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USAID/ENERGY POLICY PROGRAM

ADS 548 DOCUMENT FOR ERP IMPLEMENTATION PROJECT AT NTDCL

December 2014

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ADS 548 DOCUMENT FOR ERP IMPLEMENTATION PROJECT AT NTDCL

Contract No: AID-EPP-I-00-03-00004
Order No: AID-391-TO-12-00002

House 4, Street 88, Sector G-6/3
Ataturk Avenue, Islamabad, Pakistan
Tel: +92 (51) 835 7072, Fax: +92 (51) 835 7071
Email: jhicks@ep-ep.com.pk

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Acronyms

AEAI	Advanced Engineering Associates International
CPPA	Central Power Purchasing Agency
DISCO	Distribution Company
ERP	Enterprise Resource Planning
GENCO	Generating Company
IPP	Independent Power Producer
IT	Information Technology
NTDCL	National Transmission and Dispatch Company Limited
OEM	Original Equipment Manufacturer
PMO	Project Management Office
PSC	Project Steering Committee
PUE	Power Usage Efficiency
SDLC	Software Development Life Cycle
SOP	Standard Operating Procedure
T&D	Transmission and Despatch
USAID	United States Agency for International Development
UPS	Uninterruptible Power Supply
VESDA	Very Early Smoke Detection Apparatus

1. Program Information

Country Name	Pakistan
USAID Contract Number	AID-391-TO-12-00002
Program Name	Energy Policy Program (EPP)
Current Program Phase	Select the program phase in which the Procurement resides: ☐ Startup ☒ Implementation ☐ Closedown
Program Start Date	February 2012
Program End Date	October 15, 2015
Award Type(s)	Select the type(s) of award(s) used for this Project: ☒ Contract ☐ Grant ☐ Cooperative Agreement ☐ Fixed Amount Reimbursement (FAR) ☐ Performance Disbursement
Contracting Officer (CO)/ Agreement Officer (AO)	Joseph T. Mc Gee (CO, USAID/Pakistan),
Contracting Officer's Representative (COR)/ Agreement Officer's Representative (AOR)	Saeed Anwar (COR, USAID/Pakistan)
Review Requester Name	Jimmy R. Hicks – Chief of Party
Implementing Partner	Not applicable
Points of Contact for Additional Information/Questions	M. Asad Sardar, Sr. Procurement Specialist, asad@ep-ep.com.pk

2. Project Information

Project/Activity Name	ERP Implementation at National Transmission and Desptach Company (NTDCL).
Project/Activity Start Date	February 2015
Project/Activity End Date	October 2015
Project/Activity Description	**Please refer to Section 5 of the document.**
Project/Activity Cost	3,989,937 U.S. dollars.

3. Procurement Information

Procurement Name	ERP Implementation Project for NTDCL
Expected Delivery Date	September 2015
Procurement Description	Not applicable
Related Procurements	Not applicable
Estimated IT Cost	Click here to enter the total projected cost in U.S. dollars for the IT components proposed for this Review Request. Costs for previous procurements may be detailed in the Related Procurements section.
Type of Review Required	Select the type of review required: ☐ Project Design ☐ Pre-Solicitation ☐ Proposal Technical ☐ Standard Technical ☐ Annual Technical Proposal Technical ☐ Close-out Technical ☐ Extensive Technical

4. Technical Review Areas

a. Systems Engineering

Personnel Roles	**Please refer to Section 13.1 "Staffing".**
System Engineering Lifecycle Activities	**Please refer to Section 11.3 "Implementation Plan" and Section 10 "Maintenance and Support Plan".**
Technology	**Please refer to Section 12 "ERP Components and Specifications".**
Support Services, Training	**Please refer to Section 10 "Maintenance and Support Plan" and Section 13.2 "Training".**

b. Interoperability

Please refer to Section 11.1 "Interoperability and Integration"

c. Integration

Please refer to Section 11.1 "Interoperability and Integration"

Site/Logistics Information

Number of sites involved	42 + 1 Head Office
Total number of users	552

d. Capability

Please refer to Section 11.2 "Capability"

e. Cost-Effectiveness – This section assesses whether the proposed technology solution is economical in terms of the goods or services received for the money spent. The analysis examines the following: (1) cost comparison of alternative solutions, (2) competitive bids, and (3) price reasonableness.

Click here to explain the technology alternatives considered. Were opportunities for technology re-use available? Were emerging technologies, such as cloud services and open source software, considered? Were a competitive bidding process and an analysis conducted?

Ensure that the Bill of Materials document includes all hardware, software, services, and training components and that the total Bill of Materials price agrees with the Estimated IT Cost stated in the Procurement Information section above. For each component price, perform an electronic catalog price 'look-up' or similar type of comparison for the prices found. For each component price in the Bill of Material, specify the source, for example GSA, Internet, Manufacturer Price, or Vendor Quotation.

Click here to provide an explanation for all Bill of Materials component prices that exceed a 20 percent variance from common commercial pricing, e.g., GSA or Internet pricing.

If a competitive procurement is to be used, please provide the basis of the estimated costs presented in this review request. Include all factors considered, especially those that are unique to local vendors and/or a copy of the Vendor Quotes.

f. IT Security

Physical Security • Crime Prevention Through Environmental Design (CPTED) • Facility design • Fire safety • Electrical security • HVAC • Perimeter security: fences, gates, lighting • Physical access control: transponders, badges, swipe cards • Theft, denial, destruction • Intrusion detection: CCTV, alarms, guards, dogs	**Please refer to Section 14.1 "Physical Security".**
Access Control • Authentication methods (types 1, 2, and 3) • Authorization: DAC, RBAC, MAC • Accounting: logging, monitoring, auditing • Central, decentralized, and hybrid management • Single sign-on • Vulnerabilities: emanations, impersonation, rogue infrastructure, social engineering	**Please refer to Section 14.2 "Access Control".**
Cryptography • Privacy • Integrity • Nonrepudiation • Data encryption	**Please refer to Section 14.3 "Cryptography".**
Network Security • Antivirus protection • Firewalls • Network vulnerabilities • Wireless/WAN vulnerabilities	**Please refer to Section 14.4 "Network Security".**
Disaster Recovery Planning • System and data backups • Alternative sites • Continuity of operations planning (CONOPS)	**Please refer to Section 14.5 "Disaster Recovery Planning".**
Application Security • Change management- software upgrade and patch plans • System logs to prevent tampering • Password policies • Database security	**Please refer to Section 14.6 "Application Security".**

5. Description of the IT ERP Project

5.1 Organizational Brief

The National Transmission and Despatch Company Limited (NTDCL) is solely responsible for all the properties, rights, assets, operations, obligations and liabilities of 220 KV and 500 KV grid stations and transmission lines and networks in Pakistan.

NTDCL operates and maintains twelve 500 KV and thirty 220 KV grid stations, 5077 km of 500 KV transmission line, and 7359 km of 220 KV transmission line in Pakistan.

To carry out its responsibilities, NTDCL is charged with fulfilling the following four functions: System Operator, Transmission Network Operator, Transmission Network Operator, Contract Registrar and Power Exchange Administrator, and Central Power Purchasing Agency. These functions are briefly described below:

- **System Operator:** Provide secure, safe, and reliable operation, control, and dispatch of generation facilities;
- **Transmission Network Operator:** Ensure operation and maintenance, planning, design, and expansion of the 500 kV and 220 kV transmission network;
- **Contract Registrar and Power Exchange Administrator (CRPEA):** Record and monitor contracts relating to bilateral trading system;
- **Central Power Purchasing Agency (CPPA):** Procure power from power generating companies (GENCOs), hydel, and independent power producers (IPPs) on behalf of Distribution Companies (DISCOs), for delivery through 500 kV, 220 kV, and 132kV network

5.2 Project Description

To provide a consolidated, real-time view of all core business processes, based on standard industrial best practices, an Enterprise Resource Planning (ERP) system needs to be implemented at NTDCL.

ERP systems are used to track business resources, such as people, finance, raw materials, finished goods, inventory, sales, etc. They also help to provide higher management with real-time information for correct and timely decision making based on the current status of business commitments and facilitates.

The applications that make up the ERP system, share data across various departments (e.g., procurement, sales, stores, accounting, etc.) and facilitate a unified and concurrent information flow between all business entities.

The current project is designed to implement an ERP system and its required infrastructure at NTDCL based on the selected implementation, operations, and support options recommended by the NTDCL Board and Managing Director.

6. Goals and Objectives of the IT Component

To achieve meaningful organizational reforms, it is necessary for an organization to utilize modern and state-of-the-art information and communication technologies. In the past, this area has remained unattended at the NTDCL as there are only a few business functions that are supported by information technology (IT) applications, and these were developed in-house by internal IT teams. However, these applications lack support, integration, centralized and timely information access, and incorporation of industrial best practices. Such applications have resulted in confined, unmatched, and dispersed information that ultimately creates isolated "silos" of information that are inconsistent even within the departments of NTDCL.

Following are the main goals and objectives associated with the ERP project:

- Improved business visibility
- Concurrent, real-time and centralized information base
- Improved efficiency of the overall organization
- Reduced inventory costs
- Increased profits

7. Summary of the IT Needs Assessment

NTDCL's operations are dispersed over a vast geographical area, making it difficult to monitor business activities with a lack of information integration between its different departments. All these departments are operating in localized environments with their own independent systems. There is a lack of integration and standardization across NTDCL's operations with no centralized application infrastructure available. It is critical for NTDCL to create a homogeneous environment across its entire operational areas. The discrepancy between NTDCL's current conditions and desired goals is identified by the following general elements.

General Elements	Current Conditions	Desired Goals
Functional Silos and Information Hoarding	NTDCL's departments appear to be isolated with resulting limits of coordination whereby departments struggle to share real-time data	Eliminate functional silos and build more inter- and intra-departmental cooperation resulting in forming a coherent view of data
Data Duplication and Inconsistency	Redundancies of effort, such as employees entering the same data in more than one system	Minimize data duplication through centralized storage of data
Manual Tasks	An overabundance of manual tasks that can be automated	Dramatic reduction in people-dependent processes and manual intervention. Need of system based solution rather than people-driven environment.
Transparency and Real-Time Visibility of End-to-End Business Data	No mechanism is available to monitor real-time end-to-end business data and thus not allowing insight into key performance indicators	Real-time visibility of end-to-end business data key for improved decision making

The discrepancy between NTDCL's current conditions and desired goals is also identified by the following functional elements.

Functional Areas	Current Conditions	Desired Goals
Meter Data Management	Currently, no standard solution is available for meter administration and operations	Support for scheduling and preparation of meter readings, meter-reading result entry, plausibility checks for meter-reading results, and comprehensive monitoring of meter-reading results is desired
Energy Purchase, Sale, and Distribution	Currently, no end-to-end real time standard solution is available to manage and compare energy portfolios, energy data management, and energy portfolio management	Support for energy forecasting and demand planning, energy procurement, and energy selling is desired
Financial Management	Currently, General Ledger application built in Java JSP and MYSQL is available that lacks integration with other functional areas of NTDCL	Support is required to address critical financial functions such as core accounting, financial and management accounting, receivables management, working capital management, performance management, and regulatory compliance

Functional Areas	Current Conditions	Desired Goals
Procurement/ Inventory/Warehouse Management	Currently, no standard solution is available for procurement and material management	Support is needed for end-to-end operational processes in all areas of procurement, inventory, and warehouse management
Transmission and Despatch Projects Management	Currently, monitoring of projects is done via PHP and MYSQL applications that don't get real-time accurate data for projects and resources planning and execution	Support for strategic portfolio management, project planning, resource and time management, project execution, and project accounting is desired. Visibility to the asset management, connecting equipment data and business information across the organization and enable comprehensive core maintenance strategies, including corrective, repetitive and preventive maintenance along with inventory data validation, spare parts matching, warranty-parts separation, and parts-handling automation is also desired.

8. Relevant Business and Functional Requirements

NTDCL is responsible for several critical functions relating to the current electricity market in the country; in order to fulfill them successfully and effectively, following four modules are suggested to be implemented through ERP system:

- Meter data and energy management
- Financial management
- Procurement and Inventory management
- Project Management

8.1 Meter Data and Energy Management

CPPA requires maintaining the real-time meter data for energy purchases from the different sources throughout the country. Collection and management of energy-relevant data is required in a central energy data repository, from the different generating units under different contracts with hydels, GENCOs, and IPPs.

8.1.1 Meter Data Management

Meter-reading services will provide end-to-end support for automated meter management processes, to enable time-of-use–based services and optimized management of energy peak demands. This will ensure efficiency and accuracy of meter-reading data and related processes, which are key criteria for high quality electronic customer services.

