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| http://t0.gstatic.com/images?q=tbn:ANd9GcTykRl7ib_Y8eRvVuBMzhQfmuwms0CBPi1Ll_YTK7GNXQbR4mhM5w | **NABARD -2021001** |
|  | **Software Requirement Specifications** | |
|  | **Version 1.1** |
|  | **NABARD-TDF** |
|  | **Bluefrog Mobile Technologies** |

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**About the Document**

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1. Introduction:

NABARD has been instrumental in facilitating various activities under microfinance sector, involving all possible partners at the ground level in the field. NABARD has been encouraging voluntary agencies, bankers, socially spirited individuals, other formal and informal entities and also government functionaries to promote and nurture SHGs. The focus in this direction has been on training and capacity building of partners, promotional grant assistance to Self Help Promoting Status of Micro Finance in India 2009-2010 Institutions (SHPIs), Revolving Fund Assistance (RFA) to MFIs, equity/ capital support to MFIs to supplement their financial resources and provision of 100 per cent refinance against bank loans provided by various banks for microfinance activities.

The Fund is utilized to support interventions to eligible institutions and stakeholders. The major components of the assistance include promotional grant assistance to Self-Help Promoting Agencies, training and capacity building for microfinance clients and stakeholders of SHG - Bank Linkage Programme, funding support to MFIs, Management Information System (MIS) for microfinance, research, studies and publications.

Training and Capacity building - NABARD continued to organize / sponsor training programmes and exposure visits for the benefit of officials of banks, PIAs, SHGs and government agencies to enhance their effectiveness in the field of microfinance. Training supplements and materials were supplied to banks and other agencies. Best practices and innovations of partner agencies were widely circulated among government agencies, banks and PIAs.

* To improve the assured annual income of the selected tribal families through Natural resource management (NRM) by developing orchards and Income generation activities (IGA)
* Formation and strengthening of village institutions for overall development of villages.
* Improved hygienic / health conditions of the community
* Women Development Community capacity building

NABARD’s Roles and functions are summarized below

* Credit Functions
* Developmental and Promotional Functions
* Supervisory Functions
* Institutional and Capacity Building
* Role in Training

**Various activities of NABARD**

* Live fencing
* Soil moisture conservation (SMC)
* Water resource development (WRD)
* Women development
* Health
* Trainings
  1. Purpose:

The software requirement specification assures the project management stakeholders and client that the development team has really understood the business requirements documentation properly. This also provides confidence that the team will develop the functionality which has been detailed.

The Software Requirement Specification is documented in such a way that it breaks the deliverables into smaller components. The information is organized in such a way that the developers will not only understand the boundaries within which they need to work, but also clearly indicates the functionality needs & development order. The SRS serves as a

* Feedback to the Customer
* Facilitating to other Documentation
* Breaking the Requirements Down
  1. Scope:

Automation of NABARD’s TDF projects for operational, administrative and accounting functions at field with time processes and single source of truth model of data capture for updating central server with the following aspects:

