REQUEST FOR PROPOSAL (RFP)

FOR

APPOINTMENT OF VENDOR FOR IMPLEMENTATION OF ENTERPRISE WIDE INTEGRATED RISK MANAGEMENT SYSTEMS FOR ADVANCED APPROACHES UNDER RBI/BASEL-II (I.E. CREDIT RISK, MARKET RISK AND OPERATIONAL RISK) AND BASEL-III GUIDELINES

Notice No.: PSB/EIRMS/RFP/2017-18/01

DATED 07.04.2017

PUNJAB & SIND BANK

Head Office Risk Management Department
21, Rajendra Place
New Delhi – 110008

Definitions of major terms/ abbreviations used on the document

Sr. No.	Acronym/ Terms Used	Definition
1.	AMA	Advanced Measurement Approach
2.	AMC	Annual Maintenance Contract
3.	Bank	Punjab and Sind Bank
4.	Basel II	Framework for Capital Measurement and Capital Standards issued by Basel Committee on Banking Supervision
5.	Basel III	A global regulatory framework for more resilient banks and banking systems and International framework for liquidity risk measurement, standard and monitoring
6.	Basel II RBI Guidelines	BEGLISTUIBEGLIST • KISLISTITEMMaster Circular - Prudential Guidelines on Capital Adequacy and Market Discipline- New Capital Adequacy Framework (NCAF) • KISLISTITEMImplementation of The Standardized Approach (TSA) for Calculation of Capital Charge for Operational Risk • KISLISTITEMImplementation of the Advanced Measurement Approach (AMA) for Calculation of Capital Charge for Operational Risk - Guidelines • KISLISTITEMCapital Adequacy - The Internal Ratings Based (IRB) Approach to Calculate Capital Requirement for Credit Risk • KISLISTITEMPrudential Guidelines on Capital Adequacy - Implementation of Internal Models Approach for Market Risk
7.	Basel III RBI Guidelines	• Implementation of Basel III Capital Regulations in India • Guidelines on Liquidity Risk Management and Basel III Framework on Liquidity Standards
8.	CO	Commercial Offer/ Commercial Bid/ Price Bid
9	CRMS	Credit Risk Management System
10.	Finacle	Core Banking Application software used in bank
11.	IMA	Internal Model Approach
12.	IPR	Intellectual Property Right

13.	IT	Information Technology
14	KRI	Key Risk Indicators
15	MIS	Management Information System
16.	MSL	Minimum Service Level
17	NAS	Network Attached Storage
18.	NCAF	New Capital Adequacy Framework
19.	OEM	Original Equipment Manufacturer – Product Vendor
20.	ORMS	Operational Risk Management System
21.	Project	Implementation of Enterprise Wide Integrated Risk Management Systems for Advanced Approaches under RBI/Basel-II & Basel-III Guidelines
22.	RBI	Reserve Bank of India
23.	RCSA	Risk and Controls Self Assessment
24.	RDBMS	Relational Database Management System
25.	RFP	Request for Proposal
26.	RO	Regional Office
27.	SAN	Storage Area Network
28.	SLA	Service Level Agreement
29.	TB	Terabyte
30.	TO	Technical Offer
31.	TSA	The Standardized Approach
32	Go-Live	Application being deployed in the production environment, being used by the business users and being signed-off by the business.

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1   Invitation for Tender offers

Punjab & Sind Bank (PSB) invites sealed tender offers (Technical bid and commercial bid) from eligible, reputed **companies** for appointment of Vendors for Implementation of Credit Risk, Market Risk and Operational Risk Management Solution.

In this RFP, the term bidder/prospective bidder refers to the bidder together with other entities participating for delivering product/services mentioned in the **scope of work.**

Complete set of tender documents may be purchased by eligible bidder on payment of a non-refundable fee of Rs.25, 000/- (Rs. Twenty five Thousand only) by demand draft / bankers cheque in favour of **"Punjab & Sind Bank" payable at New Delhi**" The bank reserves the right to reject any or all offers without assigning any reason.

Please note:

- The prospective bidder needs to purchase the tender document from the Bank and is invited to attend the pre-bid meeting at Punjab & Sind Bank Head Office, New Delhi. In case the prospective bidder downloads the document from the website of the Bank, the cost of tender document should be paid along with the bid responses.

- All costs and expenses (whether in terms of time or material or money) incurred by the Recipient/ Bidder in any way associated with the development, preparation and submission of responses, including but not limited to attendance at meetings, discussions, demonstrations, etc. and providing any additional information required by the Bank, will be borne entirely and exclusively by the Bidder.

- Bidders are required to submit a Demand Draft/Banker's cheque/ pay-order drawn in favour of **"Punjab & Sind Bank" payable at New Delhi**, towards Earnest money Deposit (EMD) for Rs. 50,00,000 (Rupees Fifty Lacs only) valid for 180 days from the date of submission of the bid. Offers made without EMD will be rejected. The Bank may accept Bank Guarantee in lieu of EMD for an equivalent amount issued by any scheduled commercial bank acceptable to Punjab & Sind Bank. In case of Bank Guarantee from other than Public sector Banks, prior permission of Punjab & Sind Bank is essential. The Bank Guarantee should be valid for 180 days from the date of submission of the offer. The format of Bank Guarantee is enclosed as *ANXA1_Form_1_BankGuaranteeProforma.docx*.

- EMD/ Bank Guarantee must accompany all tender offers as specified in this tender document. EMD /Bank Guarantee should not be included with Technical or Commercial bid. It should be

in separate cover to be handed over to the Bank. For more details on EMD please refer to *'Earnest Money Deposit' section 7.1.4*

- Tender offers will be opened in the presence of the bidder's representatives who choose to attend the opening of tender on the specified date, time and place.

- Technical Specifications, Bill of Material document, Terms and Conditions and various formats and pro forma for submitting the tender offer are described in the tender document and Annexure

2   Data Sheet

The following is an indicative timeframe for the overall process. PSB reserves the right to vary this timeframe at its absolute and sole discretion and without providing any notice/intimation or reasons thereof. Changes to the timeframe will be communicated to the affected Respondents during the process.

Particulars	Details
Tender Number	PSB/EIRMS/RFP/2017-18/01 DATED 07.04.2017
Tender Title	Appointment of Vendor for Implementation of Enterprise Wide Integrated Risk Management Systems for Advanced Approaches under RBI/Basel-II (i.e. Credit Risk, Market Risk and Operational Risk) and Basel-III Guidelines
Price of Tender Copy	Rs. 25,000/- (Non-Refundable)
Bid Security Deposit (EMD)	Rs. 50,00,000/- (Rs. Fifty Lacs Only)
Date of Publishing of RFP on Bank's website (www.psbindia.com)	**07.04.2017**
Last Date for Submission of Pre-Bid Query	**13.04.2017 – 15:00 HOURS (queries must be mailed to** ho.rmd@psb.co.in **only)**
Pre-bid Meeting	**17.04.2017 15:00 Hours**
Bid submission last date and time	**01.05.2017 – 14:00 HOURS**
Technical bid opening date and time	**01.05.2017 – 15:00 HOURS**
Date of Technical presentation	To be intimated later.
Date and Time for Reverse Auction	To be notified later to the Technically Qualified Bidders only.
Place of Opening of Bids	Punjab & Sind Bank Head Office Risk Management Department Bank House, 7th Floor, 21, Rajendra Place,

	New Delhi **110008**
Contact Persons for any clarifications/ Submission of Bids	Mr Amit Srivastava
Contact Numbers	011-25814574

3   Structure of the RFP

- an overview of services to be provided by the selected Bidder;

- an overview of the solution architecture, software, hardware and facilities management services required from the Bidder;

- the technical and commercial evaluation methodology which shall be followed to select the successful Bidder and;

- the terms and conditions to which this RFP and the Bidder responses shall be subject to PSB shall enter into a separate contract after selecting the bidder, which shall detail the terms and conditions.

A detailed set of annexure is provided to the bidder for formulation of responses for evaluation covering sections such as functional requirements, technical requirements, solution architecture requirements, proposed team fitment/ strength, training the Bank's personnel, etc. The list of such annexure is provided in the table below.

Bid Formats attached to this document

Annexure Reference No.	Content
ANXA1_Form_1_BankGuaranteeProforma	Bank Guarantee Form
ANXA2_Form_2_TechnicalBidForm	Technical Proposal Format
ANXA3_Form_3_CommercialComplianceCertificate	Commercial Compliance Certificate
ANXA4_Form_4_ComplianceCertificate	Compliance Certificate
ANXA5_Form_5_ProposedAgencyProfile	Proposed Agency Profile
ANXA6_Form_6_ConfirmationofTermsandConditions	Confirmation of Terms & Condition
ANXA7_Form_7_TenderOfferCoverLetter	Tender Offer Cover Letter
ANXA8_Form_8_SubmissionCheckList	Submission Checklist
ANXA9_Form_9_PreBidQueryFormat	Pre-bid query format
ANXA10_Form 10_ConfirmationofEligibility	Confirmation of eligibility
ANXA11_Form_11_ProposedTeamProfile	Proposed Team Profile
ANXA12_Form_12_ManufacturerAuthorizationForm	Manufacturer Authorization Form
ANXA13_Form_13_NDA_Format	NDA Format
ANXA14_Form_14_Authorized Signatories	Authorized Signatories Format
ANXA15_Form_15_PerformanceBankGuaranteeProforma	Performance Bank Guarantee Format
ANXA16_Form_16_ContractForm	Contract Form

ANXA17_Form_17_DeedofIndemnity	Deed of Indemnity Form
ANXA18_Form_18_PowerofAttorney	Power of Attorney
ANXA19_Form_19_ApplicationIntegrityStatementForm	Application Integrity Statement
ANXA20_Form_20_Sizing of Requirement from Existing vendor	Sizing of Requirement of Infrastructure from Existing Bank Vendor
ANXA21_Form_21_Training Form	Training Form
ANXA22_Form_22_Vulnerabilites	Undertaking for Vulnerability
ANXB1_Functional and Technical Specifications	Functional and Technical Specifications Format
ANXC1_Commercial Bill of Material	Commercial Bill of Material Format

4 Introduction

4.1 Overview

Punjab & Sind Bank (hereon referred to as 'PSB' or the 'Bank') is a major Public Sector bank in Northern India. The Bank's Head Office is in Rajendra Place, New Delhi.

The Bank has a national presence through a widespread network of 1466 plus branches all networked under Centralized banking Solution on Finacle. It also has a network of more than 1200 ATM(s) spread across the country including onsite and offsite ATMs as well. Bank has one RRB with 33 branches at present. With more than 107 years of customer services, the Bank has a large satisfied clientele throughout the country. For enhancing customer convenience levels and overall inter-branch efficiency, the bank has been a frontrunner in implementing various IT enabled products. Bank has already launched various delivery channels such as Internet Banking, Mobile Banking, ATMs. Bank has also implemented Anti Money Laundering solution.

In the recent years, with the liberalization of financial system, use of technology, increased competition for business from banks/ FIs, introduction of global standards for risk management, etc., Reserve Bank of India (RBI) has suitably made need based changes in the risk management practices in the banking system. The Bank has also adopted improved risk management practices by introducing systems, structures, etc., in respect of credit risk management and market risk management.

Further, as part of the on-going process of introducing better risk management systems in the Bank it is proposed to implement the Advanced Approaches (*Advanced Approaches include: Advanced Internal Rating based Approach/ Foundation Internal Rating based Approach for Credit Risk, Internal Models Approach for Market Risk and Advanced Measurement Approach for Operational Risk*) under the revised capital adequacy framework (Basel II Norms) as per the

RBI guidelines. Accordingly, in line with the RBI guidelines on New Capital Adequacy Framework, related guidance notes/ guidelines and BASEL II /BASEL III Norms, the Bank proposes to set up systems and software for migrating to Advanced Approaches for Credit Risk Management [CRM], Market Risk Management [MRM] and Operational Risk Management [ORM].

Over a period of time, Punjab and Sind Bank (PSB) has taken various initiatives for strengthening risk management practices. Bank has an integrated approach for management of risk and in tune with this, is formulating policy documents taking into account the business requirements / leading practices or as per the guidelines of the national supervisor. These policies address the different risk classes viz., Credit Risk, Market Risk and Operational Risk, Pillar-II ICAAP and Pillar-III reporting

RBI has also indicated a tentative timeframe for Banks to apply to RBI seeking permission to migrate to advanced approaches of Capital Computation for all Risk areas (Credit, Market and Operational risk). The Bank has been in the process of enhancing its Risk Management practices and believes that aligning such activities with the strategic aim of migration to advanced approaches would help achieve long term benefits. The Bank has already taken some steps in this direction and this RFP is intended to invite Techno-Commercial Bids from eligible bidders to provide end-to-end solution for implementation of Credit Risk, Market Risk and Operational Risk Management system in consonance with advanced approaches under Basel-II and BASEL III.

Further, as part of the on-going process of introducing better risk management systems in the Bank, it is proposed to implement Advanced Approaches for Credit Risk, Market Risk and Operational Risk as per RBI circular reference number

1. Implementation of the Internal Rating Based (IRB) Approaches RBI/2011-12/311DBOD.No.BP.BC.67/21.06.202/2011-12 for Credit Risk.

2. Prudential Guidelines on Capital Adequacy - Implementation of Internal Models Approach RBI/2009-10/384 DBOD.No.BP.BC.86 /21.06.001 (A)/2009-10 dated April 7, 2010 for Market Risk.

3. Implementation of the Advanced Measurement Approach (AMA) RBI/2010-11/488 DBOD.No.BP.BC.88/21.06.014/2010-11 RBI Circular reference number for Operational Risk.

The Bank invites Request for Proposal for a Turnkey Project for implementation of Credit Risk, Market Risk and Operational Risk Management System for advanced approaches under BASEL-II and BASEL III. The broad scope of the project envisages installation, customization, parameterization, implementation, validation of models and processes and maintenance of application software, system software, database, interfaces etc. as well as supply and installation of related hardware at Primary and Disaster recovery data centers of the Bank, with training to Bank's designated personnel.

The Bank is currently working on establishing a comprehensive system of internal controls, systems and procedures to monitor and mitigate risk. The Bank aspires to adopt the advance approaches of Basel II guidelines and Basel III as per RBI regulations and has appointed Consultant to undertake to provide assistance for setting up Enterprise wide Integrated Risk Management System and also in selection and acquisition of suitable software for Risk Management essential as per the Basel II, BASEL III and approximation of suitable time frame for applying to RBI for advanced approaches and completion of the necessary application procedure.

4.2   Purpose of this document

The Bank intends to augment its existing infrastructure for Credit Risk, Market Risk and Operational Risk Management framework to enable migration to IRB (AIRB & FIRB), IMA and TSA & AMA approaches for Credit Risk, Market Risk and Operational Risk Management respectively. The process of enabling migration to advanced approaches would also lead to implementation of Risk Management Processes and Solutions that are aligned to global best practices and would help the Bank evaluate and manage its Risks better.

The objective of the Project is to enhance The Bank's systems to enable management of risks in an integrated, efficient and effective manner.

The proposed Integrated Risk Management System (IRMS) is expected to improve transparency and informed decision making by putting in place a complete risk based decision making system. IRMS is envisaged as a platform, which will facilitate continual improvement of the processes and practices in the Bank. Since the Bank is dealing with multi-lateral and bilateral funding agencies, up-gradation of its credit, market and operational risk management framework and compliance with Basel II and BASEL III norms would improve the Bank's acceptability with them.

Disclaimer:

The RFP document is not a recommendation, offer or invitation to enter into a contract, agreement or any other arrangement in respect of the services. The provision of the services is subject to observance of selection process and appropriate documentation being agreed between the Bank and any successful bidder as identified by the Bank after completion of the evaluation process detailed in *Section 9*.

The information contained in this RFP document or any information provided subsequently to Bidder(s) whether verbally or in documentary form by or on behalf of the Bank, is provided to the Bidder(s) on the terms and conditions set out in this RFP document and all other terms and conditions subject to which such information is provided.

This RFP is neither an agreement nor an offer and is only an invitation by Bank to the interested parties for submission of bids. The purpose of this RFP is to provide the Bidder(s) with information to assist the formulation of their proposals. While effort has been made to include all information and requirements of the Bank with respect to the solution requested, this RFP does not claim to include all the information each bidder may require. Each Bidder should conduct its own investigations and analysis and should check the accuracy, reliability and completeness of the information in this RFP and where ever necessary obtain independent advice. Bank makes no representation or warranty and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability or completeness of this RFP. Bank may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information in this RFP.

This is not an offer by the Bank but only an invitation to bid in the selection process initiated by the Bank. No contractual obligation whatsoever shall arise from the RFP process until a formal contract is executed by the duly authorized signatory of the Bank and the Bidder.

4.3 Existing IT Set-up

The Application landscape in the Bank is in a state of transition. The Bank has completed the rollout of a comprehensive Core Banking Solution on 30th April 2013. The CBS is based on the Finacle application which is a well-established COTS application being used by several banks in the country. Prior to the CBS application, the Bank primarily used ALPM (Advanced ledger posting machine) as the primary transaction application.

The following is a list of applications at Punjab and Sind Bank: (The application list includes both current / proposed and phased out applications). The list below is not exhaustive.

Application	Description
Phased Out Application	
ALPM	Advance Ledger Posting Machine. Primary Transaction system prior to CBS roll out
BOSS	Banking Operation Soft Solution. An In-house developed application for full automation of Branch Banking Operations
IBARS	Inter Bank Accounting Reconciliation System
TIPS	Risk Reporting System currently used by bank
BSR Return Package	The BSR Returns Application is used for BSR compliance reporting to RBI and remaining reports are created on excel

	templates.
CIBIL	The CIBIL application is an in-house developed application designed using FoxPro. The application is used to record and consolidate loan account information for due submission to CIBIL
Current Application	
Finacle	Core Banking Application suite
BALM	Asset Liability Management System
Laser TX	Laser TX is an integrated Treasury Management Software
Balance Sheet/GL	Core Accounting System
ADF MIS through central Repository	Centralized Reporting System
DAR	Data Archival and Retrieval
Proposed/Planned Application	
FTP	Funds Transfer Pricing Application
Data Warehouse and Business Intelligence	Enterprise wide BI Solution
LOS/LAS	Loan Origination System and Loan Application System
Ind AS	Indian Accounting Standard

Network Connectivity:

The PSB Network Infrastructure consists primarily of a MPLS cloud provided by SIFY. The Primary Data Center (Co-hosted and located at Mumbai) and Secondary data center at Chennai (being shifted and co-hosted at Greater Noida) have Point to Point Connectivity of 20 Mbps (Primary & Secondary Link)

Connectivity of Branches to DC/DR is through MPLS Cloud of 30 Mbps at DC/DR end and Connectivity at Branches is with 64/128 Kbps (VSAT/LL/RF)
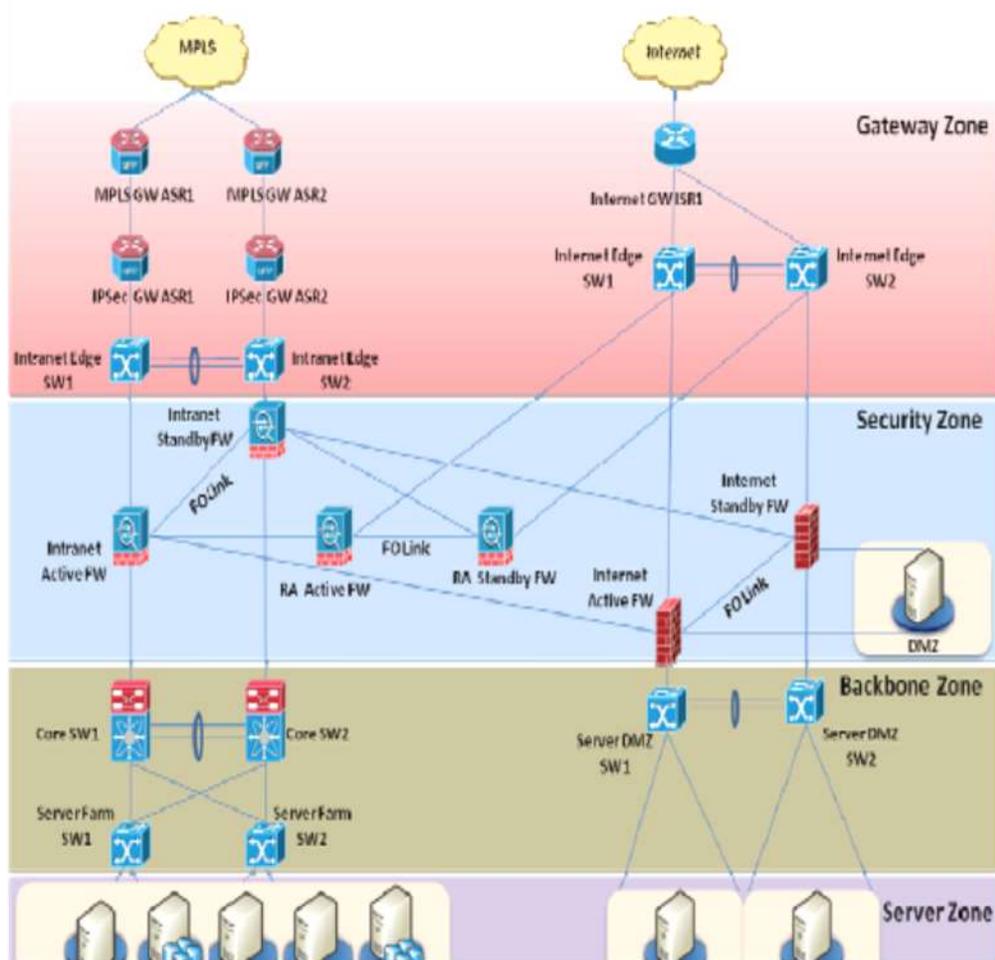
5 Eligibility Criteria

The Bank is looking to identify a Basel II /Basel III Advanced Approaches Risk Solution Provider [herein after referred to as "Bidder"] which has demonstrable technical competency in implementing Basel II /Basel III Risk Management Solutions. The Bidder should have capability to review the existing risk management framework of the Bank (including the prevailing policies, structures, processes, etc), design and implement Basel II/Basel III compliant Risk Management Systems (including modifications to existing risk management framework for Credit, Market and Operational risks) and instituting ICAAP. The Bidder is expected to have adequate experience in implementation of software products/ projects compliant with the integrated risk management framework for Basel II/ Basel III and ICAAP, and also possess high quality/ process accreditation(s). The Bidder should be well established and have sound financial standing.

Only those Bidders who fulfil the following criteria are eligible to respond to the RFP. Offers received from the Bidders who do not fulfil any of the following eligibility criteria are liable to be rejected.

If required, bidder may utilize participating entities to provide part of the scope of work. However bidder will be responsible for delivering the end to end solution and will be the single point of contact for The Bank. Eligibility criteria are applicable for bidder only.

The bidder must fulfil the criteria mentioned in the table below in order to bid for this RFP:

Sr. No.	Eligibility Criteria	Proofs to be enclosed	Compliance (Yes/ No)
Common Eligibility Criteria			
1.	The Bidder should be registered company in India. Should either be a PSU/PSE/Registered Partnership Firm or a Limited Company under Indian Laws with an established set up with support of adequate staff and with an office in India.	Certificate of Incorporation, Certification of commencement of business Reference of Act/Notification/Registration Certificate etc.	

2.	The Bidder should have average revenues in excess of INR 100 Cr. for the past 3 financial years i.e.2013-14, 2014-15 & 2015-16	Copies of Annual Reports in case of listed companies and copies of audited balance sheets and P&L statements in case of others	
3.	The Bidder should have made Net Profit (after all taxes etc.) during the last three financial years i.e. 2013-14, 2014-15 & 2015-16	Copies of Annual Reports in case of listed companies and copies of audited balance sheets and P&L statements in case of others.	
4.	The Bidder should own the intellectual property rights of the product / solution or should have rights from the owner for deployment/ resale/ customization of software with the product Bidder or any other third party, whose software products are offered.	Self-Declaration from the Bidder and an authorization letter from manufacturer to this effect should be furnished giving mandate to participate in this RFP. Self-declaration should also specify that the bidder would be solely responsible for designing, procuring and delivering the entire solution.	
5.	The Bidder and the proposed OEM solution provider should have not been blacklisted at the time of submission of the bid by any regulator / statutory body/ any government department/ PSU/ PSE/Financial Institution or banks in India.	An undertaking to this effect must be submitted on bidder's letterhead	

6.	The Bidder having at least one of the following certifications by a recognized certifying agency: • ISO 9001:2000 • CMMI 5	Relevant Certificates to be provided	
7.	The bidder must be in the business of providing/Implementing solutions for Credit / Operational/Market Risk Management under BASEL guidelines, for scheduled commercial banks in India or abroad for more than two years	An undertaking to this effect (specifying the banks serviced, along with bank's confirmation) must be submitted on bidder's letterhead. Or relevant credential letter Or Purchase Order / Work order with Completion certificate	
8.	OEM product should have capability in all three risk areas namely, Credit, Market and Operational Risk.	A report from Gartner/Forrester/Chartis/any other globally recognized body on the solutions offered by the OEM must be submitted and must be positioned as "Leaders" in Gartner's "Magic Quadrant"/similar position in reports of other globally recognized bodies.	

Credit Risk Management, Market Risk and Operational Risk Management Product – Eligibility Criteria			
1.	The Bidder must have installed and Implemented Basel II AIRB solution for credit risk for at least one Scheduled Commercial Bank in India or abroad. **OR**	Copies of the credential letter from the Bank(s) or any other supporting document, such as an independent press release, to establish the successful Implementation of Basel II AIRB solution for credit risk.	

	The AIRB compliant solution (OEM product) must have been implemented for Basel II credit risk at least one Scheduled Commercial Bank/ Financial Institution in India or abroad. Co-operative banks (State Co-operative Banks, District Central cooperative banks, Urban Co-operative banks, etc.) shall not be considered for evaluation.		
2.	The Bidder must have installed and implemented Basel II IMA solution for market risk for at least one Scheduled Commercial Bank in India or abroad. **OR** The IMA compliant solution (OEM product) must have been implemented for Basel II market risk in at least one Scheduled Commercial Bank/ Financial Institution in India or abroad. Co-operative banks (State Co-operative Banks, District Central cooperative banks, Urban Co-operative banks, etc.) shall not be considered for evaluation.	Copies of the credential letter from the Bank(s) or any other supporting document, such as an independent press release, to establish the successful implementation of Basel II IMA solution for market risk.	
3.	The Bidder must have installed and implemented Basel II AMA solution for Operational risk for at least one Scheduled Commercial Bank/ Financial Institution in India or abroad.	Copies of the credential letter from the Bank(s) or any other supporting document, such as an independent press release, to establish the successful implementation of Basel II AMA solution for operational	

		risk.	
	OR The AMA compliant solution (OEM product) must have been implemented for Basel II operational risk at least one Scheduled Commercial Bank/Financial Institution in India or abroad. Cooperative banks (State Co-operative banks, District Central cooperative banks, Urban Cooperative banks, etc.) shall not be considered for evaluation.		
4.	The proposed solutions' OEM must have a presence in India for at least last 2 years and should have revenues in excess of Rs.50 Crores for the past 2 financial years i.e. 2014-2015 and 2015-2016	• Copy of audited balance sheets and profit and loss statements of OEM for last two financial years - 2014-15 & and 2015-2016 or CA Certificate Specifying the required Revenue for last two financial years - 2014-15 & and 2015-2016 • Certificate of Incorporation, Certification of commencement of business of OEM.	
5.	The OEM should either be a PSU/PSE/Registered Partnership Firm or a Limited Company under Indian Laws with an established set up with support of adequate staff and with an office in India.	• Certificate of Incorporation, Certification of commencement of business Reference of Act/Notification/Registration Certificate etc.	

Note:

- Attested photocopies of all relevant documents / certificates should be submitted as proof in support of the claims made. The bidder should provide relevant additional information wherever required in the eligibility criteria. The Bank reserves the right to verify /evaluate the claims made by The Bidder independently. Any decision of The Bank in this regard shall be final, conclusive and binding upon the Bidder.

