

## Terms of Reference (ToR)

### Selection of a Consulting Firm for the development of Integrated Management Information System.

#### 1. Background

Bangladesh has made rapid social and economic progress in recent decades, reaching lower-middle income status by 2015. Gross domestic product (GDP) growth averaged close to 6 percent annually since 2000 and, according to official estimates, accelerated to over 8 percent in FY19. Strong labor market gains contributed to a sharp decline in poverty, with the national poverty rate falling from 48.9 to 24.3 percent between 2000 and 2016, while extreme poverty declined from 34.3 to 12.9 percent. Bangladesh's growth has been driven by manufacturing, most notably the readymade garment (RMG) sector. By creating several million waged jobs for women, employment outcomes improved sharply, with overall employment growing 2.4 percent annually between 2000 and 2016, female employment at almost twice that rate, and waged employment by 5.7 percent. The pace of poverty reduction slowed in recent years even as growth accelerated, particularly in urban areas. Similarly, the progress on shared prosperity slowed between 2010 and 2016 after a decade of improvements, with annual consumption growth of the bottom 40 percent trailing that of the overall population. This period of growth and poverty reduction was accompanied by rapid urbanization, and growing concentration of poverty in urban areas.

There are also challenges related to job quality and inclusion, which particularly impact low-income urban youth. Slow job creation has stunted transformation of the labor market, where informality and poor job quality remain the norm. Youth trained to be constrained by low educational attainment and miss out on opportunities to develop essential life skills. Self-employment and employment in microenterprises are a major source of jobs for youth, but many lack of knowledge and experience of managing a business, as well as facing limited access to capital. This limits their ability to become employed or restricts them to low-return economic activities.

Moreover, the COVID-19 pandemic brought about major disruptions to economic activity domestically, particularly affecting microenterprises. The urban poor – especially those in the informal sector – have been disproportionately affected by COVID-related shocks and lack social protection and labor market program coverage.

To address these challenges, the Government of Bangladesh, through the Palli Karma-Sahayak Foundation (PKSF), is implementing an economic inclusion program for low-income, less-educated urban youth, and for low-income micro entrepreneurs and self-employed in urban areas whose livelihoods have been impacted by COVID-19. The World Bank-supported Recovery and Advancement of Informal Sector Employment (RAISE) will provide financing towards the cost of the program, including technical assistance to facilitate implementation. PKSF intends to apply a portion of the financing to procure services of a consultant for the design, development, and service integration of the RAISE Management Information System (MIS).



## 2. Objective

The main objective of this assignment is to hire a qualified MIS/IT firm (Consultant hereafter) for the design, development, customization, commissioning, and implementation of the MIS to make it a scalable and integrated MIS Platform that facilitates end-to-end automation of the core PKSf business functions through a unified IT Platform. In this regard, the following objectives needs to achieve as the part of this project execution.

- Conduct a comprehensive Gap Analysis, Functional and System Requirements Study; Develop a detail Functional and System Requirement Study/Gap Analysis Document (SRSD) for review and approval
- Conduct a hardware and networking need assessment to develop assessment report on infrastructures review
- Develop a System Design Document (SDD) on approved SRSD that needs to be approved.
- Do design, coding and implement of the MIS Platform on agreed SRSD and SDD.
- Ensure MIS's interoperability with government line Ministries and Agencies to verify and share beneficiary information for tracking the records.
- Perform Data migration from existing to new platform; Conduct System installation, configuration on MIS hardware that procured (hardware procurement is not a part of this assignment).
- Conduct a System Security Assessment and ensure implementation of security tools; Conduct MIS user training for system administrators and staffs including implementing partners.
- Handover complete system to PKSf including full ownership of the source codes, system documents that obtains through Operational acceptance.
- Provide annual technical maintenance support up to 24 months.

## 3. Scope of work & Services

The scope of work under this assignment covers development, installation, and implementation of newly develop MIS platform for PKSf that also ensure RAISE implementation. The consultant is expected to perform the following key tasks under this assignment.

### A. Gap Analysis, Functional and System Requirement Study

The Consultant is expected to conduct a comprehensive Gap Analysis/System Requirement Study (SRS) of the following modules:

Modules	Sub-Modules	Current Status
Case Management	<ul style="list-style-type: none"><li>• Beneficiary Registration</li><li>• Training Enrollment</li><li>• Beneficiary Assessment</li><li>• Course Management</li><li>• Trainer Information</li><li>• Certificate Management</li><li>• Job Placement</li></ul>	New Development



<p>Financial Services Management</p>	<ul style="list-style-type: none"> <li>• ME Information</li> <li>• ME Financial</li> <li>• ME Performance</li> <li>• Demand driven financial product development system</li> <li>• Transaction/Payment interfacing System</li> <li>• Credit Scoring system (Micro entrepreneur)</li> <li>• Psychometric scoring and Profile management (Micro entrepreneur)</li> </ul>	<p>New Development</p>
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The approach behind Gap analysis would be key to understand the business processes and transform it into MIS functionality that will take above modules into considerations for its completeness and interoperability with other sub-systems (such as National Household Database, National ID Database and Payment Service Providers; among others); also do a detailed assessment to know how the proposed new business processes under RAISE project could effectively be mapped with MIS functionality. Such requirement analysis should perform for both functional and non-functional requirements that will collect for existing business process flows, although factors of potential future requirements and possibilities that needs to consider on MIS architecture for scaling on its future demands. Moreover, this activity should also evaluate its existing process gaps and potential overlaps. So that, it can estimate optimum measures to modernize the project implementations through use of this common MIS.

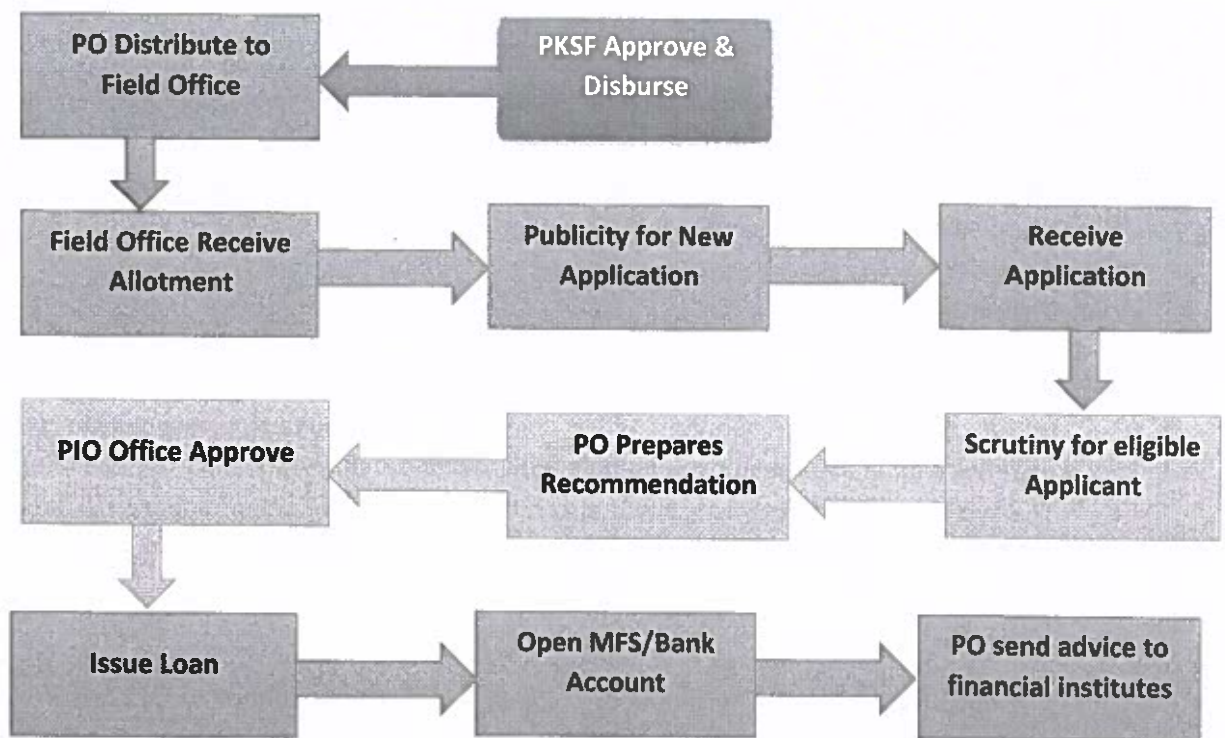


Fig: Operational Flow of PKSF Programs



For instance, the existing MIS covers some basic features on functionalities for selection, budgeting, grievance, program tracking, payment automation and service delivery mechanisms are slow to deliver their needs in robust authentication mechanisms. The overhaul procedures for this module are being considered to support for which needs to include the uses of ICT tools for beneficiary application, identification, selection, enrollment, certification, case management and benefit payment. Such an integrated system should allow a results-based monitoring and evaluation process to assess the job creation and poverty aviation impacts that support policymaking endeavors.

