

ERP SOFTWARE TENDER FOR BOF

Ser	Attachment	Name of Document	Remarks
01	Annex A	Tender Notice	
02	Annex B	Tender Specification	
03	Appendix 1 to Annex B	ERP Hardware List	
04	Annex C	Technical Specification	
05	Appendix 1 to Annex C	Schematic Design	

ক্রঃ	কাজের প্রকৃতি	একক	পরিমাণ	মূল্য (অংক ও কথায়)	মন্তব্য															
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	<div>Annex A</div> <div>ERP Software Tender for BOF</div> <div>INVITATION FOR TENDERS</div> <table><tr><td>01</td><td>Procuring Entity Name</td><td>Bangladesh Ordnance Factories (BOF)</td></tr><tr><td>02</td><td>Invitation for</td><td>Design, development, supply, integration, implementation and maintenance of customized ERP Solution for Bangladesh Ordnance Factories (BOF)</td></tr><tr><td>03</td><td>Ref No</td><td>Tender no 23.27.0000.166.192.4113301. 20. 21</td></tr><tr><td>04</td><td>Date</td><td>24-09-20</td></tr><tr><td>05</td><td>Method</td><td>Open Tendering Method (Two Separate Envelopes Technical & Financial)</td></tr></table> <div>QUALIFICATION FOR BIDDER</div>	01	Procuring Entity Name	Bangladesh Ordnance Factories (BOF)	02	Invitation for	Design, development, supply, integration, implementation and maintenance of customized ERP Solution for Bangladesh Ordnance Factories (BOF)	03	Ref No	Tender no 23.27.0000.166.192.4113301. 20. 21	04	Date	24-09-20	05	Method	Open Tendering Method (Two Separate Envelopes Technical & Financial)	No	01		
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	06	Eligibility	<p>6.1 The firm shall have the legal capacity to enter into the contract and have not been declared ineligible by any competent authority. However, BOF enlistment is not a mandatory prerequisite for participating in the Tender.</p> <p>6.2 The firm must have a registered office in Bangladesh having a valid Trade License/ TIN/ VAT/ incorporation certificate.</p> <p>6.3 Firms having any Certification of Quality (CMMi, ISO etc) are to attach with submitted Tender Documents.</p> <p>6.4 The firm shall be the software developer having minimum 5 (five) years of overall experience of supplying, installing, commissioning of similar solutions in government, autonomous or private organization.</p> <p>6.5 The firm shall have a minimum of 1 (one) supply contract of ERP solution with a reputed organization. The track records ('Cash Flow/Turnover statement from Bank' and Company's Annual Audit Report) must be included with the Tender Documents.</p> <p>6.6 The ERP must be locally developed and a fully custom-built solution for BOF. The firm has to be financially solvent for undertaking the assignment. The firm must have adequate manpower and logistic capacity to deliver the solution.</p> <p>6.7 The firm must submit bio-data/resume and certificate of previous experiences of Project Management Team in similar solution.</p> <p>6.8 The offer should have validity for at least 240 days from the date of Submission of the tender.</p>				
		BRIEF DESCRIPTION OF RELATED SERVICES					
	07		Details description of the services shall be available in the Technical Specification of the Tender Document attached with this Notice.				

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	<p style="text-align: center;"><u>Annex B</u> <u>ERP Software Tender for BOF</u></p> <p style="text-align: center;"><u>TENDER SPECIFICATION FOR THE DESIGN, DEVELOPMENT, SUPPLY, INTEGRATION, IMPLEMENTATION AND MAINTENANCE OF CUSTOMIZED ERP SOLUTION FOR BANGLADESH ORDNANCE FACTORIES</u></p> <p>1. <u>Name of the Project:</u> Design, development, supply, integration, implementation and maintenance of customized ERP Solution for Bangladesh Ordnance Factories (BOF).</p>																				

