding and operation of solution by BHEL team, vendor shall closely work with BHEL functional group while development of dashboards and hold trainings to enable usage of available features and functionalities of dashboards.
- 9.7.2. Trainings to be held for both IT and functional users.
- 9.7.3. Bidder shall provide required knowledge transfer and handing over sessions to BHEL team involved in the implementation.
- 9.7.4. Additionally, bidder shall provide training to BHEL team:
 - a. Data Science certification level training for 5 no. of BHEL person on OEM solution provided by bidder.
 - b. Data Analytics certification level training for 5 no. of BHEL person to enable them development of dashboard in the existing solution on OEM tools provided by bidder.
 - c. Certification level training on data warehouse for ETL, data modelling etc. for 2 no. of BHEL person on OEM solution
 - d. Training on proposed cloud infrastructure solution to BHEL team

9.8. Project Timelines

Below are the timelines to be followed by the successful bidder for completion of the project after award of work.

Milestone	Description	Deliverable
M1 (1st to 3rd month)	a. Kick off Presentation	1.Submission of kick-off Presentation document and project plan.
	b. Project Plan and Resource Mobilization	2. Detailed design documents for implementation of data warehouse.
	c. Provisioning of Hardware and Software	3. Software and hardware provisioning
	d. Improvement of KPIs and deployment of business use cases in discussion with function groups to understand business process and existing method of measurement of performance metrics, MIRs and improve suggested KPIs for better outcome for analysis on KPIs, Prioritization of KPIs by functions	4.Detail document of finalized KPIs and measures in-agreement of functional groups and sign-off by BHEL
	e. Assessment of data quality at source and developing data quality jobs to fix quality issues	5. Data quality assessment report for all data sources.
	f. Design of data model for each KPI including drilldowns and analysis (descriptive/ predictive/ prescriptive).	6. Design document for development of dashboards.

	g. Identification of data source from different databases (structured / unstructured) and detailed plan for data flow for each KPI (i.e. identify connectors, frequency of data flow, parameter- mapping etc.)	7. Documents on data sources and data flow plan
	h. Design visualization for dashboard	8. Dashboard design document
M2 (1st to 3rd month)	Installation and configuration of hardware and software	Installation & configuration of hardware and software
M3 (2nd to 4th month)	Build Data Warehouse and Business Intelligence & Analytics for one function	ETL/ELT on data from various sources, Data Modelling - Facts and Dimensions, Report and Dashboard development, Data Security - Authentication and Authorization
M4 (5th month)	a. User Acceptance Testing and Go-live for one function	1. Validation and User Acceptance Testing and Go-live
	b. Trainings	2. Provide certification trainings and training contents
M5 (7th month)	Go-Live for all functions	Go-Live of all functions Dashboards

9.9. Scalability

The proposed solution should be highly scalable to cater more number of users, dashboards, KPIs in future as and when required by augmenting cloud infrastructure and addition of required software licenses. For database provided in the solution should be able to scale up (adding more resources to handle demand on existing server) and scale out (adding more VMs to handle demand) to meet performance requirement. For software including OEM certified database connectors if any shall be provided by the successful Bidder without any further cost implication to BHEL.

9.10. Privacy & Security Safeguard

The Service Provider shall not publish or disclose in any manner, without the BHEL's prior written consent, the details of any security safeguards designed, developed, or implemented by the Service provider under this contract. The Service provider shall develop procedures plans to ensure that IT resources leaving the control of the assigned user (such as being reassigned, removed for repair, replaced, or upgraded) are cleared of all BHEL data and sensitive application software. The Service provider shall also ensure that all subcontractors who are involved in providing such security safeguards or part of it shall not publish or disclose in any manner, without the BHEL's prior written consent, the details of any security safeguards designed, developed, or implemented by the Service provider under this contract.

9.11. Data Security Requirements

The data and applications in the cloud shall be exclusive property of BHEL and ensuring the security, confidentiality and integrity of the data hosted on the cloud is the sole responsibility of the bidder. Without permission of BHEL they should not be accessible to any other outsider and the bidder has to ensure this aspect. The bidder shall indemnify the owner against any breach of data security and confidentiality. Security requirements of proposed solution and its implementation shall include followings:

- i The Bidder shall follow BHEL's information security policy and instructions in this behalf to the extent possible. The policy document will be shared with the successful Bidder.
- ii The successful Bidder shall ensure that the security best practices provided by OEM are implemented in the services provided to BHEL.

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- iii The solution should Conform to India's regulatory and other government Agencies recommendations/ guidelines during the entire Contract Period.
- iv The solution should provide capability to download Audit Logs of all components of solution. The bidder will provide audit logs as per BHEL's requirement.
- v The Data in-transit and at-rest in cloud should be encrypted.
- vi BHEL cloud data should be replicated in other geographically distributed datacentre.
- vii The solution should support industry standard encryptions such as AES-256, TLS1.2 or above and relevant secure versions as and when released during the entire Contract Period between Servers to Server & Server to Clients.
- viii Web Access to cloud applications should be through HTTPs and should have valid SSL certificate
- ix User Privacy Considerations: Any application/feature being offered as a part of this package should not infringe on the user privacy or result in leakage of personal data of users. The training imparted to the users shall properly explain the monitoring features available in the offered applications and their possible impact on the user privacy. Further, installation/rollout of any feature which may impact the user rights on their own devices shall be done only after taking explicit user consent.

9.12. User Acceptance Test

After completion of implementation of solution and development of dashboards, UAT shall be conducted to ascertain whether the implemented solution meet the requirements as indicated in Technical Specifications mentioned in **Annexure –I** and work is completed as per Scope of Work including KPI dashboard development for functions as mentioned in **Annexure -II**.

- 1. The vendor shall responsible for preparation and submission of test strategy & test plan for BHEL approval and demonstration of features and functionalities deployed solutions.
- 2. The UAT shall be conducted for 7 days.
- 3. Vendor shall resolve the issues reported in UAT within 15 days.
- 4. Once the issues are resolved, vendor shall offer the solution for testing again. The system again will be tested for 7 days.
- 5. In case the implemented solution is not able to meet UAT, the supplied solution is liable to be rejected. Subsequently, the Security Deposit may be forfeited and Order may be cancelled.

10. Documents to be submitted during commissioning

On successful installation of the equipment and configuration of individual components and the solution as a whole, Vendor shall submit the following documents as part of the commissioning:

- 10.1. Security scheme for entire solution.
- 10.2. Solution design document
- 10.3. Bidder shall submit complete list of BOM (items/services) required for complete commissioning of solution with price bid format.
- 10.4. KPI sign-off document
- 10.5. Approach document for data extraction methodology with details of OEM certified connectors from different data sources (SAP, Oracle etc.)

11. Instructions to bidders:

During technical evaluation, BHEL may ask bidders to provide demo of their offered solution. BHEL reserves the right to reject the bid in case the offered solution fails to meet the technical and feature requirement as per **Annexure I** of RFP.

12. Special Terms and Conditions

- 12.1. Project Manager to have proven project management experience, knowledge and skill to communicate to BHEL Management and Team as required
- 12.2. The deployed manpower should be dedicated and fulltime for the BHEL during the entire project duration.
- 12.3. The deployed manpower should be on roll with the successful Bidder, sub-contracting will not be allowed.
- 12.4. The profiles of manpower proposed for project team by the successful Bidder shall be submitted to BHEL for acceptance before commencement of activity.
- 12.5. Since the continuity of the project team is essential for the success of the project, it is expected that the successful Bidder to follow diligent process for ensuring the dedicated team. Under any circumstances when any member of the team is to be replaced or removed, the successful Bidder shall put forward the profiles of team being proposed as replacements. These profiles should be either equivalent or better than the ones being replaced. However, whether these profiles are better or equivalent to the ones being replaced will be decided by BHEL. BHEL will have the right to accept or reject these substitute profiles.
- 12.6. After placement of Purchase Order (PO), successful bidder has to submit the acceptance of PO within 7 days.
- 12.7. Offered Software(s) should be the Latest stable versions available with OEM.
- 12.8. The bidder shall have to execute the contract in close coordination with BHEL engineers/executives.
- 12.9. Any other work required in BHEL existing data sources/setup due to implementation of Data Warehouse and BI setup shall be part of scope of work.
- 12.10. The bidder must submit complete list of BOM with quantity of proposed solution to meet the requirement mentioned in RFP duly vetted by the respective OEM(s).
- 12.11. The entire scope of work, obligations and deliverables covered in this document and subsequent instructions to the Successful Bidder by BHEL post award shall be deemed to be Successful Bidder's obligation. Anything not specifically mentioned but considered essential for effective deployment of solution shall be deemed to be covered under existing scope without any additional financial implication to BHEL.
- 12.12. Successful Bidder shall work in co-ordination with BHEL team and OEM (in case OEM is other than Successful Bidder) for completion of project.
- 12.13. Bidder can only supply services from one cloud service provider (CSP) during the entire tenure of the contract. Split services from different CSPs are not allowed. The bidder shall not be permitted to subcontract its obligations under the contract.
- 12.14. The Bidder shall have monitoring tools for measuring the service levels, application performance & utilization for servers, storage and network. The tool shall be capable of providing the exact

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utilization of servers and shall be able to generate per day, per month and per quarter utilization reports. Bidder should also provide access of this tool to BHEL.

- 12.15. The Bidder shall be responsible for ensuring security of cloud services and infrastructure from any threats and vulnerabilities.
- 12.16. The cloud infrastructure / service provisioned by the Bidder must be scalable and flexible. BHEL shall be able to add/reduce cloud infrastructure / services on demand basis.
- 12.17. The Bidder should provide metering and billing to provide service assurance for maintenance & operations activities. Detailed user level or user group level auditing, monitoring, metering, accounting, quota and show-back information is essential for the cloud platform to be offered.
- 12.18. Upgrades: Any required version / software / hardware upgrades, patch management etc. provided by the Bidder / CSP will be managed by the Bidder for the entire contract period at no extra cost to BHEL. Bidder to consult / inform BHEL before doing any upgrade and share detailed report of associated services / functionalities which may get impacted due to the upgrade.
- 12.19. On expiration / termination of the contract, Bidder will need to handover complete data in the desired format to BHEL which can be easily accessible and readable without any additional cost to BHEL. Data so received should be transportable to any other Public/Private cloud.

13. Exit Management Plan

IT infrastructure support being provided under this contract is a critical business activity and its continuity is crucial for running of the business. As such, exit from the contract, for whatever, reasons need to be a planned exit to ensure that there is no disruption of service and the smooth migration takes place to an alternate CSP/Bidder.

CSP/Bidder shall provide the Owner with an Exit Management Plan which shall deal with the processes to be followed on completion of the Service. Such Exit Management Plan shall be submitted by the Service Provider with Part – I Techno-Commercial Offer, and the same will be approved by the Owner or its nominated agencies. Approved Exit Management Plan shall become part of the Contract Documents.

CSP should provide support to BHEL for transferring data / applications at the time of exit management and as per the guidelines defined by MeitY in Cloud Services empanelment RFP.

The Bidder shall be responsible for the following:

- i. Assist BHEL in migrating the VMs, data etc., and should ensure destruction of data.
- ii. Migration of the VMs, data, content and any other assets to the new environment or on alternate CSP's offerings and ensuring successful deployment and running of the BHEL's solution on the new infrastructure by suitably retrieving all data, scripts, software, virtual machine images, and so forth to enable copying to BHEL supplied industry standard media.
- iii. The format of the data transmitted from the CSP to the BHEL should leverage standard data formats (e.g., OVF, VHD etc.) whenever possible to ease and enhance portability.
- iv. The ownership of the data generated upon usage of the system, at any point of time during the contract or expiry or termination of the contract, shall rest absolutely with BHEL.
- v. Ensure that all the documentation required for smooth transition including configuration documents are kept up to date
- vi. Ensure that the CSP does not delete any data at the end of the contract (for a minimum of 45 days beyond the expiry of the contract) without the approval of BHEL.
- vii. Once the exit process is completed, remove the data, content and other assets from the cloud environment and destroy the VM, Content and data of BHEL as per stipulations and shall ensure that the data cannot be forensically recovered.