8.1.2 Energy Data Management

The energy data management module will enable a central data repository for discrete and nondiscrete meter-reading values and will provide various types of interval data independent of the measurement unit. The application will support complex, formula-based calculations based on interval data. The energy data management system will have the functionality for metering and measuring load shapes, settling energy quantities, managing schedules, billing interval customers, and more, and it will meet the needs of energy companies both in deregulated and regulated energy markets. A central database will allow the storage of all types of time-series data and will enable the importing, monitoring, and validating of key data.

8.2 Financial Management

Financial and management accounting capabilities will help NTDCL to manage the following processes:

8.2.1 Financial Accounting

Company-wide control and integration of financial information is essential to strategic decision making. The financial module will help to centrally track financial accounting data within an international framework of multiple companies, currencies, and charts of accounts.

Key features and functions include:

- Fixed asset, accrual, bank, cash journal, inventory, and tax accounting
- General ledger
- Accounts receivable/accounts payable (AR/AP)

- Fast close functions
- Financial statements
- Parallel valuations
- Master data governance

8.2.2 Management Accounting

The management accounting module will provide the valuation and recording of financial data, not only for financial reporting but also as the basis for all cost- and revenue-related reporting. As a result, NTDCL's analysts and managers can work with the same basic data.

Key features and functions include:

- Contract, profit center, project, product cost, profitability, and cost-center accounting
- Investment management
- Revenue and cost planning
- Transfer pricing
- Master data governance

8.3 Procurement and Inventory Management

NTDCL will improve capital efficiency with better productivity in logistics, and it will reduce costs by lowering inventory levels and consolidating shipments through support of the following business activities:

- Inventory and warehouse management
- Record and track the quantity and value of all materials, perform physical inventory, and optimize all warehouse resources
- Plan, enter, and document warehouse-internal stock movements by managing goods receipts, goods issues, storage, picking and packing, physical stock transfers, and transfer postings
- Manage workload planning, wave picking and order consolidation, handling-unit management, cross-docking, and real-time monitoring of all activities
- Inbound and outbound logistics
- Facilitate the movement of incoming and outgoing physical goods, including logistics involving multiple manufacturers
- Support inbound processing with capabilities to monitor the receipt of goods, track external demand, handle advanced shipping notifications, and manage in-yard activities
- Operate outbound processes, including posting goods issues, monitoring delivery and distribution activities, and documenting proof of delivery
- Perform the complete procure-to-pay process, including requisitioning, purchase-order management, and invoice verification

8.4 Project Management

NTDCL will be able to plan, monitor and control, prioritize, and manage projects with the help of the project management module using a centralized and consolidated approach. Project and portfolio management support the following processes:

- Strategic portfolio management – Provide view of NTDCL's entire business as a portfolio of assets, resources, and project investments, so the organization has the information and tools to manage that portfolio for maximum return.
- Project planning – Set up project structures based on templates, define the project team, plan budgets, and schedule project tasks.

- Resource and time management – Plan the necessary quantitative and qualitative resource demand for a project, and staff project roles with suitable employees from the enterprise. Project team members can record their efforts on the project.
- Project execution – Monitor the details of both large and small projects, ensuring that projects are executed efficiently, on time, and within budget. Project team members can execute on a planned project with collaborative tasks and confirm their work.
- Project accounting – Plan, budget, and monitor the costs and revenues of a project. Key performance metrics on budgets, schedules, and staffing provide a centralized view of project performance and at-risk elements.

9. Mapping of Relevant Assistance Objectives

The ERP implementation project is consistent with EPP objectives, as captured in the United States Agency for International Development's (USAID) Results Framework Development Objective DO1: Increased Sustainable Energy Supplied to the Economy and Associated Intermediate Results, IR 1: Increased Energy Supply, and IR 2: Improved Energy Sector Governance.

NTDCL serves as the linchpin for all sector operations in the country, its operations directly impacting both suppliers (GENCOs) and demand from end-users (and implicitly DISCO operations). NTDCL has a *prima facie* duty to ensure that its business performance, technically and commercially is reliable, effective, efficient, and safe.

Improving NTDCL business operations through provision of new information and communication technology systems will help alleviate the current priority policy issues identified by USAID in the power sector, including: mounting circular debt; inefficient power sector operations and excessive sector energy losses; poor governance and management of public energy sector enterprises; insufficient supply of affordable electricity; and excessive peak demand in summer.

The ERP implementation project is also consistent with several of the recently stated policy-related priorities of the Ministry of Water and Power including: supply-side and demand-side management; load-shedding reduction; revenue optimization; and metering.

10. Maintenance and Support Plans

Although it is often ignored, maintenance and support is one of the most essential parts in any IT software implementation project. Maintenance and support will be the most important one as far as sustainability of the ERP project is concerned.

A great emphasis has been placed on this part of the project implementation. Under the contract, the vendor would be required to offer comprehensive one-year maintenance and support of the deployed software and hardware.

If required, NTDCL may extend the support period at its own cost in the subsequent years.

It is planned that during the implementation and one-year comprehensive support period after the implementation, NTDCL will acquire all the essential staff training and support necessary for the deployed ERP software, through a detailed capacity building plan. NTDCL will attain the necessary capabilities of supporting the ERP from their own in-house team.

Thus, one-year post-implementation support by the vendor is made mandatory at the time of contract. A 24 x 7 Helpdesk Support Services compliant with international standards would be provided to NTDCL by the implementation vendor.

Following are some of the essential elements considered for support and maintenance plans.

10.1 Support Level Targets

It is required that the vendor after implementation of the project would provide access to an online support desk to NTDCL. The support portal will be accessible from the international corporate website for NTDCL.

The following indicators will be monitored and are the key performance indicators for the support organization:

1. Initial Reaction Time
2. Response Time
3. Resolution Time
4. Satisfaction Surveys

The following table provides minimum response time based on request type categories.

Request Type	Initial Reaction Time	Resolution Time
Very High	30 minutes	2 hours
High	2 hours	4 hours
Medium	4 hours	1 day
Low	1 day	2 days

Definitions of the four request types are provided in the following:

- Very High – A problem or issue impacting a significant group of customers or any mission critical issue affecting a single customer. When a Priority 1 situation occurs, it is of vital importance that a clear understanding of the severity of the issue is there and that proper IT personnel are

contacted immediately so that the necessary resources can be applied to resolve the issue. In addition, the customer(s) must be kept informed as to the progress of the situation.
- High – Noncritical but significant issue affecting a single user or an issue that is degrading the performance and reliability of supported IT services; however, the services are still operational. Support issues that could escalate to Critical if not addressed quickly.
- Medium – Routine support requests that impact a single user or noncritical software or hardware issue.
- Low – A minor service issue or general inquiry.

10.2 Post Implementation Maintenance Management

The vendor should be able to provide primary implementation, up gradating, and version management through software tools, which will be used to design, implement, and keep NTDCL IT solutions up and running at peak performance around the clock. It should be based on IT service and application management strategy. It should be the platform that would help NTDCL make the most of maintenance services thus significantly lowering total cost of ownership and minimizing risks.

It should have an integrated content, and the gateway to ERP that NTDCL needs to implement, support, operate, and monitor ERP solution.

The key capabilities enabling this broad coverage include the following:

- Customizing synchronization
- Solution testing
- Helpdesk support
- Central system administration
- Solution monitoring

11. Primary Solution, Design Concept, and Implementation Plan

11.1 Interoperability and Integration

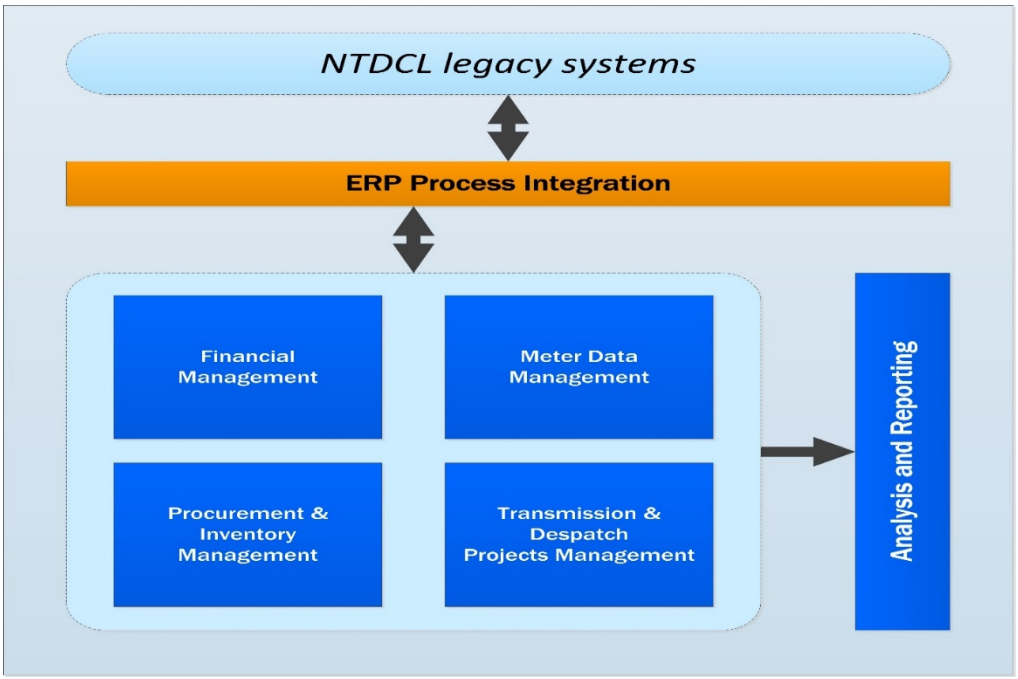
Through ERP system, businesses can achieve end-to-end process integration with pre-integrated solutions. It will support disparate applications and systems to work together to perform business processes from a combination of different systems.

The system will adhere to Services Oriented Architecture (SOA). The adaptable model will provide enterprises the flexibility to easily extend system functionality by leveraging existing IT investments that include different applications. Based on a Web services paradigm, the model will elevate IT to efficiently meet the needs of the enterprise and deliver a TCO that maps to an enterprise objectives.

The system will use Web Services as its primary method of data exchange. Data will be exchanged between application systems in the form of XML messages. XML provides a whole new set of standards and technical building blocks that provide a huge step forward in terms of interoperability. XML is not only used for Meta data, it is also the syntax for everything that is exchanged between heterogeneous systems. With XML, there will be a flexible basic format for transporting and transforming information. Message formats can be based on open XML standards for business documents, or can be custom designed. Using XML-based mapping, it is possible to transform messages to and from a common XML format or directly from inbound into outbound format. Additionally, APIs will allow communication using technologies such as Java, .NET, C++, Visual Basic, etc.

Simplified functional solution architecture is presented below:

Figure 1: Functional Solution Architecture Diagram



Simplified solution architecture (layers view) is shown as follows:

Figure 2: Solution Architecture (Layers View)

11.2 Capability

To be successful, NTDCL's lines of business need the right software to help them work together - aligning processes, gaining efficiencies, and sharing information across the organization. NTDCL needs to be able to make better decisions and collaborate both within and outside business network. With ERP system, NTDCL can enable itself to run better, while relying on a single platform, leading services, and integrated solutions, delivered on premise, on demand, and on device. With ERP system, NTDCL would gain better visibility, operate profitably, facilitate the management of procurement and logistics business processes and manage cost-intensive corporate functions. These issues are related to:

- Revenue and profitability analysis by various dimensions is time-consuming to gather, reconcile and distribute, increasing process support costs
- To operate profitably, and address shrinking business cycles and growing time pressures, organizations must find ways to reduce time to market.
- Operations: manage end-to-end procurement and logistics business processes for complete business cycles optimizing the flow of materials.
- Corporate Services: manage cost-intensive corporate functions and streamline administrative processes including real estate; enterprise assets; project portfolios; quality; and related services.