	<p>2. <u>Duration of the Project.</u> Maximum 24 months after agreement of contract.</p> <p>3. <u>General Specifications.</u></p> <p>a. Design, development, supply, integration, implementation and maintenance of customized ERP Solution for BOF for minimizing day to day paper work, maintaining large scale of inventory, ensuring quality of production, smoothening procurement process, shorten the time of decision making as well as upgrading surveillance systems.</p> <p>b. Develop, install and commission 28 modules of the mentioned ERP software showed in Technical Specification of ERP. All modules should also have a mobile App version (Android + iOS) of selected features of web version, so that specific users can work remotely in a secured manner.</p> <p>c. This ERP will have a solution architecture of the software in a manner for better performance, flexibility, scalability, extensibility and multi-tenancy of the system for future expansion.</p> <p>d. The project will have a Gantt chart of full project proceedings.</p> <p>e. The ERP will have a dashboard presenting dynamic live data in reports in tabular and graphic presentations as per BOF requirement.</p> <p>f. ERP software should be integrated with ERP Hardware (the list of ERP Hardware is attached as appendix) which will be provided by BOF.</p> <p>g. Vendor will provide relevant licensing, maintenance of licenses and third-party vendor support services for one year after going Live with each stage.</p> <p>h. Simultaneously multi modules development may be needed for the shortening of the implementation time.</p> <p>j. In future, should there be any requirements to connect this ERP with any of BOF's new software, hardware or modules, Vendor should implement that too under mutual understanding.</p> <p>k. The ERP Developer after completion of the projects shall provide the following documentation:</p> <ol style="list-style-type: none"> ERP Operation Manual/User Manual. Draft SLA for Service Level MOU. Warranty Certificate of Each Module. <p>l. Warranty period will start after the completion of the overall ERP project and all modules being LIVE.</p>				
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- 4. Proposed BOF Modules:** List of proposed modules of the ERP solution for BOF are given below. However, bidders may include any module which may help to execute the project smoothly.

Name of Modules/Item
1. Recruitment
2. Records (HRM)-Staff & Workman
3. Record (HRM)- Officers
4. Access Control
5. Clearance
6. Visitor Management
7. Budget & Cash
8. Finance
9. Planning & Progress (P&P)
10. Material Control (MC)
11. Maintenance
12. Purchase
13. Store & Inventory
14. Central Tools Management (CTM)
15. In house Store Inspection (ISI)
16. Quality Control Lab (QCL)
17. Small Arms (SA)
18. Small Arms & Ammunition (SAA)
19. High Caliber & Grenade (HAG)
20. Transportation Management
21. Ration Management
22. Employee Health Management
23. Estate Management
24. Research & Development
25. Drawing Management
26. Finance Control (FC)
27. Inspection of Armament & Explosive (IA&E)
28. Military Engineering Services (MES)

5. Expected Timeline with Payment

Modalities. The proposed ERP shall be developed in three phases. Bidders can choose modules according to the chart below and will submit a detailed Gantt chart following the instruction of Clause 6 given below. Bidders should also note that at each phase, the last two months will be reserved for Validation and Approval processes by BOF.

Phase	Description	Expected Duration (months)	Payment upon completion
1	Developing any 10 modules	10	35%
2	Developing any 10 modules	8	30%
3	Developing rest 8 modules	6	25%
4	After successful completion of 12 months warranty period of total 36 months warranty period.	12	10%

- 6. Implementation Phases of Each Module.** Bidders are to follow the below chart to render the deliverables at each phase of the project. The Gantt chart should reflect stages accordingly.