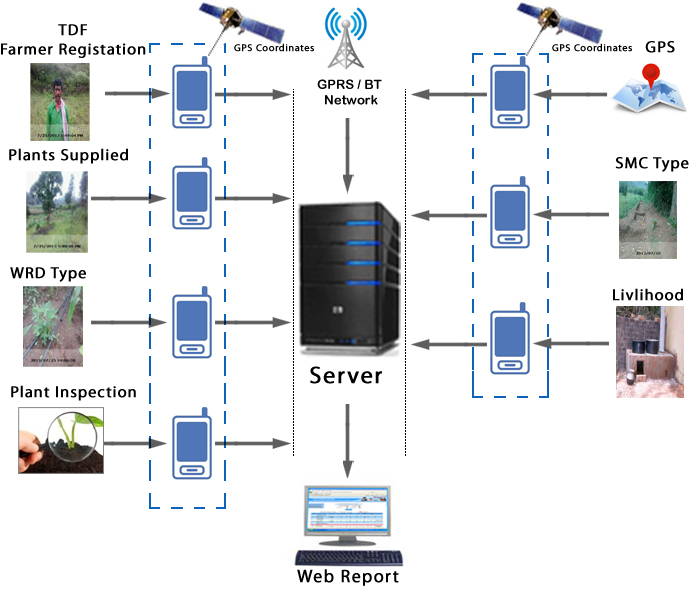
1. Horticulture plantation & Maintenance: These includes physical verification of core plantations( Mango, Sapota, Guava, Pomegranate etc)along with border plantation, live hedge, inter crop etc. Providing survival details and alerts on survivals less than 90% in case of core plantation, 80% in case of boundary plantation.
2. Soil conservation:
3. Water resource development: Sunken wells, water storage, tanks, bore wells, open wells etc.
4. Livelihood activities: These include various income generating activities involving milk animals, poultry, general stores etc.
5. Capturing information on pests & Diseases and also display the NPM methods to follow. So that the field organizer can suggest to the farmer immediately
6. Capturing income details of the TDF beneficiaries
7. Capturing phase wise financial and physical achievement against grant released
   1. Background:

Following are few reasons for additional requirements of the project

* Non availability of online information on plant growth monitoring and field inspections done by the PIAs and non availability of information to maintain as centralized registers.
* Non availability of supplied plants information & their mortality %
* Capturing complete details of the new farmers and their growing plants status from the field directly.
* To protect the interest of the present and future depositors information and available in online
* To ensure that, the business conducted by these banks is in conformity with the provisions of the real time captured data

1. System Context:
   1. Productive perspective:
      1. System Overview & Process flow Diagram:

**Field Organiser activities: TDF**

****

* + 1. System Interfaces:

|  |  |
| --- | --- |
| Interface | Interface Description |
| User Interface | The mobile & Web applications are GUI (Graphical User Interface) based and very easy to understand and learn. The user just has to navigate through different forms and options. The user should have minimum knowledge of the application to avoid any run-time errors thus avoiding any hitches or enabling the application to breakdown. |
| Hardware Interface | **Client Configuration:** Pentium 4(3.000G.Hz)Processor,512 MB RAM 20 GB HDD  **Mobile:** Samsung GT-S7392 Mobiles  **Server Configuration:** Pentium 4(3.000G.Hz)Processor,512 MB RAM 80 GB HDD |
| Software Interfaces | Windows Server 2008, MS SQL Server 2005 Enterprise Edition, Microsoft Visual studio 2008 |

* + 1. Operations:
* Minimum housekeeping / database administration, backups are expected at regular intervals.
* Documents are to be maintained as per organization standard templates.
* Trainings along with user manuals, installation manuals should be provided to the operations team. If possible will provide audio files too.
* Change requests should be completed as per the process defined in the organization.
  + 1. System Contacts:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Company | Role | Email ID | Phone No. |
|  |  | Delivery Manager |  |  |
| Mr.Praveen | Business Manager | Praveen@bluefrogindia.com | 9866567366 |
| Mrs.Sujatha | Project Manager | sujathag@bluefrogindia.com | 9848156813 |
| Mr.Jayasekhar Raju | Team Lead (.net) | jayashekar@bluefrogindia.net | 9490894529 |
| Mr.Murthy | Team Lead (Android) |  |  |
| Mr.Ravi Chandra | Software Engineer | ravichandra.bluefrog@gmail.com | 9059506489 |
| Ms.Ramya Sri | Software Engineer | ramyasri.r@bluefrogindia.net | 9848793774 |

* 1. Product Functions:

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No** | **Module** | **Short Description** | **Sub Modules** |
| 1 | TDF(Tribal Development Fund) | Capturing farmer’s information from TDF implemented districts. | 1. Master farmer registration– one time activity 2. Supplied plants – one time activity 3. WRD implementation and mapping farmers - – one time activity 4. Field inspection with crop status 5. Farmers following SMC practices 6. Activities implemented by the farmer and Livelihood 7. Income modules of the beneficiaries 8. Capturing farmer photo incase of death of a farmer |

