Development of Mobile Application for Aiding the Visually Impaired in Identifying the Denominations of Indian Banknotes (Currency Denomination Identifier)

Reserve Bank of India invites Request for Proposal (RFP) to develop a mobile application for aiding the visually impaired in identifying the denominations of Indian Banknotes (Currency Denomination Identifier). The e-Tender along with the detailed tender notice and general instructions is available at MSTC site https://www.mstcecommerce.com/eprochome/rbi and the website of the RBI at https://www.rbi.org.in under the menu “Tenders”. The last date of application of RFP is June 13, 2019.

Chief General Manager-in-Charge

"Don't get cheated by E-mails/SMSs/Calls promising you money"
RESERVE BANK OF INDIA
Department of Currency Management

Development of Mobile Application for Identification of Denomination of Indian Banknotes

REQUEST FOR PROPOSAL (RFP)

(April 2019)
# Table of Contents

1 Introduction .......................................................................................................................... 6
  1.1 Background .................................................................................................................. 6
  1.2 Objective of the RFP .................................................................................................... 6
  1.3 Schedule ..................................................................................................................... 7
  1.4 Definitions of Terms .................................................................................................... 10

2 Overview of the Mobile Application .................................................................................. 12
  2.1 Proposed Mobile Application –To Be ........................................................................ 12
  2.2 Functional Requirements ........................................................................................... 13
  2.3 Technical Requirements ............................................................................................. 15
  2.4 Hardware Requirements ............................................................................................. 15
  2.5 Security Requirements ................................................................................................. 16
  2.6 General Requirements ................................................................................................. 16

3 Scope of Work ...................................................................................................................... 17
  3.1 Introduction ..................................................................................................................... 17
  3.2 Process & System Study .............................................................................................. 17
  3.3 Design and Build .......................................................................................................... 19
  3.4 Testing (System Integration Testing and User Acceptance Testing) ......................... 19
  3.5 Training .......................................................................................................................... 20
  3.6 Implementation ............................................................................................................. 21
  3.7 Controlled Tests via Beta Release .............................................................................. 21
  3.8 Go-Live .......................................................................................................................... 21
  3.9 Project Milestones ........................................................................................................ 22
  3.10 Post Implementation Support Model ......................................................................... 22
    3.10.1 Proposed Model .................................................................................................. 22
    3.10.2 Services in scope ............................................................................................... 23
    3.10.3 Change Management ........................................................................................ 23

4 Payment Terms .................................................................................................................... 26
  4.1 Pricing Model ................................................................................................................ 26
  4.2 Additional Software License Costs .............................................................................. 26
  4.3 Post implementation Support pay-out ......................................................................... 27
  4.4 Other Payment terms .................................................................................................... 27

5 Service Level Agreement .................................................................................................. 29
5.1 Purpose and Objective of SLA ................................................................. 29
6 Evaluation Process .................................................................................. 31
  6.1 Objective of Evaluation Process .......................................................... 31
  6.2 Minimum Eligibility Criteria ............................................................. 32
  6.3 Technical Bid Evaluation Criteria ...................................................... 33
  6.4 Disqualification Parameters in Technical Bid Evaluation ................. 35
  6.5 Commercial Bid Evaluation ............................................................... 35
  6.6 Techno Commercial Bid Evaluation .................................................. 36
7 Bidding Process .................................................................................... 37
  7.1 Instructions for Bid Submission ........................................................... 37
  7.2 E-Tendering Registration and Bid submission .................................... 37
  7.3 General Guidelines ............................................................................ 38
  7.4 Pre-Bid meeting .................................................................................. 39
  7.5 Clarification on the Bid Document ...................................................... 40
  7.6 Amendments to Bid Document .......................................................... 40
  7.7 Technical and Commercial Bid: Applicable only for the qualified Bidders 40
  7.8 Period of Bid Validity .......................................................................... 41
  7.9 Format and Signing of Bid .................................................................. 41
  7.10 Correction of Errors .......................................................................... 42
  7.11 Acceptance or Rejection of Bid .......................................................... 42
  7.12 Duration and Condition of Engagement ........................................... 42
  7.13 Cost of Proposal ................................................................................. 42
8 General Instructions .................................................................................... 44
  8.1 General Terms and Conditions ............................................................ 44
  8.2 Language and validity of Proposal ..................................................... 45
  8.3 Indemnification .................................................................................... 45
  8.4 Cancellation of Contract and Compensation .................................... 45
  8.5 Earnest Money Deposit ...................................................................... 46
  8.6 Performance Bank Guarantee .............................................................. 46
  8.7 Partnering with the Original Equipment Manufacturer (OEM) ........ 47
  8.8 Force Majeure ....................................................................................... 47
  8.9 Confidentiality Undertaking and Non-Disclosure Agreement ............ 47
  8.11 Other Terms and Conditions ............................................................... 47
  8.12 Expenses incurred by successful Bidder on the project .................. 49
  8.13 Evaluation and Comparison of Bids ................................................... 49
Reserve Bank of India

RFP for Development of Mobile Application for Identification of Denomination of Indian Banknotes
1 Introduction

The Reserve Bank of India (RBI) was established on April 1, 1935 in accordance with the provision of the Reserve Bank of India Act, 1934. Reserve Bank of India (hereinafter referred to as the RBI or the Bank) desires to develop mechanism/device that can detect and read out the denomination of Indian banknotes.

The Bank proposes to develop such application/device so as to facilitate members of public, especially those with visual impairment, in identification of denomination of Indian banknotes.