Stage	Particulars (Desktop & Smart Phone version)	Details
1.	Scope of work	Finding out scope of work with the help of BRD and SRS which will be provided by BOF
2.	ERD (Entity Relation Diagram), MSA (Microservices Architecture), User Interface, User Role, ACL (Access Control Level), and Integration diagram with related modules.	Sketch out the design of a database of ERP module. Defining the entities, their attributes, and showing the relationships between them. Build a architecture of components for management and service discovery, as well as an API gateway that handles communication between micro services

3.	Software coding & Initial data entry	Backend and frontend coding, platforms are as mentioned in Technical Specification. Initial data entry and data migration to be performed with the prior consultation with the OIC BOF ICT Cell (ERP Manager).
4.	UAT (User Acceptance Test), Load & Stress Testing	Should be performed availability, functionality, management, operational and identifying data trafficking issues
5.	Module Training	Top management for overview, system administrator training regarding identifying and fixing any software issues. End user operation training regarding module operation
6.	Go-Live	Final stage of ERP module, ready for use and warranty

Notes:

(1) Each stage will follow the below timeline and life cycle:

- a) SRS Study & Gap Analysis - 4 weeks
- b) Microservices Architecture Design - 4 weeks
- c) ER (Entity Relationship) Diagrams, UI/UX (User Interaction/Experience) Design and Wireframes Submission - 4 weeks
- d) Backend APIs (Application Programming Interface) Development - 6 weeks
- e) Frontend UIs (User Interface) Development & Backend Integration - 6 weeks
- f) Test Deployment - 2 weeks
- g) UAT (User Acceptance Testing) & Debugging - 2 weeks
- h) System and User Level Training - 2 weeks
- i) Final Deployment - 2 weeks

(2) During period f, g, h & i data entry will run parallelly, if required.

7. Terms & Conditions.

a. All modules will be implemented under a single turnkey contract on single point responsibility to be completed in the approved time period. The warranty period is 36 (thirty-six) months after completion of all modules.

b. Bidders be the software developer having minimum 5 (five) years of overall experience of supplying, installing, commissioning of similar solutions in government, autonomous or private organization.

c. Bidders shall have minimum 1 (one) supply contract of ERP solution with a reputed organization. The track records ('Cash Flow/Turnover statement from Bank' and Company's Annual Audit Report) must be included with the Tender Documents.

d. A pre-bid meeting to be organized with the Tender Participants, Consultant and the members of BOF authority before the submission of the proposals.

e. Monolithic architecture will not be allowed for this ERP. Architectural Approach and Platform to be used for software coding, database and API must be mentioned specifically for Technical Evaluation.

f. Customized Industrial ERP like SAP, Oracle Cloud ERP and Dynamics 365 ERP will not be allowed for this project. The ERP must be locally developed and a fully custom-built solution for BOF.

j. After selecting the appropriate vendor, should work with the ERP Manager (OIC, ICT Cell) of BOF.

k. The procuring entity reserves the right to accept or annul any tender proposal or to reject any or all tenders without assigning any reasons whatsoever.

l. BOF enlistment is not a mandatory prerequisite for participating in the Tender.

Annex C
ERP Software Tender for BOF

TECHNICAL SPECIFICATION FOR **ERP SOFTWARE TENDER**

1 Scope of Work

1.1 Objective

Bidders are required to critically review the purpose and requirements of implementation and ensure inclusion of all goods & services for achieving the objective within the timeframe for successful implementation.

1.2 Scope Summary

The overall Scope of Work for this project will involve the following areas:

- a) Preparation of detailed implementation plan covering the complete life-cycle of the project.
- b) Complete project management activities as per standard norms & practices.
- c) Deployment of resources on-site at the project location(s).
- d) Supply, install, configure, customize and implement offered ERP software as per requirements.
- e) Provisioning of servers & associated hardware/software of suitable configuration required for training, development & configuration, quality testing for use during implementation till BOF infrastructure is available for utilization.
- f) Assist BOF in validating the delivery and installation of the hardware as per requirement.
- g) Design of improved, streamlined, standardized, more efficient to-be processes through business process reengineering based on industry best practices, ERP supported process improvements and BOF requirements.
- h) Development of forms, reports, interfaces, custom components and enhancements to meet business requirements.
- j) Testing (unit testing, integration testing, user acceptance testing, load testing, stress testing and stabilization testing).
- k) Preparation of templates for data collection, verification & migration. Provide required training and support to BOF in the data collection & verification process. Complete responsibility for data migration.
- l) Functional overview training, detailed functional training, technical training and end-user training. Bidder shall arrange the training.

m) Required project activities during the transition period such as completion of user manuals, system manuals, business continuity & disaster recovery manuals, master & transaction data migration, end-user training, help-desk setup. Post go-live support for ERP product, functional & technical support for implemented solution & related services.

