



PALLI KARMA-SAHAYAK FOUNDATION (PKSF)

www.pksf.org.bd

Terms of Reference (ToR)

for

Data Architect

1.0 Background

Palli Karma-Sahayak Foundation (PKSF), an apex development organization founded by the Government of Bangladesh, is mandated for poverty alleviation through sustainable employment generation by providing appropriate financing, skill training, and other necessary services. As a second-tier organization, PKSF implements all programs and projects through more than 200 of its Partner Organizations (POs) across the country, extending diversified financial and non-financial services covering over 2 crore members using its and POs' digital network.

To strengthen data-driven planning and monitoring, PKSF is in the process of implementing a comprehensive **Decision Support System (DSS)**, an integrated systems platform. Through real-time dashboards, analytics, and reporting tools, the DSS will enhance evidence-based decision-making, transparency, accountability, and operational efficiency at all levels.

For the successful implementation of the DSS and to ensure smooth transition and ownership of the system at PKSF level after completion of work by the selected software firm, PKSF intends to engage a qualified professional in the position of **Data Architect**.

The incumbent will play a key role in designing, governing, optimizing, securing, and integrating the database architecture of the DSS, ensuring data consistency, integrity, availability, scalability, performance, and interoperability across DSS modules and PKSF/Partner Organization systems.

2.0 Position Title & Overview

- **Name of Position:** Data Architect (Decision Support System)
- **Duty Station:** PKSF Bhaban, Dhaka (with occasional field visits as required)
- **Engagement Type:** Contractual fulltime Engagement
- **Employment Duration:** The appointment will be made for 01 (one) year.
- **Age Limit:** Maximum 50 years on the last date of application
- **Years of Experience:** Minimum of **ten (10) years** of experience in enterprise data architecture, database administration (DBA), complex database design, data warehousing, and systems integration.
- **Consolidated Monthly Salary:** BDT 1,60,000/- (inclusive of all taxes as per Government rules) plus admissible benefits (annual increments, festival allowances, Bangla Noboborsho allowance, mobile allowance, group insurance) as per PKSF policies.



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3.0 Key Responsibilities and Tasks

The Data Architect will work under the Information Technology (IT) Department of PKSF and provide technical leadership across five main operational domains:

A. Enterprise Data Architecture & DSS Analytics System Design

- 1. Architecture Leadership:** Provide overall technical leadership for database architecture, data warehouse/lakehouse design, integration, performance optimization, security, and data governance for the Decision Support System (DSS).
- 2. Data Modeling for Analytics:** Design and validate enterprise conceptual, logical, and physical data models (Relational OLTP, Data Vault 2.0, and OLAP/Data Warehouse Star/Snowflake schemas) supporting real-time DSS dashboards, reporting, and predictive analytics.
- 3. Data Integration & Real-time Ingestion:** Oversee batch and real-time data ingestion pipelines (ETL/ELT, Change Data Capture [CDC], Kafka/RabbitMQ streams, APIs) connecting PO field databases, mobile applications, and legacy PKSF systems to the central DSS data repository.
- 4. Master Data Management (MDM):** Establish Master Data Management strategies to ensure single-source-of-truth accuracy for PO records, beneficiary profiles, microfinance portfolios, and project performance indicators.

B. Database Optimization, High Availability & Disaster Recovery

- 1. Performance Tuning & Profiling:** Monitor database health, query execution plans, indexing strategies, partition management, memory allocation, and connection pooling across PostgreSQL, Oracle, and Microsoft SQL Server environments.
- 2. High Availability (HA) & Disaster Recovery (DR):** Design, configure, and validate failover, multi-node clustering, active-passive/active-active replication, backup routines, and point-in-time recovery strategies ensuring 99.9%+ availability and zero data loss.
- 3. Capacity Planning & Scalability:** Conduct load testing, concurrency analysis, storage forecasting, and horizontal/vertical scaling design to handle multi-terabyte dataset growth across 200+ PO connections.

C. Vendor Oversight, Quality Assurance & Database DevOps

- 1. Software Firm Deliverable Review:** Oversee the contracted software development firm to review database schemas, stored procedures, execution plans, migration scripts, and architectural deliverables for adherence to industry best practices.

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2. **Database DevOps & Schema Version Control:** Enforce database migration versioning tools (e.g., Flyway, Liquibase, dbt) within automated Git-based CI/CD pipelines to ensure safe, repeatable schema deployments across staging and production environments.
3. **Infrastructure-as-Code (IaC):** Guide the deployment of database infrastructure using IaC tooling (e.g., Terraform, Ansible) in cloud, on-premise, or hybrid environments.