1.1 Background

In the Statement on Developmental and Regulatory Policies announced by RBI on June 06, 2018 it was declared that the Reserve Bank, will explore the feasibility of developing a suitable device or mechanism for aiding the visually impaired in the identification of Indian banknotes.

Cash constitutes the most important means of transaction in our country. As on March 31, 2018 there are about 102 billion pieces of banknotes in circulation having a value of Rs. 18 trillion. At present banknotes in the denominations of Rs. 10, 20, 50, 100, 200, 500 and 2000 are in circulation besides Re1 notes issued by Government of India. Identification of denomination of the banknote is key to successful completion of cash based transactions by the visually impaired persons. Intaglio printing based identification marks for helping the visually challenged in identification of denomination of banknotes are present in banknotes of Rs.100 and above.

Banknotes under Mahatma Gandhi (New) series with change in the size and design were introduced in November 2016. Under this new series, banknotes in the denominations of Rs.10, Rs.50, Rs.100, Rs.200 Rs.500 and Rs.2000 have since been released and Rs.20 is likely to be released in due course. These notes are/will be concurrently in circulation along with older series notes in the denominations of Rs.10, Rs.20, Rs.50 and Rs.100. The Reserve Bank of India has been sensitive to the challenges faced by the visually challenged in conducting their day to day business with Indian banknotes.

1.2 Objective of the RFP

The objective of this RFP is to enter into a contractual agreement with a successful Bidder and select a suitable vendor for the proposed Development of Mobile Application for Identification of Denomination of Indian Banknotes.
This mobile application will have necessary capacity to enable the following:

1. **Identify the denomination** of legal tender banknotes of Mahatma Gandhi Series and Mahatma Gandhi (New) series by capturing the image of the notes placed in front of mobile camera. Capability to identify any other older banknotes will be given additional weightage.

2. **Generate audio notification** intimating the currency note denomination to the user if image is captured correctly else intimating the user to try again in case of image is not readable.

3. Ability to declare / indicate the denomination through any non-sonic mode (such as vibration mode etc.,) suitable for those visually challenged who are also hearing impaired will be given additional weightage.

4. Generate and store the logs referred to as transaction logs of the activities performed for identification of denomination of Indian banknotes.

The bidders desirous of taking up the project for supply of above mentioned solution for the Bank are invited to submit their technical and commercial proposal in response to this RFP. The criteria and the actual process of evaluation of the responses to this RFP and subsequent selection of the successful Bidder will be entirely at Bank’s discretion. This RFP seeks proposal from shortlisted bidders who have the necessary experience, capability & expertise to provide the Bank a solution adhering to Bank’s requirement outlined in this RFP.

This RFP is not an offer by the Bank, but an invitation to receive responses from the bidders. No contractual obligation shall arise from the RFP process unless and until a formal contract is signed and executed by duly authorised official(s) of the Bank with the selected Bidder.

The Bank reserves the right to reject or withdraw the RFP and no correspondence shall be entertained.

1.3 **Schedule**

The following is an indicative timeframe for the overall process. RBI 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 relayed to the affected respondents during the process.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Scheduled Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Project</td>
<td>Currency Denomination Identification project (CDI project)</td>
</tr>
<tr>
<td>Issue of RFP</td>
<td>May 4, 2019</td>
</tr>
<tr>
<td>Last date and time for receipt of mail queries for clarification from Bidders</td>
<td>May 14, 2019 till 5:00 PM</td>
</tr>
<tr>
<td>Date and time of Pre-Bid Meeting (including existing system overview)</td>
<td>May 20, 2019, 10:30 AM</td>
</tr>
<tr>
<td>Venue for Pre-Bid Meeting</td>
<td>Reserve Bank of India, Department of Currency Management, Central Office 4th Floor, Amar Building, Sir P M Road, Fort, Mumbai - 400001, India.</td>
</tr>
<tr>
<td>Last date to publish Meeting-cum-Addendum to the bid document</td>
<td>May 27, 2019</td>
</tr>
<tr>
<td>Date &amp; Time of Final Submission of Technical &amp; Commercial Bids on the MSTC Portal</td>
<td>June 13, 2019, 5:00 PM</td>
</tr>
<tr>
<td>Date and Time of Technical Bid Opening</td>
<td>June 14, 2019, 11:00 AM</td>
</tr>
<tr>
<td>Technical Bid Presentation by the Bidders Before the Committee</td>
<td>Shall be informed separately via email to qualified bidders</td>
</tr>
<tr>
<td>Commercial Bid Opening</td>
<td>Shall be informed separately via email to qualified bidders</td>
</tr>
<tr>
<td>Intimation to selected bidder</td>
<td>Shall be informed separately via email</td>
</tr>
<tr>
<td>Name and Address for communication</td>
<td>Reserve Bank of India, Department of Currency Management, Central Office 4th Floor, Amar Building, Sir P M Road, Fort, Mumbai - 400001, India.</td>
</tr>
</tbody>
</table>

*Table 1: Time frame for the Overall Vendor Selection Process*
| Venue for opening of Bids/Meetings / Presentations | Reserve Bank of India, Department of Currency Management, Central Office 4th Floor, Amar Building, Sir P M Road, Fort, Mumbai - 400001, India. |
| All Queries to be mailed to | CDI@rbi.org.in |
| Portal for registration of Bidder on MSTC | https://www.mstcecommerce.com/eprochome/rbi/ |

*Table 2: Contact details*
1.4 Definitions of Terms

Definitions – Throughout this RFP, unless inconsistent with the subject matter or context:

1. Bidder/Service Provider/Vendor – An eligible entity/firm submitting a Proposal/Bid in response to this RFP. The entity who signs and submits the bid and the Earnest Money Deposit.