2 Functional Scope

2.1 Objective The bidder must study the Business Requirements Document (BRD) prepared for BOF by a third-party consultant. The successful bidder will also be provided with a copy of the Software Requirements Specification (SRS) prepared for BOF, also by a third-party consultant. Following functional requirements (see BRD for detail) are envisaged to be covered under the project:

2.1.1 Administration

a) Management Dashboard display

- i) Attendance
- ii) Leave
- iii) Shifts
- iv) Transport pool
- v) Other module specific objects

b) Recruitment

- i) Integrate into the ERP all current manual form entries
- ii) Pass data electronically to the Records Dept
- iii) Generate all required reports

c) Records (HRM) - Staff

- i) Record all personnel related information
- ii) Prepare daily attendance record
- iii) Employee leave information
- iv) Integrate all forms for day-to-day activities
- v) Generate reports for top management

	<p>d) Records (HRM) - Officers</p> <ul style="list-style-type: none"> i) Record all personnel related information ii) Prepare daily attendance record iii) Employee leave information iv) Integrate all forms for day-to-day activities v) Generate reports for top management <p>e) Budget & Cash</p> <ul style="list-style-type: none"> i) Integrate relevant sections to gather demands ii) Help prepare budget for entry into iBus System iii) Monitor Expenditure iv) Generate notifications to alert prospective section for budget overflow or underutilization v) Generate notifications on periodic targets vi) Generate MIS reports <p>f) Finance</p> <ul style="list-style-type: none"> i) Automate a huge array of activities with other sections, such as Records, Recruitment, Purchase, Factories, etc. ii) Record Payroll Summary data iii) Generate different types of bills iv) Generate MIS reports <p>g) Purchase</p> <ul style="list-style-type: none"> i) Integrate with other sections to collect demands/indents ii) Develop e-tendering system iii) Share relevant information to other sections during a purchase process <p>h) Store & Inventory</p> <ul style="list-style-type: none"> i) Generate SKU (Stock Keeping Unit) codes for each products to be stored ii) Track every receipt and issue of every material, direct or indirect iii) Help Material Control (MC) monitor critical level of stock iv) Accurate Inventory Keeping v) Generate MIS reports vi) Smart inventory, IoT based in and out monitoring, approval check during inventory out, low inventory alert vii) Display through dashboard 				
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|--|---|--|--|--|--|
| | <p>i) Transportation</p> <ul style="list-style-type: none"> i) Trip request ii) Trip confirmation iii) Different types of roasters iv) Generate notifications v) Analyze Data to track of possible misuse or better management vi) Service request through web app <p>j) Ration Management</p> <ul style="list-style-type: none"> i) Replace current software system with its scope of work <p>k) Employee Health Management</p> <ul style="list-style-type: none"> i) Help hospital submit budgets ii) Help track expenditure iii) Keep records of employees availing of any medical service iv) Medical store and inventory management v) Automated record keeping of health check data, employee health record store & analyze vi) Summary display through dashboard: <ul style="list-style-type: none"> # of sick reports # of sick leaves # in and outpatients <p>l) Estate Management</p> <ul style="list-style-type: none"> i) Allocation of housing ii) Management of facilities iii) Service request through web app iv) Automated housing allotment v) Predictive maintenance vi) Summary display through dashboard vii) Automated and repeated task management | | | | |
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2.1.2 Planning & Progress

a) Planning & Progress (P&P)

- i) Fix production targets
- ii) Prepare warrants
- iii) Bill of Details design and ratify
- iv) Connected to smart inventory

b) Material Control (MC)