- The Bidder should provide an integrated solution for both hardware and software and should provide for enterprise support for the same from OEM, as a part of the AMC and ATS.

- Either the Indian agent on behalf of the Principal/OEM or Principal/OEM itself can bid but both cannot bid simultaneously for the same solution.
- In case of business transfer where bidder has acquired a Business from an entity ("Seller"), work experience credentials of the Seller in relation to the acquired Business may be considered.
- In-case of corporate restructuring the earlier entity's incorporation certificate, financial statements, Credentials, etc. may be considered.
- If an agent submits a bid on behalf of the Principal/ OEM, the same agent shall not submit a bid on behalf of another Principal/ OEM for the same solution.

6 Scope of Work

The Project would be implemented at the Bank's Primary and Secondary Data Center. Requisite modules would need to be rolled out to Zonal Offices, Branch Offices and other Head Office Departments. Training of all users across various locations (as necessary), would need to be provided. It is expected that there would be 100 registered and 30 concurrent users for Capital Computation in CRMS; 3000 registered users and 450 concurrent users for Credit Rating in CRMS; 300 registered and 200 concurrent users for ORMS and 100 registered and 30 concurrent users for MRMS. Expected user Year on Year growth rate is 8%.

The offices of the Bidders should be in a position to deploy adequate staff/ personnel having requisite qualifications and experience to provide above services (in a cost effective manner) and meet service level requirements (as would be prescribed in the contract, in line with industry standards).

The Bidder is expected to deploy teams on the project with members individually having minimum 1-2 years' experience in credit, market and operational risks, Integrated risk management framework (Basel II /BASEL III), ICAAP, risk management products, software projects, system integration, etc. The senior Team Members/ Leaders should have a minimum 5 years of relevant experience. The Project Leader(s) is expected to have at-least 10 years of experience in the domain areas and implementation of such project(s).Bank may interview the proposed resource and confirm their acceptability. In any event if a resource is found unfit by

Bank, bidder agrees to change the same and provide Bank with a replacement within reasonable time so as to not affect the services/project timelines. The Bidder should not replace resources without prior permission of the bank. Also, the bidder should give at least one month prior notice to the bank in case of resource replacement. It is the duty of the bidder that the replacement provided should be equally or more qualified and experienced than the existing resource. Also, the existing resource should provide the complete handover to the new resource.

It is expected that the implementation under the Project would be completed within the estimated timelines provided below:

- Credit Risk (including all Basel II/ Basel III requirements) & Operational Risk (including all Basel II/ Basel III requirements) – 18 months from the acceptance of Purchase Order of the project
- Market Risk(including all Basel II/ Basel III requirements) – 12 months from the acceptance of Purchase Order of the project
.
- Timeline for delivery of hardware, OS & DB. - within 6 Weeks from the date of acceptance of Purchase Order

The bidder will be responsible for delivering the end to end solution and will be the single point of contact for The Bank.

The Bidder will be responsible for training the Bank's employees in the areas of implementation, Operations, management, error handling, system administration, etc. with respect to the implementation of CRMS, MRMS, ORMS.

The core team training will include functional as well as technical training and shall be considered within the scope of the Bidder.
The end user training is also included in the scope. The end user must be trained on all
Functionalities required for efficient daily operations of the ORMS, CRMS, and MRMS. The RFP has a sheet in the **Annexure ANXB1_Functional and Technical Specifications Training and ANXA21_Form_21_Training Form** provided separately which the Bidder shall need to complete the questions pertain to the training techniques, course details provided by the Bidder and the educational qualifications and experience of the trainers.
The Bidder is expected to provide the core team training and end user training to the bank officials/ designated personnel subject to mutually agreed course details, educational qualification and experience of the trainers between bank and bidders.

The bidder is also expected to provide, as a part of the technical bid, a detailed document that explains the general solution architecture of the solution proposed by the bidder. The response should also include details of the hardware and software proposed.

Bidders are required to respond to each point under Project Management in **Annexure ANXB1_Functional and Technical Specifications Project Management**. The Bidder should

provide explanation on the Project Management process that is proposed for the Bank including details of how the same was applied in a similar project.

Bidders are required to provide undertaking for Vulnerability as per the format provided in the annexure **ANXA22_Form_22_Vulnerabilites**

The broad scope of work shall include:
1. Supply of Software/Licences for proposed Solution(s) (Credit Risk Management System, Operational Risk Management System, Market Risk Management System, Data base, Environmental Software etc.)

2. Supply of Hardware for the proposed solution(s).

3. ATS and AMC support for all the Software and Hardware Supplied

4. Implementation Services

5. Application Support Services (Application Help desk)

6. Reporting

7. Training of Bank Officials

6.1 Functional requirements for Credit Risk Management System

Sr. No.	Credit Risk Functional Requirements
1	**Internal Rating System (applicable to all types of credit and investment exposures)**
1.01	The bank already has few internal credit rating models and score cards . For credit risk the Bank is currently computing capital on standardized approach. The new system should be both FIRB and AIRB compliant and should also compute the standardized apporach capital in the parallel run. Once the new system stabilizes, all the calculations (standardized approach, FIRB and AIRB) will happen on the new system only.
1.02	The proposed software solution should have flexible user interface, capable of interfacing with existing and future credit rating systems / score cards of the bank.
1.03	The proposed software solution should have flexibility to add any number of rating models and scorecards in future. The system should have the capability to develop expert defined models/ scorecards/statistically developed models/score cards/hybrid models and incorporate the same in the existing data flow
1.04	The system should have capability to generate reports pertaining to any kind of model development and/or validation of rating models (as per the requirements of working paper 14 of Basel Committee on Banking Supervision and the qualitative assessment as mentioned in the RBI IRB guidelines or any modification thereof) and should have statistical tools to create expert judgment, statistical and hybrid type of rating models/ score cards/Retail Pools.
1.05	The system should have capability to run credit rating model developed by the Bank. Also it should be accessible to users at Branches, Zonal offices and Head office with workflow

Sr. No.	Credit Risk Functional Requirements
	capabilities as per Bank's need
2	**Corporate, Sovereign and Bank Asset Class Models (Non-Retail Rating Models)**
2.01	The new System should have a capability to take data related to balance sheet, profit & loss and cash flow statements from pre-defined Excel sheets and other data formats (viz. .txt, .XBRL, .CSV, .XML etc.)
2.02	Enable the user to define multiple portfolios or asset classes based on multiple dimensions (such as borrower constitution, industry, product type, loan amount etc but not limited to) and associate borrower rating model and facility rating models to the user defined portfolios.
2.03	System should have ability to track and store account-wise /customer-wise previous internal and external credit ratings/ scores and LGD, PD and EAD for seven years.
2.04	The solution should be able to support validation techniques, including statistical tools, for the non-retail rating models as per the requirements of working paper 14 of Basel Committee on Banking Supervision (May 2005) or any modification thereof and generate reports for the same for management oversight and effective portfolio management. The system should have the tools to validate credit rating models on continuous basis. Validation process should enable the Bank to assess the performance of internal rating and risk estimation methods consistently and meaningfully. The validation process should help the Bank to meet regulatory requirements of RBI. The vendor should help bank to get it validated through independent third parties.
2.05	The system should be able to capture and receive the required data (Data entry, File uploads, direct transfers, batch processes, etc) from various source systems like Core Banking Solutions, Bank's internal system/software, Internal Rating models in various formats (viz. .txt, .XBRL, .CSV, .XML, excel, PDF etc) and capital calculations (for all asset classes) as per RBI Guidelines under Standardized Approach. FIRB, AIRB and all other asset class specific approaches of Basel-II/iii/ RBI.
2.06	The solution should have the ability to map the internal risk grades of the specialized lending subclasses (PF, OF, CF, IPRE and HVCRE) to supervisory categories as per Basel-II guidelines.
3	**Retail Rating Models**
3.01	Bank already has score-cards for certain retail products In addition to this; System should have a capability to develop expert defined models/ scorecards, statistically developed models/score cards and hybrid models and provide application and behavioral scorecards. The solution should enable the branch, zone users to input the required details for application scorecard and compute the application score.
3.02	The system should have the ability to capture retail exposures at an account level, assign each exposure to a particular retail pool based on well defined risk drivers such as borrower type, demographics, products, collateral, delinquencies etc. (not limited to these dimensions) to estimate Pool PD, LGD and EAD. Homogenous pools of retail exposures formed in consultation with the Bank in compliance with IRB guidelines. The system should have capability to integrate subsequent changes in Pooling criteria.

Sr. No.	Credit Risk Functional Requirements
3.03	System should have a capability to compute behavioral score for the retail products as a whole on a periodic basis. The solution should be capable to interface with Core Banking Solution/Bank's internal system/software and fetch the required behavioral data and compute behavioral score of each retail borrower.
3.04	Vendor should have a capability to generate reports and demonstrate that retail pooling models and methodology are compliant with the minimum requirement of IRB Approaches as per RBI guidelines. The vendor should help bank to get it validated through independent third parties.
3.05	The solution should be able to validate the retail score card/retail pooling models as per the requirements of working paper 14 of Basel Committee on Banking Supervision (May 2005) or any modification thereof and generate reports for the same for management oversight and effective portfolio management. The system should be able to compute and validate PD, EAD and LGD for each pool. The system should provide methodology and tools to validate retail pooling/score card models on continuous basis. Validation process should enable the Bank to assess the performance of retail pools, risk estimates and risk estimation methods consistently and meaningfully. The validation process should help the Bank to meet regulatory requirements of RBI. The vendor should help bank to get it validated through independent third parties.
3.06	The system should source relevant data from Core Banking Solution/Bank's internal system/software and also be able to capture and receive the required data (Data entry, File uploads, direct transfers, batch processes, etc) from various source systems like Internal Rating models and capital calculations (for all asset classes) as per RBI Guidelines.
4	**Capital Computation**
4.01	The solution should support Multiple Approaches and Multiple Jurisdictions, simultaneously, if required. The system should separately compute RWA and capital charge under standardized approach/FIRB/AIRB.
4.02	The solution should be able to capture all the Bank Customer Types and Bank Product Types and should be able to reclassify/categorize them as Basel asset class wise. The solution should support categorization of asset classes and sub classes as defined as per IRB approaches as given in the Basel II/III Accord / RBI guidelines (Corporate, Sovereign, Bank, SME, SL classes, Retail, QRRE, equity, purchased receivables, securitized etc.). The system should be capable of compute bank-wide and asset class wise (including sub-categories like product-wise, specialized lendings, SME, vertical wise etc) RWA, EL, UL and Capital (regulatory & economic)
4.03	The solution should provide the ability to estimates Probability of Default (PD)/long run PDs using internal rating grades and default history across all exposure types.
4.04	The solution should be capable for computing PD based on Internal loss history, External rating based, Statistical based approaches as described in the Basel II/III accord (as defined in Para 462 of BCBS document 2006).
4.05	The solution should be capable of computing Through-the-cycle PD and Point-in-time PD. The system should be capable to convert a PIT PD to TTC PD and vice versa.
4.06	The solution should support estimation of PD for low default and low data portfolios.
4.07	The solution should support both the Foundation as well as Advanced approaches for collection of LGD data components and estimation of facility wise Loss Given Default (LGD) –both

Sr. No.	Credit Risk Functional Requirements
	economic LGD and accounting LGD- across all exposure types (On and Off Balance sheet exposures), both for defaulted/ restructured accounts. The system should be capable of computing LGD using market based LGD, implied LGD and work-out method as per the nature, applicability and data availability of credit risk exposures. Further, the system should be able to drill down the LGD estimation into industry wise, vertical wise, product wise, workout method wise, year wise/quarter wise/Other frequencies/, collateral-wise and offer additional drilldown options and reports. It should also support analytics for estimating PD & LGD correlation.
4.08	The solution should distinguish between senior and subordinated facilities allocating required LGD to unsecured portion of the facility.
4.09	The solution should provide for EAD and Effective Maturity (M) calculation for both on and off balance sheet items.
4.10	The solution should be able to capture all types of risk mitigation inputs and should have the ability to reclassify/categorize the bank's risk mitigation tools into Basel defined risk mitigation inputs types as per Basel II/III Guidelines/ RBI guidelines. The solution should be able to allocate different collaterals to different facilities using multiple algorithms, approaches (Simple, comprehensive, FIRB, AIRB) and Basel II/III or guidelines by RBI. The solution should be able to use double default methodology for capital computation.
4.11	The system should be able to compute the capital charge as per the standardized approach and advanced approaches
5	**Bank data to Basel II/III Asset Class Mapping**
5.01	The system should provide business user friendly graphical user interfaces (GUI) to perform bank codes to Basel II/III data mappings. · map Bank customer types to Basel II/III customer types · map Bank product types to Basel II/III product types · map Bank security/collateral types to Basel II/III collateral types · map Bank asset type/guarantor type to Basel II/III asset type
5.02	The software should be flexible for the business user to use multiple factors such as customer constitution code, product type, exposure amount, legal status etc to perform Basel II/III asset classification. Bidder should have the capability to refine/redevelop the asset re-classification logic and implement the same in the system.
5.03	The user should be able to view the entire asset classification mapping and it should be printable to be submitted for regulatory inspections and audit
5.04	Along with the eligible financial collateral recognized in the Standardized approach, the solution should recognize the other eligible FIRB/AIRB collaterals and provide necessary treatment as outlined in the Basel II/III accord./RBI guidelines The system should allow user to compute for eligible IRB collaterals (viz. minimum - collateralization or over - collateralization or under - collateralization).
5.05	The solution should have the ability to compute, make estimates, and apply haircuts on collaterals and exposures as per Basel-II/III accord/ RBI guidelines on IRB approach. The system should be capable of applying a weighted average of haircut if the collateral is basket of assets.

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5.06	The solution should make adjustments for different holding periods based on the quality of collaterals and non-daily mark to market or re-margining.
5.07	The solution should provide for effective LGD where the Bank is having other financial/AIRB collaterals and pool of collaterals.
5.08	The solution should provide exposure adjustment by segmenting it into portions covered by different collateral and guarantee types and portion remaining unsecured as per Basel-II/III/RBI guidelines.
5.09	The solution should provide necessary treatment for repo style transactions/ guarantees/ credit derivatives under both foundation as well as advanced approaches including computation of risk parameters and estimate credit loss for all possible scenarios involving default/no-default of protection providers and the underlying reference entity.
5.10	The solution should support measurement and capital charge computaiton for exposures subject to counterparty credit risk such as OTCs and SFTs through both the Current Exposure Method and Potential Future Exposure Models
5.11	The solution should support identification and measurement of wrong way risk and Measurement of settlement risk (including incremental default risk in the trading book). The system should provide ability to: Identify and display block trades and facilities involving wrong-way risk before execution of trades/facilities based on business rules, identify such risk in trading book , make changes to PD, LGD and EAD parameters of such counterparties ,track underlying collateral linked to wrong way risk transactions and generate reports on such trades and associated limits
5.12	The solution should be able to generate PD, EAD, LGD for sub-portfolio like industry, sector, Geography etc.
5.13	The system should be able to compute Downturn default weighted LGD as per RBI/ Basel guidelines.
5.14	The system should have the capability to validate rating and scoring models and generate reports (as per the requirements of working paper 14 of Basel Committee on Banking Supervision or any modification thereof).
5.15	The solution should support development of multiple PD, LGD & EAD models and should enable validation (as per the requirements of working paper 14 of Basel Committee on Banking Supervision or any modification thereof).
5.16	The system should provide statistical tools such as, HHI Index, Gini co-efficient, Cumulative Accuracy profile, Receiver Operating Characteristic (ROC), etc.
5.17	The system should have the ability to capture and map PD, LGD, EAD and Maturity for the FIRB/AIRB asset classes and apply the same in capital calculations.
5.18	System should generate transition matrix for multiple period (quaterly, monthly , yearly etc.) Transition matrix should be generated for asset classes, industry/region/country/product/business segment etc

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5.19	The system should be capable of performing pooling based on statistical analysis, application/ behavioral scores and expert judgment. At a minimum the system should support clustering techniques such as CART, CHAID and regression trees etc. The logic of pooling should be configurable in the system. The pooling logic is subject to change on at least at a yearly basis. Hence the definition of pooling logic should be through a graphical user interface and should not require any programming or vendor assistance. The system should have the capability to validate retail pools and generate reports (as per the requirements of working paper 14 of Basel Committee on Banking Supervision or any modification thereof).
5.20	System should generate correlation matrix for industries, ratings, zones, facility etc.
5.21	The system should be able to store the data for at least seven years at an account/transaction level to perform the pooling process.
5.22	The system should have the ability to assign/map new exposures into the created pools.
5.23	The system should generate reports to monitor/track pool stability and accuracy.
5.24	The system should be able to perform firm-size adjustment for small and medium size entities.
5.25	The system should be able to apply double default treatment for the hedged portion and compute capital requirement for double default.
5.26	In case of maturity mismatch for double default transactions and other transactions, the system should be able to perform the maturity adjustment as per Basel II/III Guidelines. The system should be able to do calculations for currency mismatches also.
5.27	The system should be able to perform capital calculation for equity exposures via the following approaches: · Market Based Approach · Simple risk weight method · Internal Models Method · PD/LGD Based Approach
5.28	The system should support VaR model (99th percentile, one tailed), i.e. the system should have the ability to build VaR Model. The system should be able to take the equations as per regulatory formulas and perform capital calculations.
5.29	The system should be able to support an interface with Treasury systems from where the VaR numbers can be fetched.
5.30	The system should be able to calculate capital charges for default and dilution risk for purchase receivables (corporate and retail exposures).
5.31	The solution should provide methodology for computation of Expected Loss (EL) and Unexpected Losses (UL), RWAs for Credit risk under both foundation as well as advanced approaches.
5.32	The solution should provide calculation of best estimate of Expected Loss; compute RWA, capital for defaulted/NPA exposures as per RBI/ Basel IRB approaches.
5.33	For Default risk, the system should be able to apply Top-down Approach or Bottom up Approach for both corporate and retail exposures (purchase – receivable asset class wise). Also based on the exposure type, the system should be able to apply retail or corporate risk weight functions to arrive at the default risk weight.
5.34	The system should be able to calculate capital for Traditional and Synthetic Securitization

Sr. No.	Credit Risk Functional Requirements
	exposures.
5.35	The system should be able to capture the bank's role (e.g. Originator, investor etc) for the securitization exposures, various credit enhancements and should calculate the capital as per Basel II/III Guidelines.
5.36	The system should have CCF's models and calculate capital for securitization exposures with early amortization features.
5.37	The system should be able to apply the supervisory formula for capital calculation of Securitized Exposures as per Basel II/III / RBI Guidelines.
5.38	The system should be able to capture Failed Trades ('Delivery versus Payment' and 'Non Delivery versus Payment') i.e. unsettled securities and foreign exchange transactions) and should be able to calculate capital as per Basel II/III Guidelines.
5.39	The system should be able to perform Stress testing and Back testing, which will allow justification of the capital computation for all the asset classes.
5.40	The system should have the ability to perform the stress tests (for all the asset classes) for PD, LGD, EAD, CCF and Maturity. System should be able to Simulate stress test on various parameters like PD, EAD, and LGD for Capital requirement & RAROC. Examples of scenarios that could be used are:
	· Economic or industry downturns
	· Market Risk events
	· Liquidity conditions
	· Bank specific scenarios
	System should be able to generate alerts for initiating management action in case of stress situation. The system should have the capability to create, edit and maintain a scenario library containing both bank-wide and business unit specific scenarios with assumptions, portfolios and considered exclusion etc and provide a report for all stress scenarios including documentation of assumptions and algorithms thereof
	Vendor should independently develop and validate the required models for PD, LGD, EAD, CCF and effective Maturity for on and off-balance sheet exposures.
	For estimation of EAD & CCF, it should also do undrawn analysis, UGD analysis etc and generate reports.
5.41	The system should be able to define portfolio based upon the following aggregation possibilities such as:
	· Counter-party or combination of counter parties
	· Industry
	· Tenor
	· Product
	· Geography
	· Issuer
	· Credit rating
	· Any internal hierarchy
	And should allow drill down capabilities up to transaction level.

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5.42	The system should be able to perform portfolio analysis by fixing and measuring exposures and limits inclusive of correlation effects within portfolio parameters. This should be in line with the Basel /RBI guidelines on correlation measurement such as Default/Asset Price correlation.
5.43	The system should be able to compute expected/unexpected portfolio losses incorporating:
	· Default risk/transition probabilities
	· Recovery rates
	· Correlation and diversification effects between counter parties
5.44	The system should have the flexibility to compute Risk-Based Capital (Capital at Risk or Economic Capital) calculations based on aggregation of:
	· Value at Risk
	· Expected and unexpected losses from exposure, default rates and recoveries
5.45	Calculation of Risk Adjusted Return on Capital (RAROC) based on regulatory capital as well as economic capital. The system should be able to calculate capital requirement individual account-wise and also units-wise such as:
	· Entire Bank
	· Region/zone
	· Geography
	· Industry
	· Business segments
	· Products
	· Rating wise
	· Branch
	· Relationship Manager
5.46	The system should have the pre-built templates and should also have the functionality for a business user to define and customize Credit Risk MIS across all matrix dimensions such as:
	· Counter-party
	· Portfolio
	· Product
	· Geography – country/ state/zone/branch
	· Industry
	· Concentrations
	Concentration risk across different categories of exposures, for e.g. Top 20 single borrowers, Top 10 group borrowers, Top 20 depositors.
	· Risk Profiles
	· Rating wise
	· Delinquency buckets
	· PD Bands
	· LGD Bands etc.
	And should allow drill down capabilities up to transaction level.
5.47	The solution should be able to generate Risk Profile Template or any other RBI requirement and other regional/ branch-wise risk profile templates for credit risk as per Bank's internal requirements.

Sr. No.	Credit Risk Functional Requirements
5.48	The system should be capable of generating various Bank- defined reports like: (System should have the capability to generate back dated reports)
	· Borrower Information report
	· Industry Analysis report
	· Monitoring (Account-wise report to cover rating transition & trend in critical identified parameters)
	· Peer group Analysis report
	· Rating wise reports
	· Portfolio reports
	· Borrower-wise risk score report
	· Borrower-wise risk grade report
	· Borrower-wise year wise risk score report
	· Borrower-wise year wise risk grade report
	· Industry Concentration Report
	· Industry- wise risk score report
	· Industry- wise risk grade report
	· Region wise Concentration Report
	· Region wise risk score report
	· Region - wise risk grade report
	· Quick mortality Report
	· Defaulted Account Report (Grade wise/ Industry wise/ year wise/ ownership wise/ size wise/ on-balance sheet/ off-balance sheet exposure wise for a date range etc)
	· RAROC reports- vertical wise, geography wise, rating grade wise etc.
	· Capital Charge-credit risk (Regulatory and economic) – expected and unexpected losses
	· Exposure Reports (Portfolio exposure by Sector/ industry/credit rating/ Client/ Loan Size/ Maturity/ country/currency/ on-balance sheet/ off-balance sheet exposure/interest rate wise/floating rate wise – internal and external benchmark /fixed rate wise etc. after including/ excluding CRM – giving NPA position separately under each of these categories along with reports on accounts which have been upgraded from NPA and which have slipped to NPA from standard Position of restructured accounts under each of the categories along with reports on accounts which have been upgraded from restructured and which have slipped to NPA from restructured status.
	· Report on restructured exposures, repeated restructured accounts and drill down options like industry-wise, rating-grade wise, curing-wise, tenor wise, sacrifice wise, product-wise, vertical-wise, region-wise, branch-wise, asset class-wise.
	· The reports should be able to cut across asset classes and give combined reports, if needed, while analyzing industry-wise, product-wise, sector-wise reports (e.g.: exposure to cement industry report should combined and render a consolidated report on all exposures under various asset classes)
	· Collateral Reports (Collateral wise exposure report (total exposure after netting that is covered by 1. eligible financial collateral 2. other eligible AIRB collateral 3. guarantees etc). including current market value of collateral wherever applicable as per policy of the Bank

Sr. No.	Credit Risk Functional Requirements
	· Expiry reports on collateral (Due to expire/expired)- bank/zone/branch/account wise Market Disclosure Report (as per Basel II/III/RBI guidelines).
	· Residual Contractual Maturity Breakdown of the whole portfolio broken down by major type of Credit Exposures
	· Exposure -weighted average LGD/EAD for each borrower category.
	· Securitization disclosure (Total outstanding exposure securitized by bank broken down by type of securitization (traditional/Synthetic), exposure type.
	· Amount of NPA securitized broken down by exposure type.
	· Securitization exposure retained/purchased broken down by exposure type. (This report would be generated for user defined period and as of date).
	· Report on capital market exposure as required as per RBI requirement – account wise as per limit and outstanding exposure – on and off balance sheet
	· Report on exposure to Real Estate – commercial and residential – direct and indirect
	· Report on exposure to commodities
	· Report on Interest rate wise break up of advances – segment wise (term loans, project finance, bills purchased/discounted or negotiated, demand loans, CC, staff loans etc) as per user defined range of rate of interest
	· Report on Interest rate wise break up of advances – segment wise - as per user defined range of rate of interest
	· Report on position of unsecured exposure – public sector/private sector/rating wise/interest rate wise/maturity wise
	· Report on break up of term loans, project finance, bills purchased/discounted or negotiated, demand loans – as per residual maturity
	· Report on pre payment of total/installment of term loans, project finance, bills purchased/discounted or negotiated, demand loans
	· Report on segment wise exposure –Report on future draw down schedule for term loans, project finance and infrastructure projects
	· Report on single borrower/group borrower exposure – user defined number of top exposure vis-à-vis prudential exposure limits fixed by bank/regulator
	· Audit log report
	· Export formats for MIS report –
	-.TXT
	-.XLSX
	-.PDF
	-.DOCX
	-.PPTX
	-.XML
	-.XBRL
	· Overrides performance reports – performance of accounts where there is rating over-ride or downgrades (Branch wise / region wise /geography wise/level wise/approving user wise rating cases processed, approved, rejected and pending for user defined period.

Sr. No.	Credit Risk Functional Requirements
	.The system should: Provide reports related to different limit structures and risk profile aggregation along with ability to define and determine portfolio limits . Be able to develop and support optimization models (e.g. Hill Climbing Algorithms) to determine credit limits. Reports incorporating the effects of netting agreements, collateral and credit risk transfer mechanisms (Credit Default Swap (CDS) and guarantees) while computing portfolio risk for the bank. Provide ability to calculate and report credit P/L for the portfolios considering default / non-default and rating-transitions. Provide ability to compute and report credit portfolio metrics including Expected Loss (EL), Unexpected Loss (UL), Credit VaR (CVaR) and Expected Shortfall (ES)
	· Any other report which bank considers as relevant including modification of earlier report
	· System should facilitate capital computation and computation of leverage ratio as per Basel II & III guidelines
5.49	The system should support portfolio-based calculation like Limits Management: Bank may define a limit cap (may be absolute or % terms) to an industry, borrower, individual exposure, and bank, sovereign, rating. The system would check the same and generate reports. What if/Incremental risk analysis by addition of individual loan portfolio for decision making purpose. Portfolio based calculation should take into account industry correlation to arrive at capital requirement.
5.50	The system should provide facility to generate customized report for user like Top Mgmt, Risk Management Dept, Zonal Manager, Branch Manager, and Relationship Manager etc. Graphical representation of reports, wherever required. Access to certain reports would be restricted to certain groups.
5.51	The system should have the provision to run FIRB/ AIRB approach for certain asset classes and Standardized approach for other asset classes in the same execution.
5.52	The system should be able to store data for minimum seven years across all asset classes, which in turn can be used for modeling the IRB risk components.
5.53	The system should be able to store minimum seven years of data for PD, LGD and EAD modeling.
5.54	The solution should have the flexibility of viewing the reports at an aggregated level or at granular level.
5.55	The system should be able to generate risk maps, risk charts, trend analysis etc for Pillar-I and Pillar-II risks, various risk dashboards for the users and top management.
5.56	The system should have the capability to generate the report on rating migration matrix depicting the number of accounts under each rating grade at start and end of period and percentage of accounts migrated to other rating grades (downgrade or upgrade). Also, reports on migration like rating grade migration report and pool migration report should be generated.
5.57	The system should be able to compute risk based pricing.
5.58	The system should have the capability to carry out the Exploratory Data Analysis (EDA)
5.59	The system should have the functionality of report creation using drag and drop.
6	**Others**
6.01	The bidder is expected to conduct trainings as per Bank requirement and in phases.