2. Bank/Purchaser/RBI - Reference to “RBI”, “the Bank”, “Bank” and “Purchaser” shall be determined in context of this RFP.

3. Proposal/Bid – the Bidder’s written reply or submission in response to this RFP.

4. RFP – the request for proposal (this document) in its entirety, inclusive of any addenda that may be issued by the Bank.

5. Solution/Services/Work/System – “Solution” or “Services” or “Work” or “System” or “IT System” means all services, scope of work and deliverables to be provided by a Bidder as described in the RFP and include services ancillary to the development of the solution, such as installation, commissioning, provision of technical assistance, training, and other obligations of the Supplier covered under the RFP.

6. Project Cost – Project cost would be initial cost/development/customisation cost/installation cost/commissioning cost/training cost/technical assistance cost/post implementation support.

7. Authorised Signatory – The authorised signatory should give a declaration and through authenticated documentary evidence establish that he/she is empowered to sign the bid documents and bind the Bidder.

8. Change Management – Any request by the Bank that results in changes in the structure of the application or a new module is added would be considered as Change Management. Any minor changes required in the application such as addition/deletion/alteration of a row/column/field, additional report, menu items will not be considered as part of Change Management and should be supported by the resident engineer (support engineer).

9. Man-day – 8 hours of work of a qualified person.

10. Week – 6 Calendar days.
11. **T** – Technical Score of the Bidder

12. **THigh** – The Bidder with the highest technical score shall be ranked as T1 and be considered as THigh for the techno-commercial score

13. **C** – The final price quoted by the Bidder.

14. **CLow** – The lowest Commercial Bid.

15. **TC1** – The successful Bidder after the ‘techno-commercial’ Bidding process
2 Overview of the Mobile Application

2.1 Proposed Mobile Application –To Be

This RFP is to develop a new mobile application for Identification of Denomination of Indian Banknotes by visually impaired. This section covers the key Functional, Non-Functional and Security related requirements.

![Architecture Diagram]

*Figure 1: Architecture*
2.2 **Functional Requirements**

Key functional requirements are listed below. The details of the Functional requirements will be made available to all vendors once Non-Disclosure Agreement (NDA) process is completed.

1. The mobile application should be searchable via voice option in all app stores.
2. The mobile application shall have an intuitive user interface with easy navigation controls for accessing the application features for visually impaired.
3. User should be able to invoke and navigate the mobile application via voice controls wherever the underlying device & OS combination supports voice enabled controls.
4. The application should be able to identify denomination of legal tender banknotes of Mahatma Gandhi Series and Mahatma Gandhi (New) series by capturing the image of the notes placed in front of mobile camera or scrolled across it. Capability to identify any other older banknotes will be given additional weightage.
5. The mobile application should be able to identify the bank note denomination in 2 seconds or less.
6. The mobile application should have very high accuracy levels for any given set of currency notes.
7. The mobile application should be able to identify the denominations of bank note by checking front or reverse side/part of the note including folded notes.
8. The mobile application should be able to identify the denomination of bank note in normal light/day light/low light/and without requiring additional light source (broad range of light conditions). The torch/flash light inbuilt in the mobile phone is not considered as an additional light source.
9. The mobile application should be able to identify the currency note in various holding angles to the camera.
10. The mobile application should be able to identify and generate audio notification in Hindi/English intimating the currency note denomination to the user for valid tender.
11. Capability to declare / indicate the denomination through any non-sonic mode (such as vibration mode etc.,) suitable for those visually challenged who are also hearing impaired will be given additional weightage.
12. In case the image captured is not clear or not focussed the mobile application should be able to generate audio notification stating "Please try again".
13. The mobile application should work without any special filters, background material.
14. The mobile application should work in offline mode without internet connection.
15. The mobile application should be able to record the usage history by logging details of the detection undertaken with date and time stamp for both successful and unsuccessful detection.
16. The mobile application should provide an option to display the history page as well as read it out for the user.

17. The mobile application shall provide multi-lingual support within the app as well as for audio notifications. Application is expected to support Hindi and English language as a minimum.

18. On first usage post download or re-install, the application behaviour should be as below:
   
   o Application shall prompt the user to identify the disability type before loading the landing page:
     - Option 1: Visually impaired only
     - Option 2: Visually impaired and Hearing impaired
     - Option 3: None of the above
   
   o For Option 3, the mobile application shall display a message to the user stating that he/she is not the intended user of the application and close the application.

   o For Option 1 & 2, the mobile application shall use the selection/response to set the notification mechanism within the application and then take the user to the landing page.

   o Notification mechanism(s) to be enabled based on the selection/response to disability type:
     - Option 1: Enable Sonic Mode Only
     - Option 2: Enable Sonic as well as Non-Sonic Mode

   o On landing page, the application shall prompt the user to swipe the currency note for identification.

19. In subsequent usage, the application should take the user to the landing page directly if the disability type selection is completed.

20. The mobile application shall retain the user notification settings and user shall not be prompted for the same post installation of any updates or patches.

21. The mobile application should have a Help feature (voice enabled wherever the underlying device & OS combination supports voice enabled controls) which allows for:
   - Accessing Audio based Usage Manual
Requesting support wherein system will use the device’s call/messaging capabilities to either send a SMS or generate a missed call to a special pre-defined support number.