ERP integrated solutions delivered through an open platform and architecture, will assist NTDCL to:

- **Optimize** business operations, no matter where they're located or who they involve;

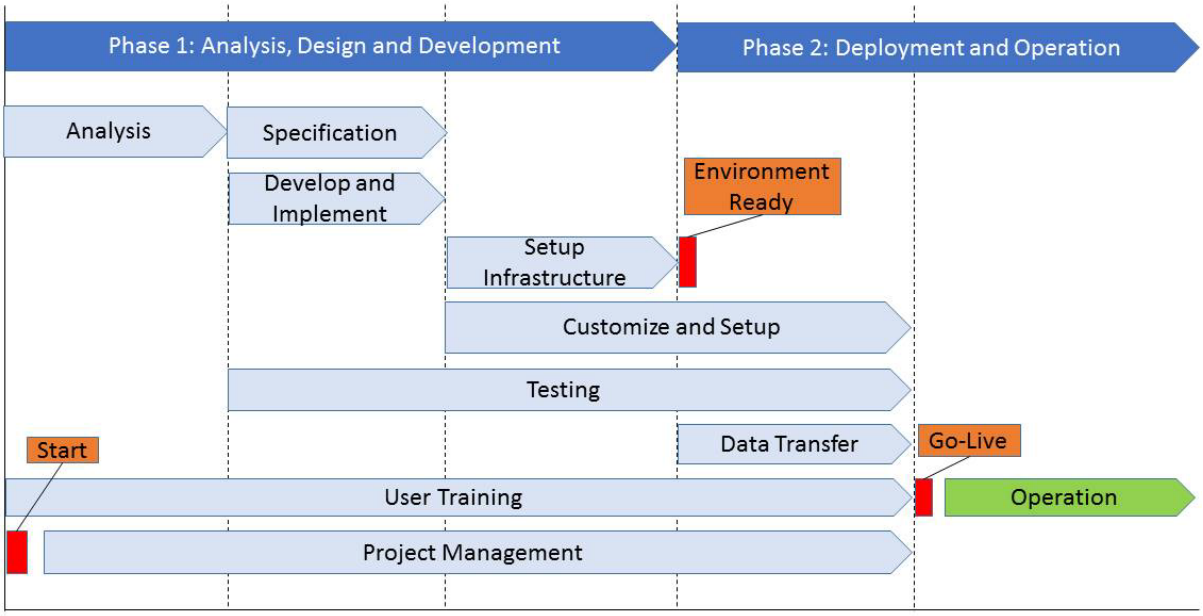
- **Collaborate** with partners, customers, suppliers – even competitors; and
- **Transform** business network into a competitive weapon.

ERP system deployed would be a robust solution with the ability to scale as more resources are added to the system. It will either scale horizontally (adding application servers) or vertically (using larger hardware). Application logic will be decoupled from database logic that will help in executing application programs on more than one physical server. The selected solution would leverage new technologies (for example, new hardware architectures) and provide information and flexibility to support future growth. ERP user licenses purchased will cover NTDCL's current and future requirements.

11.3 Implementation plan

ERP is designed to coordinate all the resources, information, and activities needed to complete business processes. The implementation plan is depicted in Figure 3.

Figure 3: Implementation Plan



A few detailed activities are mentioned below.

- Understanding business requirements, doing gap analysis, and developing new proposed solutions
- Develop complete architecture design of the Data Center
- Develop organizational change management strategy and execution plan
- Develop key-user Training Plan and training material along with execution of the Training Plan
- Develop and deliver Data Center
- Develop server, quality assurance for server, and production server installation and availability
- Develop and execute data strategy, data conversion and reconciliation, and validation of data
- Develop testing requirements and strategy along with developing business test scenarios
- Execute user-acceptance testing
- Develop End-User Training Plan and training material along with execution of the Training Plan
- Train system administration staff
- Develop and execute "Go-Live and Roll-out" strategy
- Complete production environment
- Develop project closure report
- Develop and execute on-site support plan

- Complete and share operational and functional standard operating procedure (SOP) documents for implemented modules

12. ERP Components and Specifications

This ERP project has three important higher level components that are necessary for a successful end-to-end system deployment in any organization.

- IT Data Center Facility
- ERP Implementation [Software and Hardware]
- Post-Implementation Maintenance and Support

12.1 IT Data Center Facility

The IT Data Center provides business continuity for companies using ERP systems to run their business operations. If any business system becomes unavailable, company operations are impaired or stopped completely. A reliable IT Data Center facility assures important business functions are always available through the ERP systems. Major components of a state-of-the-art Data Center include: aisle containment, in-row precision cooling solution, redundant power uninterruptible power supply (UPS), state of the art very early smoke detection apparatus (VESDA) fire detection and suppression and security and surveillance systems, and an ideal power usage efficiency (PUE) level.

This Data Center will be established at NTDCL Head office, WAPDA House, Lahore.

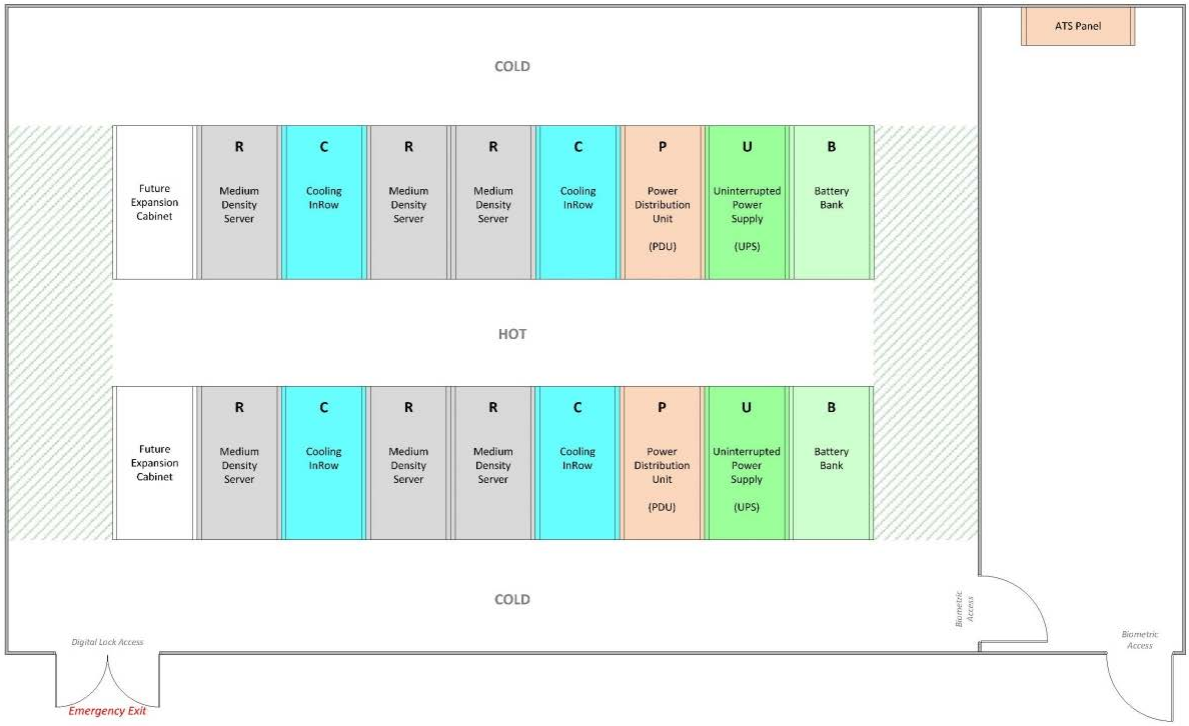
All electrical devices, such as main low voltage, ATS/AMF Panels, with output distribution will reside inside the power room.

The Data Center cooling devices will be installed inside the Data Center. The Data Center will be isolated in terms of fire and intrusion protection. The Data Center will be comprised of the following equipment:

- Aisle containment solution
- Data racks
- Cooling units and allied devices
- UPS, battery banks and allied devices
- Security and surveillance system
- Electrical/data cabling modules
- Cable railings and allied devices
- Cable termination accessories
- In-row air conditioning system

The proposed high level IT Data Center diagram is illustrated in Figure 4.

Figure 4: Data Center Block Diagram



12.2 ERP Implementation of Software and Backend Hardware

12.2.1 ERP Software

A Tier 1 commercial off-the-shelf ERP software will be deployed at NTDCL. Industrial best practices will be followed during implementation. However, ERP software will be customized as per unique business needs of NTDCL. All business reports pertaining to the modules implemented will be provisioned by the ERP and its related reporting software.

12.2.2 Complete Backend Hardware

The entire backend hardware, its operating system, and database will be provided by the implementation partner. This include production, test, and development servers, Storage Area Network (SAN), tape library and their backend network switch, etc. The server solution will be based on latest blade servers with expansion capabilities.

Complete backend infrastructure with one year full warranty, should support high availability, redundancy and auto failover hardware design. Production, test, and development server environments will be deployed. SAN along with the backend tape library will also be deployed in order to have proper backup and restoration of the entire ERP environment, in case of any disaster.

Further, the hardware procured should not be de-supported or declared end of life within next three years. For assurance a certificate will be required to be furnished from the original equipment manufacturer.

12.2.3 Operating Systems and Database

The latest Windows server operating system or any equivalent operating system will be adopted. Database will also be opted from commercial off-the-shelf Tier 1 product lines.

12.3 Post-Implementation Operations and Maintenance

Post-implementation Operations and Support are important services to be provided after initial implementation of the ERP. During this time, activities such as change management, application problem resolution through support tickets, alterations in workflows, performance optimizations, monitoring of critical processes, managing upgrades and updates, recursive End-User trainings etc., will be performed.

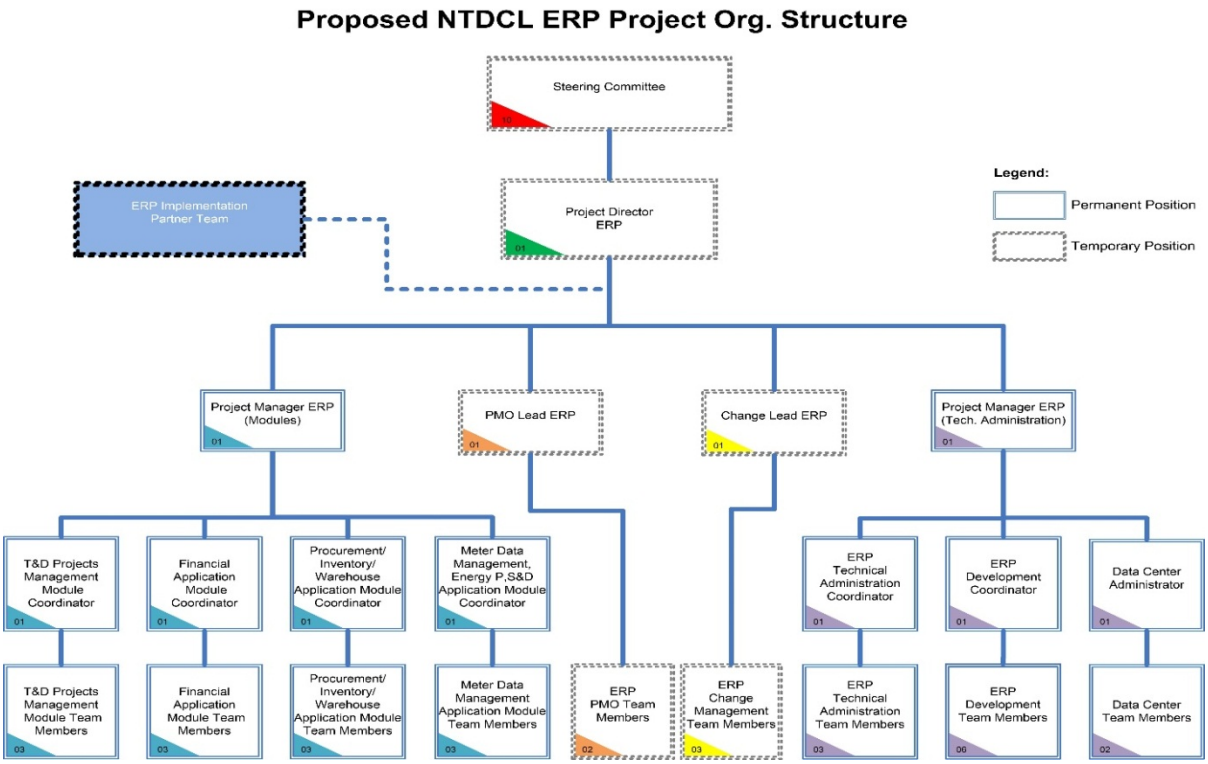
13. Staffing and Training Plans

ERP software is a comprehensive suite of integrated applications that streamlines and integrates core business processes. A project of this scope and complexity necessitates the formation of staffing and training plans.

13.1 Staffing

To ensure ERP system operability and success, NTDCL needs to have an ERP specific organizational structure. The proposed ERP Organizational Structure is given in Figure 5. An overview of the important roles and interactions of the ERP system follows. .

Figure 5: Proposed Organizational Structure



Project Steering Committee

The Project Steering Committee provides overall direction and management of the project and defines the constraints (e.g., time, cost, scope, risk, quality, and benefits) within which project needs to operate. Committee members are responsible for committing all required resources. While satisfying their individual interests, a cohesive overall direction must be agreed and communicated. Plans are approved and progress assessed by the Committee, which provides decisions on risks, issues, and quality control. Project Steering Committee members should see themselves as champions for the project. The complete ERP Project Steering Committee terms of reference are provided in **Annex I**.

Project Director

The Project Director represents the business viewpoint and keeps the project aligned with NTDCL strategic direction. The Project Director is ultimately accountable for ERP project and must provide direction, decision-making, and delegation. The Project Director is also responsible for committing resources, ensuring effective communication, and supporting Project Managers for ERP Modules and Project Manager ERP Technical Administration. Project Director ensures that ERP project job

positions and roles are filled by appropriate human resources with the right knowledge, skills, experience, commitment, authority, and accountability. One of the most key responsibility for Project Director is to lead and champion change at NTDCL along with promoting an environment of learning and growth within ERP project team.