* 1. User characteristics:
* Presently 11 PIAs are using Samsung GT-S7392 mobiles for uploading data.
  1. Constraints:
     1. Design Constraints:
* Web application should support in all browsers
* FO mobile application in Telugu language.
* Nabard mobile developed in Telugu language.
* Functionary application developed in Telugu language.
  1. Assumptions and Dependencies:
* It is assumed that the whole project team will be intact throughout the project.
* Top management of the concerned office shall support the deployment, customization of the product.
* Client officials will support us in providing the required information if needed.
* Client officials will provide the clarifications if needed as and when required during development
  1. Apportioning of Requirements:

There are no future requirements.

1. Specific Requirements:
   1. Detailed Business Requirements:

|  |  |  |
| --- | --- | --- |
| High-level Business Requirement# | Detailed Business Requirement# | Detailed Requirement Description |
| BR1.1. Farmer Registration | BR1.1. Farmer Registration | Capturing farmer details like,  1.Farmer Name  2.Survey Number  3.Ration Card Number  4.Aadhar Card Number  5.Farmer Image  6.Land Geo Images  7.Land Video  8.Father name  9.Contact number etc  10.Farmer registered project number & Phase  11.Initiated year etc.   * As per existing farmers data, Bluefrog port the data into database and populates the same into mobile application. * Field organizers during registering the farmers correct the data against available data in mobile and upload to server if required * PIA login have edit screens can edit the data uploaded by F.O * AGM and higher should able to see the data corrected reports |
| BR1.2.Supplied Plants | BR1.2. Supplied Plants | Capturing of farmers plantation details which is one time activity covering,  1.Farmers plantation type ie.Core, Boundary, live, inter crop etc  2.No.of plants supplied to each farmer   * As per existing supplied plants to each farmer, Bluefrog port the data into database and populates the same into mobile application. * Field organizers during capturing the plants supplied correct the data against available data in mobile and upload to server if required * PIA login have edit screens can edit the data uploaded by F.O * AGM and higher should able to see the data corrected reports |
| BR1.3.Field Inspection | BR1.3. Field Inspection | During Field Inspection PIA will capture following details at regular intervals of time covering  1.Farmer plantation details like .Plant type, Supplied count , Survived count  2.Plant Growth  3.Diameter of the Plant  4.Capture Plant image  5. Capturing pests & diseases effected plant details and their images. Displaying NPM methods in mobile itself to suggest to the farmer in the field itself  6. Capturing video of the land covering supplied plants  7. Capturing various SMC methods following by the farmer  8. Capturing digital images of the SMC methods   * Field organizers during field inspection captures the mortality of the supplied plants. * PIA login have edit screens can edit the data uploaded by F.O * AGM and higher should able to see the data corrected reports |
| BR1.4. WRD | BR1.4.WRD | Captures WRD details as one time activity  1.WRD source type  2.System type  3.pipe size  4.length details  5.WRD image  6.Geofencing of WRD if possible  7.Mapping the farmers utilizing the WRD |
| BR1.5. Incomes on yield of Beneficiaries | BR1.5.Incomes on yield of Beneficiaries | Field Organizers will gathers information like  1. Income per annum on core plantations  2. Income per annum on boundary plantations  3. Income per annum on inter crop |
| BR1.6. Capturing farmer photo incase of death of the registered farmer | BR1.6.Capturing farmer photo incase of death of the registered farmer | On death of the registered farmer, Field organizer captures his (farmer) wife or son images and uploads with reasons using mobile application.  PIA verifies and approves then only died farmer photo will be replaced with new farmer photo |
| BR1.7. MIS Generation | BR1.7Profile details | This Report should display the Information of PIA’s like No. of PIA’s in each district, No. of Projects handled by them, how many mandals & villages they cover in that project, and No. of acres covered project wise and implementation year of each project and its phases. This also covers the complete project profile details of the PIA ie. No. of plants, name of the plants supplied by the PIA |
|  | BR1.8.Exception Reports | Generates various exception reports to AGM and higher levels for decision making covering the following  Videos not uploaded by the Field organisers  Not covered farmers during field inspection  Farmers not implementing any SMC methods  Farmers not having WRD methods to the crop  Plants effected with pests and diseases |
|  | BR1.9.Dash Board | Displaying all the details with graphs |
|  | BR1.10. GIS information | This Report displays the Farmer details on satellite Map based on uploaded GPS coordinates |
|  | BR1.11 Videos | Captured field videos can not send directly through mobile.  Using PIA login, video interface, F.O first copies captured videos into local system and loads into the server one after the other |