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- viii. Carry out the migration of the VMs, data, content and any other assets to the new environment created by BHEL or any other Agency (on behalf of BHEL) on alternate CSP's offerings to enable successful deployment and running of the solution on the new infrastructure.
- ix. Address and rectify the problems with respect to migration of the solution and related IT infrastructure during the transition.
- x. Ensure that all the documentation required by BHEL for smooth transition (in addition to the documentation provided by the CSP) are kept up to date and all such documentation is handed over to BHEL during regular intervals as well as during the exit management process.
- xi. Support and assist BHEL during successful deployment and accessing of the services from the new environment.
- xii. Train and transfer the knowledge to the Replacement Agency (or BHEL) to ensure similar performance of solution post expiry of the contract.
- xiii. The exit management plan has to be updated every quarter and submitted to BHEL and should include any new developments provisioned on the infrastructure.

14. Warranty & Support:

- 14.1. Vendor shall provide comprehensive maintenance support without payment of extra charges for operations, maintenance and upkeep of system for entire 5 years contract period. Services shall be available on 24x7 basis on emergency call basis.
- 14.2. Comprehensive maintenance shall include the following:
 - 14.2.1. Installation charges
 - 14.2.2. inspection charges
 - 14.2.3. Periodic maintenance, wherever required

15. Procedure for Submission & Opening of Bids:

Bids shall be submitted strictly as per GeM Portal schedule.

The techno commercial bid consists of Bounded volume of:

- i. Technical offer/ details including literature/leaflets. The bidder can offer only as per technical specifications of the equipment. BHEL reserves the right to accept or reject the technical offer. Technical offer should also include following at the time of bid submission:
 - a Implementation approach
 - b Methodology
- ii. Compliance for Technical Specifications as per format enclosed as **Annexure-I**.
- iii. OEM Authorization Letter enclosed as **Annexure-III**
- iv. Unpriced copy of PRICE BID as per format enclosed as **Annexure-IV**.
- v. No Deviation Certificate as per format enclosed **Annexure-VI**
- vi. A copy of complete RFP along with corrigendum, if any, where each page is signed & stamped by the bidder.
- vii. Complete BOM (Bill of Material) of the solution with 5 TB Data Warehouse storage duly vetted by the OEM(s)
- viii. Pre-qualification /Eligibility Criteria

Part-II: Price Bid

Price bid containing PRICES only is to be submitted (in the Un-priced bid format enclosed as **Annexure-IV** only). Prices shall be quoted in Indian Rupees only. Bidder shall give details of all Applicable Taxes (between Bidder & BHEL as asked in the Price Bid) clearly. Any changes in these Applicable Tax rates during the complete contract period will only be payable as per actuals, subject to submission of documentary evidence. Any other taxes, duties, levies and charges assessed on the bidder by local, national or any statutory authorities will not be payable by BHEL.

Price Bid should not contain any technical details and/or Commercial Terms & Conditions as the same are supposed to be contained in PART-I only, so that the same can be evaluated before opening of Price Bid(s). Un-priced Bid format is enclosed as **Annexure-IV**.

16. Bid Queries:

- 16.1. The bidders are expected to carefully go through the Tender Document floated and understand all the requirements thoroughly before submitting their offer. All legitimate queries and clarifications regarding this tender must be submitted in writing as per **Annexure-IX** and addressed to the official inviting the offers. All these queries will be clarified via email.
- 16.2. BHEL shall endeavor to provide clarifications and such further information as it may, in its sole discretion, consider appropriate for facilitating a fair, transparent and competitive Bidding Process.

17. Evaluation and Comparison of Bids:

- 17.1. Though offer of higher warranty/configuration/rating, than what is required as per tender specifications, may be accepted, no extra weightage or preference will be given for the same.
- 17.2. Prices of table C of un-priced bid format in Annexure IV shall not be considered for evaluation purpose.
- 17.3. RA shall be proceeded as per GeM Portal. All the terms and conditions of the RA shall be as per GeM portal.
- 17.4. The Purchaser will evaluate and compare the bids. The bidding evaluation is based on L1 criteria. Further the tender is NOT divisible. The evaluation of bids shall be done in 3 stages.

Stage-I: Evaluation of Response to Eligibility Criteria:

These are mandatory requirements to be met by the Bidder. Only those Bidders who meet all the requirements as per eligibility criteria shall be considered for **Stage-II** evaluation.

Stage-II: Evaluation of Technical & Commercial Bids:

This shall be the second stage of the evaluation by the Purchaser. Only those Bidders who adhere to the purchaser's technical and commercial requirements shall be considered for next stage of evaluation.

Commercial and Technical bid of Vendor shall be opened and evaluated for acceptability of commercial terms, deviations and technical suitability. The Bidders should meet the commercial conditions as defined in the bidding documents.

BHEL's Technical Committee will then evaluate the Technical bid submitted by the Bidders. During the Technical Evaluation of the bid, the purchaser may ask for additional information / resources to validate the bid. These may include technical documents / white papers from OEM

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or third party, references, demonstration of a proof of concept or solution, visit to supplier's lab or their clients reference site, etc.

Stage –III: Evaluation of the Price Bid:

The evaluation of the price bids shall be done by GeM portal.

18. Sub-Contracting:

Order / contract or any part thereof shall not be sub-contracted, assigned or otherwise transferred to any third party without prior written consent from BHEL.

19. Cost of Bidding:

The Bidder shall bear all costs associated with the preparation and submission of its bid and the Purchaser will in no case be responsible or liable for those costs.

20. Validity of Offer:

Offer shall be valid as per GeM portal.

21. Deviations:

Bids shall be submitted strictly in accordance with the requirements and terms & conditions of the Tender Enquiry. Vendors have to submit a "No Deviation Certificate" in Part-I of the offer as per **Annexure VI**.

Technical & Commercial - No deviation is acceptable.

22. Purchaser's Right:

The Purchaser reserves the right to make changes within the scope of the contract in following respects at any point of time.

BHEL may, at any time during the contract period, by a written order given to the Service Provider, make changes within the general scope of the contract like change of location for provisioning of services within the campus.

23. Risk Purchase:

BHEL reserves the right to purchase from elsewhere at the risk and cost of the vendor, either the whole or part of

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- 23.1. The solution, which the vendor has failed to deliver within the stipulated delivery period in the concerned Purchase Order or if the same were not available, the best and the nearest available substitute(s) thereof which is not technically inferior to the undelivered System/Goods.
- 23.2. The warranty and support which the vendor has failed to provide in respect of the supplied system/equipment suffering from not less than 1 month of downtime.
- 23.3. The vendor shall compensate the Client for any loss or additional expense, which the Client may sustain by reason of such purchase. The Client may recover the amount from any money due to the vendor in respect of this contract or any other contract which the vendor has with Purchaser. This clause will be operated only after completion of delivery period including extended period with LD, if any.

23.4. Risk and Cost against Balance Work:

$$\text{Risk \& Cost Amount} = [(A-B) + (A \times H/100)]$$

Where, A= Value of Balance scope of Work/ Supply (*) as per rates of new contract

B= Value of Balance scope of Work/ Supply (*) as per rates of old contract being paid to the vendor/ supplier at the time of termination of contract i.e. inclusive of PVC & ORC, if any.

H = Overhead Factor to be taken as 5

24. Limitation of Liability:

Vendor's liability shall be limited to the value of this contract only.

25. Merger & Acquisition:

In case of merger / acquisition of the bidder / OEM during the contract period, all commitments and liabilities with respect to this contract will pass on to the acquiring entity.

26. Insolvency:

If during the execution of contract, the company or any member in case of JV/consortium / partnership becomes bankrupt or otherwise insolvent, the purchaser may terminate the contract by giving written notice to the supplier. Any charges payable up to the termination point will be paid by BHEL to the supplier. In case any recovery is due on supplier, the recoverable amount will be adjusted against the terminal payment to be made to the supplier. Such termination will not prejudice or affect any right of action or remedy which has accrued and/ or will accrue thereafter to BHEL.

27. Termination of The Contract & Its Consequences

- 27.1. Purchaser reserves the right to terminate the order/contract, either wholly or in part, upon situations arising due to non-compliance of stipulations of the Order/contract by Vendor.
- 27.2. Vendor shall continue the performance of the order/contract under all circumstances, to the extent not cancelled.
- 27.3. BHEL reserves the rights to cancel the contract in case the services are not found to be satisfactory.
- 27.4. Consequences: As soon as the contract is cancelled / terminated by BHEL, no payment will be payable to Vendor.

28. Ethical Standard:

Bidders are expected to observe the highest standard of ethics during the procurement and execution of this Contract. In pursuit of this policy, the Purchaser will reject a proposal for award if it finds out that

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the Bidder being considered for award has engaged in corrupt or fraudulent practices in competing for the Contract. For the purposes of this provision, the terms set forth below are defined as follows:

- a) **“Corrupt practice”** means the offering, giving, receiving, or soliciting of anything of value to influence the action in the procurement process or in Contract execution; and
- b) **“Fraudulent practice”** means a misrepresentation of facts in order to influence a procurement process including collusive practices designed to establish bid prices at artificial, non-competitive levels to deprive the Purchaser of the benefits of competition;

The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.

By signing the Bid Forwarding Letter, the Bidder represents that for the software it supplies, it is the owner of the Intellectual Property Rights in the software. Wilful misrepresentation of these facts shall be considered a fraudulent practice without prejudice to other remedies that the Purchaser may take.

29. Earnest Money Deposit (EMD)

- a) Each bidder has to deposit EMD of Rs 27,04,000/- (Rupees Twenty-Seven Lacs Twenty Six Thousand and Four Hundred only) as a part of subject tender and the same should be in the following forms.
 - i) Cash deposit as permissible under the extant Income Tax Act (before tender opening);
 - ii) Banker's cheque/ Pay order/ Demand draft, in favour of BHEL (along with offer), payable at New Delhi;
 - iii) Electronic Fund Transfer credited in BHEL account (before tender opening).

BANK NAME:	KOTAK MAHINDRA BANK
ADDRESS:	G-F 3A-3J GROUND FLOOR, AMBA DEEP, 14 K.G. MARG, NEW DELHI-1
IFSC:	KKBK0000172
CA NO.:	9011196535
BANK ACCOUNT NAME:	BHARAT HEAVY ELECTRICALS LTD.

- iv) Fixed Deposit Receipt (FDR) issued by scheduled bank / Public Financial Institutions as defined in Companies Act (FDR should be in name of the Contractor, a/c BHEL)
- v) In addition to the above, the EMD amount in excess of Rs. Two Lakh may also be accepted in the form of Bank Guarantee from scheduled bank. For instance, if EMD amount is ₹27,04,000/-, BG can be submitted for ₹25,04,000/- and rest ₹2,00,000/- to be submitted through other modes as mentioned above. The Bank Guarantee in such cases shall be valid for at least six months.

- i. EMD in any other forms/modes except the forms/modes mentioned above will lead to the rejection of bid i.e. No other form of EMD remittance shall be acceptable to BHEL.
 - ii. EMD submitted by bidder will be forfeited if bidder revokes his tender within validity period.
 - iii. EMD to be submitted prior or at the time of bid submission. Tender without requisite EMD will not be considered for further evaluation.
 - iv. Exemption of EMDs shall be as per GeM terms & conditions.
- b) **No interest shall be payable by BHEL on EMD amount.** The EMD shall be forfeited in case of:
 - i) Withdrawal of bid or increase in rates or change in bid conditions after opening of the tender.
 - ii) Refusal to enter into a contract after the award of contract.
 - iii) If operations of the contract are not commenced from the date indicated in the award of contract.
- c) The EMD will be refunded to the unsuccessful bidders within fifteen days of acceptance of award of work by the successful bidder(s) / expiry of the validity of the bid, whichever is earlier.