D. Data Governance, Security & Compliance

1. **Security Implementation:** Implement Role-Based Access Control (RBAC), Column/Row-Level Security, Transparent Data Encryption (TDE) at rest and in transit, data masking, and complete database auditing.
2. **Data Privacy & Compliance:** Ensure data architectures comply with PKSF security standards, GoB ICT policies, and national cybersecurity guidelines governing sensitive beneficiary financial data.
3. **Data Lineage & Metadata Management:** Establish automated data lineage tracking and centralized metadata catalogs (e.g., OpenMetadata, Apache Atlas) to trace data transformations from source systems to DSS dashboards.

E. Technical Documentation & Capacity Building

1. **Technical Artifacts:** Create and maintain comprehensive architecture documents, ER Diagrams, Data Dictionaries, Data Lineage Maps, Standard Operating Procedures (SOPs), and Backup/DR manuals.
2. **Internal Capacity Building:** Conduct technical workshops and mentoring for PKSF's internal IT staff to enable independent administration, monitoring, troubleshooting, and maintenance post-vendor handover.

Perform any other database and data architecture duties assigned by PKSF management.

4.0 Academic and Other Qualifications

1. **Degree Requirement:** Bachelor's degree in Computer Science / Computer Science & Engineering / Information Technology / Software Engineering / Business Information Systems or a related discipline from a recognized university.

or

Candidates with a Bachelor's degree in any other discipline will also be considered provided they possess substantial professional experience in desing data architecture and modeling field.

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2. **Academic Record:** Applicants must have at least **three First Divisions/Classes** or equivalent CGPA across their academic record. The stated academic requirement may be relaxed for applicants demonstrating exceptional professional expertise and a proven track record.
 - *Note:* Any Third Division/Class in any examination is **not acceptable**.
 - First Class will be determined based on the regular degree (considering the first four degrees only).
3. **Certifications (Preferred):** Professional certifications in database technologies, cloud platforms, or data management (e.g., *Oracle Certified Professional (OCP)*, *PostgreSQL Certified Engineer*, *AWS Certified Database - Specialty*, *Azure Database Administrator Associate*, or *TOGAF / DAMA-CDMP*).

5.0 Experience & Required Competencies

Mandatory Requirements:

- **Total Professional Experience:** Minimum of **ten (10) years** of experience in enterprise data architecture, database administration (DBA), complex database design, data warehousing, and systems integration.
- **Core RDBMS Expertise:** Proven hands-on experience designing, tuning, and administering enterprise-grade relational databases (**PostgreSQL, Oracle, and/or Microsoft SQL Server**).
- **Data Modeling:** Deep expertise in conceptual, logical, and physical data modeling techniques (Relational OLTP, Dimensional OLAP/Star-Snowflake, and Data Vault).

Preferred Qualifications & Technical Competencies:

1. **Verifiable Code & Architecture Portfolio / GitHub Presence:** Preference will be given to candidates who share a link to a public repository (**GitHub, GitLab**) or portfolio showcasing sample SQL schemas, data pipeline code (Python/SQL/dbt), IaC scripts (Terraform/Ansible), or data warehouse design artifacts.
2. **Data Warehousing & Analytics Platforms:** Proven experience in designing Data Warehouses, Data Marts, Data Lakes/Lakehouses, and OLAP cubes for business intelligence and executive Decision Support Systems (DSS).
3. **High Availability, Clustering & DR:** Practical track record in deploying multi-node database clusters, failover automation, replication topologies, and disaster recovery strategies.



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4. **ETL/ELT & Stream Ingestion Pipelines:** Hands-on experience with modern ETL/ELT tools, CDC engines (e.g., Debezium), API integrations, and event-driven data streaming (Apache Kafka, RabbitMQ).
5. **Database DevOps & Version Control:** Experience integrating database schema migration tools (Flyway, Liquibase, dbt) into CI/CD release workflows.
6. **Data Governance & Cybersecurity:** Deep knowledge of RBAC, data masking, TDE encryption, automated activity logging, data audit preparation, and local privacy laws.
7. **Metadata & Data Quality Frameworks:** Experience setting up automated data quality rules, data profiling scripts, and centralized data catalogs (OpenMetadata, Apache Atlas).
8. **Vendor Management & Mentorship:** Strong capabilities in reviewing vendor code/architectural artifacts, enforcing enterprise standards, and training technical staff.

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