* 1. Technical Requirements(TR):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| High level BR# | Detailed BR# | High-level TR# | Detailed TR# | Detailed Technical Requirement Description |
| BR1 | BR1.1. Farmer Registration | TR1.Farmer Registration | TR1.1.Farmer Registration | **Mobile capturing columns:**  1.Farmer Name  2.Survey Number  3.Ration Card Number  4.Aadhar Card Number  5.Farmer Image  6.Land Geo Images  7.Land Video  8.Father name  9.Contact number etc  10.Farmer registered project number & Phase  11.Initiated year etc.  **Process flow:**   1. As per existing farmers data, Bluefrog port the data into database and populates the same into mobile application. 2. Field organizers during registering the farmers correct the data against available data in mobile and upload to server if required 3. PIA login have edit screens can edit the data uploaded by F.O 4. AGM and higher should able to see the data corrected reports   **Role based Web reports :**   1. Master farmers registered report in each PIA wise, project wise drill down reports 2. Exception reports for AGM and higher level on modified data by PIA. |
|  | BR1.2. Supplied Plants | TR2. Supplied Plants | TR2.1.Supplied Plants | **Mobile Application:**  Capturing of farmers plantation details which is one time activity covering,  1.Farmers plantation type ie.Core, Boundary, live, inter crop etc  2.No.of plants supplied to each farmer  **Process flow:**   1. As per existing supplied plants to each farmer, Bluefrog port the data into database and populates the same into mobile application. 2. Field organizers during capturing the plants supplied correct the data against available data in mobile and upload to server if required 3. PIA login have edit screens can edit the data uploaded by F.O 4. AGM and higher should able to see the data corrected reports   **Role based Web reports :**   * Master farmers registered report in each PIA wise, project wise drill down reports * Exception reports for AGM and higher level on modified data by PIA. |
|  | BR1.3. Field Inspection | TR3. Field Inspection | TR3.1.Field Inspection | **Mobile capturing data:**  During Field Inspection PIA will capture following details at regular intervals of time covering  1.Farmer plantation details like .Plant type, Supplied count , Survived count  2.Plant Growth  3.Diameter of the Plant  4.Capture Plant image  5. Capturing pests & diseases effected plant details and their images. Displaying NPM methods in mobile itself to suggest to the farmer in the field itself  6. Capturing video of the land covering supplied plants  7. Capturing various SMC methods following by the farmer  8. Capturing digital images of the SMC methods  **Process Flow:**   1. Field organizers during field inspection captures the mortality of the supplied plants. 2. PIA login have edit screens can edit the data uploaded by F.O 3. AGM and higher should able to see the data corrected reports   **Role based Web reports :**   * Field inspection reports covering SMC practices * Exception reports for AGM and higher level on farmers not covered in field inspections. |