30. Security Deposit

- a) Security Deposit means the security provided by the Contractor towards fulfilment of any obligations in terms of the provisions of the contract. The total amount of Security Deposit will be 5 % of the total contract value. Upon acceptance of tender, the successful bidder must submit the security deposit in any of the following forms:
 - i) Cash (as permissible under the extant Income Tax Act)
 - ii) Local cheque of Scheduled Banks (subject to realization)/ Pay Order/ Demand Draft/ Electronic Fund Transfer in favour of BHEL
 - iii) Bank Guarantee from Scheduled Banks/ Public Financial Institutions as defined in the Companies Act. {Copy of proper prescribed format of BG will be provided by BHEL along with Work Order/LOI and it will be verified verbatim on receipt with original document}.
 - iv) Fixed Deposit Receipt issued by Scheduled Banks/ Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Contractor, a/c BHEL)
 - v) Securities available from Indian Post offices such as National Savings Certificates, Kisan Vikas Patras etc. (held in the name of Contractor furnishing the security and duly endorsed/ hypothecated/ pledged, as applicable, in favour of BHEL)
- b) The EMDs of the successful bidders shall be converted into Security Deposit. The Successful bidders shall have to submit the remaining amount against security deposit. The Security Deposit shall not carry any interest.
- c) The validity of Security Deposit shall be initially up to the completion period as stipulated in the Letter of Intent/ Award + 06 months, and the same shall be kept valid till final settlement of contractual obligation with BHEL.

- d) BHEL reserves the right of forfeiture of Security Deposit in addition to other claims and penalties in the event of the Contractor's failure to fulfil any of the contractual obligations or in the event of termination of contract as per terms and conditions of contract. BHEL reserves the right to set off the Security Deposit against any claims of other contracts of successful bidder with BHEL.
- e) **RETURN OF SECURITY DEPOSIT:** Security Deposit shall be refunded/ Bank Guarantee(s) released to the Contractor upon fulfilment of all contractual/ statutory obligations, after deducting all expenses / other amounts due to BHEL beneficiaries under the contract.
- f) **BANK GUARANTEES:** Wherever Bank Guarantee is to be furnished/submitted by the Contractor, the following shall be complied with
 - i) Bank Guarantee shall be from Scheduled Banks / Public Financial Institutions as defined in the Companies Act.
 - ii) The Bank Guarantee shall be as per prescribed formats.
 - iii) It is the responsibility of the contractor to get the Bank Guarantee revalidated / extended for the required period, as per the advice of BHEL. BHEL shall not be liable for issue of any reminders regarding expiry of the Bank Guarantee.
 - iv) In case the Bank Guarantee is not extended before the expiry date, BHEL reserves the right to invoke the same by informing the concerned Bank in writing, without any advance notice/communication to the concerned contractor.
 - v) Bidders to note that any corrections to Bank Guarantee shall be done by the issuing Bank, only through an amendment in an appropriate non-judicial stamp paper.

31. Force Majeure

The conditions of Force Majeure shall mean the events beyond control of the parties effected such as act of God, Earthquake, Flood, Devastating fire, War, Civil Commotion, Cyclone, Industrial Lockout and Statutory Act of the Government having bearing on the performance of the Contract. The party affected by Force Majeure shall be obliged to notify the other party within 48 hours, by fax/cable, of the commencement and the end of the Force Majeure circumstances preventing its performance of all or any of its obligations under this order. If performance of obligations under this order is delayed for more than one month due to a continuous Force Majeure, the party not affected by Force Majeure may at any time thereafter while such Force Majeure continues, by notice in writing forth with terminate all or any part of the unperformed portion this order. If this order or any portion thereof is terminated under Force Majeure conditions, the Contractor shall be liable to BHEL for any damages, losses or liabilities as result thereof.

32. Integrity Pact (IP):

- i. IP is a tool to ensure that activities and transactions between the Company and its Bidders/Contractors are handled in fair, transparent and corruption free manner. A panel of

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Independent External Monitors (IEMs) have been appointed to oversee implementation of IP in BHEL.

- ii. The IP as enclosed with the tender (**Annexure-VII**) is to be submitted (duly signed by authorized signatory who signs in the offer) along with bid. Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.

- iii. Details of IEM for this tender is furnished below:

Name: Shri Otem Dai, IAS (Retd.), Email: iem1@bhel.in

Name: Shri Bishwamitra Pandey, IRAS (Retd.), Email: iem2@bhel.in

Name: Shri Mukesh Mittal, IRS (Retd.), Email: iem3@bhel.in

- iv. Please refer Section-8 of IP for Role and Responsibilities of IEMs. In case any complaint arising out of the tendering process, the matter may be referred to the IEM mentioned in the tender.
- v. No routine correspondences shall be addressed to the IEM (phone/post/email) regarding the clarifications, time, extensions or any other administrative queries, etc. on the tender issues. All such clarifications/ issues shall be addressed directly to the tender issuing (procurement) department.

For all clarifications/issues related to the tender, please contact:

Contact Person: Amit Kumar, Dy. Manager

Contact Address: CDT HRDI Sector 16A Film City Noida UP 201301

Email: amitkumar@bhel.in

Phone: 0120-2416497

33. Provisions for Micro and Small Enterprises (MSEs)

- 33.1.1. MSE benefits shall be provided as per the GeM portal.
- 33.1.2. Participating MSEs quoting price within price band of L1+15 % shall be considered for award of complete scope of work by bringing down their price to L1 price in a situation where L1 price is from someone other than a MSE. In case of more than one such MSE, MSE with lowest price shall be given the first option to match the L1 price. However, MSEs owned by the Scheduled Caste or the Scheduled Tribe entrepreneurs shall be given the preference for matching the L1 price irrespective of their standing in comparative statement of MSE bidders within price band of L1+15 % or as per GeM portal.
- 33.1.3. In case of any change in the MSE status of the Bidder, it shall be the responsibility of the Bidder to notify the change as a part of the Bid document. If at a later date it comes to the knowledge of BHEL, that the change in the status has not been intimated by the Bidder and the order is obtained under the premise of an MSE then BHEL would cancel the pending order against this tender and take necessary steps for suspension of the business dealing with the Bidder as per the procurement policy of BHEL.

34. Non-Disclosure Agreement:

- 34.1. The successful bidder shall comply with the Information Security Management System of BHEL and work within the framework of ISMS as applicable in BHEL from time-to-time.
- 34.2. All the material / information sent to the successful bidder shall be treated as confidential and should not be disclosed in any matter to any unauthorized person under any circumstances. The successful bidder has to furnish a Non- Disclosure Agreement (NDA) as per Annexure V in line with the Owner's Information Security Management System (ISMS).

35. Other Terms:

All other term & conditions of this specification not mentioned above shall be governed by the pertinent provisions of General terms and Conditions.

36. List of Annexures:

- I. **Annexure-I:** Technical Specifications
- II. **Annexure-II:** KPI list
- III. **Annexure-III:** OEM Authorization Format
- IV. **Annexure-IV:** Un-Priced Bid Format
- V. **Annexure-V:** Non-Disclosure Agreement Format
- VI. **Annexure-VI:** Format for No Deviation Certificate
- VII. **Annexure-VII:** Integrity Pact
- VIII. **Annexure-VIII:** Format for blacklisting
- IX. **Annexure-IX:** Query format
- X. **Annexure-X:** Sample Calculation Sheet considering GST @18% for value T = Rs.1,00,000/-.
- XI. **Annexure-A&B:** BG Formats
- XII. **Annexure-C:** List of Consortium Banks

TECHNICAL SPECIFICATION OF DATA WAREHOUSE, BUSINESS INTELLIGENCE(BI), BUSINESS ANALYTICS (BA) SOLUTION**i. TECHNICAL SPECIFICATIONS OF DATA WAREHOUSE, BI AND BA PLATFORM**

Proposed solution should have following capability:

Following are indicative technical specification of proposed BI and BA solution

S.No	Requirement	Specifications	Compliance (Yes/No)
1.	Integrated solution for Data warehouse, Business Intelligence & Business Analytics	The proposed solution should be an integrated solution for data warehouse, business intelligence and business analytics	
		i) Data Quality in data warehouse,	
		ii) Advanced Analytics,	
		iii) Alerting & Investigation,	
		iv) Monitoring & Visualization capabilities	
2.	High-Performance, Scalable, Robust, Enterprise Platform	a. The solution should have the BI & BA ability to enable users to conduct fast, thorough explorations and analysis on data from different data sources across BHEL such as SAP, Oracle, SQL, MYSQL, PostgreSQL, Maria DB, Any Web Services, Web Links, MS Access, MS Excel, Flat files etc.	
		b. The solution should be able to analyze large size data and generate visualizations on the fly, without any performance degradation	
		c. The solution should be scalable to a greater number of dashboards in same function or more functional dashboards in the existing technology platform.	
		d. The solution architecture should allow integration of data sources in future which might come up as part of digitalization in BHEL	
		e. The offering should have integrated modules for analytics comprising data preparation, exploration, visualization and administration	

		f. Design specifications of complete solution should ensure minimum latency in the update of data/ refresh of dashboards. The dashboard should not take more than 10 seconds to load on a single user screen.	
		g. The solution design should be modular in nature and should allow change of software/hardware in parts without impacting the entire solution.	
3.	Self-Service Exploration and Analysis	a. The solution should have the capability to explore and seek correlations on data sets of any size for data analysis	
		b. The solution should provide interactive analytical capabilities	
		c. The solution should provide capability to analyze unstructured data	
		d. The solution should allow users to produce dashboards with minimum effort/ low-code methodology using little help from IT team. It should be a self-service BI tool, for system integration and publish/share it for the consumption of department/functional users.	
		e. The solution should have capability that the values on dashboard should get updated on pre-defined frequency automatically by sourcing required data from various sources.	
4.	BI, Reporting, Dashboards, Analytics, Mobility in a single platform on a unified easy-to-use interface	a. The solution should provide a user friendly, web based, drag and drop interface for data preparation	
		b. The solution should provide auto-charting based on data selected for analysis, solution should automatically choose best visualization suited to display the type of data selected	
		c. The solution should allow users to change queries by selecting items	

		to be displayed or dynamically filtering and grouping	
		d. The solution should provide viewable descriptive statistics, such as min, max and mean, enabling users to gain an overall sense of a particular measure	
		e. The solution should allow 'On-the-fly' hierarchy creation for adding drill-down capabilities to visualizations and reports	
		f. The solution should provide capabilities to Slice and Dice multidimensional data by applying filters on any level of a hierarchy	
		g. Customization of reports should also be available as a functionality of the BI tool which will let the user design his/her own report from the data available in the intermediate system.	
		h. The solution should provide capabilities to Drill up and down through hierarchies, or expand and collapse entire levels	
		i. The system should be able to allow users and admin to define alerts and business insights at individual, Business Users or project level. Alerts will be posted via notifications in the App, notifications on Web, Email, SMS.	
		j. Visualization techniques and framework to empower users/ decision makers to appreciate the reports quickly and take educated decisions including (but not limited to) histograms, bar charts, geographical mapping, donut charts, trend lines, spark lines, heat maps, spider charts etc.	
		k. BI tool should allow the users to create new dimensions, derived metrics etc. preferably with auto charting and dashboard facilities through the keywords	

		l. The solution should provide users the capability to save and share their analysis as exploration, report or PDF	
		m. The solution should provide the capability to export data to Excel and CSV/TSV document formats	
		n. The solution should be capable of read and write of comments in reports to aid in collaboration	
		o. The solution is capable of emailing a report link with comments to users	
		p. The solution should allow users to capture screenshots and share comments with users	
		q. The solution should provide filtering and selection capabilities to reports with easy-to-integrate common action elements such as radio buttons, drop-down/combination boxes, check boxes and sliders	
		r. Capability to calculate new data items on the fly from existing data items using expressions	
		s. Solution should support distribution of Reports and Dashboards to iOS and Android devices. The Native App should be freely available for iOS devices on App Store and for Android devices on Google Play	
		t. Solution should have ability to share content, reports and dashboards with anyone (even outside the organization) without additional licenses. Flexibility to embed reports in internal or external facing websites or mobile applications developed in all leading UI/UX technologies	
5.	Data Warehouse capabilities	a. Secure Data extraction from various sources from systems across organization, SAP, Oracle, SQL, MYSQL, PostgreSQL, MariaDB, Any Web Services, Web Links, MS Access, MS Excel, Flat	

		files, unstructured information like email, website information etc.	
		b. Data connectors for extraction of data from SAP instances should be available from day one. Capability to connect to present SAP versions like ECC/ ERP 6.0-EHP 7, ERP 6.0-EHP 0, ERP 6.0-EHP 5 and future versions. Provision of APIs and licenses for these connections are to be provided by bidder.	
		c. Solution architecture should ensure all necessary reportable data should be loaded to data warehouse storage through Extract, Transform and Load (ETL/ELT) tool and further used for reporting needs.	
		d. The solution should be able to connect to Oracle & SAP-ERP environment and facilitate efficient and faster extraction of data for further processing	
		e. Perform automated extraction, transformation and loading of updated data on a pre-defined frequency from multiple sources into data warehouse.	
		f. Compatibility with different data storages like flat file storage, relational databases and big data storages, etc.	
		g. Ensure seamless integration with all data sources, data warehouse and the BI tool so that integration is smooth for dashboard viewing and thus enable and smoothen user decision making process.	
		h. Provide a layer of data governance for flat file extraction (from multiple data sources) and loading into data warehouse to ensure data is accurate and complete.	

