

---

# FUNCTIONAL and TECHNICAL DOCUMENT

*Shramik Bal -“An employment  
portal for labor force of India”*

***Women CO[vi]DE Warrior Hackathon***

***Developed by:***

Minu Raju  
Neha Rathod  
Bharati Kulkarni  
Shreya Joshi  
Prajakta Patankar

---

## TABLE OF CONTENTS

### Table of Contents

<b>GENERAL INFORMATION .....</b>	<b>1</b>
<b>Purpose .....</b>	<b>1</b>
<b>Scope .....</b>	<b>1</b>
<b>Project References.....</b>	<b>1</b>
<b>Acronyms and/or Definitions .....</b>	<b>2</b>
<b>Points of Contact.....</b>	<b>3</b>
Information & Coordination.....	3
Administrative Support and Oversight.....	4
<b>2.0 CURRENT SYSTEM SUMMARY .....</b>	<b>4</b>
<b>FUNCTIONAL REQUIREMENTS AND IMPACTS .....</b>	<b>4</b>
<b>Summary of Functions .....</b>	<b>4</b>
Functional Requirements .....	5
<b>Summary of Impacts .....</b>	<b>6</b>
Labor Organizational Impacts .....	6
Labor Operational Impacts .....	6
Migration Impacts.....	6
Job Preference and Skill Set Matrix Impact .....	6
<b>SYSTEM DESCRIPTION.....</b>	<b>7</b>
<b>System Description.....</b>	<b>7</b>
<b>Future Scope Integration Plan .....</b>	<b>8</b>
<b>Customization and Flexibility.....</b>	<b>8</b>
<b>Sustainability and Open Source Plans.....</b>	<b>8</b>
<b>System Documentation .....</b>	<b>8</b>
<b>Rights to Code and Data /Data Ownership .....</b>	<b>8</b>
<b>Configurable System Parameters.....</b>	<b>9</b>
<b>System Development and Go-live Approval Process .....</b>	<b>9</b>
<b>EQUIPMENTANDSOFTWARE .....</b>	<b>9</b>
<b>Equipment.....</b>	<b>9</b>
<b>Software .....</b>	<b>9</b>

---

## GENERAL INFORMATION

### Purpose

The purpose of this application is to provide a solution to help bridge the gap between laborers and industries in various sectors like construction, agriculture, public sectors directly by rooting out middle men. It is inspired by the difficulty faced by the migrant workers while travelling back to their hometowns during the CoVID-19 pandemic.

### Scope

The app would provide details of laborers around the user, including their contact details. This will allow states to tap into their own labor resources first than look out for labor outside states minimizing logistical challenges and make it easier for laborers to register themselves on the app, which will in turn help laborers to find work after the CoVID-19 crisis ends. It allows laborers to move within in different sectors of work based on their preference and skill set with ease. If adapted nationwide, it can ensure that workers don't have to migrate to other states looking for work, as they can find work in their respective areas itself. The application can be configured to suitable language preference of the user.

The scope of this work includes the initial development of the Application, which can be installed in the Smartphone of the user. The targeted users for the application can be:

- Laborers
- Contractors

### Project References

- **[IBM Cloud DB2]** (<https://cloud.ibm.com/catalog/services/db2>) - The DB2 RDBMS database used
- **[Ionic]** (<https://ionicframework.com/>) - The mobile frontend framework used
- **[STS 4.6.1]** (<https://spring.io/tools>) - The IDE used for springboot application
- **[VS CODE]** (<https://code.visualstudio.com/>) - The IDE used for ionic application
- **[Maven]** (<https://maven.apache.org/>) - Dependency management
- **[Git]** (<https://git-scm.com/>) - The distributed version control system used
- **\*[PBKDF2WithHmacSHA1]** (<https://howtodoinjava.com/security/how-to-generate-secure-password-hash-md5-sha-pbkdf2-bcrypt-examples/>) - The hashing algorithm used for storing passwords

---

## Acronyms and/or Definitions

<b>API</b>	Application Programming Interface, a set of protocols or standards for communicating with web-based applications
<b>IONIC</b>	Application Programming Interface, a set of protocols or standards for communicating with
<b>Git version control</b>	Free and open-source version control system
<b>MySQL</b>	Open-source database management system
<b>RESTful API</b>	An API that uses a standard set of HTTP requests
<b>DB2</b>	DB2 is a database product from <b>IBM</b> . It is a Relational Database Management System.
<b>SpringBoot</b>	Spring Boot is an open source Java-based framework used to create a micro Service.
<b>JPA</b>	JPA tutorial provides basic and advanced concepts of Java Persistence API.

---

## **Points of Contact**

### **Information & Coordination**

Points of Contact relevant to this project are listed on the first page of this proposal.

### ***User Registration - Requirements of Shramik Bal App Users***

Application Users who install the application on their Smart phone should register on the Shramik Bal application committing to the following:

- Log on using Mandatory details – phone , name, location ,age, field of work
- Users will prepare, submit and certify their initial profile while creating their logon ID (the user's profile will not be publically viewable until this step is complete)
- Users not adhering to profile eligibility standards will not be able to action the app items and use the features.

---

## 2.0 CURRENT SYSTEM SUMMARY

There is currently no single, on-line electronic database containing all information needed for the labor Management. The State level records of public visibility which can be processed to manage the resources depending on the requirement of a Project are not centralized. The Laborers migrate in search of work to Metropolitan cities and contact the local contractors. The contractors have basic details of the laborers while they are working on a project/assignment. Once the laborers have migrated or moved to different work there is no way to keep track of the laborers involved in a particular assignment/project. The laborers rely on the word of mouth communication for finding the work in their locality. They tend to migrate to bigger cities like Mumbai, Delhi, Pune, etc. The struggle to keep finding work in their locality based on their skill set and preferences is a challenge and the current system is based on parameters that will provide the expected solution in random circumstances.