Likewise, the agency already has several unified and integrated platforms rather than having a central system within PKSF. It identifies that PKSF has integrated platform "PKSF Integrated Information System" which was designed and developed separately. Since the current MIS already have 3 core modules inbuilt – it makes sense that the MIS have functionality of PO information incorporation into the same system, so that PKSF ultimately gather all information in one unified platform. The existing data in the PIIS would have to migrate into new MIS. One of the priorities during this automation should have to evaluate existing processes and propose optimum solution structures for digitizing the process.

Similarly, other critical areas of the assessment would have to evaluate the capacity of existing hardware, network architectures and system related infrastructures within PKSF; needs to consider it on scale of transactions when the project start implement in field. The consultant is expected to do a detailed assessment of such infrastructures and other available options for hosting the MIS in secure and reliable environment that ensures high availability with auto synchronization between servers. During this period, the Consultant is expected to work closely with the Project Management Unit (PMU) to conduct Gap analysis/requirement study and arrange meetings, discussions with the counterparts as needed.

#### Outcome

The outcome of this activity should be a comprehensive and consolidated System Requirement Study/Gap Analysis Document through analysis of its existing and proposed process flows, gaps and process improvements. The Consultant must submit review documentations and submit the signed approval copy of this document as final.

#### **B. System Design**

As the SRS document is approved, the Consultant is expected to conduct the System Design of the MIS Platform into consideration. While doing so, the Consultant is expected to document the underlying database structure and reflect both backend architecture and front-end interface design. The System Design Document should also reflect the table definitions and overall database model of MIS that this document could use as future reference if needed.

#### Outcome:

The outcome of this activity should be a comprehensive document of System Design on approved SRSD. The Consultant must submit the review document for final approval by PKSF Approving Authority.

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### **C. MIS Development/Configuration and Prototyping**

The Consultant is expected to develop the system based on the agreed SRS and SDD using proposed technology framework. During this activity, the Consultant should follow agile development approach in which the system owner can track the progress that made in development period. The system should demonstrate to the counterparts in regular interval of time. This will ensure that the development efforts are progressing satisfactory.

#### Outcome:

The outcome of this activity is also iterative prototyping progress on application to review and provide quick comments on progress that made until the prototype accept by Project Management Unit (PMU).

### **D. System Installation and Configuration**

This activity involves installation and configuration of system into hardware's that will allocate for MIS hosting as the outcome of Hardware Assessment. The Consultant is responsible to install and configure of the system into MIS hardware that will work closely with the infrastructure service provider for achieving the objective. The consultant needs to deploy staging platform to test the newly adopted functionalities that will enhance the compatibility of production environment.

#### Outcome:

- System installation report
- Staging Platform Details

### **E. Data Migration & Entry**

The consultant must ensure that the existing data in MIS are well utilized when new MIS Go Live. It is the responsibility of the Consultant to perform the data migration from old system to new MIS. It is therefore important need to conduct an assessment to check data structures and formats of existing resources in the context of data migration. The Consultant is expected to perform a data migration of all existing data that are maintained electronically. It is likely that data migration could happen multiple times – first migration for the purpose of system testing and validating of data accuracy and completeness; the final data migration can happen when the system goes into final deployment (Go LIVE).

#### Outcome:

The outcome of this activity will be the data migration to enhance the MIS Platform:

- Assessment of existing electronic data and formats
- Development of data migration utility tools
- Ensure the integration tools for bulk data migration
- Prepare final data conversion strategy
- Final Data conversion/migration to system
- Assess migrated data and verify the data

### **F. MIS User Training**

MIS training is an integral part of this assignment. The Consultant is expected to undertake a comprehensive training to the users of this MIS at various levels with an aim to ensure that PKSF

and PO staffs can use the system independently and perform various transactions as desired. To achieve this objective, the Consultant is expected to conduct a MIS user-training program for the following personnel: -

At the outset of the project, the Consultant is expected to draft a Training Plan for acceptance by the Project Management Unit (PMU) that will ensure outline of the training activities, audiences, number of participants, curriculum, etc. It is anticipated that a "Train of the Trainer" (TOT) approach may be adopted.

- 1000 MIS users for PO and PKSF's –The target audience of such training programs are users such as the staffs of Partner Office's and PKSF's employees as normal user.
- 50 System Administrators – This training is primarily meant for the PKSF Project Management Unit (PMU) to undergo training in System Administration, Database Management, and administration of MIS Platform.

The Consultant may propose the training duration depending upon the extensibility of MIS functionality, but normally expect about a week for each batch. While the PKSF will make effort to identify training facilities, the Consultant should target to use PO's training facilities and arrange all necessary logistics for training and the Consultant's training team. The Consultant is expected to develop all training materials (bilingual), audio-visual aids, lead trainers, and documentation for all the participants. All training under this project shall take place by Bangla as language.

#### Outcome

- Prepare training plan
- Prepare and delivery training manuals
- Prepare and deliver core user training
- Prepare and deliver technical training
- Conduct training
- Gather and evaluate training feedback

#### **G. Operational Acceptance**

Operations Acceptance is the key part to start MIS implementation process. The Consultant should complete all functional and non-functional activity that will ensure seamless run of MIS. To achieve acceptance, the Consultant should conduct User Acceptance Test (UAT) with trained system and user groups to check MIS functionality and data migration outcomes. Upon successful completion of UAT the Consultant will move to implementation process. The warranty period depends on Operations Acceptance.

#### Outcome:

- Gather UAT feedback and mitigate the bugs
- Finalize Operational Acceptance criteria
- Obtain Operational Acceptance

#### **H. Final Deployment (GO Live)**

The final deployment will commence after issuance of operational acceptance and completion of the final successful data migration into MIS that will take place. This would mean that PKSF and its stakeholders will start using the system in the day-to-day operation for respective programs. During



this stage, the firm is expected to assist and provide technical guidance to ensure its smooth operations and facilitates in final deployment.

**Outcome:**

- The outcome of this activity will be the operationalization of MIS by the authorized users.

**I. Implementation Support Service**

The implementation support service should complete in project period. During this period, the Consultant must ensure that all issues encountered, such as: bugs, system errors and functional requests must be resolved timely that ensure smooth operation of the system. The warranty period should cover feature enhancement, customization, addition of the reports in MIS as demanded by the users if the scopes cover within MIS functions. In case of any new modifications or enhancements are required that can be completed within mutually agreed man-days of works that should consider as the part of the scopes. Any requests related to system requirements more than SLA that need to define man-days effort should consider outside of the scopes of this project and will be dealt separately. PKSF and the Consultant will jointly determine such level of efforts.

**Outcome:**

The outcome of this activity will ensure smooth operation of system and timely resolution of any bugs-errors encounter during system implementation period, including some minor incorporation of feature enhancements, addition of reports etc.