		i. The Solution should be able to process ETL to provide a pre-built transformation to use SOAP (Simple Object Access Protocol) and REST (Representational State Transfer) to access web service, standardize data and de-duplication of data.	
6.	Mobility	a. The solution should allow the analysis / explorations / reports to be pushed for offline viewing to mobile devices	
		b. The solution should have the ability for Interactive report viewing for information consumers on iOS and Android devices	
		c. The solution should support same dashboard / report created on Web to be accessed from iOS and Android devices without requiring any redesign	
		d. The solution should allow users to securely view reports on mobile devices while online or offline	
		e. Mobile device blacklisting and whitelisting through the web-based security and administration interface	
		f. The solution should have both simple & advance variable aggregation options	
		g. The visualization tool should offer complete access of functionalities on web portal and handheld device in seamless fashion. Screen layouts should be configured to adapt to Desktop, Laptop, Tablet and Mobile phones etc.	
7.	GUI-based Administration	a. The solution should provide GUI interface to monitor Resource utilization including CPU, I/O and Memory	
		b. The solution should have capability for Single Sign On (SSO) and/or AD/LDAP authentication, authorization integration with existing windows active directory	

		c. The solution should have capability to record session logs, access logs, process logs & design platform logs of all user and system activities. System should be able to report any faults if found in these logs.	
		d. The solution should have capability to monitor mobile device logging history	
		e. The solution should provide server-side logging for user actions – reports downloaded, dashboard viewing	
		f. The solution should provide usage report of Resource utilization including CPU, I/O, Memory, Data Tables, User sessions	
8.	Security	<ul style="list-style-type: none"> a. The bidder shall control and manage the tools provided by the Cloud Service Provider (CSP). b. Identifying Security Configuration gaps c. Implementation of tools such as; IPS, IDS, SIEM d. Conduct Security / Risk Assessment e. Implementation of Multi-Factor Authentication Services f. Implementation, management and monitoring of DDoS, IPS, IDS technology and solutions to ensure the security of Cloud Services procured g. Installation, Configuration, Implementation and management of Log Analyzer h. Deploy public facing services in a zone (DMZ) different from the application services. i. The Database nodes (RDBMS) should be in a separate zone with higher security layer j. Deploy security patches on hardware and software k. Take regular backups of security configurations 	
9.	Operation and Maintenance (O&M)	a. Advise BHEL on optimal operational practices, recommend deployment architectures for cloud infrastructures, design and implement automated	

		<p>scaling processes, day-to-day and emergency procedures, deploy and monitor underlying cloud services, performance reporting and metrics, and ensure the overall reliability and responsive operation of the underlying cloud services through both proactive planning and rapid situational response.</p> <p>b. Interface with the CSP(s) on behalf of BHEL for all activities including monitoring the reports (e.g., usage, security, SLA,), raising (or escalating) tickets / incidents and tracking the same to resolution.</p> <p>c. Prepare a comprehensive O&M plan for managing the cloud services and keep it updated with any changes during the course of the project.</p> <p>d. Create and maintain all the necessary technical documentation, design documents, standard operating procedures, configurations required to continued operations and maintenance of cloud services.</p>	
10.	Resource Management	<p>a. Adequately size the necessary compute, memory, and storage required, building the redundancy into the architecture (including storage) and load balancing to meet the service levels (cloud services) mentioned in the RFP.</p> <p>b. While the initial sizing & provisioning of the underlying infrastructure (including the system software and bandwidth) may be carried out based on the information provided in the RFP, subsequently, it is expected that the Bidder, based on the growth in the user load (peak and non-peak periods; year-on-year increase), will manage the scale up or scale down of compute, memory, storage, and bandwidth to support the scalability and performance requirements of the solution and meet the SLAs.</p> <p>c. Carry out the capacity planning in advance to identify & provision, where necessary, the additional capacity to meet the user growth and / or the peak load requirements to support the scalability and</p>	

		<p>performance requirements of the solution.</p> <p>d. The scaling up / scaling down (beyond the auto-scaling limits or whenever the auto-scaling limits have to be changed) has to be carried out with prior approval by BHEL. The Bidder shall provide the necessary details including the sizing calculations, assumptions, current workloads & utilizations, expected growth / demand and any other details justifying the request to scale up or scale down.</p> <p>e. Manage the instances of storage, compute instances, and network environments. CSP is also responsible for managing specific controls relating to shared touch points within the security authorization boundary, such as establishing customized security control solutions. Examples include, but are not limited to, configuration and patch management, vulnerability scanning, disaster recovery, and protecting data in transit and at rest, host firewall management, managing credentials, identity and access management, and managing network configurations.</p> <p>f. Upon deployment of virtual machines, the Bidder has to assume full administrator access and is responsible for performing additional configuration, patching, security hardening, vulnerability scanning, and application installation, as necessary.</p>	
11.	Security Administration and monitoring Security Incidents	<p>a. Ensure that the cloud infrastructure and all systems hosted on it, respectively, are properly monitored for unauthorized activity</p> <p>b. Conducting regular vulnerability scanning and penetration testing of the systems</p> <p>c. Review the audit logs to identify any unauthorized access to the BHEL's Data warehouse and BI solution.</p>	

12.	Backup	<ul style="list-style-type: none"> a. Provide relevant tools and services for backup, migration and replication of applications / data b. Configure, schedule, monitor and manage backups of all the data including but not limited to files, images and databases as per the policy finalized by BHEL c. Administration, tuning, optimization, planning, maintenance, and operations management for backup and restore d. Provision capacity for backup and restore, as required e. Perform backup on the next scheduled backup window in case of any scheduling conflicts between backup and patch management 	
13.	Usage Reporting and Billing Management	<ul style="list-style-type: none"> a. Monitoring, managing and administering the monetary terms of SLAs and other billing related aspects. b. Provide the relevant reports including real time as well as past data/information/reports c. Track solution usage and usage reports d. Provide relevant reports including real time as well as past data/information/reports for BHEL e. Summary of resolved, unresolved and escalated issues / complaints f. Logs of backup and restoration undertaken report g. Component wise Virtual machines availability and resource utilization report h. Consolidated SLA / Non-conformance report i. Prepare Monitoring Reports j. Prepare SLA Reports k. Prepare Backup Reports l. Prepare VMs Status report m. Provisioning /De-provisioning of VMs n. Creating templates for VMs o. Make changes in configurations for user administration 	

14.	Disaster Recovery	<ul style="list-style-type: none"> a. In addition to the production environment, the Bidder is responsible for Disaster Recovery Environment and the associated services so as ensure continuity of operations in the event of failure production environment and meet the SLA requirements. However, during the change from DC to DR or vice-versa (regular planned changes) there should not be any data loss. b. Sizing and providing the DC-DR replication link so as to meet the SLA requirements. c. Conduct DR drill for two days at the interval of every six months of operation wherein the Primary DC has to be deactivated and complete operations shall be carried out from the DR Site. However, during the change from DC to DR or vice-versa (regular planned changes), there should not be any data loss and should meet the SLA requirements. d. The Bidder shall clearly define the procedure for announcing DR based on the proposed DR solution. The Bidder shall also clearly specify the situations in which disaster shall be announced along with the implications of disaster and the time frame required for migrating to DR. e. The Bidder shall plan all the activities to be carried out during the Disaster Trial and issue a notice to BHEL at least two weeks before such trial. f. Setup and configuration of VMs, Storage, Network, Database, etc. at DR site meeting g. Replication tool and mechanism between DC and DR site h. Network connectivity from BHEL to DR site i. DR drills should could be conducted once every six months j. Define the procedure for announcing DR based on the proposed DR solution. 	
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		k. Clearly specify the situations in which disaster shall be announced along with the implications of disaster and the time frame required for migrating to DR.	
15.	Support Third Party Audit and other requirements	<p>a. Provide support during Audit by STQC / MeitY empanelled agency or any agency appointed by the User Department.</p> <p>b. Support the third-party auditor / program management team / internal IT team with respect to third party audits and other requirements such as forensic investigations, SLA validation.</p>	
16.	CSP	<p>The bidder should bid for providing Services only from those Cloud Service Providers (CSP) who comply with following:</p> <p>a. CSP should have its Data Centers within India and BHEL data should not be stored in any location outside India.</p> <p>b. CSP should have the following certification:</p> <ul style="list-style-type: none"> ○ ISO 27701 certification to comply with General Data Protection Regulation (GDPR) guidelines. ○ ISO 27001:2013 certification ○ ISO 27018 - Code of practice for protection of personally identifiable information (PII) in public clouds. · CSP or Service Partner's ISO 200001 certification for Service Management System. ○ Conform to at least Tier III standard, preferably certified under TIA 942 or Uptime Institute certifications by a 3rd party ○ SOC 1,2,3 compliant - System and Organization Control <p>c. CSP should have published following details on its public facing website-</p> <ul style="list-style-type: none"> ○ Prices for all services should be publicly available on their site and also accessible using Public APIs ○ Exhaustive Documentation for services <p>d. CSP must have their own native security service in cloud (instead of</p>	

		3rd party) for- · Network Firewall · Web Application Firewall · DDoS Protection · CSP should provide real-time compliance for encryption of data with 100% of the services provided by CSP.	
17.	General	a. Should provide Analytics for all the BHEL business segments / areas (like Integration of Manufacturing Data, Data Management of Corporate Data, Management Dashboards etc.) without the need of any extra license. If any extra license is required, bidder shall provide the same along with the solution.	
		b. Also, the offered solution should be cloud vendor agnostic.	
		c. User Interface of the supplied Analytics & Optimization Platform should be Web based i.e. Users should be able to perform all functions from the Web Browser i.e. Chrome or Internet Explorer, Edge, Safari, Firefox etc. (All browser) on the Desktop PC without the need of installing any client software.	
		d. Supplied platform shall also be accessed by users from Internet / Public Network on PC / Mobile Device (IOS / Android) connected to Internet.	
		e. Should provide Native Mobile App from respective OEM for seamless access of the platform from IOS / Android Mobile Device	
		f. Solution should allow connection by unlimited number of BHEL users and from anywhere in India	
		g. Offered OEM should have dedicated 24X7 service support centre with industry standard ticket tracking system.	