- i) Ability to search materials
- ii) Maintain stock level
- iii) Interact with the store
- iv) Analyze demand and material level to manage critical levels

	<p>c) Research & Development</p> <ul style="list-style-type: none"> i) Project management module ii) Record project information iii) Monitor progress of each project iv) Search historical data <p>d) CTM</p> <ul style="list-style-type: none"> i) Set daily, monthly and yearly targets ii) Follow Process documentations iii) Ensure quality of indirect materials, stage inspections, direct materials and final inspections iii) Monitor manufacturing process at various stages iv) Record quality deficiencies <p>e) ISI</p> <ul style="list-style-type: none"> i) Notify inspection results <p>f) QCL</p> <ul style="list-style-type: none"> i) Tests of all direct and indirect materials ii) Receive samples from IA&E, ISI, Production and Maintenance iii) Maintain Inward Diary iv) Maintain Registers v) Send results to relevant sections <p>g) Drawing Management</p> <ul style="list-style-type: none"> i) Archive drawings ii) Search drawings for different purposes, such as tendering processes <p>2.1.3 Production</p> <p>a) Based on production process need smart solutions such as:</p> <ul style="list-style-type: none"> i) Shift wise production dashboard display in large screen ii) Final product count iii) Weight count iv) Quality check v) Timer based solution vi) Machine health checkup and maintenance alert vii) UV light-based disinfection (Applicable for SA, SAA, HAG) <p>b) Small Arms (SA)</p> <ul style="list-style-type: none"> i) Individual component information ii) Summary of machines iii) Machine breakdown history iv) Machine running status v) Warrant updates vi) Spare demands vii) Raw material status as per warrants 				
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	<p>viii) Summary of received and produced items</p> <p>ix) Final production summary: daily, monthly and yearly</p> <p>x) Training and PSI</p> <p>xi) Development work</p> <p>xii) Daily parade state: officers & staff</p> <p>xiii) Daily attendance:</p> <ul style="list-style-type: none"> • Attendance summary display through dashboard • Smart Attendance connected to HR module • Thermal gate for body temp monitoring • Disinfection records <p>(Applicable for SA, SAA, HAG)</p> <p>xiv) Manpower summary</p> <p>xv) Casual/Systematic/Description of overtime</p> <p>xvi) Linewise manpower distribution of overtime</p> <p>xvii) Overtime (daily, weekly and monthly)</p> <p>xviii) Final issue (monthly and yearly)</p> <p>xix) Final rejection (monthly and yearly)</p> <p>xx) List of critical items</p> <p>xxi) Inspection notes</p> <p>xxii) Operations & outputs</p> <p>xxiii) Personnel information (discipline, medical reports, short leaves, etc)</p> <p>xxiv) TDL (Temporary Day Labour)</p> <p>xxv) TDL personnel information</p> <p>xxvi) Milk consumption report</p> <p>xxvii) Demand notes</p> <p>xxviii) Return notes</p> <p>xxix) Central demand notes</p> <p>b) Small Arms Ammunition (SAA)</p> <p>i) Individual component information</p> <p>ii) Summary of machines</p> <p>iii) Machine breakdown history</p> <p>iv) Machine running status</p> <p>v) Warrant updates</p> <p>vi) Spare demands</p> <p>vii) Raw material status as per warrants</p> <p>viii) Summary of received and produced items</p> <p>ix) Final production summary: daily, monthly and yearly</p> <p>x) Training and PSI</p> <p>xi) Development work</p> <p>xii) Daily parade state: officers & staff</p> <p>xiii) Daily attendance</p>				
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- xxv) TDL personnel information
- xxvi) Milk consumption report
- xxvii) Demand notes
- xxviii) Return notes
- xxix) Central demand notes