Project Managers

Project Managers are responsible for day-to-day management within the constraints set out by the Project Steering Committee. Project Managers should ensure that results are delivered within completion dates, meet quality criteria, and within budget.

Delivery Team

The Delivery team is responsible for ensuring that results are delivered within the constraints and the work package given to them by Project Managers.

The staffing plan for NTDCL consists of having the appropriate mix of staff by hiring ERP resources as module coordinators, hiring outstanding new graduates from best universities of Pakistan as module team members, and promoting resources from within the company. The complete staffing plan is attached in **Annex II**.

13.2 Training

As part of change management strategy, ERP training is going to be a key element in ensuring business continuity. NTDCL users will receive training on new business processes and new system concepts as well as step-by-step instructions on performing their work within the new system.

System users will be divided into two groups, which are termed "Power/Super Users and End Users. "Power/Super Users are those with advanced knowledge in certain applications and with special permissions or roles. End Users will only use ERP system to obtain specific information or to enter day-to-day transactions.

The process of selecting Super/ Power Users and End Users has to be based on ability, initiative, interest, and, most importantly, aptitude rather than on a seniority basis. A "train-the-trainer (TTT) approach will be adopted whereby there will be an emphasis on training Super/Power Users, who will in turn train End Users.

The objective of ERP training is to ensure NTDCL staff is equipped with the skills and knowledge to perform their roles using the new ERP system and processes. The courses should be designed to enable End Users to:

1. Understand the "To-Be" processes, key concepts, and terminologies;
2. Understand his/her role within the processes;
3. Understand changes (system and process) that will affect how he/she does his/her job once ERP system goes live; and
4. Perform ERP transactions relevant to his/her role.

14. Information Technology Security

Information security is one of the most important factor that is most often neglected or overlooked.

Major areas where security loopholes have been identified across enterprises using software such as include the following:

- Physical security
- Access control
- Cryptography
- Network security
- Disaster recovery planning
- Application security

To address these loopholes, fully enforced IT security policies will be developed, enforced, and institutionalized within NTDCL.

14.1 Physical Security

Physical security systems for protected facilities are generally intended to limit and deter potential intruders and detect intrusions and monitor/record intruders (e.g. intruder alarms and CCTV systems); and trigger appropriate incident responses (e.g. by security guards and police).

In WAPDA house NTDCL head office, physical security for office and IT data center is both handled through round the clock monitoring of security guards and CCTVs. WAPDA security and surveillance division is responsible for site security. Any visitor visiting site is physically checked at the entrance gate by a security officer. Visitor is then directed visit security office at WAPDA house where security officer countercheck his\her visit by calling the person to whom the visitor intends to visit, after getting approval from employee he will then issue a temporary visit pass upon having a valid Computerized National Identification Card CNIC from the visitor. Before entering into the building that temporary pass is checked for its validation by designated security officer. After visit the visitor has to signoff from the NTDCL employee. Visitor will have to visit the security office again and will get its CNIC back after submitting the temporary pass to security office.

14.2 Access Control

Access control has to be established on two fronts.

1) IT Data Center Access Control

   It would be controlled through a RFID based card reader and a Biometric finger print reader. This control will be in place for Data Center and its Power room as well. All Entry and Exits will be logged through its internal storage for effective monitoring and traceability of events.

   Further, Data Center will be provided with built in motion sensors. The centralized monitoring software will monitor and record footage from camera.

2) ERP Software Access Control

   Role-Based Access Control (RBAC) model will be used by the ERP software, through this access to resources is based on the role assigned to a user. Administrator will assigns a user

to a role that has certain fixed right and privileges. As the user's association with the role, the user can access certain resources and perform specific tasks. ERP application would be able to save complete audit logs of the users and its executed operations. All this would be handled in a centralized repository. Users will be able to login through single sign on only. However, multiple logons would be allowed. For security reasons a warning message appears would appear if the same user would attempt to log on two or more than two times. The application would ask the user to either continue with logon and to end all other sessions, or log on without terminating all active sessions of same user, or terminate this login attempt. ERP servers will be secured through Antivirus application which will be updated regularly.

14.3 Cryptography

It is very important to keep corporate data safe. It is required that the ERP application would have required accreditation. The organization developing ERP application must maintain detailed evidence of how they protected the information, it should maintain complete record of subcontractors to which it outsources processing of data.

ERP application will ensure that it fully covers customers' accountability needs, it should provide with the system that audited and certified by an independent certificate authority. It should also be renewed regularly in the course of recurring ISO quality management audits.

14.4 Network Security

To protect the complete ERP environment and enterprise database from potential external threats, NTDCL will put its complete IT infrastructure behind its secured firewall. Further, all web-enabled services such as email, webservers, and FTP servers etc., will be put behind a dematerialized zone to provide an additional level of security.

14.5 Disaster Recovery Planning

The objective of a disaster recovery plan for Information Technology Systems is to ensure that NTDCL can respond and take necessary actions to a disaster or other emergency that affects information technology systems and minimize the effect on the business critical functions and operations of NTDCL. The advantage of this plan in place will be the effect of a disaster will be minimized and NTDCL will be able to either maintain or quickly resume mission critical functions.

A Disaster Recovery Plan for Information Technology Systems is a "Live Document". At the initial stage disaster recovery plan for software and applications is planned through the standard backup and restore procedure. Disaster recovery by implementing a separate parallel DR site will be done after full and complete implementation of ERP systems at NDCL during the next phase. NTDCL, ERP solution will be managed through the deployment of Storage Area Network (SAN) that will be backed up using tape libraries. In case of any disaster, a quick recovery can be done through the backup & restore process.

GFS (Grandfather-Father-Son) rotation model for backups will be implemented in NTDCL in order to plan a quick and complete recovery in case of any disaster.

Daily backups (Son) take place on a five day rotation.

Weekly backups (Father) take place on a five week rotation.

Monthly backups (Grandfather) of high availability servers occur the last calendar day of the month and are on a twelve month rotation.

Full back up includes all the source files. This method ignores the file's archive bit until after the file is backed up. At the end of the job, all files that have been backed up have their archive bits turned off. Only one full backup will be done once a week followed by differential and/or incremental.

Differential backups includes files that have been changed since the last Full (Clear Archive Bit) or Incremental backup. If the archive bit is on, the file is backed up, and archive bit is not turned off. The next time an incremental backup is done, this file is skipped (unless it is modified again).

Incremental backups includes only files that have changed since the last Full (Clear Archive Bit) or Incremental backup. The next time an incremental backup is done, this file is skipped (unless it is modified again).

Special backups may be made for longer retention periods during special situations such as system upgrades and major projects.

Any data that requires offsite storage must be requested by NTDCL. The tapes containing said data will be stored offsite for a period of one month.

14.6 Application Security

In ERP, security is defined by creating roles and permissions. Each user is assigned one or many roles that determine which transactions and data they are allowed to access and which activities they can perform (add, delete, view, etc.).

ERP application will have the following security features in order to have a fully secured application and its data. It includes but not limited to:

- To sign on, users are required to enter a user name and a password.
- Security is administered through an on-line administrative tool.
- Security is role based. A user may be assigned to one or multiple roles that tie back to specific application level and data level permissions.
- Users can have more than one security profile if needed.

15. Relevant System Costs

Item	Qty.	Unit	Description	Unit Price (PKR)	Total Amount (PKR)
1	1	Item	Data Center Hardware Cost	80,127,061.00	80,127,061.00
	1	Item	Data Center related cost (if any)	5,391,926.00	5,391,926.00
			A-Sub-Total - Data Ceter Costs		**85,518,987.00**
	SAP based ERP Application Licenses				
	1	Nos.	1.) SAP Developer User (1 Unit)	217,536.00	217,536.00
	51	Nos.	2.)SAP Professional User(1 Unit)	115,896.00	5,910,696.00
	100	Nos.	3.) SAP Project User (1 Unit)	32,736.00	3,273,600.00
	25	Nos.	4.) SAP Logistic User (1 Unit)	32,604.00	815,100.00
	1	Nos.	5.) SAP ERP Foundation Starter (1 Unit)	579,744.00	579,744.00
	161	Nos.	6.) SAP Linear Asset Management (1 Unit)	14,520.00	2,337,720.00
	35	Nos.	7.) SAP Energy Portfolio Management (3 Units)	3,804,768.00	133,166,880.00
	10	Nos.	8.)SAP Meter Administration and Operation for Emery Utilities (1000 Units)	25,344.00	253,440.00
	10	Nos.	9.) SAP Energy Data Management for Energy Utilities (1000 Units)	29,040.00	290,400.00
	2	Nos.	10.) SAP Net Weaver Process Orchestration (1 Unit)	2,898,852.00	5,797,704.00
	10	Nos.	11.) SAP Business Objects BI Suite (user) (1 Unit)	55,572.00	555,720.00
			B-Sub-Total - ERP Application Licenses		**153,198,540.00**
	1	Item	Back End Hardware Cost	Included in Implementation cost	
	1	Item	Implementation Cost	160,276,200.00	160,276,200.00
	1	Item	Training Cost	Included in Implementation cost	
			C-Sub-Total - Implementation fourth (04) Module		**160,276,200.00**
			Total Evaluated Price (PKR) - (A + B + C)		**398,993,727.00**

16. Measurable Success Factors

By using ERP applications, NTDCL will build integration into every level of business and unify diverse and hard-to-monitor processes and provide the organizational coherence that will enable NTDCL to continue offering efficient transmission services.

Following are the expected benefits of ERP system:

- **SF1:** 80% increase in different business process integration
- **SF2:** 50% improvement in obtaining information/statistics and reports from remote sites
- **SF3:** 30% improvement in effective inventory management
- **SF4:** 5% increase is better project delivery due to better visibility in projects
- **SF5:** 10% improvement in decision making and planning
- **SF6:** 50% improvement in employee broadening business learning
- **SF7:** 5% better cash flows due to improved financial visibility
- **SF8:** 80% improvement in IT Application security

Key: **SF#** Success Factor number

ANNEXES

Annex I: ERP Project Steering Committee Terms of Reference

Background

Enterprise Resource Planning (ERP) software is a comprehensive suite of integrated applications specific to the utility industry that streamlines and integrates core business processes. NTDCL has requested Advanced Engineering Associates International (AEAI) to coordinate and fund the deployment of ERP software. A project of this scope and complexity necessitates the formation of a Project Steering Committee (PSC) to ensure proper implementation and governance. The PSC will provide overall direction and management of the ERP Implementation Project, and will oversee areas that include but are not limited to, time, cost, scope, risk, quality, and benefits.

Role of the Project Steering Committee

The PSC will:

- Ensure the efficient use of resources
- Ensure that the scope aligns with the requirements
- Provide guidance and support in resolving business-related issues
- Approve or reject modifications that may have a detrimental impact on the schedule and budget
- Ensure that the scope remains focused, even as and when change orders are required
- Ensure milestones are met per the agreed-upon scope
- Exercise authority to ensure anticipated outcomes are achieved
- Review and approve the interim and final deliverables

Responsibilities of the Project Steering Committee Chair

NTDCL Board Member and AEAI's Chief of Party will serve as Co-Chairs of the PSC.

If AEAI's Chief of Party is unable to attend a meeting, AEAI's Lead ERP Advisor will act as Co-Chair in his absence.

If the NTDCL Board Member is unable to attend a meeting, he will designate another NTDCL Board Member to act as Co-Chair in his absence.

The responsibilities of the Steering Committee Co-Chairs include:

- Ensure that meeting agendas are clear, and address project progress, issues and risks, and decisions that require committee action
- Ensure that meeting agendas and supporting materials are shared with PSC members at least one day before meetings are scheduled to take place
- Ensure that the purpose of each meeting is clear to PSC members
- Clarify and summarize issues
- Submit motions for votes on decisions
- Ensure meetings stay on schedule
- Encourage broad participation from other members
- Ensure each meeting ends with a summary of decisions taken and assignments issued
- Encourage full attendance of all PSC members
- Ensure that meeting minutes are distributed to PSC members one day following scheduled meetings

Responsibilities of Steering Committee Members

Individual Steering Committee members have the following responsibilities:

- Understand the goals, objectives, and desired outcomes of the project
- Understand and represent the interests of the project to all stakeholders
- Take a genuine interest in the project's outcomes and overall success
- Actively debate issues brought before the PSC, and publically support all PSC decisions
- Act on opportunities to communicate positively about the project
- Actively participate in meetings, and review meeting minutes and other Steering Committee documents
- Support open discussion and debate, and encourage fellow Steering Committee Members to lend their opinions

General

Members

The table below identifies the Members of the Steering Committee.