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		h. Solution should be scalable to a greater number of dashboards in same function or more functional dashboards in the existing technology platform.	
		i. Entire solution/cloud service should be IPv6 and IPv4 compliant	
18.	No Advertising	Advertising products shall not be built out of our data or scan email or documents	
19.	No Mingling	BHEL's data should be kept physically and logically separate from consumer services.	
20.	Physical Security	Audit reports should be provided by CSP	
21.	Regulatory compliance	The Bidder should comply with all regulatory compliance / guidelines/ advisories issued by Govt. of India / MeitY / TRAI / Cert-In/ NCIIPC	

KEY PERFORMANCE INDICATORS (KPIs) FOR DATA WAREHOUSE AND BUSINESS INTELLIGENCE SOLUTION							
SN	Key Area	Function Group	KPI	Measure	KPI Splits and Drilldowns Across Various Dimensions -Time, Project, Unit/Divisions etc.	Analytics Value	Description
1	Operations	COM	Inventory Control	Conversion time from receipt to Turnover	Value by Unit /Division, Product wise, Order wise, Customer-wise, Financial / Physical, Raw Materials /Work in progress(WIP) / Finished Goods, Non Moving / Slow Moving / On Hold / Cancelled Projects, Budget vs Actuals Historical Age wise Analysis, Prospective Liquidation Plan Material Induction Plan	Root cause analysis(RCA) and Corrective and preventive action(CAPA) for locked working capital and introduce measures to reduce them. Also, identify similar trends across the organization and employ more strategic plans to improve profitability	Effective planning for timely induction of material and effective utilization of obsolete working capital which may be required to be either liquidated or scrapped
2		Capex	Capital Investment	Value of Investment Milestone Completion	1. Break down of Capital Projects - Sanction, Budget, Actuals, Projection 2. Monitor Progress, Target Revision	Track progress on a granular level for all capital projects to help in shortening the Return on investment(ROI) on them which will help to undertake more Capital Deployments for organization growth	Capital Investment Initiatives and progress of the same
3			Capex Efficiency	Outcome of Capex	Comparison of Intended Benefits with the Actual outcomes in terms of Physical and Financial Deliverables	Improved Decisions making and self assessment	
4		COM	Budget Efficiency	Ratio of Budget vs Actual in different parameters	Financial/Physical Turnover- Product Wise/Overall, Turnover Break-up, Capacity Utilization (Budget Target, Near Term Forecast, Actual)	Projection with more accuracy for different parameters specific to near and long term goals of the organization connected with data from all systems. Also helps with trends and causal relations.	Accuracy of forecasting and variance analysis
5		COM	Turnover Shortfall Analysis	Value of Projected Shortfall in Turnover	Unit / Division, Product, Customer, Order Attributable to unit/region/sister units/customer/external variables	Identification of areas of improvements thru Root cause analysis (RCA) and Corrective and preventive action (CAPA) for avoiding shortfall in Turnover	Actions to make up of Shortfall in subsequent period/mid course correction
6		COM	Material Consumption	Value and % of material consumed for products/projects	Product wise, Project wise across units, Budget vs Actual, Shop vs BOI Vs Civil vs Erection Turnover, Forecast	Track and monitor material consumption across all Units and help in cost reduction with more data enabled decision making based on real-time consolidate data	Overview of material consumptions across organization

SN	Key Area	Function Group	KPI	Measure	KPI Splits and Drilldowns Across Various Dimensions -Time, Project, Unit/Divisions etc.	Analytics Value	Description
7		COM	Order Book Liquidation & Turnover Analysis	Outstanding Order Book, Liquidation during a period	1. Breakup of Order Book and Turnover Project wise, Product wise, Customer wise, Sector wise, Unit wise 2. Trend Analysis - Order booking/Project wise Liquidation etc. 3. Project wise (including item wise)- Financial/ Physical Turnover Plan and Actuals with spilt in terms of Shop/Outsourcing/BOI/Civil/Engg/Services /Erection etc. 4. Anticipated Order booking analysis 5. Assessment of delivery/execution time for any given item/product/milestone based on the current progress of procurement/manufacturing/execution activities. 6. Assessment of requirement of any time/product in a time frame based on the current progress of other related site activities/customer requirements etc. 7. Identification of internal constraints/pain points in achievement of planned tasks/activities	Provision to monitor and introduce interventions and alerts a to improve realization of turnover. e.g. notification on dashboard visualization/Email/SMS when planned targets are lagging. Correlate with other functional KPIs (like Quality, Procurement and drill down on same parameters) to identify and derive inefficiencies/pain areas out of the system	Turnover budget is based on order book and anticipated order. The actual turnover is monitored against budgeted.
8	Marketing	IS -Marketing	Market Share	Successful wins / Addressable Demand	1. Project, Product, Customer, Sector, Addressable Demand 2. Market share and trend in industry sector and power sector 3. Market share and its trend in new business areas	Competitive intelligence understanding and analyse the trends of new entrants, new products, reasons for BHEL losing out on opportunities and also identify the key focus to be put on which star products.	Market Share provides a measure of the relative share BHEL has in a given market compared to its competitors.
9		IS -Marketing	Lost Orders	Order lost by reason, by competitor, price strategy	Project, Product, Customer, Reason for Loss, Competitor, Price Strategy Analysis: 1. Trend of lost order 2. Reason wise, location wise, project wise, product wise, customer wise breakdown of lost orders	Learning hub for all departments and businesses to drive efficiency and reduce wastage of company resources by optimizing pricing strategy or any other contributing factor to lack of specific wins	For analysis & making better pricing strategy in-line with market trend for future tenders

SN	Key Area	Function Group	KPI	Measure	KPI Splits and Drilldowns Across Various Dimensions -Time, Project, Unit/Divisions etc.	Analytics Value	Description
		PS-Marketing	Tenders Participation and Success Therein	1. Tenders Participated 2. Tenders wherein Succeeded 3. Orders Won / Lost 4. Market Share in Addressable Market 5. Reasons for Loss	1. Customer-wise, Region-wise, State-Wise, Sector-wise breakup 2. Tenders which didn't materialize to Orders 3. Trend & Analysis of Orders Won and Lost	Can provide insights on ordering trend as well as provide signals regarding strategies needed for enhancing market share, with breakup and drill down options, to carve out specific strategies for specific cases	Enhancing long-term Competitiveness
10	Procurement	SS&P	Material Cost Reduction	% Reduction in Costs	Order, Customer, Area wise, Vendor wise, Unit / Division, Department wise (Manufacturing, Procurement, Engineering, Site Progress, Commissioning, Others), Emergency / Normal Purchases	Visibility in real-time of all cost centers and their contribution to the profitability of BHEL: <ul style="list-style-type: none"> • Data on ordered price w.r.t. estimate • Increase in vendor base • Reduction in number of days of inventory • Reduction in non moving inventory • Demand aggregation of similar items • Percentage savings through Reverse Auctions • Implementation of TReDS • Increase in competition particularly for BOPs / Bought out items (BOIs) 	The cost of materials is a larger component of the Company's expenses, directly affecting profitability. There is a need to reduce material costs without impacting the quality of the final product and altering what our customers require as per contract. Design optimization, buying only when needed, reducing waste, eliminating unnecessary product features, leveraging suppliers, trading time for discounts, offering quick payment for lower prices, etc. are many ways to reduce the material costs. Like most effective business cost-cutting measures, reducing the cost of goods starts with a thorough analysis of the various direct and ancillary ways in which the materials consume cash flow.
11		SS&P	Procurement spend Analysis	<ul style="list-style-type: none"> • PO/ WO basket • Ordering owing to customer approved sources 	Breakdown of Purchase Order/Work Order on Open Tender, Limited Tender, Single Tender	For measuring the effectiveness of procurement, one needs to constantly examine the mode of procurement cost being parked - whether through Open Tender, Limited Tender, Single tender; whether through electronic / digital means; the spend accruing owing to Customer approved purchases, etc.	The way the money is spent and how it is parked, determines the need to bring in course corrections so as to align the procurement process towards efficiency, transparency and cost reduction

SN	Key Area	Function Group	KPI	Measure	KPI Splits and Drilldowns Across Various Dimensions -Time, Project, Unit/Divisions etc.	Analytics Value	Description
12		SS&P PMG	Procurement lag	Number of tender in specified time period and cycle time	<ul style="list-style-type: none"> Details of delays at various stages of the procurement process Enquiry Success Ratio 	<ul style="list-style-type: none"> Increase in percentage of tenders within the optimum time frame Details of delays at various stages of the procurement process Enquiry Success Ratio 	Cycle time reduction can drastically improve turnaround time and the overall cost of the procurement function. It can also enable procurement employees to use more of their time for strategic activities such as building and managing supplier relationships
				Purchase Indent (PI) to Purchase Order (PO) conversion time (% nos. and value)	Project, Product, Customer, Sector, Unit / Division	Identify relationships between delay in projects/ manufacturing due to delays in procurement process or vendor related issues across the organization by every order	Measure the total time to fulfil an order. Interval of time between the initiation of a procurement action, and the receipt of the material into the supply system, purchased as a result of such action. Alignment of Material requirement planning with Project requirement
13		SS&P	Policy Compliance Rate	Purchase Order/ Work Order Documents/Manuals related to Purchase Policy Audit	A foolproof purchasing contract with clearly defined penalties to improve the compliance rate: Breakdown of mode of purchases, grievances from stakeholder. Policy documents & training modules availability Audit details	<ul style="list-style-type: none"> Percentage increase in Purchases through digital procurement Percentage reduction in grievances from stakeholders No of Policy documents centralized Number of training modules on procurement Number of Policy Audits in the year 	Compliance to Policy / Guidelines and Contractual conditions are pivotal to ensure legal security. If these compliance rates dip down, they can spike up indirect and maverick spend

SN	Key Area	Function Group	KPI	Measure	KPI Splits and Drilldowns Across Various Dimensions -Time, Project, Unit/Divisions etc.	Analytics Value	Description
14		SS&P	Vendor Competition & Performance	Total No. of Suppliers, Supplier Rating, Supplier Availability & Vendor Rejection Rate & Costs	Order, Customer, Area wise, Vendor wise, Unit / Division, Department wise, Single Vendor Bid / Multi Vendor Bid, Open Tender / GeM Tender, Rejection Rate and effect on Customer escalations	Aggregate all vendor metrics across the organization without a need to revamp current systems Measuring supplier defect rates and breaking it down based on the defect type will offer actionable insights into a supplier's trustworthiness.	<p>- NUMBER OF SUPPLIERS</p> <p>Monitor the level OF dependency towards SUPPLIERS</p> <p>Relying on too few SUPPLIERS and not diversifying sources creates a risk OF dependency, and potential further problems if one OF them pulls out at the last moment.</p> <p>- SUPPLIER RATING</p> <p>Analyse the quality OF SUPPLIERS</p> <p>the quality RATING is one OF the SUPPLIER performance metrics critical in evaluating present as well future relationships with suppliers.</p> <p>- SUPPLIER AVAILABILITY</p> <p>Measure suppliers' response to urgencies</p> <p>the NUMBER OF times goods were available on the supplier's side, or to the NUMBER OF orders placed with the supplier.</p> <p>- VENDOR REJECTION RATE & COSTS</p>
15		SS&P	Supply Chain Management	<ul style="list-style-type: none"> • Percentage reduction in imports • Percentage increase in Make In India suppliers • MSME procurement • Percentage reduction in number of 1V/2V/3V categories • Number of Inactive / Defaulting vendors weeded out • Number of Vendor meets conducted • Number of Historical suppliers reassessed 	No. of imports, Make in India procurements,MSME procurement,1V/2V/3V categories procurement, Inactive / Defaulting vendors , Vendor meets , Historical suppliers reassessed	to create a lower-risk and more manageable supply base. Develop stronger business relationships with critical suppliers, thereby reducing waste and achieving a leaner supply chain	As it involves the active streamlining of a business's supply-side activities to maximize customer value and gain a competitive advantage in the marketplace, all possible metrics for measuring the effectiveness of the vendor base should be in place.

SN	Key Area	Function Group	KPI	Measure	KPI Splits and Drilldowns Across Various Dimensions -Time, Project, Unit/Divisions etc.	Analytics Value	Description
16		SS&P	Monitoring Price Trends	<ul style="list-style-type: none"> Measure of prices of commodities which are volatile 	price trend of raw materials consumed in production	purchase of raw materials consumed in production when there is a downward trend, and restrain from purchases when there is an increasing trend.	The prices of the commodities like Steel, Copper, CRGO, CRNGO. Transformer Oil, Nickel, etc. are to be watched constantly so that one invests wisely
17		SS&P	Analysis of Emergency Purchases	emergency purchase/total no. of purchases	unit,product,single tenders, orders on nomination basis, <ul style="list-style-type: none"> Single Tender Analysis Orders awarded on Nomination basis 	By lowering the rate of emergency orders, one can save costs.	Emergency purchases are those unplanned orders which are acquired to prevent the shortage of products/services. Emergency purchases are to be made by departments only when normal functions and operations of the department would be hampered. Emergency purchases are costly and should be kept to a minimum. Avoiding emergency orders will save costs to the Company.
18		SS&P	Supplier defect rate	Number of substandard products/Total number of units tested	<ul style="list-style-type: none"> suppliers under suspension Supplier Performance Rating Rework / Rejection costs of material supplied 	Measuring supplier defect rates and breaking it down based on the defect type will offer actionable insights into a supplier's trustworthiness.	Supplier defect rate is used to evaluate a supplier's individual quality. Measuring supplier defect rates and breaking it down based on the defect type will offer actionable insights into a supplier's trustworthiness. Supplier defect rates are usually measured in defects per million.
19		SS&P	PO accuracy	<ul style="list-style-type: none"> The ratio of product/service delivered outside the pre-defined target % of erroneous delivery over the total number of purchase orders in a period of time 	material delivery	Low PO accuracy hikes up operating costs.	This metric will help businesses ensure whether suppliers are delivering what was ordered and if it was delivered at the right time.
20		SS&P	Reduction in Outsourcing	<ul style="list-style-type: none"> Reduction in percentage outsourcing over previous year Utilization ratio of the capital invested 	<ul style="list-style-type: none"> percentage outsourcing Utilization of capital invested 	In-house capacities are to be utilized to the maximum so that the capital invested is used effectively	While Outsourcing is resorted to owing to in-house capacity constraints, low skill items, lack of capacity / capability, etc., this needs to be monitored to save on unnecessary cash outflows.