Sr. No.	Credit Risk Functional Requirements
7	**Overall Functionality**
7.01	The solution should have the functionality to extract computed Credit Risk capital numbers from the respective systems / applications and compute the CRAR (Capital to Risk Weighted Assets Ratio) of the Bank for regulatory and internal reporting
7.02	"The logic and details of assumptions behind the analytics needs to be shared with the Organisation. The details will have to share even if there is use of proprietary technology in the Analytics platform. Also, any use of concepts or logics in the software need to be backed up by journals/Books/Use of it in the industry and acceptable to the regulators etc."
8	**Independent Modeling Platform**
8.01	The solution should offer an independent modeling and data analytics platform with data slicing, dicing and statistical capabilities such as different regression techniques, segmentation techniques, genetic algorithms, neural network, time series analysis, statistical validation tests and coefficients etc where the Bank can build their own rating models, do data tranformation, do statistical modeling of PD, LGD and EAD estimates. The tool should be easy to menu driven. The vendor should provide complete training to the Bank for usage of the modeling platform
9	Any new frameworks/guidelines/circular released by RBI during the contract phase shall form a part of functional and technical requirements. Vendor should agree to provide the same functionality in the system for any changes in the standardised or Advance approches or all together new approach by RBI.

6.2 Functional requirements for Market Risk Management System

Sr. No.	Market Risk Functional Requirements
1	**Value-at-Risk (VaR) Methodologies**
1.1	**Parametric/ Variance – Covariance Method**
	System capability to compute capital charge for Market Risk as per SMM/IMA approach. Details on the functionalities are provided below.
1.1.1	System should calculate VaR using industry standard Variance Covariance methodology
1.1.2	System should have the capability to test the normality assumption for distribution of returns for all asset classes in order to justify the reasonableness of using parametric VaR method
1.1.3	System should have the functionality to provide flexibility to set parameters to:
	· Incorporate volatilities and correlations data sets from external source
	· Calculate volatilities and correlations based upon selected historical periods and industry methods for computing stressed VaR under IMA
1.1.4	System should have the functionality to calculate volatilities using relative, absolute and logarithmic price changes
1.1.5	System should allow applying different volatility estimators and models: moving averages, exponential with definition of Decay Factor, GARCH & Stochastic Volatility estimates
1.1.6	System should calculate Undiversified / Diversified / Partially Diversified VaR to allow for risk factors correlations contribution

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1.1.7	System should allow selection of type of interest rate sensitivities to be used ("par" rates, zero coupon rates)
1.2	**Historical Simulation Method**
1.2.1	Ability to specify the type of risk factors which should be considered for the historical shifts
1.2.2	System should have the capability to compute scaled VaR (square root of time rule) as well as actual risk factor changes based on holding period
1.2.3	Specification of market data changes to be considered for overlapping or non-overlapping periods
1.2.4	System should have the functionality to calculate market data changes using the following approaches: · Relative Price · Absolute Price · Logarithmic Price
1.2.5	System should support variants of Full Valuation for performance issue enhancement
1.2.6	System should support multiple historical "look back" periods (e.g. 300 days) and sampling windows
1.2.7	System should be capable of computing clean and dirty prices for VaR calculation (Nelson Seigel model).
1.3	**Monte Carlo Simulation Method**
1.3.1	Accurate random number generator algorithm. Distributions to be used for random number generation.
1.3.2	System should provide multi-step processes (i.e. to define the length of Monte Carlo steps, the mean reversion and standard deviation of the steps and models used to describe risk factors relationships)
1.3.3	System should provide multi-currency simulation
1.3.4	System should display Monte Carlo price paths leading to losses greater than a certain amount (user definable) in order to provide a better understanding / interpretation of the market conditions that could generate such losses
2	**VaR Engine Architecture**
2.01	Functionality to compute Incremental VaR, Marginal VaR and Component VaR for each instrument for bank's internal analysis
2.02	Provide flexibility of setting the confidence interval parameter (95, 97, 99,etc.)
2.03	Provide flexibility of setting the holding period parameters (1 day, 10 day, etc)
2.04	Provide flexibility to consider any historical look back period considered as a stressed period for computation of stressed VaR under all the three methods. The system should have capability to compute Stressed Var as per RBI requirement of IMA guidelines. The system should consider applying anti-thetic data or applying absolute rather than relative volatilities for calculating stressed VaR as per IMA guidelines
2.05	System should have the capability to compute VaR for each instrument, asset class, mix portfolios (for example, bond and equity) and at different portfolio levels. (Along with the suitable adjustement based upon correlation)
2.06	System should perform incremental calculations in real time

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2.07	Allow user-defined scenarios to override-adjust historical pattern assumptions (e.g. special events)
2.08	Capability to use proxies for securities for which historical data is not available
2.09	Allow combination of analytical and simulation methods based on product type for performance enhancement
2.10	System should perform calculations in "Real Time" and "Batch basis"
2.11	System should calculate and store the various components of VaR for further drill down reporting
2.12	For equity transactions, corporate actions should be taken into account such as stock dividend, cash dividend, stock split, merger, etc.
2.13	Model should be able to capture "Event" risk for debt positions. Inclusion of migration risk.
3	**Market Data Input**
3.1	**Yield Curve Generation**
3.1.1	Define an unlimited number of term structures for a satisfactory coverage of the various markets within a specific currency (libor, bond, swap, etc.)
3.1.2	Define spreads over benchmark term structures for different rating and security categories
3.1.3	Choose industry standard yield curve types: zero coupon yield curve, forward rate curve or any other user defined curve
3.1.4	The user should be able to see in the system various zero rates and the market rates(like swap,forward rate or libor rate) used to generate the curve
3.1.5	Chose industry standard interpolation methodologies: Linear, Exponential, logarithmic, cubic spline, etc.
3.1.6	Compute Vector of Discount Factors based on annual, semi-annual, quarterly, continuous compounding
3.1.7	Upload pre-calculated values from external applications
3.1.8	Sufficiency of Risk factors for Interest rate sensitive portfolio (Modeled with Min of 6 factors requirement which needs to consists of the following: spot rates, parallel & non-parallel shifts, convexity, basis, correlation, concentration-issues as well as market, spread risk (eg. bond and swaps). Risk factor to be identified for Interest Rate sensitive instruments with optionality.
3.1.9	System should infer missing data points and create continuous curve values out of distinct data points by bootstrapping of curves by appropriate methodology (E.g., linear, constant, cubic spline).
3.1.10	Link missing data points to suitable proxy data
3.1.11	Provide error handling capabilities to identify missing data and substitute with data points derived either from proxy sources or from interpolation
3.1.12	Calculate correlations and volatilities based on historical data (un-weighted moving average and exponentially weighted moving average)
3.2	**Volatility Curve Generation**
3.2.1	Define an unlimited number of term structures and spreads for a satisfactory coverage of the various markets including · Across all currencies · Across all markets within a specific currency (caps, floors, bond options, swaptions,

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	exchange-traded options, puts and calls)
	· Across all Tenors
	· Across all strikes to include Term/Moneyness effect (Smile Effect)
	· Interest rate volatility structure
3.2.2	System should upload pre-calculated values from external applications
3.2.3	Sufficiency of Risk factors for Equity: - Beta mapping with Market index, Volatility, Correlation effects, Cyclicality (Industry as well as Equity Market itself) & concentration.
3.3	**Other Term Structure Requirements**
3.3.1	System should quote and use Bid, Mid and Offer rates using: real time updates, timed updates or manual input.
3.3.2	System should define/assign separately Discount Yield Curve and Forward Estimation Yield Curve for structured pricing
3.3.3	System should define for each benchmark instrument all key parameters necessary for correct calculations (i.e. Day Count Basis, Business day Convention, Holiday Conventions, etc)
3.3.4	System should allow basic graphical term structures analysis for better understanding of market conditions based on historical information and simultaneous curves comparison
3.3.5	System should support upload and download of data
3.3.6	Sufficiency of Risk factors for Foreign Exchange: - Risk factors corresponding to the exchange rate between the domestic currency and each of the foreign currency for which Bank has significant exposure.
3.3.7	System should 1. Infer missing data points and create continuous curve values out of distinct data points by bootstrapping of curves by appropriate methodology (E.g., linear, constant, cubic spline). 2.Link missing data points to suitable proxy data 3. Provide error handling capabilities to identify missing data and substitute with data points derived either from proxy sources or from interpolation
3.3.8	System should calculate correlations and volatilities based on historical data (un-weighted moving average and exponentially weighted moving average)
3.4	**Historic Information Management**
3.4.1	System should store on a daily basis the following information: · Market structures (yield curves, volatility curves, Fx Spot-Forward , FX volatilities) · Market prices (for quoted instruments) · Net Present Values and Risk parameters at transaction level · Value-at-Risk at transaction level · Scenario Results at transaction level · Profit & Loss results at transaction level · Any other information as desired by the bank · Position data for all the deals drawn from the treasury system
3.4.2	System should import historical market prices files from external vendors for volatilities and correlations calculations for transactions on new markets
3.4.3	System should be able to store historical market rates information through automatic End-Of-

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	Day procedures
3.4.4	Audit log of the changes made in assumptions, methodology, process, statistical model/ formulae used along with reasons/ logic for change should be available chronologically.
3.4.5	Data flows (Data feeder in to Market Risk measurement system) and process (VaR calculations & associated volatilities, correlations, extrapolation/ interpolation, square root of time etc.) associated with the market risk measurement system to be transparent and provide easy access to the model specification and parameters to internal and external auditors.
4	**Pricing Engine Functionality**
4.01	System should have the capability to: · Capture market quoted prices of all market traded instruments on a daily basis for the HFT and AFS portfolio consisting of equities, bonds, forex and derivatives positions · Compute model prices for illiquid securities on a daily basis · Make illiquidity adjustments in valuations as desired by the bank
4.02	Product coverage for mark to market/ model should include the following: · Forex spot and forwards · Forex vanilla options · Forex exotic options · Forex swaps · Currency futures · Forex options on futures · Repos · Treasury bills · Commercial paper · Certificates of Deposit · Short term notes · Interest rate derivatives · Forward rate agreements · Interest rate swaps · Cross currency swaps · Amortizing swaps · Averaging swaps · Constant maturity swaps · Interest rate swaptions · Caps, Floors and Collars · Fixed Coupon Bonds · Other types of bonds - Callable / Putable bonds, Convertible bonds, dual currency, ex coupon, step-up/ step down bonds, amortizing, coupon stripping, zero coupon, floating rate notes, capped/ floored, inverse floaters, perpetual, etc. · Mortgage and Asset Backed Securities · Collateralized Mortgage Obligations (CMO) · Equities · Warrants

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	· Index
	· Index options, futures and swaps
	· Interest rate futures
	· Any other instrument as desired by the bank
4.03	System should interface with external third party pricing systems that are most common in the market place
4.04	System should display partial calculations results for reconciliation and model risk analysis
4.05	System should have scalability to take care of any changes brought in by BASEL guidelines/local Regulator for pricing of products and their external sources
4.06	System should provide valuation methodologies for: 1 Foreign Exchange Models (spot and forwards): Net Present Value ,Marked To Market Interest Rate Models and Indexes: Net Present Value, Discount Curve, Forward Estimation Curve, Index Yield Curve, Calibration to market 2 Interest Rate Models and Indexes: Net Present Value, Discount Curve, Forward Estimation Curve, Index Yield Curve, 3 Fixed Income / Securities: NPV from any yield curve, Fixed spread over any yield curve, Fixed spread over Benchmark Bond 4 Structured Fixed Income: Net present value 5 Commodity Models: Calibrate to market and Marked to Market 6 Equity Models: Marked To Market 7 Common optionality models as relevant to bank: Marked to Market,Binomial, Trinomial, Monte Carlo, Black – Scholes (BS), Cox - Ingersoll – Ross, Hull – White, Garman – Kohlhagen.
5	Stress Testing – Sensitivity and Scenario Analysis
5.01	System should be capable of stress testing as per RBI requirement of IMA guidelines at firm level, portfolio level and trade level based on historical real as well as hypothetical user definable scenarios.
5.02	Shift in Market structures including parallel and non-parallel shifts in yield curves, volatility curves, forex spot and forward structure, forex volatility, equity indices, equity prices, spreads, rating migration and any other parameter as desired by the bank.
5.03	Shift in other calculation parameters, including but not limited to: Horizon (evaluation date), spreads over benchmark curves and between market curves, volatilities and correlations, etc.
5.04	Shifts can be expressed as Percentage, Absolute or Custom formula
5.05	System could carry out shifts on a single term structure, two or more term structures, assuming modeling relationships such as correlations between curves and auto correlation , FX interest rate parity, assuming no correlations, etc.
5.06	Display results using drill down capabilities
5.07	Display graphic representation of scenarios results
5.08	Name and save sets of standard scenarios for easy retrieval
5.09	Scenarios will be categorized under – Historic (period of 12 months, as occurred), anticipatory (Bank specific- Hypothetical) & Worst Case (As defined by user/leading Industry approaches like EVT).

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5.10	Stress testing need to incorporate the details as mentioned in the RBI guideline dated April 07, 2010 on IMA for "Market Risk" w.r.t to Stress Testing. Requirement of different Stress VaR model from Normal VaR model to capture certain detailed aspects in IMA guidelines viz. concentration risk, Illiquidity of markets, jumps to default, skewness risk etc.
5.11	Support the performance of reverse stress tests on specific market risk inputs, to identify scenarios where market risk limits are breached or large losses are incurred
5.12	Compare stress testing results against the start position
5.13	System should allow users to 'force run' scenarios, working around errors and running as completely as possible, then listing where errors occurred e.g. Where a data issue causes a number of scenarios to fail, the system generates the rest and lists the failures, rather than stopping at the first failure. Accordingly, metrics of process success and failure need to be defined in the system
5.14	System should be capable of : 1. Calculating aggregate sensitivities across Business Units by any available attribute (e.g. Counterparty, currency pair, currency, tenor etc.) According to a defined aggregation hierarchy. 2. Identify which risk factor a portfolio/subset of portfolio is most sensitive to / which risk factor movements would have the biggest impact on risk measures.(pertaining to sensitivity analysis)
5.15	System should run scenario generation exercises independently for stress and scenario testing, without interfering data or processes for end of day runs
5.16	Support the performance of reverse stress tests on specific market risk inputs, to identify scenarios where market risk limits are breached or large losses are incurred
5.17	Compare stress testing results against the start position
5.18	System should allow users to 'force run' scenarios, working around errors and running as completely as possible, then listing where errors occurred e.g. Where a data issue causes a number of scenarios to fail, the system generates the rest and lists the failures, rather than stopping at the first failure. Accordingly, metrics of process success and failure need to be defined in the system
5.19	Scenario Analysis:- Calculating aggregate sensitivities across Business Units by any available attribute (e.g. Counterparty, currency pair, currency, tenor etc.) According to a defined aggregation hierarchy.
5.20	Identify which risk factor a portfolio/subset of portfolio is most sensitive to / which risk factor movements would have the biggest impact on risk measures.
6	**Value-at-Risk Backtesting**
6.01	System should be capable of backtesting based on hypothetical as well as actual profit & Loss data
6.02	Back testing should be conducted at transaction level as well as portfolio level as desired by the bank
6.03	System should be capable of attributing the difference between actual P&L and hypothetical P&L on account of fees, intra-day trading, etc.
6.04	System should have the capability to back test VaR based on various confidence intervals, different holding periods and historical data samples

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6.05	Backtesting results should be statistically tested by the system to validate the VaR model using Basel multiplier based approach and any other approach as desired by the bank
6.06	As per RBI guidelines on IMA Market risk measurement system must support Backtesting for all periods.
7	**Profit and Loss Attribution**
7.01	System should decompose P&L into the constituent risk factors responsible for the net portfolio value change
7.02	System should display and report Profit & Loss attribution using drill down capabilities
7.03	System should display and report Profit & Loss attribution using graphic capabilities
7.04	System should run scenario generation exercises independently for stress and scenario testing, without interfering data or processes for end of day runs. -Calculate P&L as part of the overnight risk measurement process. -Calculate P&L intra-day (e.g. To support limit management for stress limits). -Calculate P&L for a selection of risk factor shifts, based on the following parameterization: Selected positions/portfolios Sensitivity/Taylor based Revaluation grid based Scenario Set Selected hierarchy node
8	**Portfolio Capabilities**
8.01	System should define portfolio composition at the following levels: Fixed Income portfolio, Equity portfolio, Forex portfolio, Derivatives portfolio, Interest rate derivatives portfolio, Forex derivatives portfolio, Commodities portfolio if any, HFT, AFS and HTM portfolio, Trading book investment portfolio, Banking book investment portfolio and any other portfolio as defined by the bank.
8.02	System should specify basic or complex selection criteria based on static trade information including but not limited to: · Instrument type · Trader · Currency · Counterparty · Desk · Book · Data source (e.g. external systems) · Exchange
8.03	· System should specify basic or complex selection criteria based on dynamic trade information including but not limited to: · NPV · Delta, Gamma, Vega, Rho, Theta · VaR
8.04	System should create, name and save selection criteria for any portfolio and portfolio views based on the selection criteria
8.05	System should compose a portfolio with one or more created selection criteria
8.06	System should update portfolios if new, amended or voided deals are detected

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8.07	System should have the flexibility to define how recalculation of portfolio is to be done: Full revaluation, Partial revaluation, No recalculation, manual or timed (i.e. every minutes, batch).
8.08	System should specify if portfolio should be loaded as of a specific date in the past
8.09	System should value a portfolio as of any date - historic or future dates
8.10	System should have netting functionality to offset positions or transactions within the same issue
8.11	System should display dynamic information like mark to market, VaR, risk numbers at portfolio level
8.12	The system shall have capacity to calculate Correlation estimates and its impact on instrument, asset class wise and portfolio wise including as well as sub-portfolio level. There needs to be a detailed specific report on correlation matrix.
8.13	System should have the option to make the updates in the calender at user level in case some updating the same on annual basis and if any update required during the year.
8.14	System should produce quality charts on displayed/selected information and print them
9	**Capital Computation**
9.01	System should have the capability to compute market risk capital as per Standardized Measurement method (SMM) and Internal Models Approach as prescribed by RBI on a daily basis
9.02	System should have the functionality to calculate m-duration and convexity for the capital computation under standardized measurement method (SMM).
9.03	System should have the capability to compute market risk capital as per IMA on a daily basis as a function of three components as indicated below: · Normal VaR Measure (for general market risk and specific risk) · Stressed VaR Measure (for general market risk and specific risk) · Incremental Risk Charge (IRC) (for positions subject to interest rate specific-risk capital charge)
9.04	The system should allow for manual/automatic setting of plus/add on factor based on back testing results as per regulatory requirements.
9.05	Securities for which capital charge computation is guided by SMM (Mutual Funds, Venture Funds, Receipts, specified Illiquid security etc.) to be flag marked in the Market risk measurement system and should form the part of total capital charge for Market risk in the Bank wide report.
9.06	The system should be able to make adjustments/deductions from tier I and II capital as per RBI guidelines (CrossHoldings etc) –Master Circular Basel III dated July 01, 2015.
9.07	Segregate capital based on different risk factors - interest rate risk, equity price risk, foreign exchange risk, options risk, etc.
9.08	Calculate and report the Total Capital charge for the previous day and during the previous quarters under sub categories like interest rate, equity and foreign exchange and should also calculate the total risk weighted assets and capital ratio

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9.09	Compute specific risk charge and Incremental Risk Charge (IRC) using internal models. System should fulfill additional criteria for modeling of specific risks as para 2 of IMA guidelines for building specific risks and incremental risk charge models. The model provided for IRC must capture all material components of price risk and be responsive to changes in market condition and composition of portfolio at 99.9% soundness to cover the direct as well as indirect aspects of Default Risk and Credit Mitigation Risk. The model should contain key parameters viz. liquidity horizon, Optionality in Interest bearing securities, concentration etc., (As detailed in RBI guidelines on IMA dated Apr. 07, 2010).
9.10	Segregate general and specific risk capital. The system may give a combined figure incorporating the GMR & SR for Normal VaR as well for Stressed VaR however, it must explicitly show the GMR & SR components of VaR separately up-to instrument level.
9.11	The system should be able to compute the expected shortfall.
9.12	Provide the capability to allocate of capital to business units/ Various portfolios, Risk Adjusted Performance Measurement (RAPM) and Risk Adjusted Return on Capital (RAROC)
10	**Market Risk Reporting**
10.01	System should be capable of generating all the regulatory reports for market risk at a required frequency as desired by the bank, including but not limited to: · Pillar III disclosures for market risk in trading book · Backtesting reports
10.02	System should be capable of generating all the internal reports for market risk at a required frequency as desired by the bank, including but not limited to: · Report on risk measures like Duration, Modified Duration, Convexity, PV01, VaR, etc. · Report on VaR number at various levels of portfolio drilled down to instrument level, maximum, minimum and average VaR numbers, Marginal VaR and Incremental VaR, Stressed VaR · Mark to Market Reports of Investment Portfolio, Foreign Currency Portfolio, Derivatives Position · Stress testing Reports · Backtesting reports for tracking the number of exceptions · Limit tracking & Exceptions Reports · Market risk capital charge aggregation report as per SMM · Market risk capital charge aggregation report as per IMA · Portfolio profit and loss analysis reports · Any of the above reports using any stored historical data · User defined reports on parameters computed by the system
10.03	The system should have the capability to carry out the Exploratory Data Analysis (EDA)
10.04	The system should have the functionality of report creation using drag and drop.

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10.05	System should allow the users to specify the exact layout of the required report including location of fields, header, footer, page numbering, title, etc. -should also allow users to present outputs from reports in the form of graphs, charts and other graphical representations, sorting of data in reports, customization of reports with user defined filters. -Customization of reports with respect to time period considered, portfolios considered, levels of granularity, etc. -Allow defining of the users to whom reports can be automatically sent. -Allow users to configure and generate new ad hoc reports and save report configuration in user profiles
11	**Risk Measurement and Risk Limits Tracking**
11.01	System should be capable of measuring all the risk numbers, defining risk limits and tracking those limits
11.02	Limits can be set on the following parameters: · Modified duration · Convexity · PV01 · VaR at different levels · Exposure at different levels · Net overnight open position · Aggregate Gap/ Individual Gap · Daylight and Overnight Position · Stop loss · Option Greeks · Any other parameter as desired by the bank
11.03	Limits can be defined at the following levels: Trader, Desk, Asset class, Portfolio or any other level as desired by the bank.
12	**System Documentation and Trainings**
12.01	System user manuals should be available to assist the users in implementing various modules
12.02	Documentation and working of mathematical and statistical basis of the risk measurement models
12.03	Documentation on assumptions and empirical data used to estimate the models and circumstances under which models will not work
12.04	Besides the User Training to be provided for the software, conduct training workshops to familiarize the market risk staff regarding the relevant frameworks for Market Risk Management. Provide support for applying to RBI till accreditation for migrating to the IMA approach is obtained. The bidder is expected to conduct trainings as per Bank requirement and in phases.
13	**Overall Functionality**
13.01	The solution should have the functionality to extract computed Market Risk capital numbers from the respective systems / applications and compute the CRAR (Capital to Risk Weighted Assets Ratio) of the Bank for regulatory and internal reporting.

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13.03	The functionality of testing should be present in the system.
14	"The logic and details of assumptions behind the analytics needs to be shared with the Organisation. The details will have to share even if there is use of proprietary technology in the Analytics platform. Also, any use of concepts or logics in the software need to be backed up by journals/Books/Use of it in the industry and acceptable to the regulators etc." Any new frameworks/guidelines/circular released by RBI during the contract phase shall form a part of functional and technical requirements. Vendor should agree to provide the same functionality in the system for any changes in the standardised or Advance approches or all together new approach by RBI.

6.3 Functional requirements for Operational Risk Management System

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1	**Risk & Control Self Assessment (RCSA) as per RBI guidelines'**
1.01	The system should have the features to upload, plan and facilitate, track and report the risk and control self assessment process on a firm-wide basis.
1.02	System should have customized templates for rolling out RCSA across all the operational/ functional/ administrative units. The vendor should assist in customizing the RCSA templates to suit the requirements of the Bank.
1.03	The system should have the capability to map the existing Organization Structure to the relevant Business Lines as per Basel-II/III or RBI guidelines.
1.04	End users should be able to rate the identified risks and controls
1.05	The system should have the ability to compute residual risk values based on the ratings applied for risks and controls for each process step
1.06	The system should be able to re-run the past assessments based on the revised scale when there is a change in the rating scales. The system should be able to compare the variability among different rating scales.
1.07	The system should enable logical structuring of the self assessment identified risks into units, departments and business lines
1.08	The System should be able to aggregate the different ratings and identify outliers. The aggregation of different ratings and outliers is also to be done on the basis of process/products/GL Heads etc.
1.09	The system should have the capability to automatically communicate the identified outliers to the respective users for further clarifications through bulk e-mail or other appropriate modes.
1.10	The system should have the capability to reclassify/categorize the operational risk's as per Basel/RBI Guidelines
1.11	The system should record action points arising out of RCSA exercise with agreed timelines.
1.12	The system should be able to follow up for unresolved action points and generate status report for the same.

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1.13	The system should have the capability to generate heat maps automatically. The system should have the capability to customize the logic used for creating Heat Maps (preferably through a master user setting)
1.14	The system should have a dashboard facility to view the risk profiles by business area, business unit, Basel business category etc
1.15	The system should be able to generate test plan based upon timelines in action points
1.16	The system should be able to capture testing results.
1.17	The system should generate heat maps based on testing results .The same should be compared to initial heat maps to highlight the shift in risk levels. (Trend Analysis)
1.18	The system should be capable of supporting different RCSA methodologies
1.19	The system should be capable of consolidation of ratings of RCSA risk entities at a functional/business Level
1.20	Vendor should conduct a sample run of the entire RCSA exercise as per the process mentioned by the Bank
1.21	Vendor should extend assistance in customizing various reports and MIS.
1.22	Generate exceptional reports such as risk entities which has not completed RCSA as per schedule.
2	**Loss Data**
2.01	The system must support all the requirements of the RBI and Basel II / III with respect to internal and external loss data management in terms of operational risk management as well as measurement / modeling.
2.02	The system should have the facility to capture near-miss events, gains arising from operational risk loss event and opportunity cost.
2.03	It should be able to migrate the existing internal loss data of the bank through the upload facility.
2.04	Information with respect to the risk event should be captured such as date of risk event occurrence, event end date, date of discovery, date of providing contingent liability, date of accounting / provisioning, description of risk event, location, product, process, risk entity, root-cause analysis (RCA), causal factors, risk drivers, mapping with business line and loss event type as per Basel II classification, bank‟s internal classification, etc.
2.05	It should have the facility to arrive at the Gross Loss inter alia including any direct charges to reserves due to operational losses, all expenses incurred as a consequence of operational risk events, provisions made, penalty and fines, etc.
2.06	It should record loss according to PL Heads proposed by the bank such as Damage/Replacement Cost Furniture & Fixture, Damage/Replacement Cost A/C Machinary-Equipment, Damage/Replacement Cost A/C Computers, Currency Chest Penalty A/C, ATM Settlement A/C, Penalty Paid to Ombudsman/Consumer Forum, Penalty Paid to Regulator etc. along with addition of any new such heads.
2.07	It should be able to produce loss as gross loss, loss net of all other recoveries other than insurance, loss net of all recoveries including insurance etc.
2.08	The system should have the capability to capture operational losses as decided by the Bank. The system should have the functionality to define "ORC" as required by the Bank. The locations/units/Departments are to be mapped accordingly to the ORC.