2.3 Technical Requirements

1. The mobile application should be a device only app with no server side components.
2. The mobile application should be compatible with major mobile operating system (Android, iOS, Windows etc.). The application shall be distributed via the online app stores of respective operating systems.
3. The mobile application should be compatible with all the devices which run on any version of the operating systems for which the respective companies are still providing support.
4. The mobile application should be lightweight to enable download on slow internet connections.
5. The mobile application should work in offline mode and not need internet connection to operate.
6. The mobile application should render in a consistent manner across all handheld device form factors.
7. The bidder shall provide details of the technology stack proposed for the application along with development environment used.
8. The bidder shall disclose all the third-party components used in the solution and all such components should be supported by valid subscriptions for patch updates and upgrades.
9. Bidder shall ensure that the production version of the mobile application shall not be downloadable and available as a 3rd party package outside of the app stores.
10. Bidder will ensure that whenever the user is online, the mobile application behaviours remains consistent and no revenue generating modules like advertisements come into effect.

2.4 Hardware Requirements

1. The mobile application should be a device only app with no server side components.
2. User base at full penetration expected to be 3 million users.
3. Bidder is expected to provide the following with respect to the proposed solution:
   - Minimum internet bandwidth requirements on the device for application to download successfully within 2 minutes without any interruption.
   - Minimum hardware configuration required on the device to run without any performance issues.
   - Restrictions, if any, in terms of Devices, OS versions and Form Factors supported.
2.5 **Security Requirements**

1. Bidder shall disclose all the permissions that the application needs on the device with supporting reasons thereof.
2. Bidder will ensure the user and related device information obtained during the application download process will not be used or disseminated by the bidder for any commercial purposes. Example selling the information forward to third parties who are building commercial mobile applications for visually impaired.
3. Bidder shall ensure that the most appropriate APIs from libraries of the respective mobile operating systems (Android, iOS, Windows etc.) are used case to minimize privacy risk.
4. **Secured Development:** Solution proposed should be developed, based on secure software coding standards. Code should be developed as per secure coding practices and peer reviewed (or through tool) to ensure the same. Source code access should be authenticated and logged for authorized users only, which will ensure integrity and confidentiality of code.
5. The solution proposed should be developed based on security standards including industry standards (from OWASP, CERT etc.).
6. Developer shall implement measures to protect the source code (if development is done on their premises), the measures would be reviewed by the Bank ISO.
7. The Bank reserves the right to conduct further security testing of the source code and the system by either the Bank personnel or another party. Any gaps identified during this testing will be fixed by vendor at their own cost.
8. The software shall not be considered accepted until the independent review by the Bank is complete and all security issues have been closed or assigned to a mutually agreed upon remediation roadmap.
9. The Bidder shall abide by the access level agreement to ensure safeguards of the confidentiality, integrity, and availability of the information systems.
10. Vendor will not copy any data obtained while performing services under this RFP to any media, including hard drives, flash drives, or other electronic device, other than as expressly approved by RBI.

2.6 **General Requirements**

1. Vendor shall develop and achieve Go Live of beta version of the Mobile application within three (03) months of award of contract by the Bank.
3 Scope of Work

3.1 Introduction

The scope of the Currency Denomination Identification project (CDI project) is the Development of mobile-based software application for aiding the visually impaired in identifying Indian Banknotes. The term of project also includes ongoing administration and maintenance of the solution by the means of 5 years of maintenance post issuance of Completion certificate by the Bank.

The description of the envisaged scope is enumerated in a nutshell in the subsequent sections. However, the Bank reserves its right to change the scope of the RFP, if required even after the release of the RFP document to incorporate the same. For broad reference of the expectations from the system, section 2 of this document may be referred, which explains in broad terms what is expected out of this project and all major works essential to achieve the objectives.

Based on the contents of the RFP, the Bidder shall be required to propose a solution, which is suitable for the Bank, after taking into consideration the effort estimated for implementation of the same and the resource and the equipment requirements. The Bank expressly stipulates the Bidder’s selection under this RFP is on the express understanding that this RFP contains only the broad provisions for the entire assignment and that the deliverables and the services in connection therewith are only a part of the assignment. The Bidder shall be required to undertake to perform all such tasks, render requisite services and make available all such resources as may be required for the successful completion of the entire assignment at no additional cost to the Bank notwithstanding what is stated here and what is not stated.

The Bidder has to envisage all necessary services to be provided and ensure the same is delivered to the Bank. The Bank will not accept any plea of the Bidder at a later date for omission of critical services that is required for fulfilling the requirements on the pretext that the same was not explicitly mentioned in the RFP.

3.2 Process & System Study

The Bidder is expected to study the RFP to gain an understanding of the requirement set by the stakeholders. The Bidder is expected to identify business process areas where the Bidder may need to obtain further understanding. The Bidder is expected to identify further process improvement opportunities. The successful Bidder will be required to create a detailed System Requirement Specification document with the understanding.
The SRS preparation team of the successful Bidder should be experienced, with full functional knowledge of the software. The Bank reserves the right to ask for replacement of any team member if the Bank feels he/she is not adequately qualified for the same. The SRS Document shall be signed off by the Bank on acceptance of the same.

**Preparation of System Requirement Specification Document**

1. The Bidder is expected to create System Requirement Specification (SRS) Document for RBI under the scope of the CDI Project implementation. The System Specification Document shall be signed off by the Bank on acceptance of the same.

2. The Bidder may suggest amendments to the processes that would suit the product solution offered for a seamless integration and document the same to suit the proposed CDI application as envisaged in the Study Report. However, the objective and output of the process should not change. On acceptance of the final solution by the Bank, the Bidder cannot deviate from the agreed solution under any circumstance unless agreed by the Bank. The agreed solution shall be binding on the part of the Bidder and inability to deliver the solution may result in annulling the contract and the same being awarded to another vendor as per the decision of the Bank. The Bank shall impose financial penalties or and invoke the performance bank guarantee in such circumstances. These would be in addition to various remedies available in law to the bank.