Designation\Organization	Project Steering Committee Title	Organization
NTDCL Board Member [Mohsin M. Syed]	Co-Chair	NTDCL Board
AEAI Chief of Party [Jim Roland Hicks]	Co-Chair	AEAI
AEAI ERP Lead Advisor [Syed Shams Uddin Ahmad]	Member	AEAI
NTDCL Board Member [Shah Jahan Mirza]	Member	NTDCL Board
MD NTDCL [Tahir Mahmood]	Member	NTDCL
Finance Director [Waseem Saadat Shaikh]	Member	NTDCL
ERP Project Director [TBD]	Member	NTDCL
ERP Project Manager (Modules) [TBD]	Member	NTDCL
ERP Project Manager (Tech. Administration) [TBD]	Member	NTDCL
ERP PMO Lead [TBD]	Member	NTDCL
Project Director [TBD]	Member	ERP Vendor

Quorum

A minimum number of eight Steering Committee Members are required for decision-making purposes. This quorum must also include the PSC Co-Chairs, one member from AEAI's Advisory Team, either NTDCL's Board Member or Finance Director NTDCL, Managing Director NTDCL, ERP Project Director NTDCL, ERP PMO, and ERP Project Director Vendor.

Decision Making Process

A majority of PSC Members must approve decisions.

Frequency of Meetings

PSC meetings will be held during the first week of each month. More frequent meetings can be held as deemed necessary by the Co-Chairs.

Agenda, Minutes, and Project Progress Presentation

The ERP PMO Lead will send an email to PSC Members one day in advance of Steering Committee meetings. This email will include the following:

- An Agenda that addresses:
  - Project Progress Status
  - Issues and Risks
  - Deliverable Signoffs and Payment Status
  - Decisions Required
  - Action Items
  - Miscellaneous Items
- Minutes from the previous meeting (template to be shared)
- Project Progress Presentation (to be made by ERP Project Managers [NTDCL and Vendor])
- Any other documents or information to be considered at the meeting
- ERP PMO Lead will prepare the minutes of meeting and will share them with PSC Members one day following each meeting

We hereby confirm and agree to these Terms of Reference between NTDCL and AEAI.

Signature: _____	Signature: _____
Name: _____	Name: _____
Co-Chair (NTDCL)	Co-Chair (AEAI)

Annex II: Detailed Staffing Plan

Job	Project Director ERP	OVERALL RESPONSIBILITY
Position	**Project Director ERP**	• Represents the business viewpoint and keeps the project aligned with NTDCL strategic direction • Ultimately accountable for ERP project, provide direction, decision-making and delegation • Responsible for committing resources, effective communication and supporting ERP Project Managers (Modules Project Manager and Technical Administration Project Manager) • Make sure that ERP project job positions and roles are filled by appropriate human resources with the right knowledge, skills, experience, commitment, authority, and accountability • Regularly report to Project Steering Committee with progress, status, and risks/issues information • Assess continuing project viability at key points such as authorize different stages or phases • Respond to external influences • Manage ERP vendor according to NTDCL's contract • Lead and champion change at NTDCL • Promote an environment of learning and growth within ERP project team • Ensure that the resulting business changes are supported and sustainable
Project	ERP	
Reports to	ERP Project Steering Committee	
Location	NTDCL (WAPDA House)	

PRINCIPAL ACCOUNTABILITIES and PERFORMANCE STANDARDS	
Critical Job Elements	**Performance Standards**
1. Business / Operating Results	
Ultimately responsible for successful implementation of ERP modules at NTDCL	• Successful Implementation and integration of all ERP modules • Ensuring all the deliverables according to their deadlines
Responsible for committing resources, effective communication and supporting ERP Project Managers (Modules Project Manager and Technical Administration Project Manager)	• Economical deployment and optimum utilization of all ERP resources • Extent of financial efficiency attained to contribute towards NTDCL's profitability

Responsibility to carry out an instrumental role in building relationship with ERP vendor	• Effective conformance to contract between ERP vendor and NTDCL – Honesty in exchanges of information – Integrity in dealings – Maintaining proper relationship with the vendor – Fairness (conflict of interest, procurement integrity)
Lead and champion change at NTDCL	• Effective liaison among NTDCL departments in institutionalizing change • Effective simultaneous focus on structures and systems and corporate culture
Mentor Proactive ERP PMO	Effectively mentor ERP PMO on the following: • Mobilizing/shaping ERP program • Active management of risks/milestones/benefits/costs/resources • Define/Own Project Methodology by implementing a set of tools and processes that are pragmatic and fit for purpose • Report consolidation and distribution and document management
ERP project job positions and roles are filled by appropriate human resource with the right knowledge, skills, experience, commitment, authority, and accountability	Consistent high performance to reach beyond assigned targets for ERP project
Coordinate with other departments' heads	Effectively address risks/issues, bottlenecks concerning different NTDCL departments

2. Customer Satisfaction	
Formulation of ERP implementation strategy together with the respective business department heads	All milestones of ERP project are achieved amicably

3. Employee Management	
• Integrate vendor's consultants with NTDCL ERP team • Prevent knowledge drain • Develop recognition programs that help employees' retention	• Ensure a smooth knowledge transfer when the consultants leave. Make sure that vendor's consultants and NTDCL ERP team work side-by-side throughout the implementation. • Needs to identify staff members that are critical but are high turnover risks early in the project • Set up events for employees to communicate and vent about the working environment

POSITION SPECIFICATIONS	
Education/ Qualification	**Experience**
• Bachelor's or Master's degree or equivalent in Engineering (Electrical, Power etc.), Computer Science, Information Technology, MIS, Project Management, or related field • Master's in Business Administration would be a plus	• (12+ years)[1] with knowledge and experience of leading and managing business processes of the Utility Industry. • ERP life-cycle management knowledge and experience would be highly regarded

Trainings (Preferred)	• Project Management • Oracle or SAP module specific would be a plus

			Skill Level*			
Competencies	Behavioral Skills and Personal Qualities	Leadership skills	**1**	**2**	**3**	**4**
		Strong interpersonal skills	**1**	**2**	**3**	**4**
		People management and delegation skills	**1**	**2**	**3**	**4**
		Problem solving and decision making skills	**1**	**2**	**3**	**4**

*	Skill Level is defined as	**1**	Basic	**3**	Very Good
		2	Good	**4**	Expert

Knowledge/ Abilities	• Knowledge of Business Processes of the Utility Industry • Ability to handle pressure situation • Exercise independent judgment • Strong stakeholder management • Strong verbal and written communication skills • Good presentations skills • Ability to motivate others • Self-motivated • Keen to develop and learn new skills • Keen to share knowledge with colleagues

Created by	Name	Signature	Date (dd / mm / yy)
Reviewed by	Name	Signature	Date (dd / mm / yy)
Approved by	Name	Signature	Date (dd / mm / yy)
		Next Review Due Date	/ /

[1] Exceptional cases are encouraged to apply and the minimum number of years of experience will be reconsidered.

Job	ERP Project Management	OVERALL RESPONSIBILITY
Position	**Project Manager ERP (Modules)**	• Performs day-to-day ERP project management activities • Has authority to run ERP project within Project Steering Committee approved constraints • Ensure that the project's products are delivered within the tolerances of time, cost, quality, scope, risk, and benefits • Responsible for ERP project producing a result capable of achieving the benefits defined by Project Steering Committee
Project	ERP	
Reports to	Project Director ERP	
Location	NTDCL (WAPDA House)	

PRINCIPAL ACCOUNTABILITIES and PERFORMANCE STANDARDS	
Critical Job Elements	**Performance Standards**
1. Business / Operating Results	
Define Scope and Formal Signoff	• Make sure that Business Blueprint documents of all ERP modules must have detailed requirements of users' business processes, "As is" and "To be" analysis. The documents must be completed within allocated time and duly approved by the business users. • Specification of new functionality and system enhancements must be adequately documented for future reference. Any changes, if required, must be updated in the Business Blueprint document before configuration activities are performed.
Develop, update, and implement Project Management Plans	• Develop and implement Schedule for Management Plan (Activities, Dependencies, Timelines, and Resources) and a Formal Signoff, • Develop and implement Communications Management Plan (what information project stakeholders will receive and when and how they will receive it), • Develop and implement Risks/Issues Management Plan, • Develop and implement Resource Management Plan, • Develop and implement Quality Management Plan, • Develop and implement other Project Management Plans as per need of the project

Direct and manage ERP project execution	• Make sure that modules' configuration activities must be in accordance with the Business Blueprint documents and completed within time allocated • Make sure that Testing must be properly conducted and documented, i.e., test script, data for testing, comparison of anticipated and actual results, and user acceptance / satisfaction for the business processes configured into the system. It must be completed within allocated time. • Make sure that effective training of all ERP modules is provided to the business users • Effectively manage project risks and issues by implementing Risks/Issues Management Plan • Also make sure that data verification and validation activities are performed according to the project plan
Distribute information	• Effectively execute Communication Management Plan
Manage stakeholders expectations	• Effectively manage expectations of project stakeholders
Monitor and Control Project Work	• Effectively monitor project activities to ensure quality assurance and quality control • Schedule technical and management reviews at least once a week and track progress carefully against the original plan
Perform Integrated Change Control	• Effectively document and manage change requests for all ERP modules which includes devising mechanism for approval and rejection of change requests
Close Project or Phase and a Formal Signoff	• Make sure that all handover and acceptance activities are effectively carried out

2. Customer Satisfaction	
Capacity to meet duties/responsibilities assigned by ERP Project Director/ERP Project Steering Committee from time to time in view of ERP project's successful implementation at NTDCL	ERP Project Manager will be required to keep track of activities by documenting the user issues and their resolutions to ensure that ERP modules run smoothly

3. Employee Management	
• Integrate vendor's consultants with NTDCL ERP team • Prevent knowledge drain • Develop recognition programs that help employees' retention	• Ensure a smooth knowledge transfer when the consultants leave. Make sure that vendor's consultants and NTDCL ERP team worked side-by-side throughout the implementation. • Identify staff members that are critical but are high turnover risks early in the project • Set up events for employees to communicate and vent about the working environment

POSITION SPECIFICATIONS	
Education/ Qualification	**Experience**
• Bachelor's or Master's degree or equivalent in Computer Science, Information Technology, Engineering, MIS, Project Management or related field • Master's in Business Administration would be a plus	• (10+ years)[2] leading and executing ERP projects with at least two full life-cycle implementations • Past experience of successful delivery of ERP projects in the Public Sector would be a plus

Trainings (Preferred)	• Oracle or SAP module specific certification • PMI-PMP/ACP, PRINCE2

			Skill Level*			
Competencies	Behavioral Skills and Personal Qualities	Leadership skills	**1**	**2**	**3**	**4**
		Strong interpersonal skills	**1**	**2**	**3**	**4**
		People management and delegation skills	**1**	**2**	**3**	**4**
		Problem solving and decision making skills	**1**	**2**	**3**	**4**

*	Skill Level is defined as	**1**	Basic	**3**	Very Good
		2	Good	**4**	Expert

Knowledge/ Abilities	• A comprehensive Oracle or SAP background across a variety of modules • Database, Front end, System Analysis knowledge • Strong stakeholder management • Strong verbal and written communication skills • Good presentations skills • Ability to motivate others • Self-motivated • Calm under pressure and can meet tight deadlines • Keen to develop and learn new skills • Keen to share knowledge with colleagues

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Approved by	Name	Signature	Date (dd / mm / yy)

[2] For Outstanding cases minimum number of years can be reconsidered.

Next Review Due Date	/ /

Job	ERP PMO	OVERALL RESPONSIBILITY
Position	PMO Lead ERP	The basic responsibility of ERP PMO Lead is to oversee the full project management life cycle and software development life cycle for the implementation of ERP modules at NTDCL.
Project	ERP	
Reports to	Project Director ERP	
Location	NTDCL (WAPDA House)	

PRINCIPAL ACCOUNTABILITIES and PERFORMANCE STANDARDS	
Critical Job Elements	Performance Standards
1. Business / Operating Results	
Supervising and leading the ERP project team to oversee the impacts and interdependencies amongst ERP modules and working to ensure initiatives meet the goals and objectives of the leadership	Ability to understand "the big picture" and to apply advanced knowledge of project management methodology, best practices, tools and processes
Establish and implement Issue and Change Management procedures	Train ERP team on the methodology of Issue and Change Management
Establish and implement methodology for getting project status updates from ERP Module Coordinators	Establish and implement methodology for getting project status updates from ERP Module Coordinators
Provide templates of the documents to be prepared such as project charter, scope document, and project plan, etc.	Contribute to the development of enhanced metrics to provide more insight to Leadership and to allow teams to self-correct in time to avoid project delays and to remain on budget
Training and mentoring of ERP team on project management methodologies	Effective Training of ERP team
Ensure monitoring and controlling of ERP modules' implementations so that to meet agreed scope, timeline, and budget	Effective monitoring and controlling of ERP modules' implementations
To keep track of Human Resources engaged in ERP project and manage resource conflicts	Effective management of human resource on ERP project
2. Customer Satisfaction	
Has expert experience in Project/Program Management and able to lead in the coaching and mentoring of ERP team to help them achieve individual expectations and deliverables	• Demonstrates the ability to adapt to and lead, change, and coach others in the acceptance and support of change
3. Employee Management	
Develop project management competency, management skills, and career planning of the team	• Successful completion of ERP project within the given timeframe, using assigned resources.