- Bug/error fixing/deployment of versions, upgrades etc.
- Addition or incorporation of new functionalities if it fits within the scope and nature of the program.
- Conduct regular user training in English and Bengali language as required
- Overall system management, supervision, and monitoring to ensure its smooth operation and implementation including periodic system incremental backup.
- Establish proper data backup and support mechanism to assist users to effectively operate the system without any technical problems
- Provide in-depth technical support and guidance during the data migration and update process
- Build PKSF internal technical capacity to take over the system before the contract ends.
- Perform the duties and tasks related to program scope as requested by Project Management Unit (PMU).
- Provide comprehensive training to admin users to ensure adequate support in system maintenance and modification in both environments.

**4. Functional and Technical Requirements**

**Case Management System:**

Case Management encompasses the beneficiary's and micro-entrepreneur's information for initiation, evaluation, and enroll into program that proceed on to execution and fund management. It emphasizes the importance of program beneficiaries' control and implementation through software.

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No	DESCRIPTION
<b>BENEFICIARY REGISTRATION</b>	
1.	<p>System should have the facility to collect participant information through community outreach programs and insert with following details-</p> <ul style="list-style-type: none"> <li>• Date</li> <li>• PO Name [Select]</li> <li>• Program Area</li> <li>• Program Title</li> <li>• Participant Name</li> <li>• Gender</li> <li>• Age</li> <li>• NID/BRN [National ID/Birth Registration No]</li> <li>• Contact No</li> <li>• Address</li> <li>• Education Qualification</li> </ul>
2.	System should have to collect and store socio economic information to check the program eligibility before jump into assessment.
3.	System needs to design a short-list report from the participants data based on program eligibility criteria and process it to next assessment.
4.	Ability to verify beneficiary information with National Identity Database (NID) system for ensuring the enrollment process.
5.	System should have the ability to store micro-entrepreneur's information with several assessment based on the eligibility criteria.
6.	Ability to check potential duplicate beneficiaries and/or family members and give system warnings or flag if certain beneficiary information matches (data validation based on the text fields), such as when name, address, date of birth of members are identical so that record corrective action taken.
7.	<p>Ability to store following information to complete the applicant profile-</p> <ul style="list-style-type: none"> <li>• Trainee Type [Individual or Micro-entrepreneur]</li> <li>• Name</li> <li>• Demographic Information [Division, District, Thana/Upazilla, Union, Village]</li> <li>• Type [PWD/Ethnic/Disadvantaged Communities]</li> <li>• Family Background [Name of Father and Mother, Prime Occupation of the Family Head]</li> <li>• Socio-economic Information [Monthly/Annual Income, Income Source, Family Monthly/Annual Income, Financial Data (Asset)]</li> <li>• History of Training [Technical &amp; Life Skills]</li> <li>• History of Employment</li> </ul>
8.	Ability to send successful and failed registration notification process on SMS and provide verification email to acknowledge the successful account creation on system.
<b>Training Enrollment</b>	
9	<p>System should have the functionality to store the following information's: -</p> <ul style="list-style-type: none"> <li>• Training Types</li> <li>• Course Information</li> <li>• Batch Information</li> <li>• Trainer Information</li> <li>• Performance Assessment</li> </ul>

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10	Functionality to map Partner Organization (PO) with trainer profile for enhancing the improve process on course selection and tagging on program rules.
11	Functionality to create batch for tagging the courses on trainers to identify on enrollment by training types.
12	System should have the functionality to create system generated registration number for every participant after successful enrollment of the course.
<b>Training Management</b>	
13	Functionality to set training target by PO on course and location using application rules to meet the thresholds or cutoffs targets on the program rules.
14	Functionality to generate PO training calendars on PMU system approval of course completion on field plan.
15	Ability to sort the PO's approval on training plans and calendars. Provide course completion status with location to identify implementation progress.
<b>Course Management</b>	
16	Functionality to create courses based on training categories; It should map with POs to implement assignments on enrollment.
17	Functionality to map training courses on batch that ensures alignment with plans on selected participants.
18	Functionality to tag training courses with trainers and assign batches with it to ensure system mapping.
<b>Trainer Information</b>	
19	Functionality to create trainer profile with following information: - <ul style="list-style-type: none"> <li>• Name</li> <li>• Address</li> <li>• Contact No/Email</li> <li>• Education Details</li> <li>• NID</li> <li>• Experience Details</li> </ul>
20	Functionality to view active trainer list on training types and showcase PO's information to update, delete and view.
21	Functionality to show trainer list with assign courses and batches that provide tagging on PO's for need base update of information.
22	Functionality to collect training feedback from participants on course trainer that enhance interactivity and participation of courses.
<b>Course Assessment</b>	
23	Functionality to create Training Assessment Type, Methodologies, and process on training categories for mapping it with PO.
24	Functionality to create post-assessment testing process that will enhance learning capabilities and assessment of skills.
25	Functionality to assign trainers on courses to find training assessment activity report and course performances.
26	Ability to verify the assessment/examination procedures by PMU and provide necessary feedbacks for printing the certificate.
<b>Certificate Management</b>	
27	Functionality to design certificate on training categories, class performance and final assessment outcome as result in pdf version for print.
28	System should show the mapping feature of trainer list on PO; Provide course assessors information on certificate with necessary guidelines.

29	Functionality to generate unique barcode with necessary information that will show participant specialization.
30	System should have the provision to include digital signatures on participants certificate on PMU approval process.
<b>Class Attendance</b>	
31	Functionality to create attendance tracking form that will ensures to collect daily attendance of trainees to track absent, present, and late.
32	Ability to synchronize daily attendance on both mobile apps and web forms for real time tracking on or off class participants.
33	Ability to show course wise class attendance list in both web or mobile apps and ensure functionality to send SMS for certain number of classes absent.
<b>Employment</b>	
34	System should have the ability to track trainee's employment record at least 24 months with pay scale details for assessing the impact.
35	Ability to find trainees record through searching on enrollment ID. Update employment records and wages details by users.
36	Ability to track and insert latest upskill training information by trainees and ensure employment profile update.
<b>Dashboard &amp; Reporting</b>	
37	<ul style="list-style-type: none"> <li>• Summary of Community Mobilization Meetings</li> <li>• Participant List</li> <li>• Reports on PO, District, Division, Gender</li> <li>• Course wise List</li> <li>• Batch list</li> <li>• Location wise participants lists</li> <li>• List of enrolled participants will be shown in the website</li> <li>• Notification (SMS/Email) send to enrolled participants</li> <li>• Training Calendar (Course wise, PO wise, Location wise, Month wise)</li> <li>• Participant's Attendance report</li> <li>• Trainer/Master Craftsperson's Profile (location wise)</li> <li>• Assessment of participation report (Pre-Test and Post-Test result)</li> <li>• Certification List</li> <li>• Employment Report</li> </ul>

### **Loan/Financial Services Management System**

The proposed function will support micro entrepreneurs and enterprises to manage loan profiles that implement on credit ratings. Through assessing the profiles of the applicant's eligibility PO and PMU will decide on necessary credit worthiness by systemic approach on ME module; thereby streamlining and automating the business requirements of that programs through a proposed centralized, web based and scalable loan management platform.

No	DESCRIPTION
<b>General Requirements</b>	
38	System should define and support loan products like: Working Capital, Term loans for Retails, MSME and Agriculture Segments (Farm & Non-Farm credit) etc.