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2.09	The system should have the functionality to capture: Dates, Business Lines, Bifurcation of loss events between different business lines, group events, product/process mapping/GL etc
2.10	The system should have dashboard facility to view the loss event in different impact bucket by business area
2.11	The system should have a methodology to classify losses as per Basel loss events, classification logic should be customizable.
2.12	The system should be able to generate an 8X7 matrix of loss events and business lines. And model the operational loss distribution for all the 56 operational risk cell.
2.13	The system should have the facility to customize/map loss data reports as per the Bank's needs.
2.14	The system should have the capability to record recoveries and the category of recoveries e.g. insurance. There must also be the ability to add or customize categories and also to customize the recovery recording workflow as per the Bank's needs.
2.15	System should have the ability to identify and approve "boundary issues" i.e. Credit Risk and Market Risk related losses as per the logic provided by the Bank.
2.16	The system should identify the relationship between losses and the provided drivers and can the system rank the provided drivers against the loss event categories based on the best fit computation of the identified relationship parameters.
	External Loss Data Management
2.17	The external loss data points in the external loss database should have the following data points as required in the CORDEX loss data template
	1. Loss information
	2. Description
	3. Supplementary analytic data (balance sheet size, revenue, etc)
	4. Classification as per Basel-II standards
2.18	Proposed solution should provide facility to seamlessly upload/ download data to and from the Loss Data Exchange (CORDEX) setup by Indian Banks Association (IBA)
3	**KRI (Key Risk Indicator)**
3.01	The system should enable users to upload plan and facilitate tracking and reporting on a firm-wide basis of the KRI process.
3.02	The system should allow assignment of responsibility to each KRI
3.03	The system should have the ability to take values from different users and consolidate them at various levels such as business function, location and business line.
3.04	The system should be able to generate a dashboard, generate reports and analyze trends based on logic approved by the Bank.
3.05	System should call out continuous red (high risk) and amber (medium risk) indicators and automatically intimate the person responsible for that KRI.
3.06	The system should record, suggest and monitor action points arising out of red and amber indicators with agreed timelines.
3.07	The system should be able to follow up (as per escalation matrix) for unresolved action points and generate status report for the same.
3.08	The system should allow reassessment of indicators and thresholds.

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3.09	The vendor should extend assistance in customizing various reports and MIS
3.10	The system should be able to re-run the past assessments based on the revised scale when there is a change in the rating scales. The system should be able to compare the variability among different rating scales.
3.11	The system should enable the authorized users to create new KRIs and edit as well as map existing KRIs. The system should also be capable to interface with multi data source systems (such as CBS etc.) and extract the data from the same in an automated manner.
3.12	System should also be capable of estimating/quantifying loss events based on the scenarios for underlying risk factors.
3.13	It should allow setting different thresholds for different risks.
3.14	The system should provide templates to collate data from processing units for identified Key Risk Indicator components for data to be sourced manually.
3.15	The system should permit entering of KRI data manually from the front end as well as via flat file upload.
3.16	The bidder should assist by conducting a sample run of the KRI process as per the Bank specifications.
4	**Capital Computation - Basic Indicator Approach, The Standardized Approach and AMA**
4.01	The system should be able to compute the business line wise and total capital charge as per the basic indicator approach by linking the system with the CBS.
	Business Line Mapping & Capital Computation under TSA
4.02	System should be able to compute gross income for different business lines as per RBI/Basel guidelines or any other alternate classification.
4.03	The system should be able to capture loss scenarios and map to loss events and business line.
4.04	The system should be able to generate a 8X7 matrix of losses and business at ORC (granular level).
4.05	The system should have the capability to map the existing Organization Structure to the relevant Business Line as per RBI/Basel-II guidelines on TSA.
4.06	The system should be capable of defining the mapping of any new activities or products introduced by the bank.
4.07	The system should be able to store documentation containing the rationale for mapping of Income codes appearing in the GL.
4.08	The system should be able to calculate the operational risk capital as per RBI‟s TSA guidelines by applying the Beta percentage prescribed by the RBI for each Business line.
	Capital Computation under AMA and Modeling
4.09	The system should allow the user to fit various frequency distributions, including Poisson, Binomial, Negative Binomial and any other distribution suggested/accepted by RBI. The system should be able to provide graphical outputs for the fitted distribution. Vendor should independently develop and validate the distributions using statistical tools.
4.10	The system should allow the user to fit various severity distributions, including Normal, Log normal, Pareto, Truncated Beta, Burr, Frechet distribution, Weibull, Beta, Gamma, Inverse Gaussian, Extreme Value Theory, any other distribution suggested/accepted by RBI and other distributions viz. Truncated Beta, Burr, Frechet distribution etc. The system should be able to provide graphical outputs for the fitted distribution. Vendor should independently develop and

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	validate the distributions using statistical tools.
4.11	System should have capability to integrate all the data elements viz. external loss data, internal loss data, scenario data, business environment and internal control factors and generate capital numbers. Vendor should be able to provide the logic of usage/ combination of the above data elements. The system should have the capacity to incorporate user-defined logic
4.12	The system should have the capability to run the goodness of fit test for fitting distribution as suggested by RBI and industry leading practices. Vendor should have the capability to run the goodness of fit test.
4.13	The system should support simulation for combination of frequency and severity distribution. Vendor should be able to provide the logic for combination of frequency and severity distribution through simulation.
4.14	The system should support Extreme Value Theory for fat tail events (Low frequency high severity -LFHS). Vendor should be able to develop operational VAR for LFHS events using Extreme value theory.
4.15	The system should have a functionality to combine frequency and severity distributions via statistical techniques to form a total loss distribution for each loss type/business line combination. Vendor should independently develop and validate the mixing of frequency and severity distribution using statistical tools.
4.16	The system should have advanced analytics functions such as: system capability to extrapolate from the distribution of observed total loss points curve to determine the likely amount of total losses, etc. Vendor should be able to carry out Advanced analytics function.
4.17	The system should support development of scenario related models under the scenario approach. The system should have the functionality to capture scenarios created through different methodologies. System should support identification/generation of scenarios and their consequent analysis based on inputs received from Internal Loss Data, Relevant External Loss Data and Business Environment and Internal Control Factors (BEICFs) in line with the RBI AMA guidelines.
4.18	The system should have advanced analytics functions such as: system capability to carry out structured stress testing, factor the impact of BEICF effect, extrapolate from the distribution of observed total loss points curve to determine the likely amount of total losses, etc.
4.19	System should support administration and facilitation of the templates designed for respective assessors for various risk types and business lines. The templates should be customizable
4.20	The system should generate VAR for each scenario as well as aggregated VAR at Business line level and Bank wide level. Vendor should independently develop and validate the VAR measures using statistical tools.
4.21	The system should fit various distributions based on pre set criteria for each Scenario. Vendor should be able to fit the frequency/ severity distributions, generate scenario based opVar and link the Var number to the number derived from internal loss data.
4.22	The system should objectively combine LDA data / RCSA data with Scenario data to arrive at Bank wide capital

Sr. No.	Operational Risk Functional Requirements
4.23	The system should enable the user to define rules for combination of LDA data/ RCSA data and Scenario data
4.24	System should support the risk Var measure to reflect various confidence levels eg 95%, 99.9% etc. Vendor should independently develop and validate VAR using statistical tools.
4.25	The system should be able to adjust capital based on RCSA /KRI / other quality index and can the system identify the relationship and carry out sensitivity analysis between RCSA / KRI / other quality index
4.26	System should enable validation of any parameters (loss rates, risk indicators, scale indicators etc.) used in the system to ensure that the inputs to the regulatory capital charge are reliable eg. capability to allow the user to run sensitivity analysis and analyse the impact on capital
4.27	System should enable analyst to model operational risk capital charge with and without the impacts of insurance
4.28	The system should be able to provide graphical outputs for the fitted distribution.
4.29	The system should support matrix multiplication, covariance-variance and copula approaches for the purpose of aggregation of losses at each cell to arrive at bank wide capital. Vendor should independently develop and validate the above approaches using statistical tools.
4.30	System should enable capital re-allocation to the business lines based on the above aggregation
4.31	System should support back testing and vendor should be able to carry out back testing.
	The software should provide bulk data loading facilities to load the data in database. Following is expected to be bulk loaded:
	A. Loss events with financial impacts (losses and recoveries) - Internal and External
	B. Business structures (business lines, risk categories, causes, management organizations, legal organizations etc.)
	C. KRI (& RCSA), Scenario data, BEICF.
4.32	All the processes of the system (including approaches for stress testing) should be adequately documented for ease of review and verification by the Bank, external parties or by the regulator. Vendor should provide adequate assistance during such reviews. All the documentation of models should include the key assumptions and key sensitivities of the models. Vendor should be able to carry out stress testing.
4.33	1. Use of Gross Loss/Net Loss 2. External data including Scaling Parameters. The system should allow for use of user defined logic for scaling purpose. The logic behind the scaling factor. The system should also give the logic for computing VaR for External data 3. The Combination of Body VaR and Tail VaR analysis 4. The combination of Internal & Scanrio data VaR/ The combination of VaR for internal & external data/The Combination of internal data, external data and scenario data 5. Autocorrelation 6. Heteroskedasticity. 7. Syncing of Operational Risk exercise with Audit exercise. 8. BEICF
5	Process Mapping and Reporting Structures

Sr. No.	Operational Risk Functional Requirements
5.01	The system should provide at least 10 dimensions of structures or hierarchies: Basic organization of the information onto any one or more of at least a selection of 10 hierarchy structures. (For example: business units hierarchy, process Structure, product Structure, risk library Structures).
5.02	System should provide Multi- Hierarchy Structure Management: Multiple hierarchies or structures permit data to be viewed and managed across more than one dimension with adequate access and edit permissions as specified by the Bank.
5.03	System should facilitate split, change, merge, edit and creation of units and codified data points. For example, with business changes there should be the ability to split or merge loss and risk data/MIS.
5.04	System should provide reasonable number of hierarchy levels are to be made available. (at least 10 levels)
5.05	System should have the capability to maintain inventory of processes and reports at least for seven years
5.06	System should support the break-down of processes into logical process steps with linkages to underlying procedures, unit responsibility and they should be able to be linked to RCSA, KRI and Loss event
6	**Verification & Validation of processes**
6.01	The system should have the capability to implement a Bank defined verification & validation process and should fulfill all audit and compliance requirements
6.02	The system should be able to intake the process flow as mentioned by the Bank
6.03	As per the process flow, the system should have the capability to initiate the verification & validation process and track the progress of various process steps as per the timelines provided by the Bank
6.04	The system as well as the vendor should have the capability to get the operational risk measurement system (ORMS) validated by independent third parties to ensure it is compliant with RBI guidelines.
6.05	System should provide all the information as may be required for independent review of operational risk management framework (ORMF)
7	**Risk Reporting**
7.01	Periodic reports to be generated on loss event types highlighting the findings of RCSA, Audit, Loss, Potential loss and Near Miss data, KRI and Scenarios.
7.02	The system should be capable of generating performance measurement reports measured vis-a-vis RCSA results, KRI status and action taken by units/business lines.
7.03	System should provide linkages between RCSA, KRI, loss data and audit processes as required by the Bank.
7.04	The system should provide a drill through heat map.
7.05	The system should provide drill down reporting.
7.06	The operational risk charge before and after any reduction in capital resulting from the use of insurance.
7.07	The system should have adequate graphical reporting tools for reporting loss event data
7.08	System should support KRI dials for the dashboard reporting

Sr. No.	Operational Risk Functional Requirements
7.09	System supports to build various MIS reports Loss matrix, Trend analysis, Issues and action plan status report etc., as per the requirements of the Bank/Regulators
7.10	System should support slice and dice of structure values and filtering of risk areas simultaneously
7.11	The system should provide capital charge drill down at each cell level, which would provide a split of LDA VAR and Scenario VAR and from Total Scenario VAR the system should provide drill down to VAR of each Scenario
7.12	The system should display capital before BEICF adjustments and capital after BEICF adjustments and highlight the impact of BEICF
7.13	The system should display capital before diversification and capital after diversification effect and highlight the diversification impact
7.14	The system should aggregate the RCSA scores of risk events to arrive at a Bank wide RCSA profile
7.15	The system should generate reports pertaining to outstanding issues and/or action plans emanating from RCSA/KRI/Loss Data Analysis at any given date
7.16	The system should generate reports for processes that has loss data but no KRI / RCSA and for processes that have adverse RCSA events but no KRI
7.17	The vendor should provide post implementation support, configuration training and end user training. The vendor is expected to conduct trainings as per Bank requirement and in phases.
7.18	The system should have the capability to carry out the Exploratory Data Analysis (EDA)
7.19	The system should have the functionality of report creation using drag and drop.
8	**Overall Functionality**
8.01	The solution should have the functionality to extract computed Operational Risk capital numbers from the respective systems / applications and compute the CRAR (Capital to Risk Weighted Assets Ratio) of the Bank for regulatory and internal reporting
9	**Independent Modeling Platform**
9.01	The solution should offer an independent modeling and data analytics platform with data slicing, dicing and statistical capabilities where the Bank can undertake data tranformation, do regression analysis of loss data with e.g. KRI /RCSA scores, find out trends in the data and fit different distributions. The tool should be easy to menu driven. The vendor should provide complete training to the Bank for usage of the modeling platform
10	"The logic and details of assumptions behind the analytics needs to be shared with the Organisation. The details will have to share even if there is use of proprietary technology in the Analytics platform. Also, any use of concepts or logics in the software need to be backed up by journals/Books/Use of it in the industry and acceptable to the regulators etc." Any new frameworks/guidelines/circular released by RBI during the contract phase shall form a part of functional and technical requirements. Vendor should agree to provide the same functionality in the system for any changes in the standardised or Advance approches or all together new approach by RBI.

6.4 Functional requirements for ICAAP and Pillar II System

Sr. No.	Functional Requirements for ICAAP and Pillar II - System
1	**Pillar-III risks**
1.01	The system should have pre-built pillar 3 reports as per Basel II/III /RBI guidelines on Basel-II and Basel-III.
1.02	All reports as required under Pillar – III disclosure as given by RBI
2	**ICAAP and Pillar 2 Requirements**
2.01	The System should be able to host reports related all Pillar I & Pillar II risks. The system should not have any limitation towards creating number of reports.
2.02	The system should have a Pillar-II module which supports ICAAP analysis of all material Pillar-II risks of the Bank and do capital computation, for risks like concentration risk (branch wise, Zone wise, state wise, industry/ sector wise, product wise, vertical wise rating-grade wise, interest rate-wise, group-wise, borrower-wise etc, computaiton of HHI, Lorenz Curve, computation of industry wise, borrower rating grade and correlation across different units), reputation risk, strategic risk, compliance risk, underestimation of risk under standardized approach, model risk, liquidity risk, interest rate risk, forex risk etc, as per relevant RBI/ Basel guidelines on Pillar-II.
2.03	The system should perform stress testing for each of the credit, market, interest rate, forex, liquidity, concentration risk on individual basis and aggregate the results of stress testing. The system should at the same time assist in reporting, back testing and assessment of capital for Pillar-II risks including impact on account of stress testing. Additionally, the system should also support aggregation of Pillar-II capital into Bank-wide capital (regulatory & Economic capital) assessed.
2.04	The System should be able to support and have the necessary statistical tools to validate the material risk estimation methodologies and stress testing methods under Pillar-2.
2.05	The system should be able to generate risk maps, risk charts, reports, trend analysis etc for Pillar-II risks, various risk dashboards for the users and top management.
2.06	The system should have the pre-built templates and should also have the functionality for a business user to define and customize Credit Risk MIS across all matrix dimensions such as: · Counter-party · Portfolio · Product · Geography – country/ state/zone/branch · Industry · Concentrations · Risk Profiles · Rating wise · Delinquency buckets · PD Bands · LGD Bands etc. and should allow drill down capabilities up to transaction level

Sr. No.	Functional Requirements for ICAAP and Pillar II - System
2.07	The system should be capable of generating various Bank- defined reports like: (System should have the capability to generate back dated reports) · Borrower Information report · Industry Analysis report · Monitoring (Account-wise report to cover rating transition & trend in critical identified parameters) · Peer group Analysis report · Rating wise reports · Portfolio reports · Borrower-wise risk score report · Borrower-wise risk grade report · Borrower-wise year wise risk score report · Borrower-wise year wise risk grade report · Industry Concentration Report · Industry- wise risk score report · Industry- wise risk grade report · Region wise Concentration Report · Region wise risk score report · Region - wise risk grade report · Quick mortality Report · Defaulted Account Report (Grade wise/ Industry wise/ year wise/ ownership wise/ size wise/ on-balance sheet/ off-balance sheet exposure wise for a date range etc) · RAROC reports · Capital Charge-credit risk (Regulatory and economic) – expected and unexpected losses · Exposure Reports (Portfolio exposure by Sector/ industry/credit rating/ Client/ Loan Size/ Maturity/ country/currency/ on-balance sheet/ off-balance sheet exposure/interest rate wise/floating rate wise – internal and external benchmark /fixed rate wise etc. after including/ excluding CRM – giving NPA position separately under each of these categories along with reports on accounts which have been upgraded from NPA and which have slipped to NPA from standard Position of restructured accounts under each of the categories along with reports on accounts which have been upgraded from restructured and which have slipped to NPA from restructured status. · Report on restructured exposures, repeated restructured accounts and drill down options like industry-wise, rating-grade wise, curing-wise, tenor wise, sacrifice wise, product-wise, vertical-wise, region-wise, branch-wise, asset class-wise. · The reports should be able to cut across asset classes and give combined reports, if needed, while analyzing industry-wise, product-wise, sector-wise reports (eg: exposure to cement industry report should combined and render a consolidated report on all exposures under various asset classes) · Collateral Reports (Collateral wise exposure report (total exposure after netting that is covered by 1. eligible financial collateral 2. other eligible AIRB collateral 3. guarantees etc). including current market value of collateral wherever applicable as per policy of the Bank · Expiry reports on collateral (Due to expire/expired)- bank/zone/branch/account wise

Sr. No.	Functional Requirements for ICAAP and Pillar II - System
	Market Disclosure Report (as per BASEL II/RBI guidelines). · Residual Contractual Maturity Breakdown of the whole portfolio broken down by major type of Credit Exposures · Exposure -weighted average LGD/EAD for each borrower category. · Securitization disclosure (Total outstanding exposure securitized by bank broken down by type of securitization (traditional/Synthetic), exposure type. · Amount of NPA securitized broken down by exposure type. · Securitization exposure retained/purchased broken down by exposure type. (This report would be generated for user defined period and as of date). · Report on capital market exposure as required as per RBI requirement – account wise as per limit and outstanding exposure – on and off balance sheet · Report on exposure to Real Estate – commercial and residential – direct and indirect · Report on exposure to commodities · Report on Interest rate wise break up of advances – segment wise (term loans, project finance, bills purchased/discounted or negotiated, demand loans, CC, staff loans etc) as per user defined range of rate of interest · Report on Interest rate wise break up of advances – segment wise - as per user defined range of rate of interest · Report on position of unsecured exposure – public sector/private sector/rating wise/interest rate wise/maturity wise · Report on break up of term loans, project finance, bills purchased/discounted or negotiated, demand loans – as per residual maturity · Report on pre payment of total/installment of term loans, project finance, bills purchased/discounted or negotiated, demand loans · Report on segment wise exposure –Report on future draw down schedule for term loans, project finance and infrastructure projects · Report on single borrower/group borrower exposure – user defined number of top exposure vis-à-vis prudential exposure limits fixed by bank/regulator · Audit log report · Export formats for MIS report – -.TXT -.XLSX -.PDF -.DOCX -.PPTX -.XML -.XBRL · Overrides performance reports – performance of accounts where there is rating over-ride or downgrades (Branch wise / region wise /geography wise/level wise/approving user wise rating cases processed, approved, rejected and pending for user defined period. · Any other report which bank considers as relevant including modification of earlier report · Other all reports as required under Pillar – III disclosure as given by RBI
2.08	System should facilitate capital computation for all Pillar -II risk

Sr. No.	Functional Requirements for ICAAP and Pillar II - System
2.09	The system should be able to generate Risk Profile Template /any updated RBI requirements and other regional/ branch-wise risk profile templates as per Bank's internal requirements
3	**Basel-III Requirements**
3.01	The system should have the capability for computation of non-risk based leverage ratio as per RBI/ Basel-III guidelines. The system should have the flexibility to enable reporting and estimation of each capital components like common equity, Additional Tier-1, Tier-2 etc as per prescribed guidelines of RBI under Basel-III. The Pillar-1, Pillar-2 and Pillar-3 modules should be compliant with RBI's Basel-III requirements also.
3.02	The system should be capable to compute Liquidity ratios (LCR,NSFR and stock approach ratios) as per Guidelines on Liquidity Management under Basel III and various amendments to it till date, on a real time basis.
3.03	System should have the capability to compute CVA under Basel-III guidelines.
4	**Risk Identification**
4.01	The system should host processes for appropriate identification mechanism templates and measurement of all risks defined by Basel / RBI's ICAAP guidelines (viz. concentration risk (branch wise, Zone wise, state wise, industry/ sector wise, product wise, vertical wise rating-grade wise, interest rate-wise, group-wise, borrower-wise etc), reputation risk, strategic risk, compliance risk, underestimation of risk under standardized approach, model risk, liquidity risk, interest rate risk, forex risk etc; not limited)
5	**Risk Appetite**
5.01	The system should have capability to host Risk Appetite statement of the Bank. It should be dynamic enough to monitor bank-wide risk appetite limits. The system should have the capability to generate drill down reports of the risk appetite
5.02	The system should have capability to link and translate exposure wise, investment wise incremental RWA/ capital required as and when new exposure is taken / investment is made
5.03	The system should support portfolio-based calculation like Limits Management: Bank may define a limit cap (may be absolute or % terms) to an industry, borrower, individual exposure, and bank, sovereign, rating. The system would check the same at the rating stage. Same would be part of some reports. What if/Incremental risk analysis by addition of individual loan portfolio for decision making purpose. Portfolio based calculation should take into account industry correlation to arrive at capital requirement.
5.04	The system should incorporate monitoring and reporting of all limits, viz. for credit risk, market risk, operational risk, liquidity risk and integrated risk management
5.05	The system should support to define appropriate level of capital relative to risks
6	**Materiality Assessment of Risks**
6.01	The system should have capability to store the comprehensive risk inventories maintained by businesses shall form the basis for identification of material risks
6.02	The system should have capability to creat "heat-map" diagram based materiality assessment of all risks
7	**Concentration Risk**
7.01	The system should have capability to compute concentration measures viz. HHI, Gini Coefficient etc (not limited to)

Sr. No.	Functional Requirements for ICAAP and Pillar II - System
7.02	The system should have capability to host scorecard and Concentration Risk capital computation based on Granularity Adjustment Approach (methodologies as enumerated by the research paper published by Deutsche Bundesbank)
7.03	The system should have capability to generate reports of concentration for dimensions viz. Industry, Single Name, Sector, Geographical
7.04	The system should have capability to link exposure limits to concentration measures viz. HHI etc.
8	**Interest Rate Risk in the Banking Book (IRRBB)**
8.01	The system should have capability for assessment of IRRBB taking into account both the earnings (net interest income) and economic value of equity perspective and should be able compute Value at Risk approach for the same
8.02	The system should have capability to simulate IRRBB related stress tests on the Bank's portfolio (Banking Book as well as Trading Book)
9	**Liquidity Risk**
9.01	The system should be able to assess Liquidity Risk based on - a. market liquidity risk b. funding liquidity risk
9.02	The system should be able to compute and host dynamic & structural liquidity statements and related limits
9.03	The system should be able to host Basel III liquidity ratios and other liquidity ratios those the Bank uses its day to day reporting
9.04	The system should be able to support ALM reports viz. (not limited to) - structural liquidity report, dynamic liquidity report etc.
10	**Reputation Risk**
10.01	The system should be to host reputation risk scorecard and related parameters; This scorecard may be qualitative or quantitative or combination of the both
10.02	The system should have capability to enable end users to change parameters in the scorecard
10.03	The system should be able to host audit trail related to changes in this scorecard
10.04	The system should be able to provide interface for users if the Bank plans to conduct workshop related to reputation risk. Further should have capability to aggregate inputs and convert them into score and transale the same into scorecard
11	**Strategic Risk**
11.01	The system should be to host strategic risk scorecard and related parameters; This scorecard may be qualitative or quantitative or combination of the both
11.02	The system should have capability to enable end users to change parameters in the scorecard
11.03	The system should be able to host audit trail related to changes in this scorecard
11.04	The system should have capability to host strategic plans and related capital requirements as per nature, scope, scale, complexity and risks inherent in bank's on-balance sheet and off-balance sheet activities and should demonstrate how strategy dovetails with macroeconomic factors
11.05	The system should be able to provide interface for users if the Bank plans to conduct workshop related to strategic risk. Further should have capability to aggregate inputs and convert them into score and transale the same into scorecard

Sr. No.	Functional Requirements for ICAAP and Pillar II - System
12	**Securitization Risk, Settlement Risk and other risks**
12.01	Securitization risk: The system should be able to host valuation of the securitized securities based on leading market purposes and RBI guidelines for Asset based Securities (ABS), Mortgage backed Securities (MBS) and Credit Default Obligations (CDO) type of securities; The system should be able asses risks related to Minimum Holding Period (MHP) and Minimum Retention Requirement (MRR).
12.02	Settlement Risk - The system should have capability to interact with transaction system while capturing trends in transactions in the payment and settlement system, o tracking the outstanding unsettled deals and monitoring unsettled transaction in the banking book etc.
13	**Risk Aggregation / Diversification**
13.01	The system should be able to host data related to all risk types (Pillar I & II risks) that will enable to compute correlation and copula within risks and amongst risks
13.02	The system should have statistical capabilities to compute single or multi dimensional correlations/ copulas (viz. Gaussian Copula, Student T-copula etc)
13.03	The system should be able to aggregate all risks while incorporating correlation effect in the same
13.04	The system should be able to define portfolio based upon the following aggregation possibilities such as: · Counter-party or combination of counter parties · Industry · Tenor · Product · Geography · Issuer · Credit rating · Any internal hierarchy and should allow drill down capabilities up to transaction level.
14	**Risk Adjusted Performance Measures (RAPM)**
14.01	The system should be able to host calculation of RAPM which includes Risk Adjusted Return on Capital (RAROC),WACC(Weighted Average Cost of Capital), Return On Risk-Adjusted Capital (RORAC) etc. This is primarily based on regulatory capital as well as economic capital.
14.02	The system should be able to calculate capital requirement individual account-wise and also units-wise such as: · Entire Bank · Region/zone · Geography · Industry · Business segments · Products · Rating wise · Branch · Relationship Manager
15	**Stress Testing**

Sr. No.	Functional Requirements for ICAAP and Pillar II - System
15.01	The system should perform stress testing for each of the credit, market, interest rate, forex, liquidity, concentration risk on individual basis and aggregate the results of stress testing.
15.02	The system should at the same time assist in reporting, back testing and assessment of capital for Pillar-II risks including impact on account of stress testing.
15.03	The system should also support aggregation of Pillar-II capital into Bank-wide capital (Regulatory & Economic capital) assessed.
16	**Capital Adequacy and Risk Sensitive Measures**
16.01	The system should have capabilities to host capital adequacy computation and further to help generate reports related to capital adequacy (CRAR measures)
16.02	The system should be able to compute and host overall capital adequacy in relation to the Bank's risk profile and a strategy for maintaining their capital levels
17	**Capital Planning and Budgeting**
17.01	The system should have capital planning and budgeting modules for estimating bank-wide capital for future, stress testing by changing assumptions/ macro-economic scenarios, allocation across business units, geographies, products etc, if needed. System should enable capture of requisite data and for user defined periods for development of the capital plan at the bank and at sub portfolio levels such as but not limited to: - Balance sheet and PL estimates - Anticipated growth in topline/revenue year on year, profitability margins, costs - Increase in risk weighted assets - Capital types, amounts, maturity (for non-equity), capital cost. - Risk Adjusted performance measures across various business lines and products
18	**Others**
18.01	The bidder is expected to conduct trainings as per Bank requirement and in phases.
18.02	The system should have the capability to carry out the Exploratory Data Analysis (EDA)
18.03	The system should be able to define tolerance limits for the CR/MR/OR/LR and Integrated Risk Management
19	**Overall Functionality**
19.01	The solution should have the functionality to extract computed Credit Risk capital numbers, computed Operational Risk capital numbers, computed Market Risk capital numbers, Pillar-II capital numbers if any (e.g. for concentration risk), Pillar-II stress testing capital and Pillar-III capital (if any) from the respective systems / applications and compute the overall CRAR (Capital to Risk Weighted Assets Ratio) of the Bank for regulatory and internal reporting.
19.02	"The logic and details of assumptions behind the analytics needs to be shared with the Organisation. The details will have to share even if there is use of proprietary technology in the Analytics platform. Also, any use of concepts or logics in the software need to be backed up by journals/Books/Use of it in the industry and acceptable to the regulators etc."
20	Any new frameworks/guidelines/circular released by RBI during the contract phase shall form a part of functional and technical requirements. Vendor should agree to provide the same functionality in the system for any changes in the standardised or Advance approaches or all together new approach by RBI.