3. The Bidder is expected to prepare the System Requirement Specification Document containing the following details:
   a) Overview of the Process
   b) Process flow diagrams including exceptional situations
   c) Functional Description of each step
   d) Database Schema for the Module
   e) Interaction logic of the modules with other Modules (if any)
   f) Security features
   g) Configuration of each module including field description indicating data input format including details of all related parameterization (standard available or customized)
   h) Transaction flow between interfaces/customisation
   i) Restrictions to data entry
   j) Mandatory fields
   k) Optional fields
   l) List of reports related directly/ indirectly to module(s)/ customisation/ interface
   m) Layout of each report and related customisations
   n) Description and field description of each report
   o) Abbreviations and Acronyms
3.3 **Design and Build**

1. Post finalisation and signing off of the SRS document by Bank, Bidder is expected to start with the design and build of the application.
2. Development of the application will be carried out at Bidder’s development centre.
3. Bidder is expected to ensure complete confidentiality and security of Bank’s Data as per agreement entered with the Bank.
4. Bidder should facilitate Bank or any of its entities to carry out audit at their development centres to check the progress of the project at any point of time.
5. Bidder is expected to follow Secure Coding standards as part of the application development.
6. Bidder is expected to submit all their deliverables, i.e. High-Level Design (HLD), Low Level Design (LLD) for Bank’s approval before proceeding for the build of the application.
7. Bidder should complete unit testing and required security tests before deploying in bank’s test environment.
8. The bidder should meet or exceed the static code analysis metrics such as duplications, reliability, security, maintainability indexes etc. but not just limited to these, using software/product quality review tools. The quality gate would be defined as per the Bank’s requirement.

3.4 **Testing (System Integration Testing and User Acceptance Testing)**

1. No test environment is required for this application.
2. Bidder will ensure availability of requisite executables via means other than app store for testing by the Bank.
3. The Bidder’s resources will be required onsite during the testing phase.
4. Bidder is expected to carry out their testing before the start of UAT by Bank.
5. Bidder is expected to provide user and technical documentation including Installation, Commissioning, Implementation, Security check Manuals.
6. UAT will be carried out by the Bank’s team. The testing activities shall include the Functional, Performance, Technical and Penetration testing. The Bank may also undertake any other appropriate testing approach.
7. All security issues identified will have to be either resolved or a mutually accepted remediation should be agreed upon between the Bank and successful Bidder.
8. The Bidder shall provide test plan, test cases and test results.
9. The Bank shall commence the User Acceptance Testing only after a formal
confirmation that the system is ready for UAT is submitted to the Bank.

10. The Bidder should provide test cases for UAT for Banks review. Upon finalisation of test cases, user acceptance testing will be started by the business users.

11. Any deviations/ discrepancies/ errors observed during the testing phase will have to be resolved by the Bidder. Any exceptions will have to be documented and signed off by the Bank.

12. The Bidder is expected to make all necessary modifications to the solution, customisations, interfaces, etc., if there are performance issues or errors identified during testing. The Bidder will assist RBI in preparing the test cases, including the test data. The Bidder will assist in conducting all the tests and comparing/ analysing the results. Any bugs identified will have to be rectified and subsequent patches/ versions will also have to be tested.

13. The testing also includes testing to ascertain whether the response time, the bandwidth usage & performance of the solution are as per the expectations of RBI and would involve an error free dry run of the customised solution and end-run simulation.

14. RBI shall accept the application software only after the critical or major Bugs are fixed.

15. The Bidder shall be responsible for maintaining appropriate program change control and version control for all the modifications/ enhancements carried out during the implementation/ testing phases.

16. Bidder has to maintain the system set up at their end for future change request/ enhancement and should not depend on RBI’s IT infrastructure for software development.

17. The Bidder shall be responsible for providing and updating system & user documentation as per the modifications.

3.5 Training

1. Bidder shall ensure that relevant departments, as outlined by the Bank, are trained on the functional and technical aspects of the application before the final Go-Live.

2. Bidder is expected to provide end user and technical documentation as below:
   a) Standalone Audio-Video/Audio Only training/user manuals for end users which cover all aspects of the application from download till initial usage. Content should be lightweight so that it can either be embedded or link to a version uploaded on RBI/public websites can be provided in the outbound communications for Go Live.
b) Developer Documentation covering all source code modules, key functions, and configuration files, IDE, Development Environment Set up, Build Process, Testing Tools and Test environment set up.

c) Supported App Store(s) Release Manual covering steps, configuration and pre-requisites.

3.6 Implementation

1. Bidder shall work with the Bank proactively to ensure that all the pre-requisites (example – Privacy Policy etc.) for hosting the application on respective app stores are in place prior to implementation.

2. VAPT exercise shall be conducted by the Bank, it shall be the Bidder’s responsibility to rectify the gaps unearthed during the VAPT at no additional cost to the Bank during the contract period.

3. Readiness of the application for Controlled Tests shall require the bidder to ensure that:
   - All applications and services are implemented as per the intent of this RFP,
   - Application meets all the necessary security test as part of the Bank’s Secure Software Development Lifecycle (SSDLC) methodology.
   - All functionalities mentioned in this RFP are ready.
   - Training material is ready and all the related trainings are completed

3.7 Controlled Tests via Beta Release

1. The Beta version of the application shall be released to select group(s) identified by the Bank.

2. Bidder shall ensure feedback is collected from the identified group(s) and same is discussed, prioritised and fixed in consultation with the Bank.