SN	Key Area	Function Group	KPI	Measure	KPI Splits and Drilldowns Across Various Dimensions -Time, Project, Unit/Divisions etc.	Analytics Value	Description
21	Quality	CQ&BE	Improvement in Product Quality	Reduction in Rework/ Rejection (RW/ RJ) index	- Rework & Rejection cost against all parameters RW/ RJ system	1) Trigger for area of improvements based on analysis of Rw/ Rj cost (Unit wise/ Region wise/ Product wise/ project wise/ parameter wise etc.) 2) To get clues for design optimization, setting design tolerances, upgradation of manufacturing facility, performance of service providers etc. based on analytics.	- Overall RwRj index & Cost of RWRJ -Overall, Manufacturing unit , Engineering center and PS region wise. RwRj index- product and project wise - Head wise Cost of Rework & Rejection- Overall, Manufacturing unit , Engineering center and PS region wise; Product wise and project wise - Classification of Rework/ Rejection cost - Material cost and labour/other cost - Cost of transportation- unit wise
				% Reduction in shop NC	Analysis of shop NCs for repeatability. Shop NC analysis (severity wise/ defect code wise/ product wise)	Identification of areas and reasons of NCs and improvement. Reduction in cycle time leading to timely execution. Cost reduction	Product/ Sub-Product (BOM) Level categorization Defect Code wise NC Categorization- e.g. Deign/ Manufacturing/ Manpower/ Process/ systems etc. Product wise/ Sub-product wise problem nature Severity rating of problem nature Process wise NC- Process parameters/ Indicator (through mobile app/ unit based systems)
				Reduction in SAR/ CAR / MDR	SAR/ CAR/ MDR analysis (unit wise/ Region wise/ product wise/ Project wise/ Stage wise), further analysis through RCA and implementation of learning 'Severity rating analysis (Over all Avg. Severity rating/ unit wise/ Product wise)	Identification for areas of improvements (defect code wise/ product wise/ unit wise/ region wise/ Pendency and milestone analysis)	Learning w.r.t. Design discrepancy, Process deficiencies, System shortcomings, Competency issues, Repeatability, Improper Supply, BOI issue, any other (storage, preservation, handling, painting issue, improper packing etc.)
				No. of Products benchmarked vs identified	Process wise (e.g. Engineering, Manufacturing, Aesthetics etc.) / Product wise/ unit wise	Identification for areas of improvements (product wise/ unit wise)	
22		CQ&BE	Reduction in Customer Complaint	Count of Customer Complaints (CCs) % reduction in CCs Customer Satisfaction Index	Analysis of CCs (unit wise/ Region wise/ product wise/ Project wise) Identification & analysis high severity CCs Analysis of attributes of CSI	Identification for areas of improvements (product wise/ unit wise/ region wise)	Learning w.r.t. Design discrepancy, Process deficiencies, System shortcomings, Competency issues, Repeatability, Improper Supply, BOI issue, any other (storage, preservation, handling, painting issue, improper packing etc.)

SN	Key Area	Function Group	KPI	Measure	KPI Splits and Drilldowns Across Various Dimensions -Time, Project, Unit/Divisions etc.	Analytics Value	Description
23		CQ&BE	Improvement in Process Quality	Reduction in occurrence of Major Quality issues by structured RCA and implementation of CA/ PA	1) RCA identified Vs Quality Issue registered 2) RCA completed Vs RCA identified 3) CA completed Vs RCA completed (RCA wise)	Institutionalization of learnings from RCA	Product wise/ project wise/ unit wise/ region wise analysis of complaints Analysis of complaints received from various systems like Shop NC/ SCRS/ CCMS/SDR or any unit level relevant system etc.
				100% utilization of WPMS	- module wise/ package wise/ project wise/ region wise utilization level	To assess level of compliance of the system at particular site	
				100 % Welder performance monitoring	Performance monitoring to identify the non-performing welders by sites	To take action on non-performing welder on time - to enable achieving defect free welding	
				% defective joints Vs total weld joints	Defect wise/ Sub- System wise defect data analysis	To assess overall welding Quality of a site	
				% closure of OFIs identified through theme based audit at MUs and sites.	Process wise/ sub product wise/ product wise/ unit wise/ site wise	Identification for areas of improvements (process wise/ product wise/ unit wise/ region wise)	
				100% utilization of FQMS:- No. of Protocols/log sheets completed Vs Actual as per FQMS system	Completion of protocols/ log sheets	To assess level of compliance of FQMS at particular site - to ensure compliance to FQP and ensure process quality	
				Reduction in site process deficiencies through SDR system	Capturing data against all heads of SDR system. E.g.: - Package wise/ project wise/ Subcontractor wise data analysis and SDR disposition data analysis/ Product wise	1) Analysis of SDRs on the basis of criticality/ repeatability of the problems and identify improvement areas 2) Pendency and milestone analysis	1) Learning gained and opportunities for improvement. 2. Reduction in site quality issue captured and fast execution of projects (reduced cycle time).
				% implementation of Critical Success Factors (CSFs) for Quality related Processes/ Systems improvement	Process wise/ unit wise/ site wise	Identification for opportunities for improvements (process wise/ unit wise/ region wise)	
				% digital monitoring of production operation & in-process Quality Control	process wise/ docket wise/ sub product wise/ product wise/ unit wise	Timely intimation of material inspection and further actions Analysis of delay in inspections and inspection parameters	

SN	Key Area	Function Group	KPI	Measure	KPI Splits and Drilldowns Across Various Dimensions -Time, Project, Unit/Divisions etc.	Analytics Value	Description
				% Plant/ Product standards reviewed vs Planned	Plant standard wise/ Product standard wise/ Corporate Standard wise	Availability of latest pertinent standards	
24		CQ&BE	Improvement in Quality Culture	People Quality Improvement - % Increase in Trainings	Project, Product, Customer, Sector, Unit / Division	No. of product familiarization program	Trainings on Products, packages, systems, NDT etc.
				People Quality Improvement - % decrease in NC/ rejection level	Special Process, Unit / Division	Improvement in the skill of task performer and outcome of the process	Trainings on special processes like Welding, Painting, Brazing, NDT etc.
				% Employees involved in Quality circle activity	Project, Product, Customer, Sector, Unit / Division	Increased Quality Circle case studies/ problem solving studies and improvement in Processes/ Products	
				Knowledge sharing by Best Quality Circle teams to others			
				Participation of Quality Circle Teams in National / International QC conventions			
25	Project Execution	PMG	Overrun	% Overall Overrun broken by Time, Costs	Time / Cost of Delay, Order, Customer, Area wise, Vendor wise, Unit / Division, Department wise (Manufacturing, Procurement, Engineering, Site Progress, Commissioning, Others)	Overrun correlated to other relevant data points like type of procurement etc.	<ul style="list-style-type: none"> - Time taken in manufacturing of major equipment in projects - Time taken in procurement of major Bought out items (BOIs)/BOPs/critical raw materials in projects - Time taken in release of major drawings by units/PEM e.g. plot plan, soil investigation report, boiler foundation drawings, Turbine foundation drawings etc. - Area wise/vendor wise status of monthly erection work completion at all project sites - Various problems faced at sites from pre-commissioning activities to trial operation of project - Major reasons for delay in projects

SN	Key Area	Function Group	KPI	Measure	KPI Splits and Drilldowns Across Various Dimensions -Time, Project, Unit/Divisions etc.	Analytics Value	Description
26	Human Resource Management	HR	Workforce Indicators	Weighted metric to summarize all relevant inputs into a consolidated score of Human Indicators at BHEL	Unit / Division, Product, Department, Designation / Level, Role / Profile, Competency/Skill, Employee, Contract Labour, Project, Product, Customer, Sector, Retirees, New Joiners, Appraisals, Performance Ratings	Leading indicators to summarize all manpower down to the row information to enable better manpower planning and deployment on projects which may need resources vs those that have more than enough	1.Total strength of manpower category-wise on real time basis. 2.Company wide - Executive Supervisor Worker - Distribution in a pie chart and Total Count with %age 3. Unit wide - Executive Supervisor Worker - Distribution in a pie chart and Total Count with %age 4. Company wide - Function-wise distribution of Manpower 5. Unit wide - Function-wise distribution of Manpower 6. Year wise future projection of retirement in Executives, Supervisors and Workmen Category 7. Further bi-furcation of employees profile wise (the work they are handling) 8. Past data on separation of employees (with reason) for last five years in Executive, Supervisor and Workmen category
27		HR	Succession Planning	Key positions for which succession planning is defined well	Unit / Division, Product, Department, Designation / Level, Role / Profile	Drill down to the row level data for better decision making for finding a suitable successor and manpower planning	Time taken to fill a position
28		HR	Competency & Training Index	Current Competency and Training / Desired Competency and Training	Employee, Contract Labour, Project, Product, Customer, Sector, Unit / Division, Designation / Level, Role / Profile, Induction, Product Training, Soft Skills Trainings	Comparative assessment of all units in one pane to identify training / upskill / cross skill opportunities and drive competency and training in the organization	Level of Competency within the company and the training lifecycle effectiveness
29		HR	Contract Labour Deployment	Contract Labour /Employee	Unit/ Division/ skill/ Employee/ Contract Labour	Facilitate decisions on skill development, predict cost on contract labour deployment, decision related to contract labours	contract labour engaged within the company and cost involved.
30		HR	Turnover vs Manpower	Revenue / Turnover per Employee, Revenue / Turnover per Contract Labour	Employee, Contract Labour, Project, Product, Customer, Sector, Unit / Division, Designation / Level, Role	Informed decisions on overall comparative productivity of human capital employed in BHEL	Revenue / Turnover per Employee, Revenue / Turnover per Contract Labour

SN	Key Area	Function Group	KPI	Measure	KPI Splits and Drilldowns Across Various Dimensions -Time, Project, Unit/Divisions etc.	Analytics Value	Description
31		HR	Personnel Payment	Unit/Division/Department/Product Group/Employee Category/Employee wise cost	Personnel Payment Unit - wise/Department-wise/Product Group-wise/Employee Category (Workmen/Supervisor/Executives)/ Individual employee wise All Heads of Personnel Payment to be covered	Analysis of various cost components, Help in taking decision to cost reduction measures	Personnel Payment on various Heads

Annexure-III**Authorization by OEM**

Date: _____

To,
CDT
BHEL, Delhi

Subject: Letter of Authority

Tender Ref. No.: dated

Dear Sir,

We hereby authorize _____ who has all India presence and fulfils the requirements of the tender enquiry ref. no....., dated to quote / negotiate and service the equipment as required in the above tender enquiry.

This authorization is valid only for the following services for which we are the OEM:

1. _____

The authorized agency would ensure reliable service during complete contract period of 5 years.

(Authorized Signatory)

For _____

Note: This 'Letter of Authority' should be issued on the letterhead of OEM & enclosed in Part-I.