6.5   Implementation

1. The Selected Bidder should implement an enterprise version of Market, Operational and Credit Risk Management System including Advanced Approaches under Basel II/ Basel III at the Bank's designated office and demonstrate their capability (at least one on site demonstration).

2. The Bidder is to give an undertaking to implement the solution at any location / branch identified by Bank.

3. As part of implementation all data migration (as and when required) from the existing systems/ manual data will be done by the vendor.

4. During implementation selected bidder shall provide helpdesk support wherever it is required (Head Office, Zonal Offices, Branches, Treasury, DC, DR etc.).

5. Selected bidder should ensure the OEM representation till the successful implementation of the product/solution in the Bank's environment

6. The Bidder should ensure that the quality assurance and development standards outlined in the development methodology are adhered to and that the required functionalities/reports related to the same are generated and shared with Bank"s team on a regular basis

Bidder should ensure participation of Risk Solution OEM vendor during the Blue Print, implementation, UAT and Signoff phase. Bidder should ensure that the OEM effort is spread across the Blue Print, implementation, UAT and Signoff duration and OEM vendor's sign-off is there for major milestones.

Atleast 10% of implementation effort should be from Risk Solution OEM vendor during the implementation, Blueprint, UAT and Signoff Phase. Bidder should capture the same in the proposed Project Plan also.

Bidder to please note that in all the steering committee meeting and monthly committee meeting the OEM representation is required.

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Product Implementation, testing, roll out and all other work deliverables.

- To Bridge the identified data gaps for compliance with RBI guidelines, other regulatory body in INDIA and advanced approaches with respect to BASEL II/BASEL III

- Delivery of software product(s)

- Computation of capital requirement for Credit, Market and Operational Risk.

- Generation of required reports (to be specified under functional requirements of RFP).

- The project should cover all the existing/future branches/offices of the Bank and have the capability to scale up for meeting future requirements.

- Setting up of User Acceptance Test Environment, Live System and Disaster Recovery System

- To impart user training to officers in the Bank

- To assist in obtaining any approvals from regulator or registration with any statutory Body and subsequent implementation, if required, regarding the implementation of IRMS.

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Systems Integration

- IRMS should be a web based system and hosted on the Bank's intranet and should have interface with various back end applications for data collection (via direct transfers, STP, file upload/downloads, etc.)

- On the basis of the gap study of the inter-relativity of various existing and proposed project of the Bank, implement solutions after protecting the IT investment already done. The processes involving more than one system should eliminate cumbersome process, repetitive data entry, etc. While integrating the systems it should be ensured that all the statutory, regulatory and legal guidelines/instructions are complied with. It should be ensured that the security issues are simultaneously addressed in a satisfactory manner to the Bank and necessary audit trails are also maintained.

- The new system has to be integrated with the existing and proposed systems mentioned below (but not limited to).
    - Finacle
    - BALM
    - Laser TX
    - Balance Sheet/GL
    - ADF MIS through central Repository
    - DAR
    Proposed/Planned Application
    - FTP
    - Data Warehouse and Business Intelligence
    - LOS/LAS

- Ind AS
- The bank is in process of upgrading their IT System, the bidder is required to implement/integrate the IRMS System with the new/upgraded IT System of the bank, Bidder need to provide the cost for Re-Integration. The List of the system that bank is planning to upgrade/ replace are mentioned below (but not limited to).
  - CBS- Finacle 10.x
  - Data Archival Retrieval System
  - Laser TX
  - BALM
  - Proposed LOS/LAS system
  - Proposed FTP system
  - Treasury

- Design the manual data entry where data is unavailable from any source (System). This should be extendable to Zonal Offices and Branch offices for capturing Master and Transactional data

- Design and implement any other systems or processes that may be required for enabling the Bank to comply with revised IRMS systems.

6.6   Hardware Supply

The Bidder should provide hardware systems, operating system, database, ORMS (Operational Risk Management System) application software and CRMS (Credit Risk Management System), MRMS (Market Risk Management System) application software and other necessary software & hardware required for the successful implementation and integration of the proposed solution at DC & DR. The DR should be 100% replica of production environment at DC. The bidder is also required to provide a replication solution for data replication. The bidder is also required to Dev, Test and QA environments.

Implementation at DR site should be planned in such a manner so that it should be available prior to the final Go-Live i.e. Go-Live of Market Risk system (12 Months from the start of project).

Firewall & Network security, Network equipments and Bandwidth will be provided by the Bank. The Bidder has to ensure that vulnerabilities at application level shall be handled by the offered application software. The proposed solution should be able to extract data from the Bank's business application systems as described in the **Section 4** and make the data available for risk specific data marts for internal consumption and regulatory reporting. The data integration should be automated and should ensure highest level of data integrity.

The Bidder shall upgrade servers/ storage at no extra cost to the Bank, in case the offered
configuration does not meet the SLA& utilisation requirements during the Contract Period.

The data size expected in next 5 years is 4 TB for IRMS applications. The total storage provided
by the Bidder over the five year period should be a minimum usable space of 4 TB in Raid 1+0 or
equivalent. This 4TB data size doesn't take into account the 60% percent disk utilization clause
and the RAID group required. Bidder is required to independently estimate data size requirement
subject to a minimum of 4 TB. Bidder is also required to take into consideration the disk
utilization threshold and RAID group when estimating the data size. The Bidder may propose a
SAN (Storage Area Network) to meet the requirements of the RFP throughout the tenure of the
contract. The proposed hardware at the data centre must be in active-passive cluster with external
SAN storage with back up tape library and support RAID 1+ 0 or equivalent with no single point
of failure. The proposed SAN storage should be scalable to support at-least 10TB usable space in
RAID 1+0 or equivalent and the proposed hard disk should be SAS 10K RPM or
higher/equivalent.

A complete Bill of Material for the hardware required for the successful running of the solution
should also be provided by the Bidder, with full particulars like make, model, part numbers,
proposed configuration, including all details like memory type proposed with future
expandability, processor type, number of processors, processor speed, future expandability, bus
speed, etc. and clearly show no single point of failure. Please refer *Annexure
ANXC1_Commercial Bill of Material (Bill of Material) Format*

The Bidder should specify the hardware requirement taking into consideration of efficiency level,
response time, data processing requirement, number of users, and all other parameters to ensure
that the efficiency of software system is not affected because of hardware. Bidder to provide
details for DC and DR site – Network and security requirements, switches, routers, bandwidth
requirements etc. The Bidder will certify that the hardware specified is adequate for meeting
performance standards set by the Bank, and it takes full responsibility of upgrading hardware
without any extra cost to the Bank, if at the time of implementation or any time subsequently it is
found that the hardware specified requires upgrade. At any point in time during the contract, The
Utilisation of the proposed hardware including all the sub components should not exceeds 60%
utilisation. In case the utilisation exceeds 60%, the additional hardware has to be provided by the
Bidder at no additional cost to the bank.

The Bidder must ensure no hardware equipment or software, for which **'End-of-Sale'** has been
declared, is offered as part of this RFP. None of the hardware or software should have an **'End-
of-Support'** mandated by the respective OEM within seven years from date of initial successful
commissioning of hardware.

The Bidder should also provide the Bank with the number of racks required for the servers /
equipment and associated infrastructure, as well as power requirements (average, peak and rated

power) and any other requirements for the servers / equipment (Network and security requirements, switches, routers etc) and associated infrastructure for both DC (data centre) & DR (Disaster Recovery) sites.

Sizing of equipment, hardware etc. as required, depending on the functionalities required by the bank as mentioned in the RFP, should be provided by the Bidders for processing of existing portfolio of the Banks/Group with increase in volumes at approx 20% p.a. and addition of new products/instruments and data maintenance for a minimum period of 7 years as per RBI guidelines.

6.7   Maintenance and Support

The Bidder is required to provide Server Management, Storage Management Database Management and Application Helpdesk services for the in-scope applications during the sustenance phase (after successful implementation of Risk Management Solution) for the Contract Period. The Bank will not provide VPN access to Bidder's resources to access bank's Applications & IT Infrastructure from the bidder's premises. During Business Hours i.e. 6 AM to 10 PM, Bidder should ensure that bidder has sufficient onsite team to provide management & troubleshooting of in scope infrastructure, software and applications. The bidder can also provide on call support during Business Hours, however the bidder has to ensure that it adheres to the Service Level Mentioned in the RFP. During non-business hours, Bidder has to provide onsite resource or resolution through on call support ensuring that, it adheres to the service level criteria mentioned in the RFP and subsequent documents/addendums.

Rest of the infrastructure support shall be done by the Bank's Existing Vendor.

The Bank's Existing Vendor will supply, install and maintain and provide services during the Contract Period for the following:
- Server racks will be provided by Existing Vendor for hosting EWIRMS at DC and DR Site;
- Existing   Vendor will take backup and restore the backed up data;
- Tape cartridge movement to offsite and logistic arrangement will be done by the Existing Vendor;
- Existing Vendor will supply, install and maintain for the Contract Period, the network and security components for the EWIRMS;
- Existing Vendor will provide for SAN Ports on the SAN Switches for the above applications;
- Existing Vendor shall provide additional bandwidth as and when required to run these applications from branches, additional replication bandwidth, additional bandwidth required between MPLS to DC and MPLS to DR Site.;

- Additional electricity required at DC and DR Site for EWIRMS, will be borne by the Bank, the Existing Vendor will provide separate PDU (through co-hosting vendor) for EWIRMS to monitor the power consumption on monthly basis;
- Bank will bear the electricity usage cost for these servers at DC and DR Site;
- Existing Vendor shall liaison with the selected bidder of the EWIRMS;
- Existing Vendor will provide additional EMS licenses to monitor these applications;
- Existing Vendor will provide Antivirus and HIPS licenses for EWIRMS; Existing Vendor will facilitate interface and API for EWIRMS with CBS.
- The Bidder is required to provide the sizing of the infrastructure required from the Existing bank vendor in the format as provided in the annexure **ANXA20_Form_20_Sizing of Requirement** from Existing vendor.

6.7.1 Server Management Services

It includes management of server platforms on which utilities and applications are hosted. The following table provides indicative activities under Server Management Services. The scope of work shall be inclusive of but not limited to the activities mentioned under the service category.

1	Performing management of Servers for in-scope application/system.
2	Performing review of key monitoring parameters from availability point of view i.e. System performance monitoring, tuning, server utilization, scheduling and optimizing the services running on the server etc.
3	Performing capacity planning based on historical usage patterns and providing projections including replacement planning for obsolescence and end of life scenarios.
4	Provide Operating system support (installation, configuration, hardening etc) for all servers in scope and additions thereafter related to EWIRMS.
5	Managing physical system element including configuration and maintenance tasks
6	Managing logical system components, such as operating systems and their configurations
7	Maintaining asset register for all server equipments. Record information such as serial number, asset code, warranty, AMC details etc.
8	Maintaining database of server configurations
9	Ensuring availability of critical spares and consumable spares

10	Performing change and release management
11	Monthly reporting, to ensure continued compliance with service level agreements. Monthly reports on alerts generated/ closed, alerts escalated and other hits/ misses
12	Managing vendor deliverables where services are provided externally
14	Performing implementation and maintenance of security rules
15	Troubleshooting server and operating system disruptions to resolve the issues. For Hardware related issues services provider should work with hardware OEM/Vendor to resolve the issues.
16	Rapidly resolving every incident/problem within mutually agreed timelines
17	Performing Server re-installations and decommissioning; Re-installation of the operating systems, configuration and hardening; and Re-installation and support of specified middleware
18	Performing preventative and scheduled maintenance - Plan and execute maintenance in conjunction with the application maintenance, approved time frames and support service line - Coordinate urgent maintenance activities
19	Implementing and managing access authorities including user management, periodic review of accesses, password parameters
20	Maintaining archives of the logs and periodic review
21	Testing and migration of software into production environments and post-migration support
22	Monitoring equipment conditions to ensure early recognition of likely faults along with providing recommendations for change
23	Performing upgrades of system software, including operating systems, to ensure compatibility with the overall environment

24	Performing system equipment upgrades, where existing components are replaced with additional, higher-performance components
25	Planning for patch release and upgrades, including the notification to allow: - An analysis to be carried out to assess the impact of such changes on applications - Provide environments for application testing of software and middleware with operating system upgrades and patches prior to going to production - Coordination between vendor and staff schedules, such that important activities (including application rollouts, application upgrades, training sessions and live service) are not affected by the changes.
26	Supporting Disaster Recovery activities pertaining to in-scope servers
27	Maintaining documentation of system architecture details.
28	Performing periodic review of user privileges at the OS level.
29	Create, manage and remove administrative scripts, Login scripts, user and group policies, security groups etc as necessary
30	Co-ordinate with Existing Vendor for monitoring feeds to ensure Minimal/Zero system disruptions/performance issues/outages.
31	Provide feedbacks to the Existing Vendor on takeaways from Major Incidents into monitoring to prevent repetitions.
32	Performing any other day-to-day administration and support activities
33	Conduct DR drills for the proposed solution based on the bank's policy

6.7.2 Storage Management Services

It includes management of storage platforms on which data is stored. The following table provides indicative activities under Storage Management Services. The scope of work shall be inclusive of but not limited to the activities mentioned under the service category.

S.no	Tasks
1	The scope of work mentioned is illustrative and not exhaustive. The bidder needs to comply with Bank's requirements and any statutory or regulatory guidelines
2	Develop and document storage and data management requirements and policies.
3	Develop and document procedures for performing storage management that meet requirements and conform to defined policies
4	Review Storage Management procedures on a regular basis to be defined.
5	Provide appropriate data storage services (e.g. RAID array, SAN, tape, etc.) compliant with the agreed service levels and performance and availability metrics
6	Monitor and control storage performance according to data management policies.
7	Maintain and improve storage resource efficiency and space requirements.
8	Define storage management reporting requirements
9	Provide storage management reporting as defined by the bank
10	Maintain the integrity of storage media
11	Maintain the data integrity across DC and DR
12	Perform the relevant maintenance activities to ensure data availability and redundancy
13	Storage Management administration – manage and (Pro-active) monitor to ensure all time storage availability.
14	Resolve incident/problem related to storage as per agreed SLA.
15	Supporting new and existing storage products and services like replication, mirroring, security, traffic analysis, compression, virtualization etc.
16	Managing of physical storage elements/equipment
17	Managing moving inactive data off of production machines to free online disk space for important active data
18	Managing logical storage elements like caching, I/O technologies, data protection technologies etc.
19	Storage provisioning. Estimate and recommend storage requirements
20	Performing data management including backup and recovery
21	For disk storage, responding to storage requests by:
22	- Allocating raw storage

23	- Defining logical volumes
24	Troubleshooting disruptions and working with vendors to resolve the issues including software/firmware/patches related issues
25	Performing capacity management of storage resources to meet business needs
26	Planning for upgrades to hardware and software (including execution)
27	Storage provisioning , Purging of disk space , Replication support , LUN , SAN Switches , FC Links , Point in time copy / Snapshot management , RAID Configuration
28	Supporting Disaster Recovery activities pertaining to storage devices
29	Enable Proactive monitoring to ensure Minimal/Zero system disruptions/performance issues/outages.
30	Incorporate takeaways from Major Incidents into monitoring to prevent repetitions.
31	Maintaining documentation of configurations (including pictorial representation of the storage layout.)
32	Maintaining documentation of storage component details including architecture diagram, policies and configurations
33	Performing any other day-to-day administration and support activities

6.7.3   Database Management Services

It includes management of in scope applications database environment. The following table provides indicative activities under Database Management Services. The scope of work shall be inclusive of but not limited to the activities mentioned under the service category.

1	**Performing database maintenance**
2	Defining and installing the physical database design (log files, rollback segments, table-spaces, database descriptors)
3	Creating definitions of logical data structures, tables, views, indexes, program specification blocks, stored procedures and define their relationships
4	Following naming conventions for database objects
5	Setting data storage parameters for storage associated with the physical elements of the database

6	Estimating and recommending storage requirements
7	Installing, maintaining and monitoring the health and performance of RDBMS
8	Analyzing alerts and logs including - trace files (including data block corruptions, Enqueue resources, internal errors and I/O read-write failures) - database changes - background job status - operating system logs
9	Setting up and implementing database reorganizations
10	Testing and implementation of patches and upgrades
11	Implementing and managing security rules and access authority as per security policy
12	Assist in RDBMS specific command selection (e.g. SQL, DL/I) to optimize performance
13	Defining the physical database design (including database descriptors)
14	Co-ordinate with Existing Vendor for monitoring feeds to ensure Minimal/Zero system disruptions/performance issues/outages.
15	Provide feedbacks to the Existing Vendor on takeaways from Major Incidents into monitoring to prevent repetitions.
16	Performing any other day-to-day administration and support activities

6.7.4 Application Helpdesk

Selected bidder shall provide Application Helpdesk Support for In-scope applications. The Bank's Existing Vendor will route calls/Incidents to the Selected Bidder within 15 (fifteen)

minutes after acknowledgement receipt of the trouble ticket of in-scope applications. The Bank's Existing Vendor will generate trouble tickets, provide system status and alerts, and submit unresolved problems to the Bank/Selected Bidder.

The scope of work shall be inclusive of but not limited to the activities mentioned under the service category.

- Access Management
- Performing periodic review of Access
- Resolving Integration Issues
- Performing Patch updates and software updates(In-scope applications)
- Report generation and resolving any error in report (due to software or integration related issues) etc.
- Shall also include providing status updates to user and if required escalation to next level.
- Resolution of issues escalated from the Bank/Existing Vendor
- Creating and Resolving Change requests
- Resolving Migration related issues
- Creating and Resolving Problem Tickets
- Supporting Disaster Recovery activities pertaining to in-scope application
- Compliance to Bank's security policy
- Performing any other day-to-day administration and support activities related to in-scope application

Helpdesk services for the In-scope applications should be provided for the entire Contract duration.
The end user Application Helpdesk shall be available from 8.00 am to 10.00 pm or till the completion of "EOD" activities whichever is later on all working days of the bank.

The Maintenance and Support services during the implementation of the project i.e., up to successful completion of advanced approaches shall be included by the bidder under implementation costs. The Maintenance and Support services costs towards Maintenance and Support services will therefore commence after successful completion of advanced approaches of the project and sign off by the Bank. The bidder must note that the Maintenance and Support services should be available for all environments viz., production, development and test, training.
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A monthly report to be submitted by bidder on SLA adherence (*Refer Section 10.3*)

6.8 Warranty, ATS and AMC

The selected bidder should provide one year comprehensive onsite warranty and for the remaining period of the contract ATS and AMC for proposed IRMS System, including hardware, software and associated modules and services. The period of warranty will commence post the successful Go Live of standardised approach for IRMS system and date of acceptance sign off for hardware & OS/DB. The selected bidder should provide assurance that the IRMS System works as per the functional, technical and operational specifications set out in this RFP.

The selected bidder should provide assurance that as and when any problem arises, the same would be rectified immediately by the bidder without any additional cost to the Bank.

The warranty and ATS of the software would include all version upgrade, patches/fixes, upgrades, compliance of mandates (legal guidelines of GOI as per Gazette of India, regulatory authorities, RBI etc.) and maintenance support, troubleshooting, performance fine tuning, problem resolution for the OS, database, middleware and the application software for total solution provided by the bidder.

The warranty and AMC of the hardware would include preventive maintenance, performance fine tuning, error rectification, replacement of parts for all the hardware components of the total solution provided by the bidder.

The ATS and AMC rates will be valid for the remaining period of the contract after expiry of the one year warranty period.

Warranty, ATS and AMC support will be mission critical 24X7X365 onsite support for hardware and software. Proactive and preventive measures are to be a part of the ATS and AMC.

The Bank reserves the right to terminate the AMC after giving three months notice.

Warranty, ATS and AMC shall cover, inter alia, free provision of such spares, parts, kits, software upgrades as and when necessary to ensure that the Equipments function in a trouble-free manner. Bidder shall correct any faults and failures in the Equipments and shall repair and replace worn out defective parts of the Equipments 24 hours a day, 7 days a week. In cases where unserviceable parts of the Equipment need replacement on account of product malfunction caused by circumstances not attributable to the Bank, Bidder shall replace such parts at no extra cost to Bank with new parts or those equivalent to new parts in performance without any downtime on this account.

If any hardware/ software becomes End of support/ End of life during the warranty/ AMC/ATS period, the same will be replaced by the next version of software/hardware without any cost to the

Bank. Also, hardware/software replacements are done in a planned manner to ensure that no downtime is required on this account.

The selected bidder warrants that the services provided under the contract shall be as per the Service level Agreement (SLA) between the bidder and Bank.

The Bank shall promptly notify the bidder in writing of any claims arising under this warranty.

Upon receipt of such notice, the bidder shall with all reasonable speed, repair / replace / reconfigure / re-provision the defective equipment or service, without prejudice to any other rights, which The Bank may have against the bidder under the contract.

If the bidder, having been notified, fails to remedy the defect(s) within a reasonable period as per the terms and conditions of SLA, The Bank may proceed to take such remedial action as may be necessary at the bidder's risk and expense and without prejudice to any other rights, which the Bank may have against the bidder under the contract.

The selected Bidder should also guarantee that all the software supplied by the Bidder is licensed and legally obtained. Selected Bidder shall be fully responsible for the manufacturer's warranty in respect of proper design, quality and workmanship of all equipment, accessories etc. covered by the offer. Select Bidder must warrant all equipment, accessories, spare parts etc., against any manufacturing defects during the warranty period. During the warranty period Bidder shall maintain the equipment and repair/replace all the defective components at the installed site, at no additional charge to The Bank. Warranty should not become void if Bank buys any other supplemental hardware from a third party and install it with these equipments. However, the warranty will not apply to such hardware items installed.

The same maintenance standards specified for warranty period is applicable during the AMC period as well.

If any of the peripherals, components etc. are not available or difficult to procure or if the procurement is likely to be delayed, the replacement shall be carried out with equipment of equivalent capacity or higher capacity at no charges to The Bank, during the currency of warranty period and AMC.

The ATS and AMC of the software would include all patches, upgrades, Version upgrades, compliance of mandates [of Regulatory Authorities like the RBI and the Ministry of Finance (MoF) etc.], and maintenance support for the OS, database and the applications.

Successful Bidder shall do the upgrades with the customization within six months of the release with the consent of the bank.

The AMC and ATS rates will be valid for the remaining period of the contract after expiry of one year's warranty. Proactive and preventive measures are to be a part of the AMC and ATS. The Bank reserves the right to terminate the ATS and AMC after giving three months' notice.

6.9   Deliverables

6.9.1   Project Management Plan

The Bidder should submit a comprehensive Project Management Plan which should include the following:

- Project Implementation Schedule
- Quality Assurance Plan
- Requirements Management Process
- Change Management Process
- Release Management Process
- Quality Control/ Testing Plan
- Documentation Management Process
- Progress Reporting and Distribution Process

6.9.2   Project Communication Plan

The Progress Report should be generated fortnightly/monthly/any other periodicity as mutually agreed between the Bank and the Bidder.

6.9.3   Product customization and implementation

Comprehensive System Configuration, Customization and testing documentation should be delivered on the commencement of the User Acceptance Test following the correction of any "non –compliance".

- Software executables
- Customized software source code
- Logical data base design and data recovery
- Technical design document including Solution Architecture Overview, Logical and Physical Data Base Design, System Interfaces Design, Development Tools, System Performance Benchmarks, Persistency of the Network Connection for remote and dial up users.

- Application set up and configuration manual including system configuration/set up parameters documentation, documentation for Master data set up, rating grades mapping, product types mapping, new/existing model configuration ,facilities grading system configuration documentation, system set up document for capital computations as per various approaches as specified by RBI
- Existing Data Migration documentation
- Documentation for validation/calibration tools including details in methodology for validation, parameters, data processing, formulas, algorithms, statistical models, etc.
- User Manual for the entire process Test Cases for User Acceptance Test (UAT)
- System Administration Manual

6.10   Technical Specifications

This RFP is intended to invite Techno-Commercial bids from eligible Bidders to provide end-to-end solution for implementation of Enterprise Wide Integrated Risk Management System which shall encompass Credit risk, Market Risk, Operational Risk Management systems in consonance with the advanced approaches as per the Basel-II/ BASEL III and RBI Guidelines.

The Bidder will have to provide the necessary data integration interface to all the applications as required. The list of Bank's existing applications (but not limited to) is detailed above in *Section 4.3: Existing IT Set-up*

Bidder is expected to study application and infrastructure at the bank to ensure there is no non-compatibility issues

The solution offered should be web based. Three Tier Architecture, open platform and support data transfer and consolidation both from the networked and stand alone system either online or dial up. The process should be automated with facility to schedule transfer of data. The solution should be scalable and capable to handle increased volumes. It must support both centralized and hybrid deployment.

By means of diagrammatic / pictorial representations, the Bidder should provide complete details of the hardware, software and network architecture of the Credit Risk, Operational Risk and Market Risk including source / method of data capture and transfer, validation, updation and database maintenance for the entire Bank. The proposed solution should cover all the existing branches/units/administrative offices as decided by the Bank and have the capability to scale up for meeting future requirements.

The data center is located in Mumbai. The DR site is located at Greater Noida. All Branches of the Bank are connected to DC & DR through MPLS

The detailed list of technical specifications is provided in the annexure **ANXB1_Functional and Technical Specifications**. In case of any discrepancy found between the requirements mentioned in this excel sheet (**ANXB1_Functional and Technical Specifications.xlsx**) and the requirements mentioned in the RFP document, the requirements of excel sheet will supersede. The bidders are required to respond to each line item present in the annexure ANXC1_Functional and Technical Specifications based on the instructions provided in RFP *Section 9: Evaluation Process.*

7   Terms and Conditions

The following are the general terms and conditions proposed to be included in the Contract. PSB reserves the right to add, delete, modify or alter all or any of these terms and conditions in any manner, as deemed necessary before signing the final agreement.

The Bidder, selected for the project, will have to enter into a contract agreement directly with PSB. The contract agreement will contain various terms and conditions relating to payment, delivery, installation and commencement of operations, training, commissioning and acceptance, support during periods of warranty and maintenance, penalty due to delay in performance etc. All the diagrams, drawings, specifications and other related literature and information, provided by the bidder for the solution and agreed to by PSB, will also form a part of the agreement.

The successful bidder must initiate work on the project within 15 days of execution of the contract.

The first page of the contract agreement shall be on a stamp paper of appropriate value.

The bill for the services rendered must be furnished along with the prices thereof, as per the terms and conditions contained in this document.

Payment shall be made on the actual procurement however the commercial evaluation shall be on the Total Cost of Ownership (TCO).

General Terms and Conditions

7.1.1   Terms of Assignment

The selected Bidder should perform activities as mentioned in "Scope of Work Section 6. However, if for any reason the work is not completed as per the requirements of the RFP within the stipulated time the bank will impose Liquidated damages as per clause 7.1.13.

7.1.2 Amendment of the Bidding Documents

At any time prior to the deadline for submission of bids, the Bank, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, may modify the Bidding Documents by amendment. All prospective Bidders may check Bank's web site for amendments and it will be binding on them.