2.1.4 Maintenance

- i) Machine health checkup
- ii) Preventive & predictive maintenance alert
- iii) UV light-based disinfection
- iv) Link to Smart inventory for spare parts replacement
- v) Summary display through dashboard
- vi) Machine record keeping
- vii) Summary of machines
- viii) Machine breakdown history
- ix) Machines under maintenance
- x) Machine running status
- xi) List of spare demands
- xii) Daily attendance: technicians, officers & staff
- xiii) Summary of manpower
- xiv) Personnel information (discipline, medical reports, short leaves, etc)

2.1.5 Security

a) Management dashboard

b) Smart camera with night vision for:

- i) Daily attendance
- ii) Abnormal & regular movements
- iii) Intruder alert
- iv) Perimeter check

c) Access Control

- i) Collect data from all types of smart devices
- ii) Integrate different types of biometric devices
- iii) Help Records collect attendance data
- iv) Control access according to security blueprint
- v) Generate MIS reports

d) Smart access control for:

- i) Authority check to access sensitive areas
- ii) Regular movement check

e) Security Check:

- i) Fire/smoke detection and alert, send notification
- ii) Liquid leakage detection
- iii) Air quality, hazardous gas detection

f) Clearance

- i) Maintain duty roasters: (guard, barrack, special and mosque)
- ii) Clearance management: (inhouse, foreign, contractor, consultant, visitor, supplier, employee, transport) related
- iii) Search records
- iv) Generate reports

g) Reception

- i) Receive Visitors
- ii) Check visitors' clearance permission
- iii) Record visitors' profile
- iv) Archive records for analysis, searching

2.1.6 Others**a) Finance Control (FC)**

- i) Send vetting requests
- ii) Notify results

b) IA&E

- i) Send inspection requests
- ii) Notify results

c) MES

- i) Schedule Management
- ii) Track complaints and work assignments
- iii) Allow Admin Section to monitor progress of MES activities
- iv) Option to submit work request through mobile phones
- v) Preventive & predictive maintenance alert
- vi) Linkage to MES smart inventory for spare parts
- vii) Summary display through dashboard

3 System Administration

- i) User role maintenance
- ii) Approval maintenance/delegate and bypass approval
- iii) User creation
- iv) System/Transaction monitoring
- v) Data Backup and scheduling
- vi) System/Application upgrades

4 General Requirements

- i) Standard reports
- ii) Dashboard for senior management
- iii) Web portal for partial functions
- iv) Integration with systems like biometric, weigh bridge, etc.
- v) Document Archiving

5 Functional Training

- i) Bidder will submit a training plan and strategy
- ii) Bidder will provide ERP product training (module wise standard functions & reports available in the product) to BOF core team
- iii) Training should be provided on training environment of the ERP product so that users can understand the working processes of actual ERP product
- iv) Training needs to be provided for minimum three days for each module
- v) User manuals should be provided both in paper and online format

6 Go Live/Production

During this phase, the bidder will be required to carry out go-live activities as per agreed approach and methodology. Before go-live, bidder will ensure that following documents are provided to BOF, including but not limited to:

- i) Configuration document consisting of system settings and parameters for each module
- ii) Standard Operation Procedure (SOP) manual
- iii) Online help manuals

7 Post Go-Live Support (Stabilisation/Handholding)

7.1 In this project, stabilization period will be six months from the date of go-live including all modules.

7.2 Stabilization will be carried out after each Go-live.

7.3 Bidder will provide post Go-live support to BOF for stabilization of the implemented ERP system. As part of this, following indicative activities will be carried out:

- i) Bidder will deploy all relevant functional and technical implementation team during the stabilization phase
- ii) During stabilization, bidder will rectify, reconfigure the ERP solution if any issue is identified by BOF
- iii) Bidder will update user manuals and other relevant documents if there is any change in the process or solution SLA will be monitored during this period and bidder will be responsible for compliance of the same
- iv) SLA will be monitored during this period and bidder will be responsible for compliance of the same

8 Help Desk and Maintenance Support

After successful completion of final stabilization period, solution support & maintenance period will commence. The duration of Help Desk and Maintenance Support will be as per contract provisions.