POSITION SPECIFICATIONS	
Education/ Qualification	**Experience**
• Master's degree or equivalent in business administration, public administration, information science, project management, engineering or related field	• Minimum 7 years of ERP project management experience

Trainings (Preferred)	• PMI PMP/ACP Certification or PRINCE2 • Six Sigma Green Belt • Primavera or MS Project

			Skill Level*			
Competencies	Behavioral Skills and Personal Qualities	Leadership skills	**1**	**2**	**3**	**4**
		Strong interpersonal skills	**1**	**2**	**3**	**4**
		People management and delegation skills	**1**	**2**	**3**	**4**
		Problem solving and decision making skills	**1**	**2**	**3**	**4**

*	Skill Level is defined as	**1**	Basic	**3**	Very Good
		2	Good	**4**	Expert

Knowledge/ Abilities	• Expert understanding of Project Management Body of Knowledge (PMBOK) Discipline (Integration, Scope, Time, Quality, Human Resources, Communications, Risk Management, Procurement) and understanding of Agile Methodology • Expert understanding of software development and infrastructure project lifecycles • Ability to effectively manage time, prioritize work, multi-task across many assignments • Experience with applying Lean or Six Sigma tools and techniques to process improvements • MS Office (especially MS Excel, PowerPoint, MS Project, MS Visio) • Oracle Primavera

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Approved by	Name	Signature	Date (dd / mm / yy)
		Next Review Due Date	/ /

Job	ERP Change Management	OVERALL RESPONSIBILITY
Position	**Change Lead ERP**	The basic responsibility of ERP Change Lead is to make human resources at NTDCL ready for change and conduct them to move to the new environment and map them to the new way of running business. ERP Change Lead needs to plan and implement people side of Change Management program.
Project	ERP	
Reports to	Project Director ERP	
Location	NTDCL (WAPDA House)	

PRINCIPAL ACCOUNTABILITIES and PERFORMANCE STANDARDS	
Critical Job Elements	**Performance Standards**
1. Business / Operating Results	
Develop and deploy change management methodologies and procedures to guide the ERP adoption process	• Create a vision to direct the change effort along with developing strategies for realizing that vision • Focus should be on changes in the attitude and behavior of NTDCL human resources from a task-oriented approach to process-oriented approach
Develop and implement change management, communications, training, and resistance management plans	• To develop a resource and responsibility authorization matrix • Clear definition of roles and responsibilities • Selection of Power Users and End Users based on ability, initiative, interest, and most importantly aptitude rather than on seniority basis • Change Management plan should focus on promoting resources from within NTDCL (preferably) • Develop well-structured Communication Plan that helps in communicating and coordinating across NTDCL departments • Training Plan should focus on a train-the-trainer approach • Continuously diagnosing gaps and analyzing feedback to manage resistance
Develop a role-based training curriculum and design training materials for Power Users and End Users to meet the project training needs	• Training manuals should cover end-to-end demonstration of the business processes • Training manuals should include integration processes as well
Design the scheduling of Power User and End User training	• Well-structured scheduling of training sessions • Proper evaluation mechanism should be in place for evaluating the training knowledge provided to Power Users and End Users
Design specific communication products, including proposing topics, determine appropriate medium and target audience, write drafts, finalize texts, coordinate approval and distribution	• Use every vehicle possible to communicate vision and strategies related to change • Arrange promotional activities to promote ERP modules across NTDCL departments • Rewards should be designed for outstanding Power Users and End Users

2. Employee Management	
Assemble a group with shared commitment and enough power to lead the change effort	• Institutionalize change practices in corporate culture

POSITION SPECIFICATIONS	
Education/ Qualification	**Experience**
• Master's degree or equivalent in business administration, public administration, information science, engineering or related field • Experience in Change Management and Organizational Development is desirable	• Minimum 8 years of total work experience and 4 years of relevant experience required

Trainings (Preferred)	• Organizational Change Management • Organizational Development • Project/Program/Portfolio Management • Agile Project Management • ERP Life Cycle Management

			Skill Level*			
Competencies	Behavioral Skills and Personal Qualities	Leadership skills	**1**	**2**	**3**	**4**
		Strong interpersonal skills	**1**	**2**	**3**	**4**
		People management and delegation skills	**1**	**2**	**3**	**4**
		Problem solving and decision making skills	**1**	**2**	**3**	**4**

*	Skill Level is defined as	**1**	Basic	**3**	Very Good
		2	Good	**4**	Expert

Knowledge/ Abilities	• Understand the process and activities related to the design, build, and implementation phases of an ERP project • Understand the various aspects of change management, including organizational development • Identify how to manage changes required to improve business processes • Develop and implement training curriculum and materials • Tailor language, tone, style, and format of communication to match the audience • Integrate knowledge with broader strategic, policy and operational objectives

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Job	ERP Project Management	OVERALL RESPONSIBILITY
Position	**Project Manager ERP (Technical Administration)**	• Performs day-to-day project management activities related to Data Center deployment, ERP Technical Administration and ERP Developments • Assure network and end-user equipment availability for all ERP NTDCL Go-Live and rollout sites • Has authority to complete activities within Project Steering Committee approved constraints • Ensure that the project's products are delivered within the threshold of time, cost, quality, scope, risk, and benefits • Responsible for ERP project producing a result capable of achieving the benefits defined by Project Steering Committee
Project	ERP	
Reports to	Project Director ERP	
Location	NTDCL (WAPDA House)	

PRINCIPAL ACCOUNTABILITIES and PERFORMANCE STANDARDS	
Critical Job Elements	Performance Standards
1. Business / Operating Results	
Define Scope and a Formal Signoff	**Data Center Deployment** • Define scope for Data Center deployment by documenting and signing off from the relevant stakeholders **ERP Technical Administration** • Define scope of ERP Technical Administration by documenting and signing off from the relevant stakeholders **ERP Developments** • Business Blueprint documents must have detailed requirements of users business processes, "As is" and "To be" analysis. The documents must be completed within allocated time and duly approved by the business users. • Specification of new functionality and system enhancements must be adequately documented for future reference. Any changes, if required, must be updated in the Business Blueprint document before configuration activities are performed.

Develop, update, and implement Project Management Plans	• Develop and implement the Management Plan Schedule for all 3 functions (Activities, Dependencies, Timelines and Resources) and a Formal Signoff • Develop and implement Risks and Issues, management Plan for all 3 functions • Develop Communications and Access Management Plan related to Data Center Deployment and ERP Technical Administration • Develop and implement Resource Management Plan for all 3 functions • Develop and implement other Project Management Plans as per need of the project
Direct and manage ERP project execution	• Make sure that all activities related to Data Center deployments are completed within the project constraints • Make sure that all activities related to ERP Technical Administration are completed within the project constraints • Make sure that all activities related to ERP Developments are completed within the project constraints
Distribute information	• Effectively execute Communication Management Plan
Manage stakeholders expectations	• Effectively manage expectations of project stakeholders related to 3 functions
Monitor and Control Project Work	• Effectively monitor project activities to ensure quality assurance and quality control • Schedule technical and management reviews at least once a week and track progress carefully against the original plan
Close Project or Phase and a Formal Signoff	• Make sure that all handover and acceptance activities are effectively carried out and signed off
Proactively identify requirements in order to improve efficiency and control by providing data and voice connectivity to the users at NTDCL ERP Go-Live and rollout sites	• Identify and evaluate opportunities Interaction with NTDCL telecom department and service providers regarding Internet connection relating issues for NTDCL ERP Go-Live and rollout sites
Plan and Design technical solutions for it data and voice network to the users at NTDCL ERP Go-Live and rollout sites	• Cost awareness and remaining within budget
Ensure LAN/WAN Network projects implemented under enterprise networking and Data Center are well integrated, upgraded, and enhanced according to business needs	• Completeness of activities within time and budget

Ensure development of IT Infrastructure	• Effective dedicated budget for IT Infrastructure (Software/Hardware/Services) • Complete end-user computer equipment (e.g., printers, scanners, notebooks, desktops, UPS, routers, switches, PDAs, LCD screens, etc.) for NTDCL headquarter and remote sites to be available on time and within budget as per plan

2. Customer Satisfaction	
Capacity to meet duties and responsibilities assigned by ERP Project Director and ERP Project Steering Committee from time to time in view of ERP project's successful implementation at NTDCL	• ERP Project Manager will be required to keep track of activities by documenting the user issues and their resolutions
Respond promptly to Management instructions for service and assistance	• Number of complaints unresolved at the end of reporting day
Coordinate and lead Technical Team members in the design, development, and implementation of the suitable network	• Design, development, and implementation of suitable network within ERP project plan for all NTDCL Go-Live and rollout sites

3. Employee Management	
• Integrate vendor's consultants with NTDCL ERP team • Prevent knowledge drain • Develop recognition programs that help employee retention	• Ensure a smooth knowledge transfer when the consultants leave. Make sure that vendor's consultants and NTDCL ERP team work side-by-side throughout the implementation. • Identify employees that are critical but are high turnover risks early in the project • Set up events for employees to communicate and vent about the working environment
Guide the Network Department Managers in operational activities to ensure compliance with departmental goals, objectives, and budget	• Assure all complaints are addressed timely in a timely manner

POSITION SPECIFICATIONS	
Education/ Qualification	**Experience**
• Bachelor's or Master's degree or equivalent in Computer Science, Information Technology, Software Engineering, MIS, Project Management, or related field • Master's in Business Administration would be a plus	• (10+ years)[3] • Past experience of successful delivery of IT projects in the Public Sector would be a plus

Trainings (Preferred)	• Network related trainings (such as wireless, routing and switching concepts etc.) • CCNA, CCNP • Thorough knowledge of Network Protocols • PMI-PMP/ACP, PRINCE2

[3] For Outstanding cases minimum number of years can be reconsidered.

			Skill Level*			
Competencies	Behavioral Skills and Personal Qualities	Leadership skills	**1**	**2**	**3**	**4**
		Strong interpersonal skills	**1**	**2**	**3**	**4**
		People management and delegation skills	**1**	**2**	**3**	**4**
		Problem solving and decision making skills	**1**	**2**	**3**	**4**

*	Skill Level is defined as				
		1	Basic	**3**	Very Good
		2	Good	**4**	Expert

Knowledge/ Abilities	Knowledge of network topologies and architecture Working knowledge of server and PC operating systems Ability to interface with technical and engineering personnel in order to discuss technical issues pertaining to problems, purchases, or technical specifications Working knowledge of routers and switches Strong stakeholder management Strong verbal and written communication skills Good presentations skills Ability to motivate others Self-motivated Calm under pressure and can meet tight deadlines Keen to develop and learn new skills Keen to share knowledge with colleagues

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Job	ERP Functional / Technical Coordinator	OVERALL RESPONSIBILITY
Position	**ERP Module Coordinator** • T&D Projects Management Module Coordinator • Financial Application Module Coordinator • Procurement/ Inventory/Warehouse Application Module Coordinator • Meter Data Management (Energy Purchase, Sales and Distribution) Application Module Coordinator	The primary responsibility of ERP Module Coordinator is to look after effective implementation/Developments as well as monitoring of issues and their resolutions. Also to ensure smooth and consistent delivery of services to internal customers while proactively identifying and proposing changes in policies and procedures to further streamline ERP services. In addition, he/she is responsible to provide ERP module specific training to business users. He/she is also responsible to ensure effective coordination between his/her module with other respective modules.
Project	ERP	
Reports to	ERP Project Manager (Modules)	
Location	NTDCL (WAPDA House)	