39	Ability to define, generate and manage self-employment trainees and Micro-entrepreneurs from training programs. Identify the interested applicant and should allow to create different user groups under each partner organization.
40	Ability to allocate relevant cases through partner organizations and allow controlled access to work or give them facility to upload their own e-KYC.
41	<p>Module needs compatible enough to deliver the followings:</p> <ul style="list-style-type: none"> <li>• Define &amp; manage application channels.</li> <li>• Support different loan products and loan types.</li> <li>• Secured access for POs to define profile definition.</li> <li>• Audit trail of entrepreneurs and loan data.</li> <li>• Supports multi-level loan product hierarchy.</li> <li>• Support multi-tier rate structure like fixed/floating, indexed, and mixed.</li> <li>• Supports application processing for individual and non-individual customers.</li> <li>• Non individual customers to include various constitutions like proprietorship, partnership, Companies, trusts, societies, Corporations etc.</li> <li>• New product definition and amending product parameters accessible for internal organization users.</li> <li>• Rule based credit evaluation to provide internal credit checking, Credit rating, Credit Scoring, Risk Assessment, and Compliance Check.</li> <li>• Document flow, imaging, and archiving.</li> <li>• Image processing abilities, including pictures taken by webcam and other similar image forms.</li> <li>• Application details and status enquiry should be possible.</li> <li>• Generate letters, forms, loan legal documentation &amp; all desired template system generated. The generated forms should be configurable from user.</li> <li>• E-Signature/Digital Signature should be enabled that can be applied at any stage of processing.</li> <li>• Possibility of enhancement with add-ons like Analytics, third party users/auditors/values/advocates/ stock auditors/ due diligence agencies.</li> <li>• Ability to perform 3rd party Verifications, Valuations, Field Investigations etc.</li> <li>• EMI, Non-EMI/Principal Distributed, and other methods of payment supported.</li> <li>• Interest and principal moratorium should support.</li> <li>• Document set specific to customer type can be defined.</li> <li>• KYC verification/Due diligence module.</li> <li>• Dashboard reporting: few specific reports that are needed are <ul style="list-style-type: none"> <li>• Report on Pending applications.</li> <li>• Report on Pending documentation.</li> <li>• Report on an industry, etc. any other report required by the PKSF</li> </ul> </li> </ul>
42	System should have the ability to send Reminder Emails and SMS to designate personnel of the program that can generate as alert for approving the applications through system.
43	System should provide comprehensive audit trail report on activities performed by system including data modification.
44	The Loan Management System shall have a Business Rules Engine to support different types of Application Routing Mechanism including-



	<ul style="list-style-type: none"> <li>• Sequential Routing (Tasks are to be performed one after another in a sequence)</li> <li>• Parallel Routing(Tasks can be performed in parallel by splitting the tasks among multiple users and then merging as single)</li> <li>• Rule based Routing - One or another task is to be performed, depending on rules,</li> <li>• Ad-hoc Routing: Changing the routing sequence by authorized personnel. Rules can be defined on parameters set for each product/group.</li> </ul>
45	System should have the ability to define seasonal or demand driven cashflows repayment scheduling capabilities.
46	Ability to store various units of land area prevailing in various states and convert it to standard units like: Acre, Hectare, Sq.ft, Sq.meters, etc.
47	After fetching data from internal/external sub-system should store it and make it available for subsequent checks as and when required.
48	Ability to handle entire loan life cycle management from loan application to loan disbursement and post sanction compliance.
49	System should have mobile or tab solutions for field functionality, client visits, including documents, pictures need to upload into website by PO.
50	Ability to tag with configuration module for demographic information, financial information's.
51	System should have the facility to configure templates in system like call report, offer letter, SMS and Email alert, Survey Report templates, subsidy claim template that can be configured at the master data management level in the system.
52	System should be capable to capture financial data for analysis and assessment on customers current and projected Equity/capital details.
53	System should have the capability to process the loan application from PO to different PKSf department simultaneously; those departments can work parallelly and put comments, remarks on concerned department.
<b>Workflow &amp; Allocation</b>	
54	System should manage workflows that can be configured and parameterized on channels, products, schemes, sources, and other available fields. That system functionality should map with system configuration module.
55	Ability to allocate application for specific approvers. Further, there should be a queuing system based on preset logic for approval process.
56	Ability to define workflows for credit lines based on current process flow of the organization. Interact dynamically between the rule's engine and the queuing process to move the credit processing.
57	System should have the provision of maker checker facility for different activities like: Data Entry, Document Management and Approvals on risk segments.
58	<p>System should have to maintain the following applications workflows:</p> <ul style="list-style-type: none"> <li>• Quotations</li> <li>• Quick /Detailed data entry</li> <li>• Duplicate Check/Review</li> <li>• Credit Scoring</li> <li>• Document Process</li> <li>• Verifications Details</li> <li>• Multi-level credit evaluation</li> <li>• Decision Making</li> </ul>



	<ul style="list-style-type: none"> <li>• Disbursement</li> <li>• Monitoring</li> <li>• Review renewal.</li> </ul>
59	System should have the capability to view all previous notes exchanged and remarks made by other users with respect to the application under consideration and seek for clarification.
60	System should have the facility to put applications on hold until the pending actions are completed.
<b>Loan Origination System</b>	
61	Should have the ability to tag beneficiary information from internal modules and capture as detail as possible of the borrower, co-borrower, and guarantor information.
62	System should check the application data against Loan and Product Details; also add various repayment parameters with multiple collaterals would accept as security.
63	Ability to reject the application for ineligible customers with appropriate justifications by the higher authority.
64	<p>System should capture following details-</p> <ul style="list-style-type: none"> <li>• Customer KYC</li> <li>• Employment details</li> <li>• Loan details</li> <li>• Guarantor/Co-applicant Details,</li> <li>• Land Holding Details</li> <li>• Asset &amp; liability Details</li> <li>• Existing Cultivation Pattern</li> <li>• Registering application details in a user defined format</li> <li>• Borrower Master data</li> <li>• Financial Data</li> <li>• Security Details</li> <li>• Standard Terms &amp; Conditions</li> <li>• Credit Rating Result</li> <li>• Ratios and calculation from rating input/output sheets</li> <li>• Document checklist</li> </ul>
65	System should generate output (on screen or print) based on input provided by the customers to check eligibility for loan and other parameters by front line staffs.
66	System should have facility to validate the data being entered with validations like mandatory/non-mandatory, format etc.
67	System must generate unique loan number for every loan application; the loan enquiry should process on specific unique definable parameters.
68	System should be able to check the ceiling limit as prescribed in the loan policy for sector in which it proposes. System should be able to add/deduct the available limit.
69	System should have the ability to find if a customer is existing one and check for internal or external referral lists whether the customer is defaulter.
<b>Credit Evaluation/Rating</b>	
70	System should have a scoring engine that is capable to generate credit scoring across demographic bureau variables and handle multiple scorecards across products.
71	System should have the ability to define the customer eligibility rules based on different parameters. Details will convey at time of SRS.





72	System should support sensitivity analysis where the user can modify the financial data to find out how the change will affect certain key financial ratios and indicators.
73	System should be able to capture cost management data furnished by the PO (either through uploading system entry) and evaluate the Credit Limit, Credit Scoring and Appraisal.
<b>Document Management</b>	
74	Ability to upload various stages Document Receipt, Verification Report in compress and encrypt format that should be able to retrieve and display in same whenever required.
75	Ability to generate documents tracking id based on each product and parameter on PO specific documents and forms.
76	System should have the provision to make available automatic document checklist on application records.
77	System should generate different verifications for customer on his application and evaluation process.
78	System should verify all documents after receiving by the designated officer. Multiple types of verification should support.
79	Ability to track all verified documents in three different stages. These are Application, Asset and Processing level.
<b>Collateral Management</b>	
80	System should generate unique collateral ID for the collateral. In case of exception, if any, existing collateral ID capture for subsequent applications, it should show notification flag.
81	System should generate technical and legal valuation of a collateral; allocate it to a user or PO and capture the valuation details.
82	Workflow based valuation process - initiate valuation request, valuation report details, accept valuation and attach collateral.
83	System should generate eligible applicant list based on collateral value and Net Present Value (NPV).
<b>Dashboard &amp; Reporting</b>	
84	<p>System should generate reports-</p> <ul style="list-style-type: none"> <li>• Application Received, Pending, Approved and Declined</li> <li>• Sourcing Performance Turnaround Time (TAT) Reports</li> <li>• SLA reports</li> <li>• Disbursement of Applications</li> <li>• Pending Documents</li> <li>• Application Pending Verification</li> <li>• Pre-Finalized Company Rating Report</li> <li>• Final Company Rating</li> <li>• Industry Rating Report</li> <li>• Final Industry Rating Report</li> <li>• Company Financials Report</li> <li>• Score Mismatch Report</li> <li>• Risk Rating Reference Report</li> <li>• Industry Benchmark Report</li> <li>• Company Comparison Report</li> <li>• Case Status Report</li> <li>• Audit Report</li> <li>• Executive Summary Report</li> <li>• Periodically reports in PDF/ MS Word/ MS excel/ HTML etc.</li> </ul>



## 5. Reporting and Business Intelligence Tool

The MIS Platform should generate inbuilt and ad-hoc report at various levels that shows each of the programs have effective monitoring, program improvement and well-informed decision-making. It should also design and integrate with an enterprise business intelligence tool to support PKSF data warehouse. Use quantitative techniques and apply industry proven Business Intelligence & Forecasting techniques. The Consultant is expected to supply, deliver, and integrate BI tool with the MIS platform.