9 Functional and Technical Support

9.1 Bidder will provide comprehensive on-site support within stipulated timelines and SLA parameters including but not limited to ERP solution, database, patches and releases

9.2 Implement any functional and/or technical enhancements through patches, updates and/or bug-fixes related to ERP, database, middleware or any other software provided as part of the complete solution.

9.3 Incorporate any change in business conditions such as organization restructuring.

10 Training Infrastructure

10.1 BOF will provide training infrastructure.

11 Training Types

Following types of trainings are envisaged to be covered under the scope of this project

Training Type	Participants	Days
ERP Overview	Top Management	3 days
ERP Technical Functionality	IT Team	4 days
Rolewise /End-user training	Application Users	5 days

12 Data Collection and Migration

For migration of existing data, the following procedures needed to be followed:

- a) Prepare a detailed data collection and migration plan
- b) Prepare data collection templates if required
- c) Train BOF team in data collection, entry and verification process
- d) Prepare migration scripts and migrate data through system driven process from BOF legacy systems
- e) Provide necessary details to BOF to confirm data migration accuracy and completion

13 Testing and Quality Assurance

ERP solution needs to be tested during various phases of the project to ensure that the developed/configured solution meets BOF requirements and as per standard practice. The actual testing methodology, tools and success parameters will be mutually decided by BOF and the bidder before carrying out the tests. Different types of testing which will be done during the project are mentioned below:

Testing Type	Objective
Unit Testing	Process/activity wise testing of developed /configured solution for each module
System Integration Testing	End to End integrated test of business process involving multiple modules or applications
User Acceptance Testing	Complete testing of the ERP solution based on user roles & responsibilities
Load & Stress Testing	To test the system based on simulated growth in terms of users and transaction volume. Solution should meet SLA parameters
Stabilization Test	To test if the solution meets SLA parameters and complete functioning as per requirements

14 Technical Specifications:

14.1 BOF has an existing fiber optics-based network and a user base of more than 300. All are using PCs.

14.2 It is expected that the ERP will need to support around 350 users or more.

14.3 The application will run on the Local Area Network within the BOF premises. Some part of the application will support mobile devices, some of which will require access through the internet.

15 Hardware Specifications:

The bidder will not be required to provide any hardware equipment. All needed hardware equipment (As per Appendix 1) will be provided by BOF.

16 Software Specifications:

16.1 BOF ERP will be developed using microservices architecture. Monolithic architecture will not be allowed (Please refer to BOF ERP SCHEMATIC DIAGRAM).

16.2 The microservices architecture will use mainly Spring Boot Technology, which is a Java based Framework, to develop the ERP. Spring provides a complete stack of microservices technology, that is highly efficient, open source and robust for enterprise solutions development.

16.3 ASP.Net core also supports microservices architecture. ASP.Net core can be used for the development also. In that case, the Bidder will be responsible for licensing of those products.

16.4 For the Database Layer, the bidder can use MySQL or PostgreSQL for SQL based database services development. If a non-structured database is required BOF will allow use of MongoDB or Apache Cassandra.

16.5 Spring Boot and Spring Data JPA will be used to access databases.

16.6 The Microservices will be developed using mainly Spring Boot. If Event based communication is required among microservices, BOF will go for RabbitMQ or Apache Kafka technology stack.

16.7 All services will provide REST API and/or HATEOAS.

16.8 For Service Registry and discovery, Spring Cloud based technology Eureka server will be used along with Spring Boot. This technology layer will also work as load balancing, if required.