Annexure IV

Un-Priced Bid Format

(All Amounts in INR)

Section A

Sl. No.	Item Description	Weightage % of T1	Quantity	Unit of measurement	Quarterly per unit cost (excluding GST)	Quarterly Cost for total quantity (excluding GST) (D=C*A)	GST Rate in %	Quarterly Cost (Including GST)	Total Cost for desired quantity for 5 years (Including GST)	Remarks
			(A)	(B)	(C)	(D=C*A)	(E)	F=(D+D*E/100)	G=20*F	
1	Implementation of Data Warehouse, Business Intelligence and advance analytics solution as per specifications mentioned in RFP on cloud with all required components (implementation of solution),	20 %	1	Lot						
2	Cloud service for Data Warehouse, BI and advance analytics (software license, database connector license, infrastructure on cloud) for 5 TB Data Warehouse storage.	40 %	1	Lot						
3	Post implementation support of solution, support engineer charges	25 %	1	Lot						
4	Developer (50 Nos.) and Visualization (300 Nos.) license	15 %	1	Lot						
	Total cost of Solution for section A (T1)									

Bidder shall submit complete list of BOM (items/services) required for complete commissioning of solution duly vetted by OEMs.

Section B:

Sl. No.	Item Description	Quantity	Unit of measurement	Per unit cost (excluding GST)	Cost for total quantity (excluding GST) (D=C*A)	GST Rate in %	Cost for total quantity (Including GST) F=(D+D*E/100)
		(A)	(B)	(C)		(E)	
1	Cost for Man-days for future dashboard development for KPIs	300	Mandays				
Total cost of Solution for section B (T2)							

Total cost of solution for section A for 5 years (T1) (Including GST)	Total Cost of solution for section B for 300 Man-days (T2) (Including GST)	Total cost T=T1+T2 (Including GST)

Note: Evaluation of solution shall be done on the basis of delivered cost (i.e. “total cost to BHEL”). Bidder has to quote for total cost (T) and indicate applicable GST% included in the total cost. The total quoted price shall be allocated to different line items of price bid as per Annexure-X.

In case BHEL requires development of more KPIs (other than already considered in scope of work for details refer Annexure-II for KPI list), BHEL shall pay the development charges based on above man-day rates (as mentioned in section B of Price-Bid format) provided by the bidders. This shall be paid on completion of KPI dashboard development and acceptance by BHEL along with the quarterly payment for the quarter in which KPI dashboard has been developed.

Note:

- 1) The quoted price for the solution is T which is sum of section A Price (T1) and section B Price (T2).
- 2) T1 is assigned 96% of total quoted price(T).
- 3) T2 is assigned 4% of total quoted price(T).
- 4) As price quoted in line item 2 of section A is considering complete solution of 5 TB, the payment for line item 2 shall be done on pro-rata basis for data storage used for the solution in proportion to price quoted in line item 2 by the bidder.

Table C:
Quotation for 6th/7th Year:

Sl. No.	Item Description	Quantity	Per Quarter Cost for unit quantity excluding GST) (in Rs.)	GST rate (%) (Bidder to specify)	Price for unit quantity per quarter Including GST (in Rs.)
1	Post implementation support of complete solution for 6 th year	1			
2	Post implementation support of complete solution for 7 th year	1			

Note: Table C prices shall not be considered for evaluation purpose.

Annexure-V**MUTUAL NON-DISCLOSURE AGREEMENT**

This Agreement is made and entered into as of the last date signed below (the “Effective Date”) by and between **Bharat Heavy Electricals Ltd.(BHEL)**, a Public Sector Organization having its principal place of business at BHEL House, Siri Fort, New Delhi - 110049 and _____, a _____ corporation, hereinafter called “The Bidder”, whose principal mailing address is _____.

WHEREAS in order to pursue the mutual business purpose of this particular project as specified in Bid document for Data Warehouse & BI solution, **BHEL** and the Bidder have an interest in participating in discussions wherein either Party might share information with the other that the disclosing Party considers to be proprietary and confidential to itself (“Confidential Information”); and

WHEREAS the Parties agree that Confidential Information of a Party might include, but not be limited to that Party’s:

1. business plans, methods, and practices;
2. personnel, customers, and suppliers;
3. inventions, processes, methods, products, patent applications, and other proprietary rights; or
4. specifications, drawings, sketches, models, samples, tools, computer programs, technical information, or other related information;

NOW, THEREFORE, the Parties agree as follows:

1. Either Party may disclose Confidential Information to the other Party in confidence provided that the disclosing Party identifies such information as proprietary and confidential either by marking it, in the case of written materials, or, in the case of information that is disclosed orally or written materials that are not marked, by notifying the other Party of the proprietary and confidential nature of the information, such notification to be done orally, by e-mail or written correspondence, or via other means of communication as might be appropriate.
2. When informed of the proprietary and confidential nature of Confidential Information that has been disclosed by the other Party, the receiving Party (“Recipient”) shall, for a period of three (3) years from the date of disclosure, refrain from disclosing such Confidential Information to any contractor or other third party without prior, written approval from the disclosing Party and shall protect such Confidential Information from inadvertent disclosure to a third party using the same care and diligence that the Recipient uses to protect its own proprietary and confidential information, but in no case less than reasonable care. The Recipient shall ensure that each of its employees, officers, directors, or agents who has access to Confidential Information disclosed under this Agreement is informed of its proprietary and confidential nature and is required to abide by the terms of this Agreement. The Recipient of Confidential Information disclosed under this Agreement shall promptly notify the disclosing Party of any disclosure of such Confidential Information in violation of this Agreement or of any subpoena or other legal process requiring production or disclosure of said Confidential Information.
3. All Confidential Information disclosed under this Agreement shall be and remain the property of the disclosing Party and nothing contained in this Agreement shall be construed as granting or conferring any rights to such Confidential Information on the other Party. The Recipient shall

honour any request from the disclosing Party to promptly return or destroy all copies of Confidential Information disclosed under this Agreement and all notes related to such Confidential Information. The Parties agree that the disclosing Party will suffer irreparable injury if its Confidential Information is made public, released to a third party, or otherwise disclosed in breach of this Agreement and that the disclosing Party shall be entitled to obtain injunctive relief against a threatened breach or continuation of any such breach and, in the event of such breach, an award of actual and exemplary damages from any court of competent jurisdiction.

4. The terms of this Agreement shall not be construed to limit either Party's right to develop independently or acquire products without use of the other Party's Confidential Information. The disclosing party acknowledges that the Recipient may currently or in the future be developing information internally, or receiving information from other parties, that is similar to the Confidential Information. Nothing in this Agreement will prohibit the Recipient from developing or having developed for its products, concepts, systems or techniques that are similar to or compete with the products, concepts, systems or techniques contemplated by or embodied in the Confidential Information provided that the Recipient does not violate any of its obligations under this Agreement in connection with such development.
5. Notwithstanding the above, the Parties agree that information shall not be deemed Confidential Information and the Recipient shall have no obligation to hold in confidence such information, where such information:
 - 5.1. Is already known to the Recipient, having been disclosed to the Recipient by a third party without such third party having an obligation of confidentiality to the disclosing Party; or
 - 5.2. Is or becomes publicly known through no wrongful act of the Recipient, its employees, officers, directors, or agents; or
 - 5.3. Is independently developed by the Recipient without reference to any Confidential Information disclosed hereunder; or
 - 5.4. Is approved for release (and only to the extent so approved) by the disclosing Party; or
 - 5.5. Is disclosed pursuant to the lawful requirement of a court or governmental agency or where required by operation of law.
6. Nothing in this Agreement shall be construed to constitute an agency, partnership, joint venture, or other similar relationship between the Parties.
7. Neither Party will, without prior approval of the other Party, make any public announcement of or otherwise disclose the existence or the terms of this Agreement.
8. This Agreement contains the entire agreement between the Parties and in no way creates an obligation for either Party to disclose information to the other Party or to enter into any other agreement.
9. This Agreement shall remain in effect for a period of one (1) year from the Effective Date unless otherwise terminated by either Party giving notice to the other of its desire to terminate this Agreement. The requirement to protect Confidential Information disclosed under this Agreement shall survive termination of this Agreement.

IN WITNESS WHEREOF:

FOR AND ON BEHALF OF

Signature: _____

Name: _____

Designation: _____

Date: _____

Witness

1.

2.

FOR AND ON BEHALF OF

BHARAT HEAVY ELECTRICALS LTD.

Signature: _____

Name: _____

Designation: _____

Date: _____

Witness

1.

2.

Annexure-VI**No Deviation Certificate**

This is to certify that our offer is exactly in line with your tender enquiry no., dated

This is to expressly certify that our offer contains no deviation either Technical or Commercial in either direct or indirect form.

Signed By:

Name: _____

Designation: _____

Organization: _____

Date & Place: _____

Phone/Fax/Mobile: _____

Email: _____

Stamp & Seal: _____

Annexure-VII**INTEGRITY PACT****Between**

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi - 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

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 and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint Independent External Monitor(s), 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

- 1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles: -
 - 1.1.1 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.
 - 1.1.2 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.
 - 1.1.3 The Principal will exclude from the process all known prejudiced persons.
 - 1.1.4 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section 2 - Commitments of the Bidder(s)/ Contractor(s)

- 2.1 The Bidder(s)/ Contractor(s) commit himself 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.
- 2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or 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, immaterial or any 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.
- 2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or 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.
- 2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant Indian Penal Code (IPC) and Prevention of Corruption 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 document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- 2.1.4 Foreign Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)/ Contractor(s) to disclose their foreign principals or associates. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- 2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.
- 2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and will await their decision in the matter.

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 acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 4 - Compensation for Damages

- 4.1 If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent Earnest Money Deposit/ Bid Security.
- 4.2 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 equivalent to 5% of the contract value or the amount equivalent to Security Deposit/ Performance Bank Guarantee, whichever is higher.

Section 5 - Previous Transgression

- 5.1 The Bidder declares that no previous transgressions occurred in the last 3 years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.
- 5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

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

- 6.1 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors. In case of sub-contracting, the Principal contractor shall be responsible for the adoption of IP by his sub-contractors and shall continue to remain responsible for any default by his sub-contractors.
- 6.2 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 Bidders/ Contractors /Subcontractors

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 if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 -Independent External Monitor(s)

- 8.1 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.
- 8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.
- 8.3 The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/ Contractor(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub-contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Sub-contractor(s) with confidentiality in line with Non- disclosure agreement.
- 8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the contract 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.
- 8.5 The role of IEMs is advisory, would not be legally binding and it is restricted to resolving issues raised by an intending bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some bidders. At the same time, it must be understood that IEMs are not consultants to the Management. Their role is independent in nature and the advice once tendered would not be subject to review at the request of the organization.

- 8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process, the matter should be examined by the full panel of IEMs jointly as far as possible, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.
- 8.7 The IEMs would examine all complaints received by them and give their recommendations/ views to CMD, BHEL, at the earliest. They may also send their report directly to the CVO and the Commission, in case of suspicion of serious irregularities requiring legal/ administrative action. IEMs will tender their advice on the complaints within 10 days as far as possible.
- 8.8 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.
- 8.9 IEM should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the organization should be looked into by the CVO of the concerned organisation.
- 8.10 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code/ Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.
- 8.11 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.
- 8.12 The word 'Monitor' would include both singular and plural.

Section 9 - Pact Duration

- 9.1 This Pact shall be operative from the date IP is signed by both the parties till the final completion of contract for successful bidder and for all other bidders 6 months after the contract has been awarded. Issues like warranty / guarantee etc. should be outside the purview of IEMs.
- 9.2 If any claim is made/ lodged during currency of IP, 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 the CMD, BHEL.

Section 10 - Other Provisions

- 10.1 This agreement is subject to Indian Laws and jurisdiction shall be registered office of the Principal, i.e. New Delhi.
- 10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
- 10.3 If the Contractor is a partnership or a consortium, this agreement must be signed by all partners consortium members.
- 10.4 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.
- 10.5 Only those bidders / contractors who have entered into this agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.

For & On behalf of the Principal
(Office Seal)

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

Place-----

Date-----

Witness _____

Witness: _____

(Name & Address) _____

(Name & Address) _____

Annexure-VIIIUndertaking for Blacklisting/Banned

Date: _____

To,
CDT
BHEL, Delhi

Subject: Undertaking regarding Blacklisting/Banned

Tender Ref. No.: dated

Dear Sir,

We hereby declare that we are currently not black listed / banned for business dealings by any Govt. authority / department / agency or by any BHEL Unit / Region / Division / Office. In case at any stage it is found that the information submitted in the bid is false or incorrect, we understand suitable action can be taken by BHEL.