3. Bidder shall incorporate the feedback and stabilize the application within 90 days of release of beta version.

3.8 Go-Live

Go-Live is the phase in which the application is made available to all the users.

1. Considering the nature of the application and the target community, the Bidder shall ensure that the Go-Live strategy is:
   - Clearly articulated in the RFP response.
   - Revisited and mutually agreed upon with the Bank post award of the project.

2. The Go-Live is an end-to-end responsibility of the Bidder who will manage total planning, hand holding support as per the scope of work.

3. On satisfactory performance of application post 30 days from Go-Live, Bank will issue Completion Certificate.
3.9  Project Milestones

<table>
<thead>
<tr>
<th>Milestones</th>
<th>Deliverables/Key Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issue of Purchase Order</td>
<td></td>
</tr>
<tr>
<td>Signing of Agreement</td>
<td>Within 30 days of receiving the letter of offer from RBI</td>
</tr>
<tr>
<td>Process &amp; System Study</td>
<td>• System Requirement Specifications (SRS)</td>
</tr>
<tr>
<td></td>
<td>• Working Prototype</td>
</tr>
<tr>
<td></td>
<td>• Technical solution document with Solution Architecture</td>
</tr>
<tr>
<td></td>
<td>security features and best practices to be followed</td>
</tr>
<tr>
<td>Design and Build</td>
<td>• HLD and LLD</td>
</tr>
<tr>
<td></td>
<td>• Source Code</td>
</tr>
<tr>
<td></td>
<td>• Test plans, Test script and sample test data</td>
</tr>
<tr>
<td></td>
<td>• Technical documentation (refer Sec 3.5)</td>
</tr>
<tr>
<td>Testing (SIT &amp; UAT)</td>
<td>• Certificate for completion of Testing -SIT and UAT</td>
</tr>
<tr>
<td>Training</td>
<td>• Refer Sec 3.6</td>
</tr>
<tr>
<td>Implementation</td>
<td>• Completion of VAPT</td>
</tr>
<tr>
<td></td>
<td>• Fixing observations</td>
</tr>
<tr>
<td></td>
<td>• Completion of Security risk assessments</td>
</tr>
<tr>
<td></td>
<td>• Application release in app stores</td>
</tr>
<tr>
<td>Controlled Test via Beta Release</td>
<td>• Incorporation of user feedback and stabilisation of the</td>
</tr>
<tr>
<td></td>
<td>application</td>
</tr>
<tr>
<td></td>
<td>• Approval from Bank for Go Live</td>
</tr>
<tr>
<td></td>
<td>• Updated Training documentation/ manuals</td>
</tr>
<tr>
<td>Go Live</td>
<td>• Certificate of Completion</td>
</tr>
</tbody>
</table>

3.10  Post Implementation Support Model

3.10.1  Proposed Model

The post implementation period will start from the day for issue of Completion Certificate by the Bank.

Bank realises that availability of a robust & scalable support model is key to the long term viability of the project and helps by improving user adoption on an ongoing basis.

Vendors are expected to operationalize the support model immediately after Go Live.

Bank envisions a reliable and scalable support model on the below lines. **Vendors are free to take cues from this and propose alternate or enhanced versions of this support model as they see appropriate.**
1. **Vendor technical support team** at any location in India. The team should have sufficient technical and application knowledge to be able to carry out their tasks. This team will primarily do the following:
   - Manage incoming requests via supported feedback channels and raise corresponding support tickets in the vendors ticketing system.
   - Identify solutions for reported issues and test the solution.
   - Schedule releases, secure requisite approvals (as mandated by Bank’s Change Management guidelines) and publish on app stores.

2. **User Feedback Capture mechanisms:**
   - User Initiated via the application:
     - SMS or Missed Call to a special pre-defined support number.
   - User Feedback from App Store:
     - User Ratings and Qualitative comments

3. **Program Governance:**
   - Supervisory teams from RBI and RBI identified subsidiaries.
   - Regular reporting from vendor to RBI and RBI identified subsidiaries on:
     - User Adoption Rate: Uses previous User Base and Users added/removed in the reporting cycle
     - App Store Ratings

3.10.2 **Services in scope**
1. The maintenance of the mobile application will be the responsibility of the vendor
2. Vendor should provide periodical upgrade to ensure that the application is capable of:
   - Meeting the changing requirements on account of introduction of new designs of Indian banknotes and/or phasing out of any valid currency during the above mentioned period.
   - Compatibility with newer version of the supported operating systems.
   - Compatibility with newer versions or policy mandates of individual app stores.
3. Bidder shall ensure that newer versions of the mobile application are backward compatible with all the devices which run on any version of the operating systems for which the respective companies are still providing support.

3.10.3 **Change Management**
1. Post-Implementation, any request by the Bank that results in changes in the structure of the application and / or a new module is added, and which requires considerable effort for customisation would be considered as part of Change Management. Any minor changes required in the application such as addition / deletion / alteration of
a row / column / field, additional report, menu items will not be considered as part of Change Management. The vendor should maintain records of all such changes made in the application with a proper audit trail and time-stamp. There should be an appropriate roll-back mechanism which is identified and tested if changes are not successful.

2. Any standard functionality available in the proposed CDI would not form part of the Change Request submitted by the Bidder. Bidder should provide and implement any application specific upgrades/ updates in the application as needed to make it compatible with any Software/ OS/ Middleware/Infra patch updates, as and when released by the Vendor/ OEM or as per requirements of the Bank and the same shall not be included as a part of change management. Bidder should bring to notice of the Bank all release / version change. Bidder should obtain a written permission from the Bank before applying any of the patches/ upgrades/ updates in UAT or live environment.