16.9 The API Gateway will use Spring Boot and Spring Cloud based technology Zuul Proxy/Hystrix,

	<p>etc. The API Gateway will also be used for User Authentication and Authorization. For this Spring Security will be used.</p> <p>16.10 The user interface, the front-end, will run on various types of devices, mobile, tablets, PCs and Display Panels. The front-end will be developed using a Javascript based framework ReactJS or VueJS. Mobile apps should run on both Android and iOS-based devices. Mobile access will need additional security measures such as using a secured tunnel/VPN.</p> <p>16.11 The above software specification is a guideline for the potential ERP Software Developer. Any better solution will be appreciated and evaluated by the Technical Evaluation Committee.</p>				
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অন্যান্য শর্তাবলী

- ক। বিওএফ এ তালিকাভিহীন প্রতিষ্ঠান সমূহও আলোচ্য দরপত্রে অংশগ্রহণ করতে পারবে। সে ক্ষেত্রে তফসিল এর ক্রমিক নং ট অনুযায়ী দরপত্র জামানত দাখিল করতে হবে।
- খ। পণ্য সরবরাহের প্রাক্কালে মোট মূল্যের উপর ০৫ % হারে কমান্ড্যান্ট বিওএফ গাজীপুর ক্যান্ট এর অনুকূলে পিএস (পে-অর্ডার) দাখিল করতে হবে।
- গ। সন্তোষজনকভাবে সকল Module এর কার্যক্রম সম্পন্ন হবার পর হতে ০১ বছর ওয়ারেন্টি পিরিয়ড অতিক্রান্ত হলে পিএস (পে-অর্ডার) ফেরৎ প্রদান করা হবে। Module সমূহের কার্যসম্পন্নে ব্যর্থ হলে চুক্তি/কার্যাদেশ বাতিল করতঃ দাখিলকৃত পিএস বাজেয়াপ্ত করে সরকারী কোষাগারে জমা করা হবে।
- ঘ। প্রদত্ত বিল হতে সরকারী নিয়মানুযায়ী ভ্যাট এবং আয়কর কর্তনযোগ্য হবে।
- ঘ। নিম্নলিখিত সনদেও সত্যায়িত ফটোকপি দরপত্রের সাথে সংযুক্ত করতে হবে :
- ১। ভ্যাট রেজিস্ট্রেশনসনদ (শুধুমাত্র প্রতিষ্ঠানের ক্ষেত্রে)
 - ২। টি আই এন সনদ
 - ৩। হালনাগাদ ট্রেড লাইসেন্স (শুধুমাত্র প্রতিষ্ঠানের ক্ষেত্রে)
 - ৪। অভিজ্ঞতাসনদ

দরপত্রে অংশ গ্রহণকারীর স্বাক্ষর
(বড় অক্ষরে নাম),
‘সীলমোহর’

স্থান :
তারিখ :

ERP বাস্তবায়নে অপরিহার্য হার্ডওয়্যার (আইটেম) তালিকা

(বিওএফ সরবরাহ করবে)

Ser	Item Name	Quantity	Rmk
1	Biometric Time Attendance	56	
2	Archway Metal Detector	20	
3	Baggage Scanner	6	
4	Video Wall (30'-40')	1	
5	LED Monitor (60"-65") with Raspberry PI	15	
6	LED Monitor (40"-45") with Raspberry PI	65	
7	High Resolution Camera	32	
8	PTZ Camera	23	
9	IP Camera	215	
10	RFID Reader	10	
11	UHF Reader	136	
12	Switch with SFP Modular	105	
13	42U Rack	4	
14	15U Rack	24	
15	9U Rack	59	
16	DB Server	1	
17	DR Server	1	
18	API Gateway Server	1	
19	NAS Device	2	
20	PC for end users	200	
21	Workstation PC	22	
22	Tablet PC with Keyboard (Bluetooth)	20	
23	UHF RFID Printer	4	
24	UHF Cards	5,000	
25	ID Card Printer	2	
26	Archive Scanner	10	
27	NVR (128 Channel)	4	
28	UTP Cable (Box)	110	
29	Vehicle Tracker	41	
30	Online UPS (20 KVA)	2	
31	AP	40	
32	Drum Scanner	4	
33	Smoke Detector	80	
34	UVSS (Under Vehicle Surveillance System)	01	

SCHEMATIC DESIGN