PRINCIPAL ACCOUNTABILITIES and PERFORMANCE STANDARDS	
Critical Job Elements	**Performance Standards**
1. Business / Operating Results	
Responsible for ERP modules implementation at NTDCL. • Responsible for developing Business Blueprint document • Finalize business process definition with process owner • Responsible for Managing efficient testing and training	• Business Blueprint document must have detail requirements of users, business processes, "As is" and "To be" analysis. The document must be completed within allocated time and duly approved by the user. • Configuration activities must be in accordance with the Business Blueprint document and completed within time allocated. • Testing must be properly conducted and documented, i.e., test script, data for testing, comparison of anticipated and actual results, and user acceptance and satisfaction for the business processes configured into the system. It must be completed within allocated time.
Maintain optimum level of ERP functional services to internal customers by ensuring Service Level Agreements and Key Performance Indicators are met.	Response time in delivering solutions to companywide IT related issues
Critically analyze problem sets and develop problem solving strategies	Extent of understanding latest technological developments
Coordinate with other Functional experts for Integration related issues.	Functional staffs are expected to provide support to each other for issues related to integration between modules in a professional and timely manner
Configure the system and validate the design. Obtain buy-in from both the business process owners and End Users. Also track errors for resolution.	Each business process should fulfil the business requirements
Plan, prioritize, and utilize resources effectively and economically in order to ensure consistent and quality services	Effective resource utilization

2. Customer Satisfaction	
Resolving routine user queries, troubleshooting, and providing timely support to ensure that their specific modules run smoothly.	Functional expert will be required to keep track of activities by documenting the user issues, their statuses, and their resolutions, and issuing logs for review to ERP Project Manager (where required). Routine issues must be resolved with 24 hours (depending upon the nature of problem)
Arrange ERP module specific training workshops for business End Users	Functional consultants are expected to develop ERP module specific training manuals and arrange training workshops for all relevant internal customers

2. Employee Management	
Management of day-to-day ERP module specific related activities	Follow-up and ensure conformity with compliance and other regulations

POSITION SPECIFICATIONS	
Education/ Qualification	**Experience**
• Bachelor's or Master's degree or equivalent in Computer Science, Information Technology, Software Engineering, MIS, Project Management, or related field • Master's in Business Administration would be a plus	• (5 years)[4] of relevant module specific experience

Trainings (Preferred)	• Oracle or SAP Training/ Certification • Database and Front end Trainings/Certification

			Skill Level*			
Competencies	Behavioral Skills and Personal Qualities	Leadership skills	**1**	**2**	**3**	**4**
		Strong interpersonal skills	**1**	**2**	**3**	**4**
		People management and delegation skills	**1**	**2**	**3**	**4**
		Problem solving and decision making skills	**1**	**2**	**3**	**4**

*	Skill Level is defined as	**1**	Basic	**3**	Very Good
		2	Good	**4**	Expert

Knowledge/ Abilities	• Database • Front end • System Analysis

[4] For Outstanding cases minimum number of years can be reconsidered.

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Job	ERP Technical Administration	OVERALL RESPONSIBILITY
Position	**ERP Technical Administration Coordinator**	To manage ERP technical administration functions
Project	ERP	
Reports to	Project Manager ERP (Technical Administration)	
Location	NTDCL (WAPDA House)	

PRINCIPAL ACCOUNTABILITIES and PERFORMANCE STANDARDS	
Critical Job Elements	**Performance Standards**
1. Business / Operating Results	
Installation and configuration management	• Upgrade ERP system as per the vendor recommendations and guidelines
Patching and upgrades Management	• Periodic patches and updates to meet requirements of system modification by a consultant and to enhance added functionality of ERP System • ERP System upgrades in switching from older version to new version
Users administration	• Creations of ERP users • Giving required authorizations to users
Backup and recovery management	• Assure backup taken according to the backup policy • Assure there is no data loss when recovery is required • No data loss when partial recovery required
Disaster recovery management	• Convert standby ERP system to production system • Rebuild ERP standby system from production system
Data migration	• Data import request in ERP system • Number of requests imported to fulfil End User requirements or to enhance current setup/added functionality
Performance tuning and optimization	• Frequently tuning of server performance in response of ERP related queries • Efficient optimization of hardware resources to increase response time of server to End Users.
System uptime	• Minimize production downtime during the client copy
ERP System migration	• No data loss when performing ERP system migration to new hardware, new ERP enhancement or change of OS platforms

2. Customer Satisfaction	
• Uninterrupted service to ERP Users • Respond promptly to ERP users complaints	• Smooth operation and availability of ERP System • Resolve approved complaints • Keep performance measurement, i.e., No. of complaints unresolved (due to waiting for approval / due to incomplete information from user end)

2. Employee Management	
Ensure that team members are fully familiar with latest technologies / advancement	• Perfectness and professionalism of team members in providing ERP services

POSITION SPECIFICATIONS	
Education/ Qualification	**Experience**
• Bachelor / Masters of Computer Sciences	• 5 - 8 years

Trainings (Preferred)	• Database Administrator Certification • ERP Systems Administration Certification • OS Linux / Unix Certification • SAN certifications

			Skill Level*			
Competencies	Behavioral Skills and Personal Qualities	Leadership skills	**1**	**2**	**3**	**4**
		Strong interpersonal skills	**1**	**2**	**3**	**4**
		People management and delegation skills	**1**	**2**	**3**	**4**
		Problem solving and decision making skills	**1**	**2**	**3**	**4**

*	Skill Level is defined as				
		1	Basic	**3**	Very Good
		2	Good	**4**	Expert

Knowledge/ Abilities	• Strong working knowledge of databases (Oracle / DB2 / SQL Server, etc.) • Ability to pick new technologies and grow personal skill set with new technologies • Superior analytical skills

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Job	ERP Technical Administration	OVERALL RESPONSIBILITY
Position	**ERP Development Coordinator**	The basic responsibility of ERP Developments Coordinator is to develop, maintain, and support software applications for ERP systems
Project	ERP	
Reports to	Project Manager ERP (Technical Administration)	
Location	NTDCL (WAPDA House)	

PRINCIPAL ACCOUNTABILITIES and PERFORMANCE STANDARDS	
Critical Job Elements	**Performance Standards**
1. Business / Operating Results	
Define, develop, test, analyze, and maintain software programs and applications	• System and software requirements analysis • System and software design • Implementation and software unit testing • Reports developments • Integration and testing • User acceptance testing • Addressing new/change requirements • Support during post-implementation
Actively participate in code/design reviews as well as brainstorming sessions	• Research and develop solutions within ERP environment according to defined business requirements from business experts • Apply technology standards and industry best practices
Develop program and system documentation	• Document requirements as per the industry best-practiced templates
Analyze and assist in resolving issues	• Fixes software errors in a timely and accurate fashion
Operate as an internal technical expert on developments in ERP environment	• Consult with users and software architects to build and develop solutions
2. Employee Management	
Assist and train developers to become internal technical experts	• Number of developers trained and retained as NTDCL valuable resources

POSITION SPECIFICATIONS	
Education/ Qualification	**Experience**
• Bachelor / Master's degree in Computer Science	• Minimum 8 years (overall) experience out of which minimum 4 years of managing off-the-shelf ERP experience and minimum 4 years of core software development experience

Trainings (Preferred)	• Software Development Life Cycle (SDLC) and its application • Programming language certification • OS / DB Certification

			Skill Level*			
Competencies	Behavioral Skills and Personal Qualities	Leadership skills	**1**	**2**	**3**	**4**
		Strong interpersonal skills	**1**	**2**	**3**	**4**
		People management and delegation skills	**1**	**2**	**3**	**4**
		Problem solving and decision making skills	**1**	**2**	**3**	**4**

*	Skill Level is defined as	**1**	Basic	**3**	Very Good
		2	Good	**4**	Expert

Knowledge/ Abilities	• In-depth understanding of SDLC and its application • Detail-oriented with strong organizational skills • Work well with minimal supervision, delivering results under pressure • Knowledge of multiple programming languages is a plus

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Job	IT Data Center	OVERALL RESPONSIBILITY
Position	**Data Center Administrator**	Overall responsibility of planning, management, control, and administration of IT Data Center.
Project	ERP	
Reports to	Project Manager ERP (Technical Administration)	
Location	NTDCL (WAPDA House)	

PRINCIPAL ACCOUNTABILITIES and PERFORMANCE STANDARDS	
Critical Job Elements	**Performance Standards**
1. Business / Operating Results	
Help in installation, testing, and commissioning of Data Center	• Make sure that deliverables offered by vendor are completed with their required accessories, fittings, and tool kits and all products' technical specifications are submitted with the technical proposal accompanied by their instruction manuals and Single Line Diagrams • Also make sure that the goods supplied under the contract are new, un-used, of the most recent or current models, and incorporate all the latest improvements in design and materials • Also make sure that the selected equipment hardware and software is not at end-of-life (as to the RFP) and end-of-support (as per RFP) for after final acceptance
Maintaining electrical infrastructure for Data Center	• Assure minimum unscheduled downtime
Maintaining efficient cooling environment of all equipment in Data Center	• Maintaining temperature as per Data Center operations and maintenance SOP
Maintaining physical and data security of Data Center	• Manage Access Control List • Proper maintenance of Biometric and other fire detection and suppression devices
Maintenance of UPS, Gen. sets , MPB, and ATS panels	• Assure timely maintenance by vendor.
Develop disaster recovery plan and business impact analysis	• RTO/RPO identification
Develop redundancy in Data Center infrastructure with respect to dual path , UPS, Genset , ATS panels, main breakers, industrial sockets, DB's, PDU's, AVR, etc.	• Assure there is no downtime in planned maintenance activities. Assure there is no single point of failure.
2. Customer Satisfaction	
IT Services, IT Network Operations Center, and Servers	Availability of servers, network equipment, critical applications and supporting services 24/7 in Data Center operation

3. Employee Management	
Co-ordination within department	Coordinate activities by scheduling work assignments, setting priorities, and distributing the work between subordinates Conduct inter-departmental meetings in order to discuss issues
Management of team work	To achieve overall / specific Departmental goals / tasks

POSITION SPECIFICATIONS	
Education/ Qualification	**Experience**
• Masters in Computer Engineering/Science	• Minimum 08 years related

Trainings (Preferred)	• Data Center Management and Operations Certification / Training • Disaster Recovery Planning and Execution

			Skill Level*			
Competencies	Behavioral Skills and Personal Qualities	Leadership skills	**1**	**2**	**3**	**4**
		Strong interpersonal skills	**1**	**2**	**3**	**4**
		People management and delegation skills	**1**	**2**	**3**	**4**
		Problem solving and decision making skills	**1**	**2**	**3**	**4**

*	Skill Level is defined as	**1**	Basic	**3**	Very Good
		2	Good	**4**	Expert

Knowledge/ Abilities	• Data Center Operations • 24/7 Support Services • Infrastructure/ design of data Center • Power/ NW/ High-end servers

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Job	ERP Functional / Technical Consultant	**OVERALL RESPONSIBILITY**
Position	**ERP Module Team Member**	The basic responsibility of ERP Module Team Member is to provide support for ERP implementation and issues. He/she is also responsible for providing ERP training to business users.
Project	ERP	
Reports to	Respective Module Coordinator	
Location	NTDCL (WAPDA House)	

PRINCIPAL ACCOUNTABILITIES and PERFORMANCE STANDARDS	
Critical Job Elements	**Performance Standards**
1. Business / Operating Results	
Responsible for ERP modules implementation at NTDCL. • Participate in the process of developing business blueprint document • Participate in ERP configuration activities • Preparation of functional and technical specifications • Go-live and technical support functions	• Business blueprint document must have detail requirements of users, business processes, "as is" and "to be" analysis. The document must be completed within allocated time and duly approved by the user. • Configuration activities must be in accordance with the business blueprint document and completed within time allocated. • Testing must be properly conducted and documented, i.e., test script, data for testing, comparison of anticipated and actual results, and user acceptance / satisfaction for the business processes configured into the system. It must be completed within allocated time.
Notify ERP Module Coordinator about the individual problem areas and suggest appropriate interventions for the purpose of maintaining a productive work environment in assigned domain	Track number of ERP module complaints resolved at the end of reporting day
Support ERP Module Coordinator in provisioning of related accurate data for ERP reporting requirements that may arise from time to time	Track number of ERP module assignments delivered on time
Configure ERP system and validate the design. Track errors for resolution.	Ability to manage expectations in a cross-functional team across the department
2. Customer Satisfaction	
Resolving routine user queries, troubleshooting, and providing timely support to ensure that the specific ERP module runs smoothly	Track number of user queries answered within time
Prepare / update ERP training manuals and execute ERP training sessions for End Users	Training manuals should be prepared and prepared Training sessions conducted
Respond promptly to ERP module-specific complaints and assistance	Should track number of complaints resolved
Delivery of accurate ERP module-specific reporting requirements	Track number of accurate reports delivered

POSITION SPECIFICATIONS	
Education/ Qualification	**Experience**
• University Graduate recognized by HEC • Engineering Graduate or Masters	• (1-3 year)[5]

Trainings (Preferred)	• ERP Training/ Certification

			Skill Level*			
Competencies	Behavioral Skills and Personal Qualities	Leadership skills	**1**	**2**	**3**	**4**
		Strong interpersonal skills	**1**	**2**	**3**	**4**
		People management and delegation skills	**1**	**2**	**3**	**4**
		Problem solving and decision making skills	**1**	**2**	**3**	**4**