|  | BR1.4.WRD | TR4.WRD | TR4.1.WRD | **Mobile capture data:**  Captures WRD details as one time activity  1.WRD source type  2.System type  3.pipe size  4.length details  5.WRD image  6.Geofencing of WRD if possible  7.Mapping the farmers utilizing the WRD  **Process Flow:**  1.Like master all WRD in a village information need to upload  **Role based Web reports :**  Master WRD report with images and farmers utilising |
|  | BR1.5.Incomes on yield of Beneficiaries | TR5. Incomes on yield of Beneficiaries | TR5.1. Incomes on yield of Beneficiaries | **Mobile capturing data :**  Field Organizers will gathers information like  1. Income per annum on core plantations  2. Income per annum on boundary plantations  3. Income per annum on inter crop  **Web reports:**  Role based income details covering abstract & Detailed report |
|  | BR1.6.Capturing farmer photo incase of death of the registered farmer | TR6. Capturing farmer photo incase of death of the registered farmer | TR6.1.Capturing farmer photo incase of death of the registered farmer | **Mobile capturing data:**   1. Existing farmer name 2. New farmer name 3. Relation with the existing farmer 4. Reasons 5. Capture image   **Process Flow:**  On death of the registered farmer, Field organizer captures his (farmer) wife or son images and uploads with reasons using mobile application.  PIA verifies and approves then only died farmer photo will be replaced with new farmer photo  **Web application:**  PIA login will have online approval screen. PIA has to go through the remarks and images and approve. From then onwards reflects the farmer details |
|  | BR1.7. Profile details | TR7. Profile details | TR7.1. Profile details | **Mobile application:**  Not required  **Web application:**  This Report should display the Information of PIA’s like No. of PIA’s in each district, No. of Projects handled by them, how many mandals & villages they cover in that project, and No. of acres covered project wise and implementation year of each project and its phases. This also covers the complete project profile details of the PIA ie. No. of plants, name of the plants supplied by the PIA  **Process flow:**  Data captured from each PIA ported to the database and generated reports. |
|  | BR1.8.Exception Reports | TR8. Exception Reports | TR8.Exception Reports | Generates various exception reports to AGM and higher levels for decision making covering the following   1. Videos not uploaded by the Field organisers 2. Not covered farmers during field inspection 3. Farmers not implementing any SMC methods 4. Farmers not having WRD methods to the crop 5. Plants effected with pests and diseases |
|  | BR1.9.Dash Board | TR9.Dash Board | TR9.Dash Board | Displaying various abstract details with graphs |
|  | BR1.10. GIS information | TR10.GIS information | TR10.GIS information | This Report displays the Farmer details on satellite Map based on uploaded GPS coordinates |
|  | BR1.11. Videos | TR11.Videos | TR11.Videos | Captured field videos cannot be send directly through mobile.  Using PIA login, video interface, F.O first copies captured videos into local system and loads into the server one after the other  **Process Flow:**   1. Capture the field images using mobile application 2. Connect the mobile to the system and copy the videos 3. Using online application upload each video at a time |