7.1.3 Documents Consisting the Bid

The Bid prepared by the Bidder shall comprise the following components:

Technical Bid – Part I of the bid document. The Bidder shall furnish as part of its technical bid, documents establishing the bidder's eligibility to bid and its qualifications to perform the Contract. As part of its technical bid, the bidder should submit documents agreeing to the bid's terms and conditions. The documentary evidence of the Bidder's qualifications to perform the Contract if its bid is accepted, shall establish to the Bank's satisfaction:

- that, the Bidder has the financial and technical capability necessary to perform the Contract;
- that, the Bidder meets the qualification requirements
- Bid document as per format enclosed in Annexure
- Bid security (Earnest Money Deposit)
- Bid Amount (Cost of RFP)

The Bank may, at its discretion, reject any bid document not accompanied by the above.

7.1.4 Earnest Money Deposit (EMD)

Earnest Money Deposit of Rs 50, 00,000/- (Rupees Fifty Lacs only) has to be submitted by way of Demand Draft / Banker's Cheque / Pay Order drawn in favor of "Punjab & Sind Bank" payable at New Delhi or in the form of Bank Guarantee. Earnest Money will not carry any interest. The Earnest Money Deposit of unsuccessful bidders will be refunded while intimating the rejection of the bid within 30 days after the conclusion of the contract. The Demand Draft/Banker's Cheque/Pay Order towards Earnest Money Deposit should be delivered separately along with the sealed envelopes containing RFP responses and it should not be kept inside the sealed envelopes containing RFP responses. Non-submission of Earnest Money Deposit will lead to outright rejection of the Offer.

The Earnest Money Deposit will be forfeited if:

- The bidder withdraws his tender after opening of the envelope containing eligibility criteria documents.

- The bidder fails to participate in the reverse auction.
- The successful bidder fails to honor the Bids placed during the auction process.
- The successful bidder fails to sign the Contract Form (ANXA16_Form_16_ContractFormat) and / or furnish the Performance Bank Guarantee (ANXA15_Form_15_PerformanceBankGuaranteeProforma)

7.1.5 Adherence to Terms and Conditions

The Bidders who wish to submit responses to this RFP should note that they should abide (in true intent and spirit) by all the terms and conditions contained in the RFP. If the responses contain any extraneous conditions put in by the Respondents, such responses may be disqualified and may not be considered for the selection process.

7.1.6 Execution of Agreements/NDA

The selected bidder shall execute Non Disclosure Agreement (NDA) on the draft suggested by the Bank. As the selected bidder will have access to the data/information of the Bank while implementing the project as per defined scope under RFP, the Bank will require the selected bidder to sign a non-disclosure agreement along with the Contract in the NDA format *(Annexure-ANXA13_Form_13_NDA Format)* provided by the Bank, undertaking not to disclose or part with any information relating to the Bank and its data to any person or persons, as may come into possession of the selected bidder during course of the implementation and security integration. All expenses and costs for execution of the Contract/Agreement and NDA shall be borne by the successful Bidder. The conditions stipulated in the NDA shall be strictly adhered to and any breach / violation thereof will entail termination of the Contract without prejudice to the other rights of the Bank including recovery of liquidated damages as specified in this RFP or NDA.

7.1.7 Substitution of Project Team Members

During the assignment, the substitution of key staff identified for the assignment will not be allowed unless such substitution becomes unavoidable to overcome the undue delay or that such changes are critical to meet the obligation. In such circumstances, the Selected Bidder, as the case may be, can do so only with the prior written concurrence of the Bank and by providing the replacement staff of the same level of qualifications and competence. If the Bank is not satisfied with the substitution, the Bank reserves the right insist the bidder to replace the resource. Further, the Bank reserves the unconditional right to insist the Selected Bidder to replace any team member with another (with the qualifications and competence as required by the Bank) during the course of assignment pursuant to this RFP. Bank may allow any such substitution of key staff only with its written consent with similar experience and expertise.

Bidder is required to provide the HR Undertaking specifying that due background verification has been carried for the all the resources deployed on the Project. Bank may at its discretion interview the resources. All the resources/personnel deployed or are working on the project shall sign the NDA Agreement

7.1.8 Professionalism

The Selected Bidder should provide professional, objective and impartial advice at all times and hold the Bank's interest paramount and should observe the highest standard of ethics, values, code of conduct, honesty and integrity while executing the assignment.

7.1.9 Expenses

It may be noted that Bank will not pay any additional amount/expenses / charges / fees / traveling expenses / boarding expenses / lodging expenses / conveyance expenses / out of pocket expenses etc. other than the amount mentioned in the award of the contract.

7.1.10 Contract Performance Guarantee

Within the period prescribed under Annexure ANXA1_Form_1_BankGuaranteeProforma from Date of execution of Contract, the Bidder shall furnish to the Bank, the Performance Security for an amount of 10% of Contract value which would be valid for the six months post Contract Period - 5 years (extendable for 2 years on basis of annual renewal on mutually agreed terms & conditions). The planned contract period is 5 years and hence PBG with validity of five years and six month will need to be provided (5 years of planned Contract Period + Extended six months) In the event of the Successful Bidder being unable to service the contract for whatever reason, Bank may provide a cure period of 30 days and thereafter invoke the PBG, if the bidder is unable to service the contract for whatever reason The proceeds of the performance security shall be payable to the Bank as compensation for any loss resulting from the Bidder's failure to complete its obligations under the Contract.

• The Performance Security shall be denominated in Indian Rupees and shall be by way of Bank Guarantee issued by a Scheduled / Nationalized bank in India (other than Punjab & Sind Bank), acceptable to the bank in the Format.
• The performance security will be discharged by the Bank and returned to the Bidder after 30 days following the date of completion of the Bidder's performance obligations under the contract.
• In the event of any contract amendment, the Bidder shall, within 30 days after receipt of such amendment, furnish the amendment to the performance security, rendering the same valid for the duration of the contract as amended.

7.1.11 Single Point of Contact

The selected Bidder has to provide details of single point of contact viz. name, designation, address, e-mail address, telephone/mobile no., fax no. etc.

7.1.12 Applicable Law and Jurisdiction of Court

The Contract with the selected bidder shall be governed in accordance with the Laws of India for the time being in force and as amended from time to time and will be subject to the exclusive jurisdiction of Courts at New Delhi.

7.1.13 Liquidated Damages (LD)

The Bank will consider the inability of the bidder to deliver services or install the equipment within the specified time limit as a breach of contract and would entail the payment of Liquidated Damages on the part of the bidder. The liquidated damages represent an estimate of the loss or damage that the Bank may have suffered due to delay in performance of the obligations (relating to delivery, installation, operationalization, implementation, training, acceptance, warranty, maintenance etc. of the proposed solution/services) by the bidder. Installation will be treated as incomplete in one / all of the following situations:

1. Non-delivery of any component or other services mentioned in the order
2. Non-delivery of supporting documentation
3. Delivery / availability, but no installation of the components and/or software
4. No integration
5. Non Completion of Transition within suggested timeline
6. System operational, but unsatisfactory to the Bank

Bank may at its option demand and recover from the Successful Bidder(s) an amount equivalent to 1(one) percent of the undelivered portion of contract value for every week of delay or part thereof, subject to a maximum of 10% of the overall contract value. Once the maximum is reached, the Bank may consider termination of the contract. Similarly for delay in Services, subject to a maximum of 10% of the overall contract value Bank may at its option demand and recover from the Vendor(s) an amount equivalent to 1 (one) percent of the incomplete portion of services for every week of delay or part thereof. If the Bidder fails to commence helpdesk and managed services as per the timelines stipulated in the RFP then the bank would impose liquidated damages at the rate of 0.5% of order value of the respective services for each calendar week of delay or part thereof.

After acceptance of product (Hardware & Software), if during usage in production any malfunctioning is noticed, the SI, within a reasonable timeframe as per the terms of the RFQ, shall rectify/replace the same to comply with the specifications/requirements, failing which, the Bank shall impose liquidated damages equivalent to a sum of one half of one percent (0.5%) of the cost of non-performing product. However the

cap for LD is 10% of the overall contract value. Further, the Bank also reserves the right to cancel the order and invoke the Bank Guarantee/Performance Guarantees in case of inordinate delays in the delivery/ installation of the equipment. Bank may provide a cure period of 30 days and thereafter foreclose the bank guarantee without any notice. In the event of Bank agreeing to extend the date of delivery at the request of Successful Bidder(s), it is a condition precedent that the validity of Bank guarantee shall be extended by further period as required by Bank before the expiry of the original bank guarantee. Failure to do so will be treated as breach of contract. In such an event Bank, however, reserves its right to foreclose the bank guarantee. For the purpose of this RFP, the total of penalties as per SLA and the Liquidated damages will be subject to a maximum of 10% of the overall contract value.

7.1.14 Insurance- Insurance Obligations of the Vendor

The equipment (hardware, software etc.) supplied under the contract shall be fully insured by the successful Vendor against loss or damage incidental to manufacture or acquisition, transportation, storage, delivery and installation. The insurance shall be obtained by the Vendor naming PSB as the beneficiary, for an amount equal to 100% of the invoiced value of the goods on "all risks" basis. The period of insurance shall be up to the date the supplies are accepted and the rights of the property are transferred to Bank. The successful bidder shall ensure that the insurance policy is in force and make necessary arrangement for renewal of the policy whenever required.

 Should any loss or damage occur, the selected Bidder shall:-

   i.   initiate and pursue claim till settlement; and
   ii. Promptly make arrangements for repair and / or replacement of any damaged item irrespective of settlement of claim by the underwriters.

The Vendor shall not hold the Bank responsible for rejection of the insurance claims of the Vendor by the insurer.

The Vendors' obligation to maintain insurance coverage hereunder shall be in addition to, and not in lieu of, the Vendors' other obligations hereunder, and the Vendor's liability to the Bank shall not be limited to the amount of coverage required hereunder. All the disputes arising out of or in connection with the agreement shall be deemed to have arisen in Delhi. Only the courts/s in Delhi shall have the jurisdiction to determine the same to the exclusion of all other courts'.

7.1.15 Force Majeure

Any failure or delay by selected bidder or Bank in the performance of its obligations, to the extent due to any failure or delay caused by events beyond the control of either Party (Bank or Selected Bidder) and which such Party could not have avoided by use of reasonable case, including but not limited to acts of god or public enemy, actions of Governmental Authorities, acts of war,

rebellion, sabotage or fires, floods, explosions, epidemic, quarantine restrictions, riots, or strikes or analogous events ("Force Majeure Events").

If the successful Bidder is prevented or delayed from the performing any of its obligations under the Contract by Force Majeure Events, then the successful Bidder shall notify Bank the circumstances constituting the Force Majeure Event and the obligations, performance of which is thereby delayed or prevented, the beginning and end of the cause of delay immediately, but in no case later than 3 days from the beginning and end of such Force Majeure Event respectively.

7.1.16 Authorized Signatory

The selected bidder shall indicate the authorized signatories who can discuss and correspond with the Bank *(Annexure ANXA14_Form_14_Authorized Signatories),* with regard to the obligations under the contract. The selected bidder shall submit at the time of signing the contract, a certified copy of the resolution of their Board, authenticated by Company Secretary/Director, authorizing an official or officials of the company or a Power of Attorney copy to discuss, sign agreements/contracts with the Bank. The bidder shall furnish proof of signature identification for above purposes as required by the Bank.

7.1.17 Indemnity

The Bidder shall indemnify Bank and keep indemnified for any loss or damage, cost or consequences that Bank may sustain, suffer or incur on account of violation of patent, trademarks, etc. by the bidder. The bidder shall always remain liable to the Bank for any Losses (including, without limitation, any legal fees, costs, charges, demands, actions, liabilities expenses or disbursements incurred therein or incidental thereto) or damage (whether foreseeable or not)) suffered by the Bank due to any technical error or negligence or fault on the part of the bidder, and the bidder also shall indemnify the Bank for the same. The total liability of the selected bidder under this clause and contract shall not exceed the total contract value. *(Annexure ANXA17_Form_17_DeedofIndemnity)*

7.1.18 Assignment

Neither the contract nor any rights granted under the contract may be sold, leased, assigned, or otherwise transferred, in whole or in part, by the selected Bidder without advance written consent of the Bank and any such sale, lease, assignment or transfer otherwise made by the selected Bidder shall be void and of no effect.

7.1.19 No Employer – Employee Relationship

The selected Bidder or any of its holding/subsidiary/joint-venture/ affiliate / group / client companies or any of their employees / officers / staff / personnel / representatives/agents shall not, under any circumstances, be deemed to have any employer-employee relationship with the Bank or any of its employees/officers/ staff/representatives/ personnel/agents.

7.1.20 Vicarious Liability

The Selected Bidder shall be the principal employer of the employees, agents, contractors, subcontractors etc., engaged by the Selected Bidder and shall be vicariously liable for all the acts, deeds, matters or things, whether the same is within the scope of power or outside the scope of power, vested under the contract. No right of any employment in the Bank shall accrue or arise, by virtue of engagement of employees, agents, contractors, subcontractors etc., by the Selected Bidder, for any assignment under the contract. All remuneration, claims, wages dues etc., of such employees, agents, contractors, subcontractors etc., of the Selected Bidder shall be paid by the Selected Bidder alone and the Bank shall not have any direct or indirect liability or obligation, to pay any charges, claims or wages of any of the Selected Bidder's employees, agents, contractors, subcontractors etc. The Selected Bidder shall agree to hold the Bank, its successors, assigns and administrators fully indemnified, and harmless against loss or liability, claims, actions or proceedings, if any, whatsoever nature that may arise or caused to the Bank through the action of Selected Bidder's employees, agents, contractors, subcontractors etc.

The Selected Bidder shall comply and fulfill all its obligations under the Contract Labour Act (CLRA) and that they shall keep the Bank indemnified from any claims, damages, etc that may arise with respect to payment.

7.1.21 Limited Liability

Neither party shall be liable to the other for any special, indirect, incidental, consequential (including loss of profit or revenue), exemplary or punitive damages whether in contract, tort or other theories of law, even if such party has been advised of the possibility of such damages.

The total cumulative liability of Bidder arising from or relating to the Agreement shall not exceed the amount paid to the successful Bidder by the Bank during the preceding six (6) months period (as of the date the liability arose).

The successful Bidder shall be excused and not be liable or responsible for any delay or failure to perform the services or failure of the services or a deliverable or plant under the Agreement to the extent that such delay or failure has arisen as a result of any delay or failure by the Bank or its

employees or agents or third party service providers to perform any of its duties and obligations. In the event that the successful Bidder is delayed or prevented from performing its obligations due to such failure or delay on the part of or on behalf of the Bank, then the successful Bidder shall be allowed an additional period of time to perform its obligations and unless otherwise agreed the additional period shall be equal to the amount of time for which the successful Bidder is delayed or prevented from performing its obligations due to such failure or delay on the part of or on behalf of the Bank. Such failures or delays shall be brought to the notice of the Bank and subject to mutual agreement (including on commercials) with the Bank, the successful Bidder shall take such actions as may be necessary to correct or remedy the failures or delays on mutually agreeable terms."

7.1.22 Subcontracting

The selected Bidder shall not subcontract or permit anyone other than its personnel to perform any of the work, service or other performance required of the vendor under the contract.

7.1.23 Cancellation of Contract

The Bank reserves the right to cancel the contract of the selected Bidder and recover expenditure incurred by the Bank in any of the following circumstances. The Bank would provide 30 days cure period to rectify any breach/ unsatisfactory progress if:

- The selected Bidder commits a breach of any of the terms and conditions of the bid/contract.
- The selected Bidder becomes insolvent or goes into liquidation voluntarily or otherwise.
- The progress regarding execution of the contract, made by the selected Bidder is found to be unsatisfactory.
- If deductions on account of penalty and liquidated damages exceeds more than 10% of the total contract price.

After the award of the contract, if the selected bidder does not perform satisfactorily or delays execution of the contract, the bank may give a 30 days cure period. Thereafter, if the selected bidder does not perform satisfactorily or delays execution of the contract, the Bank reserves the right to get the balance contract executed by another party of its choice. In this event, the selected bidder is bound to make good the additional expenditure, which the Bank may have to incur to carry out the bidding process for the execution of the balance of the contract. This clause is applicable if for any reason the contract is cancelled.

7.1.24 Dispute Resolution

If a dispute, controversy or claim arises out of or relates to the contract, or breach, termination or invalidity thereof, and if such dispute, controversy or claim cannot be settled and resolved by the Parties through discussion and negotiation, then the Parties shall refer such dispute to arbitration. Both Parties may agree upon a single arbitrator or each Party shall appoint one arbitrator and the two appointed arbitrators shall thereupon appoint a third arbitrator. The arbitration shall be conducted in English and a written order shall be prepared. The venue of the arbitration shall be New Delhi. The arbitration shall be held in accordance with the Arbitration and Conciliation Act, 1996. The decision of the arbitrator shall be final and binding upon the Parties, provided that each Party shall at all times be entitled to obtain equitable, injunctive or similar relief from any court having jurisdiction in order to protect its intellectual property and confidential information.

7.1.25 Ownership of Deliverables

All the deliverables as per scope of this RFP will become the property of Punjab & Sind Bank, provided, however, there will not no transfer of ownership of the bidder's intellectual property rights contained in such deliverable. However, any customization done specifically for the bank by the bidder during the tenure of the contract will be the intellectual property of the bank

7.1.26 Exit Management

7.1.26.1Purpose

- Transfer of Assets
- Cooperation and Provision of Information

The existing vendor will promptly on the commencement of the exit management period supply to the Bank or its nominated vendors the following:

- Information relating to the current Credit Risk, Market Risk and Operational Risk system implemented at the Bank, and reports
- Documentation relating to Intellectual Property Rights
- All other data relevant to the solution and confidential information

Before the expiry of the exit management period, the current vendor shall deliver to the Bank or its nominated vendor all new or up-dated materials from the categories set out in point (1) above, and shall not retain any copies thereof, except that the current vendor shall be permitted to retain one copy of such materials for archival purposes only.

Before the expiry of the exit management period, unless otherwise provided under the contract, The Bank or its nominated vendor shall deliver to the existing vendor all forms of vendor confidential information

7.1.26.2Transfer of certain Agreements

On request by the Bank or its nominated vendor, the current vendor shall effect such assignments, transfers, innovations, licenses and sub-licenses in favor of the Bank or its nominated vendor, in relation to any equipment lease, maintenance or service provision agreement between existing vendor and nominated vendor, and which are related to the services and reasonably necessary for the carrying out of replacement services.

The Bank and its appointed nominees shall have the right of Access to Premises where the assets are hosted or from where services are being provisioned.

7.1.27 Contract Period

The contract period will commence from the date of acceptance of the PO, and will be valid for 5 years (extendable for 2 years on basis annual renewal on mutually agreed terms & conditions. However, the cost for the 6th year should not exceed more than 10% of the 5th year's payout. Similarly for 7th year).The selected Bidder needs to execute a comprehensive, definitive Service Level Agreement (SLA) with the Bank covering all terms and conditions of this RFP. SLA will cover performance and availability of the system deployed. The performance of the selected Bidder shall be reviewed every quarter and The Bank reserves the right to terminate the contract at its sole discretion first providing a 30 day cure period and thereafter giving 90 days' notice without assigning any reasons. Any offer falling short of the contract validity period (Five Years from the date of Contract) is liable for rejection. Further Bank reserves the right to renew the contract after the expiry of the initial term extendable for 2 years on basis annual renewal on mutually agreed terms & conditions.

7.1.28 Title of Ownership

The Title of ownership and risk of goods supplied under this contract will be passed on to the bank on delivery of the material at the banks location. However Bidder is required to provide insurance in in-line with the RFP

7.1.29 Payment Terms

Payment will be released by the Bank after deduction of applicable taxes at source of the agreed payment to the bidder (for which contract will be executed) in stages on completion of the activities as per the phases defined in the scope of services under the RFP. **No advance payment will be made**. Further, it may be noted that the criteria mentioned below is only for the purpose of

effecting agreed price payment. The selected Bidder shall cover the entire scope including deliverables mentioned in Section 6. Payment will be based on phases as detailed in the Project scope. Aside from the amount payable by the Bank to the selected bidder for the Scope of Work as given in the RFP (which is inclusive of all charges, taxes, etc.), the Bank shall not pay any extra taxes or amounts.

Bank will release payment within 30 days from the date of receipt of invoice. In case of Dispute/s, payment will be made within 15 working days of resolution of dispute/s. No penal Interest will be paid for delayed payment.

Bidder is required to provide staggered or phased delivery and deployment of hardware, associated software and applications. Thus, the warranty and subsequent AMC/ATS of the components will begin as per the phased delivery.

Deliverables	% of payments	Stages (on Completion of Activities)
Hardware	70%	Delivery of the Hardware and submission of invoice with Proof of Delivery and other documents (after due inspection)
	20%	On Successful installation and acceptance of the hardware by the bank(after due inspection)
	10%	Three (3) Months after Successful installation and acceptance of the hardware by the bank (after due inspection) Alternatively this amount will be paid by the bank after Successful installation and acceptance of the hardware by the bank against a bank guarantee of the said amount. The bank guarantee should be valid for 6 months
Database systems, OS & Other	70%	On delivery of licenses on submission of invoice with proof of delivery(after due

peripheral software		inspection)
	20%	On successful implementation and Acceptance of Database systems, OS & Other peripheral software by the bank(after due inspection)
	10%	Three (3) Months after successful implementation and Acceptance of Database systems, OS & Other peripheral software by the bank(after due inspection) Alternatively this amount will be paid by the bank after successful implementation and Acceptance of Database systems, OS & Other peripheral software by the bank against a bank guarantee of the said amount. The bank guarantee should be valid for 6 months
Market Risk, Operational Risk and Credit Risk Management System	50%	Delivery of applications & other components as per the actual supply (after due inspection), for respective module
	15%	Successful completion of the customization , for respective module
	10%	Successful completion of data Migration, for respective module
	15%	UAT Signoff for respective module
	10%	One year after successful release to production , for respective module Alternatively this amount will be paid by

		the bank after successful release to production, for respective module, against a bank guarantee of the said amount. The bank guarantee should be valid for 15 months
Implementation Cost	10%	On Successful implementation, customisation and data migration of Standardised approaches, for respective module
	10%	UAT Signoff of standardised approaches for respective modules
	10%	On successful completion of Standardised approaches and release to production , for respective module
	10%	Three Month after successful release of standardised approaches to production , for respective module Alternatively this amount will be paid by the bank on successful completion of the customization, Data Migration, UAT sign off & Go Live of Standardised Approaches against a bank guarantee of the said amount. The bank guarantee should be valid for 6 months
	10%	On Successful implementation, customisation and data migration of Advanced approaches, for respective module
	10%	UAT Signoff of Advanced approaches for respective modules

	20%	On successful completion of Advanced approaches and release to production , for respective module
	10%	Three Month after successful release of Advanced approaches to production, for respective module. Alternatively this amount will be paid by the bank on successful completion of the customization, Data Migration, UAT sign off & Go Live of Advanced Approaches against a bank guarantee of the said amount. The bank guarantee should be valid for 6 months
	10%	On RBI approval. Alternatively this amount will be paid by the bank on successful completion of the customization, Data Migration & UAT sign off against a bank guarantee of the said amount. The bank guarantee should be valid till the date of RBI Approval.
AMC/ATS	100% in advance (bank guarantee of 50% of annual amount valid for 15 months)	The AMC/ATS shall commence on completion of the warranty period. Bidder to furnish the bank guarantee of 50% of annual amount valid for 15 months before claiming for AMC/ATS Cost. *The AMC & ATS will be treated as a part of the total cost of the project.*
Maintenance and Support services	Monthly in Arrears (Bank Guarantee	The payment will paid in arrears at the end of every month Bidder to furnish the bank guarantee of

	of Quarterly amount valid for 3 months) Or Quarterly in arrears	quarterly amount valid for 3 months before claiming payment in that quarter. Or The payment will paid in arrears at the end of every quarters.

7.1.29.1 Price Composition

The Bidder is expected to quote unit price in Indian Rupees (without decimal places) for all components (hardware, software etc.) and services on a fixed price basis as part of the commercial Bid inclusive of all costs and taxes like customs duty, excise duty, import taxes, freight, forwarding, insurance, delivery, installation, training etc. at the respective delivery location of the bank **but exclusive of only applicable (in India) Sales Tax/VAT, Service Tax and Octroi / Entry Tax / equivalent local authority cess, which shall be paid / reimbursed on actual basis on production of bills** Further, receipts of such payments made to relevant authorities must be produced for Octroi / Entry Tax / equivalent local authority cess. The Bank will not pay any other taxes, cost or charges. Any change in tax or new tax introduced by the Government post submission of the bid will be borne by the bank on actuals. As and when GST is implemented, taxes which are included in the RFP and subsequently will fall under the purview of GST, will have to be quoted separately in the invoice. The Bank will not pay the same to avoid double taxation. The Bank will not pay any other taxes, cost or charges.

7.1.29.2 Road Permit

In case of receiving of hardware to the area where Road Permit is required for transportation of goods, it is the responsibility of the bidder to arrange for the same in advance without any extra cost to the bank.

7.1.29.3 Right to Alter Quantities

The bank will be free to either reduce or increase the quantity to be purchased by 25% on the same terms and conditions.

7.1.30 Termination

7.1.30.1Termination for Default

The Bank, without prejudice to any other remedy for breach of contract, by written notice of default sent to the Successful Bidder, may terminate this Contract in whole or in part:

a. if the Successful Bidder fails to deliver any or all of the deliverables within the period(s) specified in the Contract, or within any extension thereof granted by the Bank; or;

b. If the Successful Bidder fails to perform any other obligation(s) under the contract.

c. If the Successful Bidder, in the judgment of the Bank has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

Corrupt practice means the offering, giving, receiving or soliciting of anything of value or influence the action of a public official in the procurement process or in contract execution; and "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Bank, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Bank of the benefits of free and open competition.

The bank may give a cure period of 30 days and thereafter 90 days' notice period without assigning any reasons to the bidder before terminating the contract. In the event, the Bank terminates the Contract in whole or in part, the Bank may procure, upon such terms and in such manner as it deems appropriate, Goods or Services similar to those undelivered, and the Successful Bidder shall be liable to the Bank for any excess costs for such similar Goods or Services. However, the Successful Bidder shall continue performance of the Contract to the extent not terminated when the value of the liquidated damages exceed 10% of the contract amount.

7.1.30.2Termination for Insolvency

If the Bidder becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, if the Bidder is a corporation, a   resolution is passed or order is made for its winding up (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), a receiver is appointed over any part of its undertaking or assets, or if the Bidder takes or suffers any other analogous action in consequence of debt; then the Bank plans to, at any time, terminate the contract by giving 90 written notice to the Bidder. If the contract is terminated by the Bank in terms of this Clause,

termination will be without compensation to the Bidder, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Bank. In case, the termination occurs before implementation in all the locations in terms of this clause, the Bank is entitled to make its claim to the extent of the amount already paid by the Bank to the Bidder.

7.1.30.3 Termination – Key Terms & Conditions

The Bank shall be entitled to terminate the agreement at any time by 90 giving notice if:

The Bidder

a. has a winding up order made against it; or
b. has a receiver appointed over all or substantial assets; or
c. is or becomes unable to pay its debts as they become due; or
d. enters into any arrangement or composition with or for the benefit of its creditors; or
e. Passes a resolution for its voluntary winding up or dissolution or if it is dissolved.

The Bidder shall have right to terminate only in the event of winding up of the Bank

7.1.30.4 Exit Option

1. The Bank reserves the right to cancel the contract in the event of happening one or more of the following after giving 30 days cure period:

a. The Successful Bidder (s) shall be required to enter into a contract with Bank, within thirty (30) days of the award of the work or within such extended period, as may be specified by Bank. The Contract will be based on this RFP document, Purchase Order and the corrigendum. The Successful bidder shall furnish the Performance Guarantee within 21 days of acceptance of the PO by the bidder

b. Delay in completing installation / implementation and acceptance tests/ checks beyond the specified periods;

c. Serious discrepancy in functionality to be provided or the performance levels agreed upon, which have an impact on the functioning of the Bank.

d. In addition to the cancellation of contract, Bank reserves the right to appropriate the damages through encashment of Bid Security /Performance Guarantee given by the Bidder.