No	DESCRIPTION
85	Extensive functionality to generate various decision-making report on availability data. The input parameters should select by the user and generate custom report by user demand.
86	Such reporting structure should meet user requirements, such as higher management might require reports for policy making and planning purposes whereas the operational staffs might need to generate day-to-day functions of the programs.
87	System generated reports should also be exported in various formats such as PDF, Excel, Word
88	System should generate all reports that currently is maintained manually and even in any legacy system.
89	Ability to allow grab standard common periodic reports to avoid redundant efforts in report generation and improve system performance.
90	System should allow to generate custom reports by user without writing any singles script.
91	The system should provide show result of program impact analysis, and ability to drill-down as much as possible.
92	Reporting tool should have the capability to generate ad-hoc reports.
93	Functionality to generate graphical reports, ad-hoc reports and ability to perform data analysis

## 6. Mobile Apps:

Users can access services offered through MIS using mobile app available on Android and iOS. The app could be hybrid architecture or platform independent by users.

No	DESCRIPTION
94	The core of Android, IOS apps are fully interactive apps that should develop by using platform-specific development tools and technologies defined by Google, Apple and Microsoft respectively.
95	The application and department key service forms should have standard GUI that encourage users to the app with customize facility.
96	The app should have the facility for continuous improvement to enhance best practices for security and performances to ensure a smooth, hassle-free experience.
97	For the UI/UX section, the app should follow customized design guidelines on Material Design Platform that define by Google for Android, Apple HIG's for IOS.
<b>Service &amp; Module Integration</b>	
98	That aggregated app should provide several functionalities within the MIS itself for interfacing the applications with functionalities including GIS-based monitoring. The integrations can vary on need base emerging requirements.

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99	The app should be enabled for third party authentication process. MIS and all its components are required to compliant under PKSF system guidelines issued by PMU and kept compliant.
100	The services where Payment Service Provider (PSP) will integrate to avail the services for beneficiary payment through payment gateway that needs to be enabled in MIS. The payment service decision will define by PMU.
101	Case Management System (CMS) is a platform to rollout the program and deliver various services on demand. PMU is seeking program implementation status and feedback of end users can trigger them through Web and Apps; both should be online and offline mode. App should be integrated through API Manager for online feedback collection.

## 7. Technical Requirements

### Data Security, Access, and Authentication

No	REQUIREMENTS
102	The security of the system shall be built by a combination of Login Identification and Passwords. The security shall be provided at Operating System Level (Level 1), Application Login Level (Level 2) and the Menu/Program Execution Level (Level 3).
103	User login, pin-based authentication should be implemented on system through user requirement;
104	System should be secured and well equipped with integration of industry standard proven data encryption techniques and methodologies. Those encryption techniques should be audited in timely manner to detect loopholes and updated with latest patches to ensure the mechanisms are fitted with latest security features;
105	Implementation of Secure Socket Layer (SSL) is a must for web-based MIS system. The Consultant is expected to procure SSL certificates on behalf of the Purchaser and implement it into system;
106	System shall provide access control on user roles and assure privilege to access certain system functions. Concepts of Triple-A: Authentication, Authorization and Access Control should implement to stay in line.
107	System should support to define virtually unlimited number of users under different sets of user roles for access privileges.
108	System should block the user account for the parameter-driven length of time after invalid login attempt
109	In case of multiple unauthorized attempts of administrator access, the case should be reported immediately to the designated maintenance and security staffs of the MIS through Email, pop up notification or SMS;
110	In case there are 3 failed login attempts for a specific admin user, the IP making request will be dropped from further access and the password reset request will be issued for those authenticated administrator.
111	The system shall provide capability for the users to change their password;
112	The system shall provide facility to force users to change their password after certain parameter-driven period;
113	The system shall provide definable password enforcement rules, including but not limited to: <ul style="list-style-type: none"> <li>• Password length</li> <li>• Required Alpha character</li> <li>• Use at least one symbol</li> <li>• Not same as previously used password</li> </ul>

114	The strength of the passwords provided by the users can be measured and suggested as Weak, Medium, and Strong;
115	System should encrypt the password before storing through encryption algorithm or stronger process;
116	System should have functionality to enforce termination of selected user connections without adversely impacting on system capacity
117	System access control security function shall provide facility to system administrator that enhance suspension of existing user's access rights in a period.
118	System should provide the facility to lock user session after a definable period of inactivity;
119	The system shall provide a log of changes for user access rights.
120	Use SSL encryption on HTTPS protocols that implement in Public-key encryption methods.
121	Implement two factor authentication
122	Some fields are required (Mandatory) because certain information must be captured in the database. If those fields are not filled in, the system must reject the form with relevant message. Similarly, data entry checks are configurable within the system. If information is incorrectly entered (for example, numbers are entered where there should only be letters or dates are invalid), the system shall instantly generate a message notifying to user and the form will not be accepted until the mistake is corrected.

## 8. System Audits

No	REQUIREMENTS
123	System shall maintain an audit trail of any changes or updates made in any information that are considered vital and it should maintain the audit log with information such as: <ul style="list-style-type: none"> <li>• Log the users who are accessing the system</li> <li>• Log the parts of the application that are being accessed</li> <li>• Log the fields that are being modified</li> <li>• Log the results of these modifications</li> <li>• Log attempted breaches of access</li> <li>• Log attempted breaches of modification rights</li> <li>• Log the users MAC and IP Address</li> <li>• Timestamp.</li> </ul>
124	Ensure an audit trail is kept for all transactions in data warehouse method that kept the system audit data into database.
125	System should have to archive all audit logs and define it by types.
126	Ability to generate system audit reports.





## 9. Data Exchange Protocol and Mechanism/System Integration

No	REQUIREMENTS
127	Data exchange within the system at different levels via internet shall be encrypted;
128	System should have functionality to exchange data with other relevant databases and third-party legacy systems including PO's MIS, NID and NHD in secure environment;
129	System should have the functionality to export/import files on standard template defined through web services or API's;
130	System should maintain the log of such data imports being performed by the authorized users. The log should maintain information such as: <ul style="list-style-type: none"> <li>• Name of the file exported/imported</li> <li>• Login ID</li> <li>• Timestamp</li> </ul>

## 10. API Manager

No	REQUIREMENTS
131	System should have customized API Manager to manage all system Integration with other integrated systems/e-services/financial transactions and payment interfacing
132	The API Manager will communicate with e-Services for sharing data through interoperability that ensure security and authentication of every data transaction
133	System should have ability to build and publish APIs/Services on selected set of gateways in a multi-gateway environment
134	System should support enforcement of government policies for actions like API/Service subscriptions, application creation, etc., via customizable workflows
135	Manage API/Service visibility and restrict access to specific agencies or systems
136	System should facilitate to integrate data sharing configuration of third-party API on prior approval of system administrator.
137	Functionality to view push or pull datasets through API with status that define by system notification.
138	Ability to integrate with BI tools for reporting and analysis.