* 1. Software Specifications:

|  |  |  |
| --- | --- | --- |
| **SNo.** | **Software / Hardware Resources** | **Usage** |
| 1 | Microsoft Visual studio | To develop the web application for generating MIS reports |
| 2 | MS SQL Enterprise Server | Database |
| 3 | Android Version | To develop the Mobile Application |
| 4 | SVN V1.7 | To maintain Source code and Documents |
| 5 | MS office 2003 | To Prepare Documents |

* 1. Hardware Specifications:

|  |  |
| --- | --- |
| **Client Configuration** | **Server Configuration** |
| Pentium4 (3.00G.Hz) Processor,512 MB RAM and 80 GB HDD | Pentium4 (3.00G.Hz)Processor, 512 MB RAM and 40 GB HDD |
| Android OS mobile |  |

* 1. System Features:
* User Friendly
* The application stores the complete details of seeding activities.
* Instantaneous updating of data into the central server
* The system will not provide unnecessary access to unauthorized users.
* Security Maintenance through Form Authentication with URL encryption and decryption using Cryptography Methodology
* The system shall not allow confidential data stored in the system’s database to be accessed, whether directly or indirectly, by malicious users.
  1. Performance:
* Response time for each message sent from mobile on an average is 10 seconds
* An average transaction time to send and receive information from mobile is 10 seconds.
* Simultaneously 10 users from a mobile can submit data to server in the same second.
* 80% of reports will open in less than 5 seconds
* Simultaneously more than 20 users can connect to web to view reports.
* Response time to open the page in the micro browser 7 Sec
* Transaction response 7 Sec
  1. Acceptance Criteria:
* The Intermediate server need to be maintained by Bluefrog Mobile Technologies to capture the immediate transactions from the mobile applications.
* Data uploaded through mobile should be captured and shown immediately in the respective MIS reports
  1. Logical Database Requirements:

The software system will hold three logical databases.

* The algorithm processor will parse the algorithm into a tree structure before processing. After processing the tree, the data inside will not be accessed second time.
* A database will be kept to store options about the software. This database will hold integers and floats as well as Boolean data. The information stored will be access at almost every possible interface with the user and by almost every internal system.
* The software will allow a user to store and recall values. These values will be stored in a database and will be accessed only if the user updates or requests a stored value. The input interface and the algorithm processor will access this database.
  1. Compliance to Standards:
* .Net Coding standards
* Database standards
* J2ME mobile application standards

* 1. Software System Attributes:
     1. Reliability:

Standardize the data resulting in fewer corrections and significantly lowering the incidence of missing or incorrect data. Consolidating data stores at one location ensuring data integrity and in turn provides future statistical and management reports. Reducing the time spent by staff filling out forms, freeing resources for more critical tasks

* + 1. Availability:

The system should be available at all times, that means, the user can access it at anytime except when the server is down on which the system runs. In case of a hardware failure or database corruption, a replacement page will be shown. Also in case of a hardware failure or database corruption, backups of the database should be retrieved from the database server and saved by the administrator

* + 1. Security:
* Considering the sensitivity of the information the following security features are also considered for deployment
* Virus Scan
* While downloading images of the CMSA activity item captured through Mobile camera, virus scanning will done before the same is added to the database.
* Date & Time Stamp (on the image)
* To avoid date & time stamp manipulation on the mobile instrument used for the purpose.
* WTLS 128 bit encryption will be implemented for secure data transfer purpose between Mobile to database server
  + 1. Maintainability:

The Web server takes care of the web application for generating reports and SQL server is used for maintaining the centralized database. In case of a failure, a re-initialization of the program is recommended.

* + 1. Portability:

Portal mobile devices with application used for capturing the field level data for instantaneous updating of data into the central server

* + 1. Other Requirements:

None

* 1. Project Specific Requirements:
     1. System Mode:
* Offline & online capturing of data
  + 1. User Class:
* Mobiles with data in txt file, web reports data
  + 1. Objects:
* Internet, GPS coordinates, Authentication credentials.
  + 1. Features:
* In signals not available locations, mobile application should save data in mobile and send the same from signals available places
  + 1. Implementation Schedule (Optional):
* Refer to Work Breakdown structure for the project.

1. Risk Assessment:

A risk assessment means the estimation or evaluation of risks. It is an important step in protecting your Project, as well as complying with the law. In many instances, straightforward measures can readily control risks.

In our Project the following Risks may occur:

* The system as delivered might be hard to maintain.
* The stated requirements might not match the customers' desires and probably request which may impact the system.
* Developers may ignore common standards and processes to follow during development and requires reviews else may lead to rework.

1. Acceptance:

* Design, develop prototype and present to respective unit in NABARD for acceptance.
* Implement the Pilot by arranging the required infrastructure and communication
* Acceptance of the deliverable shall be made at the department site specified in the Schedule of Requirements at the NABARD discretion.

1. References:

* Approved BRS Document
* Base lined IPMP document
* Work order