3. The procedure that would be adopted for evaluating Change Requests will be based on the work breakdown method/ Function Point Analysis method or the method mutually agreed upon with the vendor.

4. The Bidder is required to develop a change management methodology to ensure all application changes and technical changes (after go-live, and in the case of network changes, from the start of contract), are reviewed, tested, approved, implemented, and verified post implementation.

5. All change requests should be documented and should have a numerically assigned number in sequential order. A database of all change requests should be maintained, and the Bidder should deploy an automated change management application. All change requests should be classified, and approval and escalation mechanisms should be defined as per classification.

6. The change request should include an appropriate roll-back mechanism which is identified and tested if changes are not successful. The Bank would initiate or invoke penalty clause in case of repeated roll-back of change request (more than 2 roll backs).

7. Changes should be implemented in a controlled manner and should be tested in the test (non-production) environment prior to implementation. The impact of technical changes on application environment should also be performed. Dependencies of changes should be documented.

8. All changes should be reviewed, and the databases of changes should be reviewed for any actions taken post implementation. Emergency change requests should follow a defined and controlled process.

9. A release schedule should be maintained for all changes, so as to provide minimum disruption to business services. The Bidder will be required to perform analysis of
change requests to review frequently occurring issues, trend analysis, and an analysis report to be provided to the Bank along with a summary report.

10. The change request time estimation would be computed using Function Point Analysis methodology.

11. Change Request would be billable only after Bank utilises 300-man day of customization during the warranty period.

12. The Bidder should quote the unit costs (man day charges) for affecting the Change Management Requests as Annexure S.
4 Payment Terms
4.1 Pricing Model

Bank understands that the adoption of this mobile applications depends heavily on the ability of the vendor to successfully manage the end user experience with quality support. We also understand that in mobile application ecosystem, the application development effort is a small fraction of the operational effort to keep the application ecosystem intact without eroding the user base.

In view of the above, the Bank proposes the following payment milestones:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Milestones</th>
<th>Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Acceptance of the mobile application by Bank for Beta Release</td>
<td>10 %</td>
</tr>
<tr>
<td>2</td>
<td>Acceptance of the mobile application by the Bank for Go-live</td>
<td>10 %</td>
</tr>
<tr>
<td>3</td>
<td>Issuance of completion certificate by the Bank post “Go-live”</td>
<td>30 %</td>
</tr>
<tr>
<td>4</td>
<td>Post implementation support for Year 1</td>
<td>10 %</td>
</tr>
<tr>
<td>5</td>
<td>Post implementation support for Year 2</td>
<td>10 %</td>
</tr>
<tr>
<td>6</td>
<td>Post implementation support for Year 3</td>
<td>10 %</td>
</tr>
<tr>
<td>7</td>
<td>Post implementation support for Year 4</td>
<td>10 %</td>
</tr>
<tr>
<td>8</td>
<td>Post implementation support for Year 5</td>
<td>10 %</td>
</tr>
</tbody>
</table>

For each milestone to be marked as complete, the bidder should ensure that all the acceptance criteria are met and approved by the Bank, as mentioned in various applicable sections in the RFP.

The bidder shall submit the detailed cost sheet in INR as per Annexure S.

4.2 Additional Software License Costs

For evaluation purposes, costs of the software licenses proposed by the Bidder would be included in the Total Cost of Ownership. In case any software license(s) are required to be procured directly from the Original Equipment Manufacturer (OEM)/Product Vendor, the actual payment to the Bidder will be reduced appropriately to exclude the software license costs quoted in the commercial bid. Bidder is requested to add all the Other Software Licensing Cost under the header "Any other Software Costs" on MSTC website. Bidder may be requested to submit the list of software (including Database licensing cost) to the Bank in a sealed envelope with break-down
of cost mentioned on MSTC portal. The date and time for this submission will be communicated to all the qualified bidders at a later point of time. The Bank’s evaluation committee may take a call on the exclusion/inclusion of cost of software for commercial evaluation.

4.3 Post implementation Support pay-out

1. The amount payable towards yearly support would be divided into equal instalments, to be paid every quarter on arrear basis subject to meeting expected service levels during that quarter.
2. Bidder shall be eligible for first pay-out from next quarter after issuance of completion certificate by the Bank.
3. Actual Pay-out will be a factor of performance and driven by SLA parameters outlined in Section 5.1 (Service Level Agreement).
4. Proposed Pay-out matrix as per Service Level Rating as below:

<table>
<thead>
<tr>
<th>Service Level Rating</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
<th>L4</th>
<th>L5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay-out %</td>
<td>100</td>
<td>95</td>
<td>80</td>
<td>65</td>
<td>50</td>
</tr>
</tbody>
</table>

- Actual Pay-out shall be calculated based on applicable Pay-out % and the linked Payment value.