## 11. Security & Privacy

No	REQUIREMENTS
139	System should have functionality to implement security algorithm that defined in policy parameter. For instance, MIS should strengthen security on following instances: <ul style="list-style-type: none"> <li>• User roles - Accessibility, Authorization and Accountability</li> <li>• Data Management</li> <li>• Code level securities on development &amp; implementation</li> <li>• Hosting</li> <li>• Client and service side application</li> <li>• Training and Production system.</li> </ul>

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140	<p>System should manage role-based access, encryption of user credentials. System security should align with standard practice algorithm including the following:</p> <ul style="list-style-type: none"> <li>• Prevent SQL Injection Vulnerabilities attack on database</li> <li>• Prevent XSS Vulnerabilities to extract username, password (Escape All Untrusted Data in HTML Contexts and Use Positive Input Validation)</li> <li>• Secure Authentication and Session Management control functionality shall be provided through a Centralize Authentication and Session Management Controls that Protect Session IDs from XSS</li> <li>• Prevent Security Misconfiguration Vulnerabilities (Automated scanners shall be used for detecting missing patches, misconfigurations, use of default accounts, unnecessary services, etc. maintain Audits for updates)</li> <li>• Prevent Insecure Cryptographic Storage Vulnerabilities (by encrypt off-site backups, ensure proper key storage and management to protect keys and passwords, using strong algorithm)</li> <li>• Prevent Failure to Restrict URL Access Vulnerabilities (By providing authentication, authorization for each sensitive page, use role-based authentication, authorization and make authentication and authorization policies configurable)</li> <li>• Prevent Insufficient Transport Layer Protection Vulnerabilities (enable SSL for all sensitive pages, set the secure flag on all sensitive cookies and secure backend connections)</li> <li>• Prevent ID Redirects and Forward Vulnerabilities</li> </ul>
141	Establish processes for viewing logs and alerts which are critical to identify and track threats that compromises to the environment. The granularity and level of logging must be configured to meet the security management requirements.
142	System should deploy technology that enhance active monitoring and managing perimeters on internal information security
143	Ability to defense against malicious resource consumption, denial of service, node capture and injection
144	System should have the facility to perform periodic scanning of the network to identify system level vulnerabilities
145	System should protect Integrated Project information against unauthorized access, denial of service, and both intentional and accidental modification. Data security, audit controls and integrity must be ensured across the data life cycle management from creation, accessed, viewed, updated and when deleted (or inactivated). This provides a proactive way to build defenses against possible security vulnerabilities and threats, allowing errors to be corrected and system misuse to be minimized

## 12. Email Notification

No	REQUIREMENTS
146	<p>System should have functionality to trigger email notification as defined in business rules. For instance, MIS should be able to send automatic email notification to the users when following instances occur:</p> <ul style="list-style-type: none"> <li>(i) User is created and approved</li> <li>(ii) Password is changed</li> <li>(iii) Payment is triggered</li> </ul>
147	The content of such email shall be user configurable as per the business need.



### 13. Query and Advance Search

No	REQUIREMENTS
148	System shall provide simple and advanced query search facilities on system run. The access privilege of user groups that belongs to scope of the information permitted by query and limited in search results.
149	The data generated because of selection of such query criteria should be exported to MS-Excel; download and /or print in PDF format.

### 14. Sizing, Performance, Load Testing and Scalability Requirements

No	REQUIREMENTS
150	System shall be capable of handling online transaction for handling the following: <ul style="list-style-type: none"> <li>• 1,200,000 simultaneous transactions</li> <li>• Maintains at least 572 PO Center with 5,000 individual users</li> </ul>
151	System should be capable to estimate and support extended volume of data for the period of 20 years at 10-12% annual growth rate.
152	The Consultant must conduct load testing with considering above factors and submit a load testing results
153	The database architecture should be designed in such way that the system should be available to users 24 X 7 X 365 days a year without any unapproved down-time
154	Page load time, login response-time, 'on-click' load time of Portal should be less than 3 seconds when the online application is accessed over the Intranet;
155	Average transaction response time, 'On-submit' response-time, or any other database access/search time should be less than 5 seconds when the MIS solution is accessed over the Intranet.
156	Considering the network infrastructure challenges in Bangladesh, the solution must support narrow bandwidth conditions for the services defined in the functional requirements.
157	In case of mobile application, this should support very narrow bandwidth even in 2G to 4G network provided internet bandwidth

### 15. Hardware Requirements

The Consultant will conduct a hardware and networking need assessment. Develop a comprehensive technical specifications and bills of quantity of all required hardware and IT equipment including networking arrangement to deploy system. Therefore, the high-level requirements on this component shall be as follows:

No	REQUIREMENTS
158	The Consultant shall conduct a hardware and networking need assessment during system requirement study of the project and deliverable the following: <ul style="list-style-type: none"> <li>• Hardware and Networking need assessment report</li> <li>• Proposed hardware architecture with back-up provisioning</li> <li>• List of hardware to be procured and their full specifications based on the proposed hardware architecture</li> <li>• Bills of Quantity based on the requirements</li> <li>• RDMBS licenses required based on the proposed hardware architecture</li> </ul>



	Note: Based on approved hardware specifications and Bills of Quantity, PKSf will procure the equipment under a separate package.
159	The Consultant is expected to collaborate and work closely with the hardware vendor to ensure a proper hardware implementation on system deployment.
160	The Consultant should consider hosting/database server synchronization for taking auto-backup.
161	The Consultant shall certify that all hardware procured should follow the specification and submit hardware review report.  Note: The winner of this contract (Consultant and their associates) shall not be allowed to bid for the hardware package.

#### 16. SMS Integration

No	REQUIREMENTS
162	System should have the functionality to broadcast and manage an SMS service to the eligible beneficiaries based on business rules and criteria (SMS management module)
163	The SMS module should design, develop, and integrate with MIS for seamless data exchange on SMS broadcasting
164	The Consultant shall identify all the hardware and IT equipment necessary (such as SMS gateway) for implementing that solution. Such hardware and IT equipment shall be identified and proposed in Hardware need assessment.
165	The Consultant is expected to design, develop a complete solution for SMS broadcasting as part of this scope. PKSf will bear only the recurring cost of SMS (if any).

#### 17. Data Backup and Recovery Requirements

No	REQUIREMENTS
166	The backup and restoration plan should be developed and implemented;
167	The Consultant shall be responsible for monitoring data backup in accordance with plan that develop during warranty period;
168	System should implement required backup solution for real-time/scheduled /automatic backups which should monitor and report;
169	Must implement data recovery mechanism in case of database failover;
170	System should be synchronized between multiple production (DC) and recovery (DR) sites. The synchronization should real-time and service log must be maintained through integration.

#### 18. Electronic Document Management & Tracking

No	REQUIREMENTS
171	System should have the functionality to upload scanned images and maintain the history for future retrieval. For instance, the user should upload scanned copy of supporting document
172	Such documents/images need to upload on user definable document category, for instance, scanned photograph, financial statement, application form etc.;
174	System shall allow the user to enter specific supporting details like attaching documents at all levels.

175	Scanned images could be in the form of PDF, word, Excel, JPG files; [File format should be defined by administrator]
176	The maximum file size should be uploaded and validated in order to restrict large file size.

### 19. System Monitoring

No	REQUIREMENTS
177	System should have to integrate and show real-time tracker of incidents in servers and networks.
178	Ability to showcase update status of system on Dashboards. Provide system generated reports on device status.
179	System shall allow the users view the reports like: Rainmeter.
180	System should have the facility to integrate any third-party system monitoring tools that can allow users to share necessary updates.

### 20. System Ownership & Source Code Requirements

No	REQUIREMENTS
181	PKSF will be the owner of this MIS and Database Platform without any preconditions or whatever;
182	The Consultant shall handover all the source code and technical documentation of the system without any preconditions.
183	For any other proprietary or third-party software used, the Consultant shall provide perpetual and valid license for at least period of 5 (five) years.
184	Consultant should have to provide all tools and technologies with license and there will be no conditional clause allow.