2. The Bank and the Bidder shall together prepare the Reverse Transition Plan as part of vendor exit plan. However, the Bank shall have the sole decision to ascertain whether such Plan has been complied with.

3. In addition to the cancellation of contract, Bank reserves the right to appropriate the damages through encashment of Security Deposit /Performance Guarantee given by the Bidder.

4. Notwithstanding the existence of a dispute, and/or the commencement of arbitration proceedings, the Bidder will be expected to continue the facilities management services. The Bank shall have the sole and absolute discretion to decide whether proper reverse transition mechanism over a period of 6 to 12 months, has been complied with.

5. Reverse Transition mechanism would typically include service and tasks that are required to be performed / rendered by the Bidder to the Bank or its designee to ensure smooth handover, transitioning of application knowledge, Bank's deliverables, and maintenance and Application Support Help Desk.

7.1.30.5 Termination for convenience

The Bank, by 90 days written notice sent to the Bidder, may terminate the Contract, in whole or in part, at any time its convenience. The notice of termination shall specify that termination is for the Bank's convenience, the extent to which performance of work under the Contract is terminated and the date upon which such termination becomes effective.

In the event of termination for whatsoever reason, the Vendor shall be paid up to the stage of products delivered and services rendered as per the payment terms defined in the RFP till the point of termination after deducting SLA penalty/Liquidated damages, if any.

8   General Instructions

8.1   Registration of RFP Response

Registration of RFP response will be affected by the Bank by making an entry in a separate register kept for the purpose upon Bank receiving the RFP response in the above manner. The registration must contain all documents, information, and details required by this RFP. The submission should be in the format outlined in this RFP and should be submitted only through hand delivery. If the submission to this RFP does not include all the documents and information required or is incomplete or submission is through Fax mode, the RFP is liable to be summarily rejected. All submissions, including any accompanying documents, will become the property of Bank. The Recipient shall be deemed to have licensed, and granted all rights to the Bank to reproduce the whole or any portion of their submission for the purpose of evaluation, to disclose the contents of the submission to other Recipients who have registered a submission and to disclose and/or use the contents of the submission as the basis for any resulting RFP process, notwithstanding any copyright or other intellectual property right of the Recipient that may subsist in the submission or accompanying documents.

RFP responses will remain valid and open for evaluation for a period of at least six (6) months from the RFP closing date.

8.2   Request for Additional Information

Recipients/ Bidders are required to direct all communications for any clarification related to this RFP, to the designated Bank officials and must communicate the same in writing in 7 days prior to the pre-bid meeting scheduled date. All queries relating to the RFP, technical or otherwise, must be in writing only. The Bank will try to reply, without any obligation in respect thereof, every reasonable query raised by the Recipients in the manner specified.

However, the Bank will not answer any communication reaching the bank later than15:00 hours IST on **13.04.2017** this being the last date to receive clarifications.

The Bank may in its absolute discretion seek, but under no obligation to seek, additional information or material from any Bidders after the RFP closes and all such information and material provided must be taken to form part of that Bidder's response. Bidders should invariably

provide details of their email addresses as responses to queries will be provided to all Bidders via email.

The Bank may in its sole and absolute discretion engage in discussion with any Bidder (or simultaneously with more than one Bidder) after the RFP closes to clarify any response.

8.3   Pre-Bid Meeting

The Bank plans to hold a pre-bid meeting on **17.04.2017** at 15:00 PM. at the address specified in Bid details under introduction note to bring utmost clarity on the scope of work and terms of the RFP being floated. The Bidders are expected to use the platform to have all their queries answered.

Interested Bidders will be allowed to participate in the Pre-Bid meeting. Also, bank will allow a maximum of 2 representatives from each Bidder (including OEM partners) to participate in the pre-bid meeting.

Bidders are requested to send their queries relating to RFP to our office by e-mail/ fax / speed post / courier, well in advance (latest by **15:00** hours IST on **13.04.2017**) so that the same could be discussed during the Pre-Bid meeting with interested Bidders.

Non-attendance at the Pre-bid Meeting will not be a cause for disqualification of a Bidder.

The Bank will have liberty to invite its technical consultant or any outside agency, wherever necessary, to be present in the pre-bid meeting to reply to the technical queries of the Bidders in the meeting.

8.4   Disqualification

Any form of canvassing/ lobbying/ influence/ query regarding short listing, status etc. will result in a disqualification.

8.5   Language of Bid

The language of the bid response and any communication with the Bank must be in written English only. Supporting documents provided with the RFP response can be in another language so long as it is accompanied by an attested translation in English, in which case, for purpose of evaluation of the bids, the English translation will govern.

8.6   Period of Validity of Bids

Bids should remain valid for the period of at least six (6) months from the last date for submission of bid prescribed by the Bank. A bid valid for a shorter period shall be rejected by the Bank as non-responsive. In case the last date of submission of bids is extended, the Bidder shall ensure that validity of bid is reckoned from modified date for submission.

8.7   Errors and Omissions

Each Recipient should notify the Bank of any error, fault, omission, or discrepancy found in this RFP document but not later than five business days prior to the due date for lodgment of Response to RFP.

8.8   Amendment of Bidding Documents

Any time prior to the last date for bid-submission, the Bank may, for any reason, whether at its own initiative or in response to clarification(s) sought from the prospective Bidders, modify the RFP contents/ covenants by amendment. Clarification /amendment, if any, will be notified on Bank's website. No individual communication would be made in this respect.

8.9   Authorization to Bid

The proposal/ bid being submitted would be binding on the Bidder. As such, it is necessary that authorized personnel of the firm or organization sign the bid documents. The designated personnel should be authorized by a senior official of the organization having authority.

1. All pages of the bid, shall be initialed by the person or persons signing the bid
2. Bid form shall be signed in full & official seal affixed.
3. Any inter-lineation, erasure or overwriting shall be valid only if they are initialed by the person or persons signing the Bid.
4. All such initials shall be supported by a rubber stamp impression of the Bidder's firm.

The proposal must be accompanied with an undertaking letter duly signed by the designated personnel providing a bid commitment. The letter should also indicate the complete name and designation of the designated personnel.

In case the principal Bidder authorizes his business partners/ authorize distributors to bid on his behalf, a separate authorization letter as per format enclosed (*Annexure: ANXA12_Form_12_ManufacturerAuthorizationForm*), with a commitment to fulfill the terms of the RFP should be submitted. Necessary resolutions/authority available should be enclosed.

8.10   Recipient obligation to inform itself

The Recipient must apply its own care and conduct its own investigation and analysis regarding any information contained in the RFP document and the meaning and impact of that information.

8.11   Errors and Omissions

Each Recipient should notify the Bank of any error, fault, omission, or discrepancy found in this RFP document but not later than five business days prior to the due date for lodgment of Response to RFP.

8.12   Cost borne by the Respondent

All costs and expenses (whether in terms of time or money) incurred by the Recipient / Respondent in any way associated with the development, preparation and submission of responses, including but not limited to attendance at meetings, discussions, demonstrations, etc. and providing any additional information required by Bank, will be borne entirely and exclusively by the Recipient / Respondent. Stamp duty that may be incurred towards entering into agreement with the successful bidder for awarding the contract will be borne entirely by the successful bidder.

8.13   No Legal Relationship

No binding legal relationship will exist between any of the Recipients / Respondents and the Bank until execution of a contractual agreement to the full satisfaction of the Bank.

8.14   Acceptance to Terms

A Recipient will, by responding to the Bank's RFP document, be deemed to have accepted the terms as stated in this RFP document.

8.15   Submission to Bank

The RFP response documents should be submitted in paper copies - hard bound in two sets (Original Set and Duplicate Set) and each set should contain one copy of the following:

1.   **ENVELOPE – I: Eligibility Criteria:**

     Separate envelopes with superscriptions as "**Eligibility Criteria**" should be included within the overall Envelope. The Bidder should submit the following:

a) The sheet mentioning compliance/ non-compliance to all the eligibility criteria specifications with remarks and other requirements given in *Annexure*: *ANXA10_Form 10_ConfirmationofEligibility*

b) All the proofs required for eligibility criteria as mentioned in *Annexure*: *ANXA10_Form 10_ConfirmationofEligibility.*

c) *A softcopy of the above along with supporting document in a CD.*

2. **ENVELOPE – II: Technical Bid :**

Bid Document cost and Bid Security: Separate envelopes with superscriptions as "**Bid document cost and Bid Security**" should be included within the overall Envelope. The Bidder should submit the following:

a) Cost of Application/ Bid Document
b) Bid Security (Earnest Money Deposit) and
c) Technical Bid

Technical Bid: Separate envelopes with superscriptions as "**Technical Bid and Masked Commercial Bid**" should be included within the Envelope II.

a) Technical Bid
b) Masked Commercial Bid

The Bidder should submit compliance / non-compliance to all the specifications with remarks and other requirements given in the Bid Document and Scope of Work.

The Technical Bid should be complete in all respects and contain all information asked for, except commercial prices. The Technical Bid should include all items asked for in bid document. The technical offer **should contain a Masked Bill of Material. The Bidders should note that the technical offer should not contain any price information**. The Technical Offer should be complete and indicate that all products and services asked for are quoted. The Bidder should enclose a copy of the Masked Commercial Bid (as per the format provided in *ANXC1_Commercial Bill of Material*) as per price schedule without the prices (please put 'X' mark wherever prices are quoted) along with other bid documents for evaluation purpose. In addition to submitting the hard copies, the Bid Formats dully filled, supporting documents and bid documents should be submitted in CD in pdf format.

3. **ENVELOPE – III: Indicative (Estimated) Price:**

The Price Bid document should give all relevant price information and should not contradict the Technical Offer in any manner. **Please note that if any envelope is found to contain both technical and commercial bid together, that bid will be rejected summarily.**

The three envelopes should be put together in an envelope to constitute one set. Each set should be packed in an envelope

The proposal should be prepared in English in MS Word/Excel format. In addition to submitting the hard copies, the Bid Formats dully filled and signed could be scanned and submitted in CD. Other supporting documents could be in PDF format.

The details required in the Annexure shall also be enclosed. The Bank may reject any proposal not containing all the requirements called for in various Annexure.

The bidders who do not qualify as per eligibility criteria will not be considered for Technical evaluation. The Technical Bid of the eligible Bidders will be opened first for evaluation. A bidder not found eligible under Technical Bid will not be considered for participating in the Reverse Auction process. Final bidder would be decided by **Techno – Commercial Evaluation.**

Prices quoted by the Bidder shall be fixed during the Bidder's performance of the Contract and shall not be subject to variation on any account, including exchange rate fluctuations, changes in taxes, duties, levies, charges etc. A Bid submitted with an adjustable price quotation will be treated as nonresponsive and will be rejected.

Paper copies of RFP response as mentioned above along with Demand Draft/Banker's Cheque/Pay Order for Rs. 25,000/- towards Application Money (which shall be non-refundable) and Rs. 50,00,000/- towards Earnest Money Deposit & one electronic copy (in standard readable format on CD) of Technical Bid must be submitted to Bank at the following address.

Name: Mr. Amit Srivastava
Address: Punjab & Sind Bank,
Bank House, 21, Rajendra Place,
Risk Management Department
New Delhi **110008**
Tel No: 011 – 25814574
E-mail ID: ho.rmd@psb.co.in

The sealed bid envelopes as mentioned above should be delivered to Mr. Amit Srivastava (AGM Risk Management Dept) Risk Management Dept, Bank House at the address given above. The

bidders who do not qualify as per eligibility criteria will not be considered for Technical evaluation. A bidder not found eligible under Technical Bid will not be considered for participating in the Reverse Auction process.

8.16   Late RFP Policy

RFP responses received after the deadline for lodgement of RFPs may be registered by Bank and may be considered and evaluated by the evaluation team at the absolute discretion of the Bank. Respondents are to provide detailed evidence to substantiate the reasons for a late RFP submission. It should be clearly noted that Bank has no obligation to accept or act on any reason for a late submitted response to RFP. Bank has no liability to any person who lodges a late RFP response for any reason whatsoever, including RFP responses taken to be late only because of another condition of responding.

8.17   Modification and Withdrawal of Bid

- The Bidder may modify or withdraw its bid after the bid's submission, provided that written notice of the modification including substitution or withdrawal of the bids is received by the Bank prior to the deadline prescribed for submission of bids.
- The Bidder's modification or withdrawal notice shall be prepared, sealed, marked and dispatched in accordance with the provisions as mentioned in this RFP. A withdrawal notice may also be sent by fax/e-mail but followed by a signed confirmation copy, postmarked not later than the deadline for submission of bids.
- No bid can be modified subsequent to the deadline for submission of Bids
- No bid can be withdrawn in the interval between the deadline for submission of bids and the expiry of the period of Bid validity specified by the Bidder on the Bid Form. Withdrawal of the bid during this interval shall result in forfeiture of Bid security.
- The modification of the bid mentioning the clause being modified will be considered as an integral part of the original bid and the relevant modifications shall be considered for bid evaluation process.

8.18   Bid Opening

1) The Bank will open only the Technical Bids as per the schedule mentioned in this RFP. The Indicative (Estimated) Prices of only technically qualified bidders will be opened on a later date subsequent to the technical evaluation. The Bank will notify the date and time for participating in the on-line Reverse Auction to the technically qualified bidders.

2) Attendance of all the authorized representatives of the bidders who are present at Bid Opening will be taken in a register against name of the representative, name of the company/bidder and with full signature of the representative.

3) Each Bid will be numbered serially, signed and dated by the Officers of the Bank except printed literature, brochure and reports.

4) The following details will be announced at the bid opening:
   a) Bidder's name,
   b) Bid Modifications or withdrawals, if any.
   c) Technical Details (in case of Technical bid opening),
   d) Submission or non submission of Bid Security (in case of Technical bid opening) and such other details as the Bank, at its discretion, may consider appropriate.

5) Alterations in the bids, if any, made by the bidders should be signed legibly to make it perfectly clear that such alterations were present on the bids at the time of opening of the Bids. It would be ensured that alterations are signed by the bidder/company's executive who has signed the bid or by the bidder/company's representative authorised by the executive who has signed the bid.

6) An "on the spot statement" giving details of the bids opened and other particulars as read out during the opening of the bids will be prepared which will then be signed by all the bidders/representatives and bank officers present at the time of opening of bids.

7) Bids **(and modifications sent pursuant to Clause – 8.17 of Section 8)** that are not opened and read out at Bid opening shall not be considered further for evaluation, irrespective of the circumstances. Such Bids will be returned unopened to the Bidders.

8) Indicative (Estimated) Prices of those bidders who fail to technically qualify will be returned unopened to the concerned bidders.

9) In order to participate in online reverse auction, bidders should have Digital Signature. M/s E Procurement Technologies Ltd (ETL) has been engaged for providing e-tendering services for Punjab & Sind Bank. ETL will train the bidders for this purpose and they will have to abide by the E-Business Rules framed by the service provider and duly approved by the Bank.

Bank reserve the right to either reconduct the reverse auction or call for closed commercial bid from technically qualified bidders, in case the initial reverse auction fails to identify the prospect L1 bidder.

Rules, Terms & Conditions for the Reverse Auction will be informed to technically qualified bidders.

9   Evaluation Process

9.1   Objective of the Evaluation Process

The objective of the evaluation process is to evaluate the bids to select an effective and best fit solution at a competitive price. The evaluation by PSB will be undertaken by an Internal Committee formed by the Bank. The bank may consider recommendations made by External Experts/Consultants on the evaluation. The decision of the committee shall be final.

The Bank will scrutinize the offers to determine whether they are complete, whether any errors have been made in the offer, whether required technical documentation has been furnished, whether the documents have been properly signed, and whether items are quoted as per the schedule. The Bank plans to, at its discretion, waive any minor non- conformity or any minor deficiency in an offer. This shall be binding on all Bidders and the Bank reserves the right for such waivers and the Bank's decision in the matter will be final.

Each Recipient acknowledges and accepts that the Bank may, in its sole and absolute discretion, apply whatever criteria it deems appropriate in the selection of organizations, not limited to those selection criteria set out in this RFP document. The issuance of RFP document is merely an invitation to offer and must not be construed as any agreement or contract or arrangement nor would it be construed as any investigation or review carried out by a Recipient. The Recipient unconditionally acknowledges by submitting its response to this RFP document that it has not relied on any idea, information, statement, representation, or warranty given in this RFP document.

Bank may call for any clarifications/additional particulars required, if any, on the technical/ commercial bids submitted. The bidder has to submit the clarifications/ additional particulars in writing within the specified date and time. The bidder's offer may be disqualified, if the clarifications/ additional particulars sought are not submitted within the specified date and time. Bank reserves the right to call for presentation/s, product walkthroughs, on the features of the solution offered etc., from the bidders based on the technical bids submitted by them. PSB also reserves the right to conduct Reference Site Visits at the bidder's client sites. Based upon the final technical scoring, short listing would be made of the eligible bidders for final commercial bidding.

Through this Request for Proposal, Bank aims to select a Bidder/ application provider who would undertake the designing and implementation of the required solution. The Bidder shall be entrusted with end to end responsibility for the execution of the project under the scope of this RFP. The Bidder is expected to commit for the delivery of services with performance levels set out in this RFP with a Service Level Agreement.

9.2 Normalization of bids

The Bank will go through a process of technical evaluation and normalization of the bids to the extent possible and feasible to ensure that Bidders are more or less on the same technical ground. After the normalization process, if the Bank feels that any of the bids needs to be normalized and that such normalization has a bearing on the commercial bid; the Bank may at its discretion ask all the technically shortlisted Bidders to resubmit the technical and commercial bids once again for scrutiny. The Bank can repeat this normalization process at every stage of technical submission or till the Bank is satisfied. The Bidders agree that they have no reservation or objection to the normalization process and all the technically short listed Bidders will, by responding to this RFP, agree to participate in the normalization process and extend their co-operation to the Bank during this process. The Bidders, by submitting the response to this RFP, agree to the process and conditions of the normalization process.

9.3 Technical Evaluation Process

Initially only the 'Technical Bids' will be opened and evaluated. All technical bids will be evaluated and a technical score would be arrived at. The bidder scoring the highest technical score will be ranked as T1.

Bidders scoring more than 70 percent of the total score (i.e. 2100 out of 3000) and scoring at-least 75% of the maximum score for the functional requirements in each of risk areas viz. Credit Risk, Market Risk and Operational Risk (i.e 225 out of 300) shall be considered to be technically qualified.

If there is only one bidder as technically qualified then Bank reserves the right to consider the bidder scoring more than 60 percent of the Total Score (i.e. 1800 out of 3000) and scoring at-least 75% of the maximum score for the functional requirements in each of risk areas viz. Credit Risk, Market Risk and Operational Risk (i.e. 225 out of 300) as technically qualified

In second stage, only those bidders shall be invited for reverse auction who have qualified in the technical evaluation.

While the technical score carries a weight of 70 percent, the commercial score carries a weight of 30 percent.

9.3.1 Preliminary Examination of Offers

The Bank will scrutinize the offers to determine whether they are complete, whether any errors have been made in the offer, whether required technical documentation has been furnished, whether the documents have been properly signed, and whether items are quoted as per the schedule. The Bank plans to, at its discretion, waive any minor non - conformity or any minor

deficiency in an offer. This shall be binding on all Bidders and the Bank reserves the right for such waivers and the Bank's decision in the matter will be final.

9.3.2 Technical Bid Evaluation Criteria

The scoring methodology for technical bid components is explained in the following paragraphs of this section.

The Credit, Market and Operational Risk System implementation involves various components including implementation of necessary Application Software, RDBMS, development of interfaces and customizations where necessary, setting up of all necessary applications in the Disaster Recovery Centre for the roll-out, training of end users, performing data migration activities, providing implementation services, and rolling out the system at various locations of Bank and provide Support and maintenance services for a period of 5 years from the date of Contract. The proposal submitted by the Bidders shall, therefore, be evaluated on the following parameters:

- Functional Requirements (FR)
- Technical Requirements (TR)
- Product Demonstration and Technical Bid Presentation (PB)
- Approach and Methodology (AM)
- Past Experience (PE)
- Certifications

Scores for the above individual parameters shall be normalized to a percentage value. Each parameter has been assigned a weight. The weighted scores shall be summed up to determine the technical scores of the bidders. The bidder with the highest technical score shall be ranked as T1 and shall be considered as T_{high} for the techno-commercial score.

9.3.2.1 Scoring Methodology for Functional Requirements (FR)

The minimum functional specifications for the CRMS (Credit Risk Management System), MRMS (Market Risk Management System) and ORMS (Operational Risk Management System) software are given in **Annexure ANXB1_Functional and Technical Specifications**. All the requirements are mandatory. Bidder shall indicate in column 4 the availability of each requirement as a standard product (S) or customization I.

Bidders should secure at-least 75% of the maximum marks for the functional requirements in each of risk areas viz. Credit Risk, Market Risk and Operational Risk (i.e 225 out of 300) to qualify for commercial evaluation

Marks will be awarded as 'Maximum Marks' for 'Standard Product', 'half of the Maximum Marks' for Customization and '0' for 'Not feasible.

The functional requirements which are mentioned as customized or not feasible shall be provided to the Bank before the completion of pilot run at no extra cost to the Bank.

9.3.2.2 Scoring Methodology for Technical Requirements (TR)

The minimum technical specifications for the CRMS, MRMS and ORMS software are given in **Annexure ANXB1_Functional and Technical Specifications**. All the requirements are mandatory. Bidder shall indicate in column 4 the availability of each requirement as a standard product (S) or customization (C).

Marks will be awarded as 'Maximum Marks' for 'Standard Product', 'half of the Maximum Marks' for Customization and '0' for 'Not feasible.

The total marks obtained against the total number of technical specifications will be proportionately modified to a maximum of 265 for the sake of evaluation.

9.3.2.3 Scoring Methodology for Overall Solution, Product Demonstration & Bid Presentation (PB)

Eligible Bidders will be required to make technical presentations to supplement their bids, showcase overall solution proposed. The Bank will schedule presentations and the time and location will be communicated to the Bidders. Failure of a Bidder to complete a scheduled presentation to the Bank may result in rejection of the proposal. The technical presentation will be scored out of 60 marks.

The Bidder is also required to conduct a product demo of the functional feature of the offered solution as mentioned **Annexure ANXB1_Functional and Technical Specifications. The bank may also share additional use cases and/or questionnaire for the product demo**. Marks will be awarded as 'Maximum Marks' for 'Standard Product', 'half of the Maximum Marks' for Customization and '0' for 'Not feasible. The Bank will schedule product demo and the time and location will be communicated to the Bidders. Failure of a Bidder to complete a product demo to the Bank may result in rejection of the proposal. The product demo will be scored out of 100 marks.

9.3.2.4 Scoring Methodology for Approach and Methodology (AM)

The bidder is expected to provide, as a part of the technical bid, a detailed document that explains the approach and methodology proposed by the bidder for the implementation of the proposed solution.
The "Approach and Methodology" adopted for the Implementation would be evaluated by PSB and would at the minimum cover

- Reference site visit/Tele Conference
- Team Strength

Reference site visit/ Tele conference:

A Committee of people from the Bank would carry out Reference Site Visits and/or Telephonic Interviews with the existing customers of the Bidder/OEM. The inputs that have been received from the
Customer would be considered by the Bank and this might not need any documentary evidence. This rating would be purely on the inputs (like satisfaction of the organization of the product, timeliness of implementation/progress in case of under implementation, promptness of support services etc.) provided by the Bidder's/OEM customers and score would be assigned to Bidder as mentioned in **Annexure ANXB1_Functional and Technical Specifications Reference Site Visit.**

The Bank at its discretion may reject the proposal of the Bidder without giving any reasons whatsoever, in case the responses received from the Site Visits are negative.

Team Strength:

Bidder responses to each point under Team Strength in **Annexure ANXA11_Form 11_Proposed Team Profile**, including the team profile provided by the Bidder, would be evaluated and score would be assigned to Bidder as mentioned in **Annexure ANXB1_Functional and Technical Specifications Team Strength**.

9.3.2.5 Scoring Methodology for Past Experience (PE)
The Bidder should provide details of past experience in implementing Market Risk Management System (MRMS), Operational Risk Management System (ORMS) and Credit Risk Management System (CRMS) The Bidder's past experience shall be evaluated and the score obtained by the Bidder shall be considered for evaluation as given in the **Annexure ANXB1_Functional and Technical Specifications Past Experience**. The Bidder should provide the details of all the implementations in Banks including details of Scope of Project, Number of Branches with breakup of the role and Proof of Implementation. Experience at co-operative banks (State Co-operative banks, District Central co-operative banks, Urban Co-operative banks, etc.) shall not be considered for evaluation.

9.3.3   Functional & Technical Evaluation Criteria

9.3.3.1 For Credit Risk System

SI	Technical & Functional Evaluation Phase	Sub Scores	Max Total Score
1	**Functional Requirements evaluation**		**300**
2	**Technical Requirements Evaluation**		**265**
3	**Overall Solution, Presentation and Product Demonstration**		**160**
3.1	Presentation and Overall Solution	60	
3.2	Product Demonstration	100	
4	**Past Experience**		**120**
4.1	OEM solution has been Implemented for FIRB/AIRB in Banks abroad / Scheduled Commercial Banks in India		
	Less than or equal to 2 banks in India/Abroad	50	
	More than 2 banks	70	
4.2	OEM solution has been implemented for Standardized Approaches in Scheduled Commercial Banks in India/Abroad*		
4.2.1	1 Bank in India	25	
	Or 1 Bank in abroad	20	
4.2.2	2 Banks in India	35	
	Or 2 Banks in Abroad	30	
4.2.3	More than 2 Banks in India	50	
	Or More than 2 Banks in abroad	45	
5	**Approach & Methodology**		**150**
5.1	Reference site visit/Tele-conference	100	
5.2	Team Strength	50	
6	**Certifications**		**5**
6.1	The Bidder having following certifications by a recognized certifying agency: • ISO 9001:2000 and • CMMI 5	5	

SI	Technical & Functional Evaluation Phase	Sub Scores	Max Total Score
6.2	The Bidder having following certification by a recognized certifying agency: • CMMI 5	4	
6.3	The Bidder having following certification by a recognized certifying agency: • ISO 9001:2000	1	
	TOTAL		**1000**

9.3.3.2 For Market Risk System

SI	Technical & Functional Evaluation Phase	Sub Scores	Max Total Score
1	**Functional Requirements evaluation**		**300**
2	**Technical Requirements Evaluation**		**265**
3	**Overall Solution, Presentation and Product Demonstration**		**160**
3.1	Presentation and Overall Solution	60	
3.2	Product Demonstration	100	
4	**Past Experience**		**120**
4.1	OEM solution has been Implemented for IMA in Banks abroad / Scheduled Commercial Banks in India		
	Less than or equal to 2 banks in India/Abroad	50	
	More than 2 banks	70	
4.2	OEM solution has been implemented for Standardized Approaches in Scheduled Commercial Banks in India/Abroad*		
4.2.1	1 Bank in India	25	
	Or 1 Bank in abroad	20	
4.2.2	2 Banks in India	35	
	Or 2 Banks in Abroad	30	
4.2.3	More than 2 Banks in India	50	

SI	Technical & Functional Evaluation Phase	Sub Scores	Max Total Score
	Or More than 2 Banks in abroad	45	
5	**Approach & Methodology**		**150**
5.1	Reference site visit/Tele-conference	100	
5.2	Team Strength	50	
6	**Certifications**		**5**
6.1	The Bidder having following certifications by a recognized certifying agency: • ISO 9001:2000 and • CMMI 5	5	
6.2	The Bidder having following certification by a recognized certifying agency: • CMMI 5	4	
6.3	The Bidder having following certification by a recognized certifying agency: • ISO 9001:2000	1	
	TOTAL		**1000**

9.3.3.3 For Operational Risk System

SI	Technical & Functional Evaluation Phase	Sub Scores	Max Total Score
1	**Functional Requirements evaluation**		**300**
2	**Technical Requirements Evaluation**		**265**
3	**Overall Solution, Presentation and Product Demonstration**		**160**
3.1	Presentation and Overall Solution	60	
3.2	Product Demonstration	100	
4	**Past Experience**		**120**

SI	Technical & Functional Evaluation Phase	Sub Scores	Max Total Score
4.1	OEM solution has been Implemented for AMA in Banks abroad / Scheduled Commercial Banks in India		
	Less than or equal to 2 banks in India/Abroad	40	
	More than 2 banks	60	
4.2	OEM solution has been implemented for Standardized Approaches in Scheduled Commercial Banks in India/Abroad*		
4.2.1	1 Bank in India	25	
	Or 1 Bank in abroad	20	
4.2.2	2 Banks in India	35	
	Or 2 Banks in Abroad	30	
4.2.3	More than 2 Banks in India	50	
	Or More than 2 Banks in abroad	45	
5	**Approach & Methodology**		**150**
5.1	Reference site visit/Tele-conference	100	
5.2	Team Strength	50	
6	**Certifications**		**5**
6.1	The Bidder having following certifications by a recognized certifying agency: • ISO 9001:2000 and • CMMI 5	5	
6.2	The Bidder having following certification by a recognized certifying agency: • CMMI 5	4	
6.3	The Bidder having following certification by a recognized certifying agency: • ISO 9001:2000	1	
	TOTAL		**1000**

9.3.3.4 Disqualification Parameters in Technical Bid Evaluation

The bidders are required to score at a minimum as per the parameters defined. If only one bidder qualifies, Bank at its discretion may select bidders with the top two technical scores for commercial evaluation process. Bank, at its discretion, may choose to open the commercial bid of the only bidder who qualifies. Bank at its discretion may reject the proposal of the Bidder without giving any reason whatsoever, if in Bank's opinion, the Solution Sizing was not made appropriately to meet the performance criteria as stipulated by Bank. Bank at its discretion may reject the proposal of the Bidder without giving any reasons whatsoever, in case the responses received from the Site Visits are negative.