4.4 Other Payment terms

1. Any delay in achievement of milestones/deliverables/activities from Bidder shall automatically result in delay of corresponding payment from Bank.
2. The successful Bidder will have to incur the stamp duty for franking of contract documents. The stamp paper and franking needs to be done in Mumbai only.
3. Any objection/dispute to the amounts invoiced in the bill shall be raised by RBI within reasonable time from the date of receipt of the invoice. Upon settlement of disputes with respect to any disputed invoice(s), the Bank will make payment within thirty (30) working days of the settlement of such disputes. All out of pocket expenses, travelling, boarding and lodging expenses for the entire project period and subsequent agreement is included in the amounts and the Bidder shall not be entitled to charge any additional costs on account of any items or services or by way of any out of pocket expenses, including travel, boarding and lodging etc.
4. All the payments becoming due during each of the quarters of the contract period will be paid at the end of the respective quarter, subjected to satisfactory feedback from business team.
5. The fees payable by the Bank to Bidder shall be inclusive of all costs such as insurance, taxes (GST, as per the rates applicable), transportation, installation, that may be levied,
imposed, charged or incurred and RBI shall pay the fees due under this RFP and subsequent agreement after deducting any tax deductible at source ("TDS"), as applicable. The Bidder will need to provide the details for the tax rates as considered in the pricing. This will be used for subsequent tax changes. RBI shall pay each undisputed invoice raised in accordance with this RFP and subsequent agreement, within thirty (30) working days after its receipt unless otherwise mutually agreed in writing, provided that such invoice is dated after such fees have become due and payable under this RFP and subsequent agreement.

6. Any variation (upward) in Government levies/ GST (as per the rates applicable) which has been included as part of the price will be borne by the Bank. Any variation (downward) in Government levies/ GST (as per the rates applicable) which has been included as part of the price, the benefit will be passed to the Bank and adjusted in the payment milestones. If the Bidder makes any conditional or vague offers, without conforming to these guidelines, the Bank will treat the prices quoted as in conformity with these guidelines and proceed accordingly.

7. If the Bank has to pay taxes for any of the items or supplies made in terms hereof by the Bidder, for any reason including the delay or failure or inability of the Bidder to make payment for the same, the Bank has to be reimbursed such amounts paid, on being intimated to the Bidder along with the documentary evidence. If the Bidder fails to reimburse the amount within a fortnight, the Bank shall adjust the amount out of the payments due to the Bidder from RBI along with the interest calculated as per the tax rate prevailing at the time of actual payment.

8. Terms of payment indicated in the Contract that will be issued by RBI to the selected Bidder will be final and binding on the Bidder and no interest will be payable by the Bank on outstanding amounts under any circumstances. If there are any clauses in the Invoice contrary to the terms of the Contract, the Bidder should give a declaration on the face of the Invoice or by a separate letter explicitly stating as follows “Clauses, if any contained in the Invoice which are contrary to the terms contained in the Contract will not hold good against the Bank and that the Invoice would be governed by the terms contained in the Contract concluded between the Bank and the Bidder”. Bidder should ensure that the project should not suffer for this reason.

9. The Bidders should note that the contract entered with the successful Bidder will be for implementation and post go-live period of 5 years, extendable at the Bank’s discretion. The Bank will have the right, in its sole discretion to renegotiate the prices/ terms and conditions.
5 Service Level Agreement

Bank expects that the Bidder shall be bound by the Service Levels described in this document for CDI application.

5.1 Purpose and Objective of SLA

Bank intends to enter into a Service Levels Agreement (SLA) with the successful Bidder in order to provide complete utility of the service that could be provided to Bank once the “CDI Application” is in place. The SLA shall be included in the contract agreement as mentioned in the document and identifies the expectations of Bank and defines the Scope and Boundaries for the successful Bidder to provide maximum “Business Utility”.

Bank understands that in mobile ecosystem the overall adoption and ratings in respective app stores are the key indicators of an application achieving the intended purpose. On that note Bank proposes the following SLA’s for the mobile application during support phase:

a. User Adoption Rate:

\[
\text{Adoption Rate} = \frac{[\text{Total Unique Users at the end of pay-out period} - \text{Total Unique Users at the end of Last Pay-out Cycle}] - \text{No. of New Installations in current pay-out cycle}}{[\text{Total Unique Users at the end of Last Pay-out Cycle}] - \text{No. of Uninstalls in current Pay-out Cycle} - \text{No. of Unique Customers with unresolved issues}} \times 100
\]

\[
\text{Total Unique Users at the end of any pay-out period} = [\text{Total Unique Users at the end of Last Pay-out Cycle}] + [\text{No. of New Installations in current pay-out cycle}] - [\text{No. of Uninstalls in current Pay-out Cycle}] - [\text{No. of Unique Customers with unresolved issues}]
\]

b. App Store Ratings from end-user community

\[
\text{Average App Store Ratings} = \frac{[(\text{App Store 1 Rating}) \times (\text{Total Unique Users in App Store 1 at the end of pay-out period})] + [(\text{App Store 2 Rating}) \times (\text{Total Unique Users in App Store 2 at the end of pay-out period})] + \ldots + [(\text{App Store n Rating}) \times (\text{Total Unique Users in App Store n at the end of pay-out period})]}{(\text{Total Unique Users across all App Stores at the end of pay-out period})}
\]

Vendor shall report on the SLA’s at the end of every quarter and the service level rating for the elapsed quarter shall be discussed and mutually agreed upon with the Bank. This rating will feed into the Pay-out calculations. Vendor shall also provide the supporting reports/source data based on which the SLA has been calculated.
Details of service level ratings are outlined below:

<table>
<thead>
<tr>
<th>Parameters</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
<th>L4</th>
<th>L5</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Adoption Rate</td>
<td>30% &amp; Above</td>
<td>25 to 30%</td>
<td>20 to 25%</td>
<td>20 to 15%</td>
<td>&lt;15</td>
</tr>
<tr>
<td>Average App Store Rating</td>
<td>4.5 &amp; Above</td>
<td>4 to 4.5</td>
<td>3.5 to 4</td>
<td>3 to 3.5</td>
<td>&lt; 3</td>
</tr>
</tbody>
</table>

Vendor has to meet the expected service levels for all the parameters to be eligible for that Service Level rating.