### 21. Exception Handling

No	REQUIREMENTS
185	System should throw appropriate alert or error messages when exceptions are discovered which impacts data integrity. For instance, the appropriate validations should expose error/exception if: <ul style="list-style-type: none"> <li>• Blank value/data is passed were mandatory</li> <li>• Invalid date format is entered and/or does not fall between the acceptable data range</li> <li>• Invalid Unique Identifier</li> <li>• Invalid code is entered</li> <li>• Duplicate entries detected</li> </ul>

### 22. System Development Tools

No	REQUIREMENTS
186	The solution must support industry standard enterprise RDBMS systems.
187	<b>For centralized MIS System:</b> <ul style="list-style-type: none"> <li>• Use open-source language Java (Preferable Spring Framework).</li> <li>• System architecture should follow micro service design approaches.</li> <li>• Secure interaction with Core-service and shared service using dynamic token</li> <li>• Messaging protocol support e.g., AMQP 1.0, STOMP, MQTT, HTTP</li> <li>• OAuth2 token revocation support</li> <li>• OAuth token introspection</li> </ul>

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	<ul style="list-style-type: none"> <li>• Open ID connect based session management, discover and dynamic client registration</li> <li>• Federated SSO via SAML2 or Open ID with external identity providers</li> <li>• White label login and registration process</li> <li>• Role-based authorization support for SSO</li> <li>• Support for multi-option/multi-step authentication</li> <li>• X.509 Authentication</li> <li>• 2-factor authentication (2-FA) (hardware based or soft OTP)</li> <li>• Time-based one-time password (TOTP) based authentication</li> <li>• Enterprise Linux or Unix to host the application</li> <li>• Bootstrap, Foundation, AngularJS, React, VueJS for UX</li> <li>• Oracle (Preferred) or equivalent enterprise use as RDBMS</li> <li>• REST API for eService bus (Enterprise Service Bus)</li> <li>• Redis, Mem cache, CDN or Varnish for caching and faster data delivery</li> <li>• Must ensure load balancing for scalability and failover for high availability of service endpoints</li> <li>• Code Version Controlling using GIT or Bit bucket in private mode</li> <li>• Use Jira or Asana for issue tracking and feature change management</li> <li>• Jenkins Deployment</li> </ul>
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### 23. Key Deliverables

The Consultant shall provide all documentation in both hard and soft copies in English. The key deliverable shall, at minimum, include the following:

No	REQUIREMENTS
1	<b>Project Inception Report</b> – Provides, at a minimum, Consultant’s overall plan for completing the project, describes the way the Consultant’s team will work with PMU; provides a timeline for project execution including dates, resources, and dependencies; provides a plan for communications/issue resolution with PMU, and agreed technical requirements within 15 days of contract signing.
2	<b>Gap Analysis, Functional and System Requirement Study Document (SRSD)</b> – Provides a detailed review of the existing MIS platform and description of business processes and functionalities of the proposed MIS in line with business process needs to be outlined the TOR. The document should also include process/data flow diagram of the proposed system.
3	<b>System Design Document (SDD)</b> – Provides a detailed description of the underlying system architecture of the proposed system including table structure, data dictionary, Entity Relationship Diagram (ERD), object model etc.
4	<b>Hardware, IT Equipment and Logistics</b> – Need assessment report containing the proposed hardware architecture and its description, detailed technical specifications, bills of quantity of hardware to be procured.
5	<b>Prototype Demonstration</b> - Provides a Graphical User Interface (GUI) for user templates with basic validation to determine the functionality compliance and navigation flow.
	<b>Note:</b> First Demo of Web & Mobile application should present within 3 months of contract signing. Within next three (3) months another demo should present to PMU. The final demo needs to present within next six (6) months.

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6	<b>Handover MIS Software with complete Source Code and ownership</b> —provides a complete source code and file of the application software and any other related bespoke application software and third-party software such as BI tool, RDBMS etc.
7	<b>Operational Acceptance Test Plan</b> – Provides a narrative of the approach that will be used to obtain user acceptance of system that will use to verify application operation.
8	<b>Technical Documentation</b> – Provides a description of the system architecture, module integration, workflow engine, data dictionary, user manual etc. and any other technical material for technical team will need to understand and support the System in long run.
9	<b>Training Materials</b> – Copies (and electronic) of handouts, manuals, Power Point slides and any other materials use prior to conducting training to staffs at various levels.
10	<b>Monthly Status Reporting</b> – Copies (and electronic) of all status reports should provide by the Consultant during execution. Each status report should include current activity, current issues, and planned activity for the next period.
11	All the documentation deliverables must comply the following <ul style="list-style-type: none"> <li>• 2 copies in English Language in hard copy</li> <li>• Electronic submission</li> </ul>

#### 24. Requirement of the Consultancy Firm

An IT company or Joint Venture with broad and demonstrative experience in conducting similar assignment is needed. The firms will be evaluated based on following:

- The firm should have at least 15 (Fifteen) years of general experience in IT industry and experience of developing 10 (Ten) nos. similar type of software.
- Proven track record of developing at least 5 (Five) nos. of Enterprise IT Solution/Software application development & deployment that works on public cloud.
- The firm should have 5 (Five) mobile Apps in google play or App store having online/offline data collection features.
- Working with development partner funded project or development agencies regarding software development will be an added advantage.
- Firm should demonstrate its logistical capability.
- Strong financial capability will be required.
- Must submit valid Trade License, TIN and VAT
- The firm must be a BASIS member and attach update Certificate.
- The firm should be CMMI-DEV 3 and ISO Certified

#### 25. Minimum Resource Requirements and Team Composition

The responsibility of consultant to maintain, manage and allocate of its team resources as deemed necessary to achieve the overall objective of the project. This project is a delivery-based assignment in which payments are linked with the milestones. Following underlines, the minimum expected skill set of technical resources that the consultant is expected to deploy during the project period. While the consultant is expected to propose its own team resources and skill sets to execute the project as deemed necessary, the Consultant must deploy at least the following resources on-site of the project.

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Considering the project size, nature and its complexities, the table below set outs the minimum number of technical resource utilization the firm is expected to deploy during the life span of the project.

Table 1: Minimum resource requirements deploy on site for the design, development and implementation of MIS including implementation support services period.

#	Experts	Qty	Person Month
1	Team Leader	1	12
2	Business Process Specialist	1	6
3	System Analyst	1	12
4	System Developers	5	12
5	UI/UX Specialist	1	12
6	SQA Specialist	1	12
7	Database Specialist	1	3
8	System Security Specialist	1	3

The project considers the following resources are the key experts. The CVs of the following position must be provided since it will be one of the criteria for the proposal evaluation. It is to be noted that the Consultant is not allowed to alter the key position without prior consent of PMU. In case of any alteration must be done due to avoid circumstances, the Consultant must propose equivalent or better candidate for purchaser review and approval.

### Key Positions Qualification Requirements

#### Team Leader (1)

- 10 (ten) years of demonstrated experience working in previous projects of similar size and nature. At least five of these years should consist of working as the Project Manager/Team Leader.
- Demonstrated knowledge and experience around banking solution development, payment portal development, enterprise MIS for government, case management system, health, education, or similar public programs.
- Strong experience of working with Government organizations and structures.
- Demonstrated work experience in developing countries conducting related work in the region

#### Business Process Specialist (1)

- 8 (Eight) years of demonstrated knowledge and experience in banking solution development, payment portal development, enterprise MIS for government, case management system, health, education, or similar public programs.
- Strong experience in conducting business process reviews, functional gaps and overlaps in the programs, particularly loan disbursement and repayment process.
- International work experience in developing countries conducting similar work is an advantage
- Sound knowledge of MIS or other relevant information systems

#### System Analyst (1)

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- At least eight (8) years of demonstrated experience working in previous projects of similar size and nature.
- At least 5 project experiences working as the System Analyst for the design and implementation of IT system of similar size and nature
- Excellent knowledge and experience of conducting system requirement study/gap analysis, developing data/process flow diagrams to effectively map the business requirements into MIS; preferably in the relevant areas such as financial management information system, core banking solutions, pension system or similar public programs
- Excellent knowledge and experience in system design and development methodologies (software development life cycle)
- Strong experience of working with Government organizations and structures.
- Demonstrated work experience in developing countries conducting related work.