9.3.3.5 Short Listing of Technically Qualified Bidders

Technically qualified Bidders will be shortlisted based on the following criteria:

Bidders scoring the cut off as defined in section 9.2.3 and 9.3.2.1 also – Evaluation of Bids in Market Risk Management, Credit Risk Management and Operational Risk Management in the technical evaluation will be shortlisted for commercial evaluation.

The technical score T_x = Score from Technical Evaluation for Credit Risk + Score from Technical Evaluation for Market Risk + Score from Technical Evaluation for Operational Risk. (The score will be out of 3000)

The Relative Technical Score (RTS) for the Bidders will be calculated based on the following basis:
$RTS_x = T_x / T1 *100$

Where,

RTS_x: Relative Technical Score of each Bidder

T_x: Technical Score of the current proposal

T1: Technical Score of the Bidder with Highest Technical Score

Up to 2 decimal values will be considered for the score.

Example: If Bidder A scores 1800 points and has the highest technical score, then T1 = 1800
If Bidder B scores 1700 points, then Bidder B is TB = 1700
Hence,
$RTS_A = 1800/1800*100 = 100 \%$
$RTS_B = 1700/1800*100 = 94.44 \%$

9.4   Commercial Evaluation Process

Technically qualified bidders as per Technical Evaluation Process will participate in Reverse Auction process as mentioned in **clause 8.18 under Section 8** and comprehensive "Score (S)" will be arrived at as mentioned below after considering the reverse auction quotes and the marks obtained in technical evaluation with relative weights of 30% for commercial score and 70% for technical score. The Bidder with the highest score will be declared successful L1 bidder.
Computation Methodology for arriving at Final Techno-commercial score (S) :

A "Score (S)" will be calculated for all qualified Bidders using the following formula:

$$S = (C_{low} \div C) \, X + (T \div T_{high}) \, (1-X)$$

Where C stands for reverse auction price quoted, C_{low} stands for the price quote of the lowest reverse auction bid. T stands for technical evaluation score and T_{high} stands for the score of the technically highest Bidder. X is equal to 0.3. While computing the comprehensive score (S) as per above formula, the values of (C_{low} / C * X) and (T / T_{high}) * (1-X)) will be considered only upto 3 decimals and the other decimals will be ignored.

Example:

S.No.	Bidder	Technical Evaluation Marks (T)	Reverse Auction Bid price (C) in INR	(C_{low}/C)*0.3	(T/T_{high})*0.7	Score (S)
1	ABC	95	70	(60/70)*0.3= 0.257	(95/95)*0.7 = 0.7	0.957
2	XYZ	80	60	(60/60)*0.3 = 0.3	(80/95)*0.7 = 0.589	0.889

In the above example, ABC, with the highest score of 0.957 becomes the successful Bidder. Bank reserves the right to negotiate the price with the successful L1 Bidder before awarding the contract. If successful L1 bidder declines to accept the offer, bank reserves the right to negotiate with bidder, having next highest Techno-Commercial score (S).

In case of a tie of Total Score between two or more Bidders, the Bid with higher technical score would be chosen as the successful bidder.

Bank will notify the name of the Successful Bidder.

Commercial bid valuation shall be considered as below in case of any kind of discrepancy:

- If there is a discrepancy between words and figures, the amount in words shall prevail

- If there is a discrepancy between percentage and amount, the amount calculated as per the stipulated percentage basis shall prevail
- If there is discrepancy between unit price and total price, the unit price shall prevail
- If there is a discrepancy in the total, the correct total shall be arrived at by Bank
- In case the bidder does not accept the correction of the errors as stated above, the bid shall be rejected.
- At the sole discretion and determination of the Bank, the Bank may add any other relevant criteria for evaluating the proposals received in response to this RFP.
- Bank may, at its sole discretion, decide to seek more information from the respondents in order to normalize the bids. However, respondents will be notified separately, if such normalization exercise as part of the technical evaluation is resorted to.
- All liability related to non-compliance of this Minimum Wages Requirement and any other law will be responsibility of the bidder.
- The Highest Technical bidder shall not automatically qualify for becoming selected bidder and for award of contract by the bank.
- The Lowest Commercial Bidder shall not automatically qualify for becoming selected Bidder and for award of contract by the Bank.
- The Bank shall not incur any liability to the affected Bidder on account of such rejection.
- The Bidder whose technical and commercial Bid is accepted will be referred to as "Selected Bidder" and the Bank will notify the same to the Selected Bidder.
- The Selected bidder shall provide revised TCO and the revised break-up of the cost items post reverse auction
- The final decision on the vendor will be taken by the Bank. The implementation of the project will commence upon successful negotiation of a contract between the Bank and the selected bidder based on the Techno – Commercial evaluation.
- If for some reason, negotiations with the successful bidder fail to result in an agreement within a specified timeline, the Bank reserves the right to award the contract to the next most eligible bidder based on the Techno-Commercial evaluation scores.

9.5 Key Guidelines:

1 Bidder's proposal should strictly conform to the specifications.

2 Proposals not conforming to the specifications will be rejected subject to the Bank's discretion. Any incomplete or ambiguous terms / conditions / quotes may result in disqualification of the offer at bank's discretion. The Bidder has to offer specific remarks for technical requirements and clearly confirm compliance. Any deviations on technical requirements should be clearly informed in Remarks column.

3 Deviation/ comments on other terms prescribed by the Bank are to be provided in a separate section in Technical Bid. The Bank is not bound to evaluate the deviations mentioned at any other section of the bid.

4   For supplementary information a separate sheet should be used.

5   All pages should be numbered (like 1/xxx, 2/xxx where xxx is last page number of Bid document) and signed under the company seal.

6   Technical Bid documents are to be properly hard bound.

7   Punjab & Sind Bank reserves the right to reject any or all proposals. Similarly, it reserves the right not to include any vendor in the final short-list.

9.6   Sealing and Marking of Bids

1. The Bidder has to submit 2 copies of the response and a soft copy of the complete technical Bid and Eligibility Criteria in Microsoft Office / Open Office format on a Compact Disc (CD) super-scribing "**Soft Copy of Technical Bid and Eligibility Criteria against PSB/EIRMS/RFP/2017-18/01 DATED 07.04.2017**" along with the technical bid. The Bidder will not furnish the softcopy of the commercial bid.

2. The Bidder shall seal the envelopes containing "**Envelope – I: Eligibility Criteria**", "**Envelope – II: Technical Bid**" and "**Envelope – III: Indicative Commercial Bid**" separately and the three envelopes shall be enclosed and sealed in a SINGLE OUTER ENVELOPE marked as
    "**ORIGINAL: Implementation of Enterprise Wide Integrated Risk Management System for Advanced Approach under Basel II /Basel III Guidelines-FINAL BID**"

3. The inner and outer envelopes shall:
    a) be addressed to the Bank at the address given; and
    b) bear the following in separate envelopes
        i.   "**Implementation of Enterprise Wide Integrated Risk Management System for Advanced Approach under Basel II /Basel III –Eligibility Criteria**"
        ii.   "**Implementation of Enterprise Wide Integrated Risk Management System for Advanced Approach under Basel II /Basel III –Technical Bid**",
        iii. "**Implementation of Enterprise Wide Integrated Risk Management System for Advanced Approach under Basel II /Basel III – Price Bid (Indicative Commercial Bid)**",
    c) All envelopes should indicate on the cover the name and address of the Bidder.

4. If the outer envelope is not sealed and marked, the Bank will assume no responsibility for the bid's misplacement or premature opening.

10 Additional Instructions for Bidders

10.1 General Instructions

Nature of Bid

a) Bids will be permitted only from a single entity.
b) Consortium bidding is not allowed.

Source Code

a) Bidder to agree to keep source code of proposed solution with approved / recognized escrow agency under escrow arrangements mutually acceptable to the bank and Bidder but at Bidder's cost for entire project period. In case of termination, the bank will have the right of ownership of the escrow account and claim the source code.

b) The application software should mitigate Application Security Risks, at a minimum, those discussed in OWASP top 10 (Open Web Application Security Project)

c) The Bank has right to Audit the Application / Source Code by suitable Security Auditor.

d) The Bidder shall provide complete and legal documentation of all subsystems, **licensed operating systems, licensed system software, and licensed utility software and other licensed software**. The Bidder shall also provide **licensed software** for all software products whether developed by it or acquired from others. The Bidder shall also indemnify the Bank against any levies / penalties on account of any default in this regard.

e) In case the Bidder is coming with software which is not its proprietary software, then the Bidder must submit evidence in the form of agreement it has entered into with the software vendor which includes support from the software vendor for the proposed software for the full period required by the Bank.

Information Ownership

All information processed, stored, or transmitted by successful Bidder equipment belongs to the Bank. By having the responsibility to maintain the equipment, the Bidder does not acquire implicit access rights to the information or rights to redistribute the information. The Bidder understands that civil, criminal, or administrative penalties may apply for failure to protect information appropriately.

Any information considered sensitive by the bank must be protected by the successful Bidder from unauthorized disclosure, modification or access. The bank's decision will be final.

Types of sensitive information that will be found on Bank system's which the Bidder plans to support or have access to include, but are not limited to: Information subject to special statutory protection, legal actions, disciplinary actions, complaints, IT security, pending cases, civil and criminal investigations, etc.

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

Security Configuration, Monitoring and Audit

The baseline security configuration of Operating System, Database, Web server and all other applications to be done by the bidder, according to the industry best practices.

Compliance with security best practices may be monitored by periodic computer security audits performed by or on behalf of the Bank. The periodicity of these audits will be decided at the discretion of the Bank. Periodicity for Regulatory Audits would be required as per the rules and guidelines laid down by the regulator or as required by the regulator. These audit plan to include, but are not limited to, a review of: access and authorization procedures, physical security controls, input/output controls, DB controls, backup and recovery procedures, network security controls and program change controls.

To the extent that the Bank deems it necessary to carry out a program of inspection and audit to safeguard against threats and hazards to the confidentiality, integrity, and availability of data, the Bidder shall afford the Bank's representatives access to the Bidder's facilities, installations, technical resources, operations, documentation, records, databases and personnel. The Bidder must provide the Bank access to various monitoring and performance measurement systems (both manual and automated). The Bank has the right to get the monitoring and performance measurement systems (both manual and automated) audited without prior approval / notice to the Bidder.

Considerations for Proposed Hardware & Software to support the in-scope System

The version of the Business Application must be the latest version.

1. The Bidder can propose the latest version of industry leading RDBMS software like MS SQL Server, Oracle RDBMS, IBM DB2 or equivalent.

2. The Bidder should provide the data sheets for all the hardware proposed.

   Proposed hardware should not go End of Life & Support throughout the tenure of the Contract

3. All Servers shall be configured with two numbers of sufficient capacity of Internal Disk Drives with Mirroring

4. The proposed servers should have 64 bit quad core or higher processors based on either RISC or EPIC or x86/CISC architecture. The proposed server processor should be the latest generation such as Intel Xeon E7, IBM Power 8, Itanium 95XX, Oracle MSeries, SPARC TSeries or equivalent. The offered OS should be Enterprise version of 64 bit OS such as Solaris/Windows /Linux/AIX/HP UX or equivalent and should be the latest version.

5. All servers offered should be of same OEM

6. The application servers should be either horizontally or vertically scalable, whereas the database servers should be vertically scalable ('in box' upgradable) with respect to the number of CPUs configured and Memory Configured so as to meet the Bank's scalability requirements. The scalability factor to be considered is at least 10%.

7. The CPU type offered should be of the same generation/family/architecture across all servers and should be of latest generation

8. The Memory Chipset should be of Double Data Rate 4 (DDR4) or higher memory.

9. The Bidder is expected to provide SAN based storage facility for hosting the system in scope for Production , DR and Non Production Environment. All past and future data would be stored on a single infrastructure i.e. new SAN. The new SAN storage capacity is required for 5 years for the data at the DC and DRS each. The new solution proposed by the Bidder should be capable of accessing the existing SAN for the purpose of data migration and data archival as and when required. The current core usable production data size on the existing SAN is approximately 2 TB and usable development data size is 200 GB.

10. If the solution suggested by the bidders necessitates additional capacity, then the bidder would need to provide accordingly to meet the RFP and Service Level Agreement (SLA) requirements.

11. The Bidder should design the hardware taking note of parameters for CPU utilization, memory utilization, disk Input/output capacity, and Storage capacity etc. as defined in the RFP so as to meet the business requirements of the bank as well as Service Level Agreement requirements defined in this RFP. The proposed SAN (Storage Area Network) and storage management solution should support combinations of mostly used RAID levels (e.g. RAID 0,1,5,6 etc.). The complete production data should be on a combination of RAID 5.

12. The tape library offered should be of modular design to allow configuration, and addition of capacity to increase performance. Offered Tape Drives in the Tape Library should be LTO5 or above.

13. The Storage proposed should be modular storage with enterprise class features.

14. The Storage System should support industry standard applications / databases, including but not limited to MS SQL Server, Oracle, MySQL, DB2, Web and Application Servers, MS Exchange, Lotus Notes etc.

15. The storage system should support heterogeneous multi-host connectivity. The system should facilitate connectivity to various flavours of Operating Systems (OS), including but not limited to, HP-UX, IBM AIX, SUN Solaris, Linux, Microsoft Windows, etc.

16. The hard disk proposed for production storage in the array should be FC (Fibre Channel) or SAS (serial attachment scsi) drives only.

17. The offered storage system should be from OEM positioned as "Leaders" in latest Gartner's "Magic Quadrant"/similar position in latest reports of other globally recognized bodies for storage and disk arrays. A report on same should be submitted as part of proposal document.

18. The proposed Tape Library should be offered with redundant power supplies and cooling fans.

19. Offered tape library/ tape drives in the library should have a minimum of two redundant connections to SAN switches.

20. The Management console/interface of the proposed tape library shall provide the following functionalities:
   - Manage Tape Drives and Cartridges
   - Configure network parameters
   - Should have GUI Front panel

21. All the components (hardware, software etc.) in the DC site should be replicated in the DR (except Test and Development environment). The proposed solution should have full capability to support database to database replication and storage to storage replication between DC and DR with a Recovery Point Objective (RPO) of 30 minutes and Recovery Time Objective (RTO) of 4 hours. The replication between DC and DR should be possible in both directions.

22. System should have standard input, communication, processing and output validations and controls. System hardening should be done by selected bidder. Access controls at DB, OS, and Application levels should be ensured at all times during the implementation and completion of the project.

23. Bidder should propose separate physical servers for Database, however the application & Web servers can be virtualized. However Bidder should adhere to the utilization levels & Service Levels mentioned in the RFP.

10.2 Performance Guidelines

The proposed solution should be able to comply with the following guidelines on performance and solution components in minimum.

a) Bidder should clearly specify the detailed configuration and specifications of the applications and corresponding hardware required at various levels of performance and supply a detailed Bill of Materials (BoM) with the part numbers for the hardware based on the technical requirements. The bidder should separately list down the reasons for the recommended hardware configurations and specifications.

b) The bidder has to explain through proper calculations how the performance of the system vis-à-vis business statistics, projected growth, redundancy, projected growth in functional requirements, concurrent users, performance parameters expected on peak load, VaR or other parameter calculations, transactions handled per second, quarter-end and year-end activity etc, are ensured. The bidder should provide data on any other parameter which would be required.

c) Bidder to indicate the timing of the performance testing (before/after installation of hardware). Bidder will do this at a mutually agreed location at his cost

d) Bidder should also provide data on the solution as how the individual components offered under the solution (application and associated hardware) would be able to meet the current volumes as well as the future scalability requirements.

e) The bidder should provide information on industry standard bench-marks for the system such as TPC-C, TPC-E, certified by Transaction Processing Council and / or Oracle TPMC and/or SPEC that is made available in respective web-sites. The bidder has to furnish the details of the configuration of the servers, OS and databases used in such benchmarking exercise for TPC-C, TPC-E, Oracle TPMC, SPEC etc. and relate the same to the server configurations proposed for Bank's requirement.

f) The bidder should also provide the benchmarks with Risk Management application software preferably conducted with real time loads for similar requirement or as acceptance test with credential and details of references involved in conducting such bench-marks. The Bidder has to relate the same to the model and configuration of the hardware proposed for Bank's requirement.

g) Besides the above, the bidder may furnish the details of any other benchmarks either Industry standard such as "SPEC" ratings or for other Financial Institutions with due relevance.

h) The bidder may also furnish certified performance details from past implementations of similar nature.

i) Bank at its discretion may ask the Bidder to perform the benchmark for the purpose of this project, incorporating the proposed technology architecture for the IRMS application. The Bidder will have to do a benchmark on the hardware proposed for the IRMS solution. Benchmark needs to be validated & reported by reputed independent third party who has the experience of reporting performance benchmark with due concurrence of the bank. The Bidder will have to perform a product benchmark at the benchmarking centre as identified by the Bidder in the presence of Bank employees and its appointed representatives. The objective of this exercise is to demonstrate that the proposed hardware meets the terminal year sizing and provides the required service levels in terms of number of the necessary user concurrency mentioned in Scope of Work and Growth Projections, . It is for the bidder to establish that the sizing is proper for the requirement and to demonstrate the performance to Bank's designated officials and consultants.

j) This benchmark should be carried out on the proposed hardware with the proposed version of the operating system, proposed version of the database system and the

proposed version of the application system. The benchmarking exercise should be successfully completed within 3 months from the date of acceptance of the Purchase Order by the bidder. The Bidder should factor all the necessary costs for the benchmark, including the travel, lodging, meals for the Bank personnel and it's appointed Consultant. Thus we suggest the Bidder to consider 4 to 5 Bank Authorized personnel for this exercise. Any expenses (performing the benchmark, travel, stay, etc.) incurred for the same would be borne by Bidder and under no circumstances the same would be reimbursed to the Bidder by the Bank. The Bidder is expected to factor the all expenses linked to the benchmarking in the Bill of Materials. The Bidder shall ensure that the solution provided and sized by the Bidders is capable of meeting Bank's current and terminal year transaction and business volumes. Empirical evidence of the appropriateness of the server sizing by means of comparison with independently assessed benchmarked data on a similar environment as proposed to Bank will be mandatory. The Bidder has to provide all necessary supporting to Bank to prove that the Solution sizing is appropriate.

10.3 SLA

Bank expects that the Bidder shall be bound by the Service Levels described in this document. Service Levels will include Availability measurements and Performance parameters. Bank requires the Bidder to provide reports for all availability and performance parameters a log of all issues that have been raised and Closed/ Pending Closure by the Bidder. The frequency of these reports would be Weekly, Monthly, Quarterly and Yearly. Apart from reports on each availability and performance measurement parameter mentioned below, the reporting should also include the following:

1. Utilization of CPU, RAM, Hard Disk, I/O (Peak and Average)
2. Percent of CPU utilized by the system and user activity.
3. CPU utilization broken down by user CPU and system CPU. Tabular report of CPU, Memory, NIC and I/O utilization (peak and average) by application, if possible.
4. Percent of physical memory utilized by system and user processes.
5. Problem Trends
6. Call Resolution Time

However, all Availability and Performance Measurements will be on a monthly basis for the purpose of Service Level reporting.

Audits will normally be done on monthly/quarterly basis or as required by Bank and will be performed by Bank or Bank appointed third party agencies.

The term 'business infrastructure' mentioned in this document shall include all capital costs of hardware, associated software and RDBMS (at DC or DRC, as the case may be) delivered as of the point of time when the penalty is levied. The cost of AMC from the second year onwards will not be treated as capital cost and therefore excluded. The business infrastructure shall also exclude the capital cost of all components related exclusively to other infrastructure and Test and Development infrastructure, for the purpose of penalty calculation.

S No	Services	Infrastructure Output	Description	Calculation	Periodicity	MSL	Penalty	Measurement Tools
1	Business Infrastructure & Solution	Availability of Business Infrastructure Elements & Solution	Availability of Business Infrastructure Elements & Systems is the time that each solution is available for intended use without any malfunctions. It is measured in minutes and calculated by (a) System Scheduled Uptime minus Scheduled Downtime minus Unscheduled Downtime, divided by (b) System Scheduled Uptime minus Scheduled Downtime with the result	Availability = (U – C – D)/ (U – C) Refer to the below definitions of the parameters. ▪ System Scheduled Uptime for servers (U) ▪ Scheduled Downtime for servers (C) ▪ Unscheduled Downtime for servers (D)	Monthly	99%	• For each 0.25% drop in availability, penalty shall be INR 75,000	EMS Tools

S No	Services	Infrastructure Output	Description	Calculation	Periodicity	MSL	Penalty	Measurement Tools
			expressed as a percentage to two decimal places.					
2	Incident Management Services	Incident resolution within targets	This Service Level measures the number of all category calls/Incidents per month that get resolved within the response time & resolution time defined divided by the total number calls that get logged in the EMS.	Call tickets per month resolved within the time lines divided by the total number of call tickets per month. **Severity I** • During business hours - Within 30 minutes • Non - business hours - Within 1 hours or earlier as per business hours if business hours begin **Severity II** • During business hours - Within 60	Monthly	Severity 1- 99.5% Severity 2- 99% Severity 3- 98%	• Severity 1- For each .25% drop in service level, penalty shall be INR 25,000 • Severity 2- For each .25% drop in service level, penalty shall be INR 20,000 • Severity 3- For each .25% drop in service level,	EMS Tools

S No	Services	Infrastructure Output	Description	Calculation	Periodicity	MSL	Penalty	Measurement Tools
				minutes • Non business hours - Within 2 hours or earlier as per business hours if business hours begin			penalty shall be INR 15,000	
				Severity III • Scheduled monitoring activities - As per routine to be agreed (within maximum 2 hours) • During business hours - Within 4 hours. • During Non-business hours the resolution should be within 4 hours of the next working day.				
3	Incident Management	User Notifications	Notifying users of problem status and resolution	Tickets wherein users are notified of problem status/ Total tickets	Monthly	98.00%	• For each .5% drop in service level, penalty	EMS Tools

S No	Services	Infrastructure Output	Description	Calculation	Periodicity	MSL	Penalty	Measurement Tools
			logged for the month				shall be INR 5000	
4	Problem Management	Problem Resolution - successful closure	This service level measures the successful closure (as per mutually agreed time-lines) of all the problem tickets raised in Helpdesk tool, post the root cause analysis having been carried out, the necessary corrective action taken and the PSB management having given the signoff expressing their satisfaction on the problem management	Dividing the total number of successful closure of problem tickets by the total number of problem tickets raised in the Helpdesk tool	Monthly	85%	• For each .5% drop in service level, penalty shall be INR 5000	EMS Tools

S No	Services	Infrastructure Output	Description	Calculation	Periodicity	MSL	Penalty	Measurement Tools
			activities undertaken.					
5	Performance Measurement	Hardware Utilization	Reporting to the Bank if Hardware daily peak utilization levels of hardware and all its sub component exceeds 60% at any given point of time during business hours or production storage utilization levels exceeds 60% at any given point of time.	Reported alerts to the bank/Total no of alerts for breach of hardware utilization	Monthly	99%	• For each .5 % drop in service level, penalty shall be INR 12,500	EMS Tools
6	Security Management Services	Adherence to Patch Update	It includes both scheduled updates and updates requested	Actual number of updates done/Total scheduled and requested updates	Monthly	99.00%	• For each .5% drop in service level, penalty shall be	EMS Tools

S No	Services	Infrastructure Output	Description	Calculation	Periodicity	MSL	Penalty	Measurement Tools
							INR 12,500	
7	Change and Release Management Services	Change request Resolution - successful closure	Measure of successfully implementing-change management (as per mutually agreed time-lines)	Dividing the total number of successful closure of change request tickets by the total number of change request tickets raised in the Helpdesk tool	Monthly	99.00%	• For each .5% drop in service level, penalty shall be INR 5,000	EMS Tools
8	Change and Release Management Services	Planned Downtime	Planned down - time for Storage, DB, servers services (up gradation, bug fixing, patch uploads, regular maintenance etc.) will not be more than 1 hour. This activity will not be carried out during	Calls wherein serving was completed within 1 hour or agreed threshold/ Total calls logged for servicing	Monthly	98%	• For each 0.5% drop in service level, penalty shall be INR 10,000	EMS Tools

S No	Services	Infrastructure Output	Description	Calculation	Periodicity	MSL	Penalty	Measurement Tools
			business hours. However, such activities which require more than 1 hour or required to be carried out during business hours will be scheduled in consultation with the Bank. In case the downtime exceeds the planned hours the additional time taken for servicing will be considered for infrastructure or system downtime as per availability measurements table.					

S No	Services	Infrastructure Output	Description	Calculation	Periodicity	MSL	Penalty	Measurement Tools
9	Change and Release Management Services	User Notifications	Notifying users in advance for all known (planned maintenance) problems	Tickets wherein users have been notified of planned downtime/ Total tickets for planned maintenance in a month	Monthly	98%	• For each .5% or part thereof drop in service level, Penalty shall be INR 5,000	EMS Tools
10	IT Service Continuity & Disaster Recovery Services	RTO & RPO	RPO of 30 Min and RTO of 4 Hours	As per testing report	Bi-Annually or as per the regulator	100%	• Penalty shall be INR 2,00,00 for each default.	EMS Tools
11	IT Service Continuity & Disaster Recovery Services	Business Continuity	Business Infrastructure to resume from Disaster Recovery Site within 4 hours of the Data Centre failing and vice versa	Total successful business continuity calls logged/Total Business continuity calls logged	Monthly	100%	• Penalty shall be INR 2,50,00 for each default.	EMS Tools

*** Severity I, II and III, mentioned above shall serve as categories for severity / priority.

Urgency		Impact		
		Critical (I1)	High (I2)	Medium (I3)
	Critical (U1)	SI	SI	SII
	High (U2)	SI	SII	SIII
	Medium (U3)	SII	SIII	SIII

I_x – Impact

U_x – Urgency

S_x – Severity

Severity Type	Priority Definition	Example
SI	Interruption making a critical functionality inaccessible or a severe impact on services availability or unavailability of any reports which is urgently required for compliance purpose. There is no possible alternative.	Service is unavailable
SII	Critical functionality, degraded or unusable, having an severe impact on services availability. No acceptable alternative is possible.	Service is unavailable in a branch/Zonal office
SIII	Non critical function or procedure, unusable or hard to use having an operational impact, but with no direct impact on services availability. A workaround is available.	Single user is impacted