*	Skill Level is defined as	**1**	Basic	**3**	Very Good
		2	Good	**4**	Expert

Knowledge/ Abilities	• Databases • Front end • System Analysis and design

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[5] Exceptional cases are encouraged to apply and the minimum number of years of experience will be reconsidered

Job	IT ERP PMO	OVERALL RESPONSIBILITY
Position	**ERP PMO Team Member**	The basic responsibility of ERP PMO Team Member is to assist in the development of the project management methods, systems, tools, and techniques in order to ensure continuous improvement of the department capabilities in project management.
Project	ERP	
Reports to	ERP PMO Lead	
Location	NTDCL (WAPDA House)	

PRINCIPAL ACCOUNTABILITIES and PERFORMANCE STANDARDS	
Critical Job Elements	**Performance Standards**
1. Business / Operating Results	
Assist the ERP PMO Lead in the development of the Project Development Plan in conjunction with all related and concerned ERP modules. The Project Development Plan should describe the overall key and major milestones of the project development phases	• Critical milestones are met in accordance with the Project Development Plan throughout the project development phases
Coordinate, expedite, and report all activities related to the project development phases	Coordinate, expedite, and report all activities based on: • Time (duration) • Resource utilization • Budget • Other related attributes
Assist the ERP PMO Lead for all periodical status meetings (weekly, biweekly, etc.)	• Make project status presentations based on feedback taken from all concerned stakeholders
Prepare the documentation of meeting minutes related to the specific project meetings and ensure circulating them to all related/concerned stakeholders	• Document and follow-ups on action items decided and written down in meeting minutes
Responsible for all communication coordination related to ERP PMO with all concerned functions	• All stakeholders to the project are on-board and a constant feedback mechanism is followed
Document lessons learned from ERP module specific implementations and archive them for future projects	• Feedback from all concerned stakeholders should be taken on lessons learned
2. Customer Satisfaction	
Assist ERP PMO Lead in training and mentoring of project team members on project management methodologies	• Prepare material and presentations on project management covering knowledge areas and process groups

POSITION SPECIFICATIONS	
Education/ Qualification	**Experience**
• University Graduate recognized by HEC • Engineering Graduate or Masters/Bachelors in Business Administration	• 2 years (Ideally) or newly graduated in case of outstanding candidates

Trainings (Preferred)	• PMI CAPM Certification • Primavera or MS Project

Competencies	Behavioral Skills and Personal Qualities		Skill Level*			
		Leadership skills	1	2	3	4
		Strong interpersonal skills	1	2	3	4
		People management and delegation skills	1	2	3	4
		Problem solving and decision making skills	1	2	3	4

*	Skill Level is defined as	**1**	Basic	**3**	Very Good
		2	Good	**4**	Expert

Knowledge/ Abilities	• Project Management knowledge • Ability to effectively monitor the development of several ERP modules simultaneously • Must be a professional of unquestionable integrity, credibility, and character • MS Office (especially MS Excel, Power Point, MS Project, MS Visio) • Oracle Primavera

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Job	ERP Change Management	OVERALL RESPONSIBILITY
Position	**ERP Change Management Team Member**	ERP Change Management Team Member is to assist ERP Change Lead to make human resources at NTDCL ready for change and conduct them to move to the new environment and map them to the new way of running business.
Project	ERP	
Reports to	ERP Change Lead	
Location	NTDCL (WAPDA House)	

PRINCIPAL ACCOUNTABILITIES and PERFORMANCE STANDARDS	
Critical Job Elements	**Performance Standards**
1. Business / Operating Results	
Assist Change Lead to develop and deploy change management methodologies and procedures to guide the ERP adoption process	• Assist Change Lead to implement strategies for realizing change vision • Focus should be on change in the attitudes and behaviors of NTDCL human resources from a task-oriented approach to process-oriented approach
Assist Change Lead in developing and implementing change management, communications, training, and resistance management plans	• Assist in developing Authorization Matrix • Assist in selection of Power Users and End Users based on ability, initiative, interest and most importantly aptitude rather than on seniority basis • Assist in developing well-structured Communication Plan that helps in communicating/coordinating across NTDCL departments • Assist in developing Training Plan • Assist Change Lead in continuously diagnosing gaps and analyzing feedback to manage resistance
Assist in developing a role-based training curriculum and design training materials for Power Users and End Users to meet the project training needs	• Assist in developing training manuals that cover end-to-end demonstration of the business processes and also include integration processes
Assist in designing the scheduling of Power-User and End-User training	• Assist in scheduling of training sessions • Assist in developing and implementing proper evaluation mechanism for evaluating the training knowledge provided to Power Users and End Users
Assist in designing specific communication products, including proposing topics, determine appropriate medium and target audience, write drafts, finalize texts, coordinate approval and distribution	• Use every vehicle possible to communicate change vision and strategies • Arrange promotional activities to promote ERP modules across NTDCL departments • Rewards should be designed for outstanding Power Users and End Users
2. Employee Management	
Assist Change Lead in assembling a group of employees across NTDCL departments with shared commitment and enough power to lead the change effort	• Assist in institutionalizing change practices in corporate culture

POSITION SPECIFICATIONS	
Education/ Qualification	**Experience**
• Master's degree or equivalent in business administration, public administration, human resources, information science, engineering, or related field • Experience in Change Management and Organizational Development is desirable	• Minimum 2 years

Trainings (Preferred)	• Organizational Change Management • Organizational Development • ERP Life Cycle Management

			Skill Level*			
Competencies	Behavioral Skills and Personal Qualities	Leadership skills	**1**	**2**	**3**	**4**
		Strong interpersonal skills	**1**	**2**	**3**	**4**
		People management and delegation skills	**1**	**2**	**3**	**4**
		Problem solving and decision making skills	**1**	**2**	**3**	**4**

*	Skill Level is defined as	**1**	Basic	**3**	Very Good
		2	Good	**4**	Expert

Knowledge/ Abilities	• Understand the process and activities related to the design, build, and implementation phases of an ERP project • Understand the various aspects of change management • Identify how to improve business processes • Develop and implement training curriculum and materials • Tailor language, tone, style, and format of communication to match the audience • Integrate knowledge with broader strategic, policy, and operational objectives

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Job	IT ERP Technical Administration	OVERALL RESPONSIBILITY
Position	**ERP Technical Administration Team Member**	To assist ERP Technical Administration Coordinator in operations and administration of all ERP servers
Project	ERP	
Reports to	ERP Technical Administration Coordinator	
Location	NTDCL (WAPDA House)	

PRINCIPAL ACCOUNTABILITIES and PERFORMANCE STANDARDS	
Critical Job Elements	**Performance Standards**
1. Business / Operating Results	
Installation and configuration of ERP System	• Install ERP System as per the vendor recommendations and guidelines
Application, DB, OS Patching, and upgrades	• Timely patches application and update of ERP System
System backup and restoration	• Backup taken according to the backup policy • Assure there will be no data loss when recovery required on complete failure •
Users administration	• ERP users definition • Give required authorizations to users
Data migration	• Handle data Import and export request in ERP System
Performance tuning and optimization	• Frequently tune server performance in response of ERP system • Assure there is efficient optimization of hardware resources to increase response time of server to end users
System uptime	• Assure no downtime production downtime during the client copy • Assure quality aspects while data migration
2. Customer Satisfaction	
• Uninterrupted service to ERP users • Respond promptly to ERP users complaints	• Smooth operation and availability of ERP System • Keep track of number of complaints resolved • Keep track of number of complaints unresolved (due to waiting of approval / due to incomplete information from user end)

POSITION SPECIFICATIONS	
Education/ Qualification	**Experience**
• Bachelor's Degree in computer science	• (2–3 years) experience of system administration

Trainings (Preferred)	• Operating system administration training / certification • Database administration training / certification • ERP Application Administration

Competencies	Behavioral Skills and Personal Qualities		Skill Level*			
		Leadership skills	**1**	**2**	**3**	**4**
		Strong interpersonal skills	**1**	**2**	**3**	**4**
		People management and delegation skills	**1**	**2**	**3**	**4**
		Problem solving and decision making skills	**1**	**2**	**3**	**4**

*	Skill Level is defined as	**1**	Basic	**3**	Very Good
		2	Good	**4**	Expert

Knowledge/ Abilities	• Good working knowledge of OS and database administration • Ability to pick new technologies and grow personal skill set with new technologies • Superior analytical and problem resolving skills

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Job	ERP Developments	OVERALL RESPONSIBILITY
Position	**ERP Development Team Member**	The basic responsibility of ERP Development Team Member is to develop, maintain, and support software applications for ERP systems under the guidance of ERP Development Coordinator
Project	ERP	
Reports to	ERP Developments Coordinator	
Location	NTDCL (WAPDA House)	

PRINCIPAL ACCOUNTABILITIES and PERFORMANCE STANDARDS	
Critical Job Elements	**Performance Standards**
1. Business / Operating Results	
Define, develop, test, analyze, and maintain software programs and applications	• System and software requirements analysis • System and software design • Implementation and software unit testing • Reports developments • Integration and testing • User acceptance testing • Addressing new/change requirements • Support during post-implementation
Actively participate in code/design reviews as well as brainstorming sessions	• Research and develop solutions within ERP environment according to defined business requirements from business experts • Apply technology standards and industry best practices
Develop program and system documentation	• Document requirements as per the industry best-practice templates
Analyze and assist in resolving issues	• Fixes software errors in a timely and accurate fashion
Strive to become an internal technical expert on developments in ERP environment	• Consult with users and software architects to build and develop solutions

POSITION SPECIFICATIONS	
Education/ Qualification	**Experience**
• Bachelors or Master's degree or equivalent in Computer Science, Software Engineering or related field	• Minimum 3 years of core programming experience

Trainings (Preferred)	• Certification / training of different software development platforms • Project Methodology/Agile Methodology

			Skill Level*			
Competencies	Behavioral Skills and Personal Qualities	Leadership skills	**1**	**2**	**3**	**4**
		Strong interpersonal skills	**1**	**2**	**3**	**4**
		People management and delegation skills	**1**	**2**	**3**	**4**
		Problem solving and decision making skills	**1**	**2**	**3**	**4**

*	Skill Level is defined as				
		1	Basic	**3**	Very Good
		2	Good	**4**	Expert

Knowledge/ Abilities	• Detail-oriented with strong organizational skills • Work well with minimal supervision, delivering results under pressure • Knowledge of multiple programming languages is a plus

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Job	IT Data Center	OVERALL RESPONSIBILITY
Position	**Data Center Team Member**	Help in installation, testing, and commissioning of Data Center at NTDCL. Once deployed, perform daily routine health checks of all Data Center equipment and monitor the physical environment of Data Centers and assure that all electrical and cooling equipment are running up to the optimal level
Project	ERP	
Reports to	IT Data Center Administrator	
Location	NTDCL (WAPDA House)	

PRINCIPAL ACCOUNTABILITIES and PERFORMANCE STANDARDS	
Critical Job Elements	**Performance Standards**
1. Business / Operating Results	
Proactive monitoring	• Monitor all parameters of UPS and other environmental factors of Data Center facility
Access control monitoring	• Update access control and its monitoring • log and monitor each activity that is done inside Data Center
Escalate environmental problems immediately to vendor team for remedial actions	• Monitor Data Center uptime as per standard tier 3 Data Centers
Abnormal shutdowns	• Assure abnormal shutdowns
Proactively monitor UPS / DB / breaker logs and solve HW problems with the help of vendor	• Assure a proactive monitoring of all system environment management system generated logs
2. Customer Satisfaction	
Participate in preparation of Business Continuity Plan	• Implement business continuity plan
Execution of underpinning contracts with vendor and assure that SLA targets are achieved	• Keep track of number of breaches of SLA per month
3. Employee Management	
Report Data Center issues immediately to vendor/technical team for remedial actions	• Keep track of number of problems reported per month that reduce downtime
Risk management	• Timely reporting of environmental risks to appropriate authorities

POSITION SPECIFICATIONS	
Education/ Qualification	**Experience**
• University Graduate preferably Engineer / IT, Telecom, Computer Science	• 1 year relevant

Training (Preferred)	• Data Center operational training • Occupational health and safety training • Basic power and cooling concepts

			Skill Level*			
Competencies	Behavioral Skills and Personal Qualities	Leadership skills	**1**	**2**	**3**	**4**
		Strong interpersonal skills	**1**	**2**	**3**	**4**
		People management and delegation skills	**1**	**2**	**3**	**4**
		Problem solving and decision making skills	**1**	**2**	**3**	**4**

*	Skill Level is defined as	**1**	Basic	**3**	Very Good
		2	Good	**4**	Expert

Knowledge/ Abilities	• Computer literacy OS and (MS Office) excellent

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www.ep-ep.com.pk
info@ep-ep.com.pk