#### System Developer (4)

- Minimum academic requirement is graduation in Computer Science and Engineering/ICT preferably having a degree from a reputed university.
- Minimum 8 years of experience in system development.
- Develop, record, and maintain cutting edge application software development of same service platforms
- Must be familiar to build innovative, state-of-the-art applications and collaborate with the User Experience (UX) team
- Capability to maintain all applications utilizing standard development tools
- Familiar with backend data services and contribute to increase existing data services API
- Capable to lead the entire web application development life cycle right from concept to delivery and post launch support
- Convey effectively with all task progress, evaluations, suggestions, schedules along with technical and process issues
- Coordinate with co-developers and keeps project manager well informed of the status of development effort and serves as liaison between development staff and project manager

#### UI/UX Specialist (1)

- Minimum academic requirement is graduation in Computer Science and Engineering/ICT preferably having a degree from a reputed university.
- Minimum 5 years of experience on Web and Mobile application UI design.
- Expertise to create high-quality UX and UI deliverables to communicate the intended user experience such as screen flow diagrams, prototypes, mockups, icons, and UI specification.
- Expertise on communicate complex, interactive design concepts clearly and persuasively across different audiences and varying levels of the organization.
- Experience with libraries like React/Flux, Backbone, or Angular for structuring UI implementations.
- Experience on work with a cross-functional team of product managers, designers, and engineers

#### Software Quality Assurance Specialist (1)

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- Minimum academic requirement is graduation in Computer Science and Engineering/ICT preferably having a degree from a reputed university.
- Minimum 5 years of experience on API Testing, QA Testing, Software Testing, Unit Testing, Web Testing
- Experience with Test Planning for the entire project (Web and Mobile Interface as well as Server-side testing) after analyzing functional specifications.
- Experience with manual and automated testing processes and tools.
- Experience with Load and Performance testing and documenting the Test Outcome.

#### Database Specialist (1)

- Bachelor of Science (BSc) in IT, ICT, CS, EEE or Engineering related field, Master of Science (MSc) in IT/ICT/CS/EEE/Engineering related field
- At least 10 years of experience in installing, configuring and troubleshooting SQL Database systems on RDBMS such as Oracle, MS SQL Server, PostgreSQL, MySQL, etc.
- Knowledge of Windows Server and Linux environments
- Practical experience of managing data migration
- Professional Database Administration certification will be an advantage

#### System Security Specialist (1)

- Bachelor of Science (BSc) in IT, ICT, CS, EEE or Engineering related field
- At least 6 (five) years of demonstrated experience in Information Security
- At least 3 (three) years' experiences in Software Security and Testing
- Certification in CISSP/CISA/CISM will be preferred
- Demonstrated skills on software security testing methods and techniques (Black box Testing with DAST, Negative testing, Functional & Non-Functional Testing)

## 26. Other Service Requirements

### **System Testing, Quality Assurance and Operational Acceptance Testing Requirements**

Vendor should have to submit a comprehensive testing plan before the system is put into operation. The plan should cover all standard testing approaches that ensure phase-by-phase testing activities like test scripting, test cases, testing tools, testing process, test log, result and report formats that generate expected test deliverables based on requirements.

- Unit Testing
- Functional Testing
- Compatibility Testing
- Smoke and Sanity Testing
- Regression Testing
- Load Testing
- Destructive Testing
- Software Performance Testing
- Usability Testing
- Accessibility Testing
- Security Testing

Vendor is expected to implement performance and load testing with following features:



- Testing workload profiles and test scenarios based on various functional requirements should define. Application on system resource utilization parameters that need to be monitored and captured.
- Should support application and API testing including HTTP(s), web services, mobile applications, and different web 2.0 frameworks such as Ajax/Flex/HTML5.
- Vendor should perform load testing of project for multiple workload profiles, multiple scenarios, and user loads to handle the envisaged users of the system.
- Different activities before load testing i.e. identification of work load profiles, scenarios, information capturing report formats, creation of testing scripts, infrastructure detailing and workload profile should be prepared before the start of actual load testing exercise.
- Solution parameters needs to be tuned based on analysis of load testing reports. The tuning process could be iterative until the issues are closed. Multiple load runs need to be executed for users to simulate different scenarios, such as peak load (year end, quarter end, etc.), load generation within modules or network simulator while introducing configurable latency/jitter/packet loss etc.
- Should eliminate manual data manipulation and enable ease of creating data-driven tests.
- Should provide capability to emulate true concurrent transactions.
- Should identify root cause of performance issues at application or code level; including code performance analysis to pinpoint component-level bottlenecks: Slowest classes and methods, most frequently called methods, most costly (aggregate time spent for each method), response time variance etc.
- Should be able to monitor various system components e.g. Server (OS, Web, Application & Database) Monitoring, Network (between Client & Server) Delay Monitoring, Network Devices (Firewall, Switch & Router).
- Should correlate response times and system performance metrics to provide quick insights for root cause of performance issues.
- Reports on following parameters (but not limited to) such as transaction response time, transaction per second (Passed), user interface rendering time, transaction per second (Failed), web transaction breakdown graphs, hits per second, throughput, HTTP responses per second, pages downloaded per second, system infrastructure performance metrics etc.
- Should provide End-to-End system performance analysis based on defined SLAs. Should monitor resource utilization including memory leakage, CPU overload and network overload.
- Recovery testing is one of the important aspects of an application as it portrays how well it can recover in case of a system failure, server shutdown, or service failure.

## 27. System Handover

At the end of the warranty period, the Consultant will be responsible for transferring system operation to PKSf. In preparation, the Consultant must thoroughly provide training to the key user staff before the system transfer. Full system documentation must be provided as per the requirements of *Key Deliverable Section*. These documents must be current at the time of the handoff and cover the final version of the system implemented. All project documents, such as technical memoranda, change requests and status reports, must also be delivered to the PMU. To ensure a smooth transition, the Consultant will agree a handoff checklist with the PMU that will verify that all required tasks are completed before the system handover is accepted.





## INSTITUTIONAL ARRANGEMENTS

The appointed IT firm shall work in close cooperation with the specialists within the Project Management Unit (PMU). All reports prepared by the consultant shall be submitted to the authorized representative of PMU for analysis and further approval. All reports shall be submitted in printed copy in English. If necessary, the consultant shall respond to comment from the client by modifying, amending, or supplementing the reports and resubmitting them to the client within 15 working days as from the receipt of such comments.

### 28. Duration of the contract

- Contract period is up to six (06) months from the contract signing. Design, development, implementation, update, operation, and maintenance will be included within the contract. Content Development and implementation of the case management System must be completed by Six (06) months of signing the contract. After the approval or modification from PKSf, the consultant will complete the assignment. The firm will have to provide the support and maintenance service up to the project period (Jun 2026).
- The firm needs to submit the following deliverables within the following mentioned time and days.

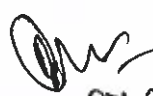
Deliverables	Timeline
Inception Report	15 days of Contract signing
SRSD	Within 45 days of Contract signing
All other deliverables	Within 180 days of Contract Signing
Support and Maintenance Service	Until June 2026

- A separate service and maintenance contract may be signed with the Consultant after this contract period if needed.

### 29. Payment terms

- I. 20% of the total contract value will be made after submission of the inception report and acceptance by the PKSf;
- II. 25% of the total contract value will be made after submission of the SRS and acceptance by the PKSf;
- III. 40% of the total contract value will be made after the successfully delivering all deliverables and accepted by PKSf;
- IV. 15% of the total contract value will be made at the end of service period.

  
27.02.23  
**Md. Al Amin**  
Procurement Specialist  
Recovery and Advancement of Internal Sector Employment (RAISE)  
Palli Karma-Sahayak Foundation (PKSF)

  
27.02.2023  
**Dilip Kumar Chakravorty**  
General Manager (Programme)  
&  
Project Coordinator, RAISE  
Palli Karma-Sahayak Foundation (PKSF)



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