(Authorized Signatory)

Name : _____

Email : _____

Sign : _____

Seal of the Company: _____

Note: This undertaking on the company letter head must be enclosed in Part-I.

Annexure-IXQuery Format

_____. _____. _____

Ref Bid Number: _____Item Category: _____

Company Name: _____Representative Details:**Name:** _____**Email IDs:** _____**Phone Nos:** _____**Signatures:** _____*Note: Only written queries shall be entertained in the Pre-Bid Meeting. Visiting Card (if available) may also be enclosed.*Queries:

<u>NIT Clause No.</u>	<u>Query Details</u>

Signatures:

Annexure-X

GST% 18.00

Sample Calculation Sheet considering GST @18% for value of T = Rs.1,00,000/-

Total Value including GST	100000.00
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(All Amounts in INR)

Section A

Sl. No.	Item Description	Weightage % of T1	Quantity	Unit of measurement	Quarterly unit cost (excluding GST)	Quarterly Cost for total quantity (excluding GST)	GST Rate in %	Quarterly Cost (Including GST)	Total Cost for desired quantity for 5 years (Including GST)
			(A)	(B)	(C)	(D=C*A)	(E)	F=(D+D*E/100)	G=20*F
1	Implementation of Data Warehouse, Business Intelligence and advance analytics solution as per specifications mentioned in RFP on cloud with all required components (implementation of solution)	20%	1	Lot	813.56	813.56	18.00	960.00	19200.00
2	Cloud service for Data Warehouse, BI and advance analytics (software license, database connector license, infrastructure on cloud) for 5 TB Data Warehouse storage.	40%	1	Lot	1627.12	1627.12	18.00	1920.00	38400.00
3	Post implementation support of solution, support engineer charges	25%	1	Lot	1016.95	1016.95	18.00	1200.00	24000.00
4	Development(50 Nos.) and Visualization (300 Nos.) license	15%	1	Lot	610.17	610.17	18.00	720.00	14400.00
Total cost of Solution for section A (T1)									96000.00

Bidder shall submit complete list of BOM (items/services) required for complete commissioning of solution duly vetted by OEMs.

Section B:

Sl. No.	Item Description	Quantity	Unit of measurement	Per unit cost (excluding GST)	Cost for total quantity (excluding GST)	GST Rate in %	Cost for total quantity (Including GST)
		(A)	(B)	(C)	(D=C*A)	(E)	F=(D+D*E/100)
1	Cost for Man-days for future dashboard development for KPIs	300	Mandays	11.30	3389.83	18.00	4000.00
Total cost of Solution for section B (T2)							4000.00

Total cost of solution for section A for 5 years(T1) (Including GST)	Total Cost of solution for section B for 300 Man-days(T2) (Including GST)	Total cost T=T1+T2 (Including GST)
96000.00	4000.00	100000.00

Note: Evaluation of solution shall be done on the basis of delivered cost (i.e. "total cost to BHEL"). Bidder has to quote for total cost (T) and indicate applicable GST% included in the total cost. The total quoted price shall be allocated to different line items of price bid as per Annexure-X.

In case BHEL requires development of more KPIs (other than already considered in scope of work for details refer Annexure-II for KPI list), BHEL shall pay the development charges based on above man-day rates (as mentioned in section B of Price-Bid format) provided by the bidders. This shall be paid on completion of KPI dashboard development and acceptance by BHEL along with the quarterly payment for the quarter in which KPI dashboard has been developed

Note :

- The quoted price for the solution is T which is sum of section A Price (T1) and section B Price (T2).
- T1 is assigned 96% of total quoted price(T).
- T2 is assigned 4% of total quoted price(T).
- As price quoted in line item 2 of section A is considering complete solution of 5 TB, the payment for line item 2 shall be done on pro-rata basis for data storage used for the solution in proportion to price quoted in line item 2 by the bidder.

ANNEXURE A

ii. PROFORMA OF BANK GUARANTEE FOR EARNEST MONEY

(On non-Judicial paper of appropriate value)

Bank Guarantee No.....

Date.....

To

(Employer's Name and Address)
.....

Dear Sirs,

In accordance with the terms and conditions of Invitation for Bids/Notice Inviting Tender No.....1(Tender Conditions), M/s. having its registered office at.....2 (hereinafter referred to as the 'Tenderer'), is submitting its bid for the work of.....3 invited by4.(name of the Employer) through its Unit at(

The Tender Conditions provide that the Tenderer shall pay a sum of Rsas Earnest Money Deposit in the form therein mentioned. The form of payment of Earnest Money Deposit includes Bank Guarantee executed by a Scheduled Bank.

In lieu of the stipulations contained in the aforesaid Tender Conditions that an irrevocable and unconditional Bank Guarantee against Earnest Money Deposit for an amount of5 is required to be submitted by the Tenderer as a condition precedent for participation in the said Tender and the Tenderer having approached us for giving the said Guarantee,

we, the[Name & address of the Bank] having our Registered Office at(hereinafter referred to as the Bank) being the Guarantor under this Guarantee, hereby irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer without any demur, merely on your first demand any sum or sums of Rs. 5(in words Rupees.....) without any reservation, protest, and recourse and without the beneficiary needing to prove or demonstrate reasons for its such demand.

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor/Contractor/Vendors in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

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Any payment made by us under this Guarantee shall be a valid discharge of our liability for payment hereunder and the Tenderer shall have no claim against us for making such payment.

We Bank further agree that the Employer 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 Tender or to extend the time of submission of from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Tenderer and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Tenderer or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Tenderer or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Tenderer and notwithstanding any security or other guarantee that the Employer may have in relation to the Tenderer's liabilities.

This Guarantee shall be irrevocable and shall remain in force upto and including 6 and shall be extended from time to time for such period as may be desired by the Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Tenderer but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms hereof. However, unless a demand or claim under this Guarantee is made on us in writing on or before the⁷ we shall be discharged from all liabilities under this Guarantee.

We, Bank lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed.....5.....
- b) This Guarantee shall be valid up to 6
- c) Unless the Bank is served a written claim or demand on or before⁷ all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank

We, Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of

(Name of the Bank)

Date.....

Place of Issue.....

1191845/2022/CO-CDT-ITIN¹ *Details of the Invitation to Bid/Notice Inviting Tender*² *Name and Address of the Tenderer*³ *Details of the Work*⁴ *Name of the Employer*⁵ *BG Amount in words and Figures*⁶ *Validity Date*⁷ *Date of Expiry of Claim Period***Notes:**

1. Units are advised that expiry of claim period may be kept 3-6 months after validity date. It may be ensured that the same is in line with the agreement/ contract entered with the Vendor.
2. The BG should be on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Contractor/sub-contractor /vendor/ Bank issuing the guarantee.
3. In line with the GCC, SCC or contractual terms, Unit may carry out minor modifications in the Standard BG Formats. If required, such modifications may be carried out after taking up appropriately with the Unit/Region's Law Deptt.

4. In Case of Bank Guarantees submitted by Foreign Vendors-

- a. **From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India)** can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.
- b. **From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)**
 - b.1 In such cases, in the Tender Enquiry/ Contract itself, it may be clearly specified that Bank Guarantee issued by **any of the Consortium Banks only** will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter- Guarantee by Foreign Bank in favour of the Indian Bank's (BHEL's Consortium Bank) branch in India. It is advisable that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor. The tender stipulation should clearly specify these requirements.
 - b.2 **In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank** (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at **sl.no. b.1** will be required to be followed.
 - b.3 The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time). The BG Format provided to them should clearly specify the same.

iii.ANNEXURE B

PROFORMA OF BANK GUARANTEE (in lieu of SECURITY DEPOSIT)

In consideration of Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at _____¹ through its Unit at.....(name of the Unit) having agreed to exempt (Name of the Vendor / Contractor / Vendors) with its registered office at _____² (hereinafter called the said "Contractor" which term includes vendors), from demand under the terms and conditions of the Contract reference No. _____ dated _____³ valued at Rs.....⁴ (Rupees -----)⁴ (hereinafter called the said Contract), of Security Deposit for the due fulfilment by the said Contractor of the terms and conditions contained in the said Contract, on production of a Bank Guarantee for Rs. _____⁵ (Rupees _____ only),

we ____ (indicate the name and address of the Bank) having its Head Office at _____ (address of the head Office) (hereinafter referred to as the Bank), , at the request of _____ [Contractor(s)], being the Guarantor under this Guarantee, do hereby irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer, , an amount not exceeding Rs. _____ without any demur, immediately on demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand

Any such demand made on the bank, shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. ____.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Contractor(s) in any suit or proceeding pending before any Court or Tribunal or Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

The payment so made by us under this guarantee shall be a valid discharge of our liability for payment hereunder and the Contractor(s) shall have no claim against us for making such payment.

We, 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 Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied & the Employer certifies that the terms and conditions of the said Contract have been fully and properly carried out by the said contractor(s) or acceptance of the final bill or discharge of this guarantee by the Employer, whichever is earlier. This guarantee shall initially remain in force upto and including _____⁶ and shall be extended from time to time for such period as may be desired by the Employer. Unless a demand or claim under this guarantee

1191845/2022/GO-GDT-ITIN before the _____⁷, we shall be discharged from all the liability under this guarantee thereafter.

We, (indicate the name of the Bank) further agree with the Employer that the Employer 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 Contract or to extend time of performance by the said contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by any reason of any such variation or extension being granted to the said contractor(s) or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee that the Employer may have in relation to the Contractor's liabilities.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Contractor but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).

We,..... BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed⁵
- b) This Guarantee shall be valid up to⁶
- c) Unless the Bank is served a written claim or demand on or before _____⁷ all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

Date _____ Day of _____

for _____ (indicate the name of the Bank)

(Signature of Authorised signatory)

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¹ ADDRESS OF THE EMPLOYER. I.e Bharat Heavy Electricals Limited

² ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER .

³ DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

⁴ CONTRACT VALUE

⁵ BG AMOUNT IN FIGURES AND WORDS

⁶ VALIDITY DATE

⁷ DATE OF EXPIRY OF CLAIM PERIOD

Note:

1. Units are advised that expiry of claim period may be kept 3-6 months after validity date. It may be ensured that the same is in line with the agreement/ contract entered with the Vendor.
2. The BG should be on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Vendor/Contractor/Supplier /Bank issuing the guarantee.
3. In line with the GCC, SCC or contractual terms, Unit may carry out minor modifications in the Standard BG Formats. If required, such modifications may be carried out after taking up appropriately with the Unit/Region's Law Deptt.
4. In Case of Bank Guarantees submitted by Foreign Vendors-
 - a. **From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India)** can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.
 - b. From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)
 - b.1 In such cases, in the Tender Enquiry/ Contract itself, it may be clearly specified that Bank Guarantee issued by **any of the Consortium Banks only** will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter- Guarantee by Foreign Bank in favour of the Indian Bank's (BHEL's Consortium Bank) branch in India. It is advisable that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor. The tender stipulation should clearly specify these requirements.
 - b.2 **In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank** (e.g. if a

1191845/2022/CO-CDT-ITIN

BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at **sl.no. b.1** will required to be followed.

- b.3** The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time). The BG Format provided to them should clearly specify the same.

List of Consortium Banks (BG to be submitted from these Banks only)			
	Nationalised Banks		Nationalised Banks
1	Allahabad bank	19	Vijaya Bank
2	Andhra bank		Public Sector Banks
3	Bank of Baroda	20	IDBI
4	Canara Bank		Foreign banks
5	Corporation bank	21	CITI Bank N.A
6	Central bank	22	Deutsche Bank AG
7	Indian Bank	23	The Hongkong and Shanghai Banking Corporation Limited
8	Indian Oversea Bank	24	Standard Chartered Bank
9	Oriental bank of Commerce	25	J P Morgan
10	Punjab National Bank		
11	Punjab & Sindh Bank		Private banks
12	State Bank of India	26	Axis Bank
13	State Bank of Hyderabad	27	The Federal Bank Limited
14	Syndicate Bank	28	HDFC
15	State Bank of Travancore	29	Kotak Mahindra Bank
16	UCO Bank	30	ICICI
17	Union Bank of India	31	Indusind Bank
18	United Bank of India	32	Yes Bank