The Employment portal for various job profiles is available, there are some platforms to provide and avail services from household needs to personal care. The proposed solution is targeted to bring closer the labor community and the opportunities in their locality. This will enable them to have a view of the opportunities in their surrounding areas, starting with current city, then state followed by other states.

The application from the user's perspective needs to be appealing, easy to understand and easy to use, thus the language of the application can be switched to National Language if user needs. The default language is English.

## FUNCTIONAL REQUIREMENTS AND USERIMPACTS

### Summary of Functions

The Shramik Bal focuses currently on the following functions:

- Data Accessibility
- User Accounts
- Data Integrity
- System Security
- Relevant opportunities in the locality

---

## Functional Requirements

In order to accomplish the above articulated need, the Shramik Bal requires to have the basic functional needs listed below:

- **Data Accessibility**
  - Entity profile information is publicly available via a searchable app.
  - Profile data is available for direct user-to-user access via an HTTP API (read only)
  - Profile details for both individual laborers and a group of laborers represented can be viewed (read only)
- **User Accounts**
  - User accounts are password protected
  - Password reminders and resets are handled by the application
  -
- **Data Integrity**
  - New profiles must be verified with unique Phone Number, which is not already registered with the application.
  - The passwords are being stored using hashing, to ensure more security of the user's details.
- **System Security**
  - Authorized User has read-only access via application to other user's information
  - API provides read-only data access in the above case
  - Profile editing requires password-protected user account with manually-assigned rights

## Summary of Impacts

### Labor Organizational Impacts

- Contractor would be able to hire the laborers based on the task, site location and their skill set.
- It would be easier to acquire the required volume of laborers.

### Labor Operational Impacts

- The migration costs will be severely reduced, due to localized opportunities.
- Laborers can have a view of the opportunities based on their skill set, they have the option to apply to the opportunities that suit them.

### Migration Impacts

- The Migration of the laborers in search of work will be reduced. The laborers will have exposure and engagement with the work in their city.

### Job Preference and Skill Set Matrix Impact

- The Laborers can apply to suitable opportunities based on their preference.
- They can search for opportunities in the locality based on their skill set and category of work.

---

## SYSTEM Description

The Shramik Bal system will consist of a mobile application. There are two User Profiles – Laborers and Contractors. The Contractors can register as individuals whereas the laborers have option to register as individuals or register as group. The laborers tend to move in group thus the option to operate as an individual or operate as a group will enable them to do so if required. The New profile registration for both user profiles – Contractor and Laborers will have to go through mandatory phone OTP verification step. Generally, all users will provide direct input into the system –Profile Information like basic details, locality, Phone Number (Mandatory), skill set.

Anyone looking for resources can post the requirement and nature of the task and can ask people to apply for the same. The interested users (laborers) can look up on the app and apply for the job. The application for any work can be done as an individual or as a group. The contractor can accept or decline the request created and thus fill the labor requirements accordingly.

The application helps laborers in finding labor in the surrounding areas of the requirement in the following way. If the number of opportunities in the city is less than a threshold number then the application will retrieve the records from the current state of the site of requirement. If the State doesn't have enough opportunities, then records for opportunities will be fetched even further from adjoining geographical states. This way, the application helps in minimizing the migrant issue for laborers

For the contractors, the application currently helps to find available laborers in current city/state thus helping in tapping the nearest resources which will reduce logistical problems



---

## Future Scope Integration Plan

The Future release vision for the application is targeted to point to the specific requirements the user would experience while trying to get more from the Shramik Bal Application. The Elaborate Plan of action for future releases is as follows:

- Integration of configurable User Interface language – The users can switch to any regional language beyond the current languages.
- Registration data validation – Phone OTP verification will be integrated to ensure the phone number provided by the user is owned by him/her.
- Admin Profile Integration – The admin profile would enable the study and analysis of Statistics for the admin users.
- Group Registration of Labors – Labors generally tend to move and work in groups, thus this is important feature integration in view of enhancing the user ease and experience.
- For the contractor, we will implement a feature to expand the search radius based on the resources/laborers available as per the requirement

**Sustainability:** The application will be free cost for all users for the first month (from the date of registration, for laborers fee will not be applicable) so we can build a customer base. Post which we plan to charge a subscription fee for the contractors on the basis of number of profiles required

## System Documentation

There is no anticipated need for an end-user guide as system will include an intuitive user interface. The application has been developed so as to make the usage easy for the target users (Laborers and Contractors). They can set their preferred language from among National Language or English. The features are presented in a simple and understandable way on the User Interface of the application.

---

## **Configurable System Parameters**

In the current prototype version of the application the configurable system parameter to ease the use of the application is the Application language visible to the user.

Another important implicit implementation of configurable parameter is the distance of the resource (labor) required from the site of the work. Currently the system is configured to fetch the nearest resources in current state for the contractors and as part of future scope we will implement a feature to expand the search radius based on the resources available as per the requirement.

## **System Development and Go-live Approval Process**

**System Development** - The application prototype is ready with the basic required functionalities in place. The future scope features will be integrated in the upcoming version of the application.

**Go-Live Approval Process** –

We will conduct awareness campaigns and training sessions across India. In order to build a database we will explore options of existing databases that contain information about laborers. Once we have data of at least 20K laborers per state we will target to roll out the application to laborers and contractors.

To reach the target users advertising via hoardings, television and radio ads, newspapers, etc. will be required.

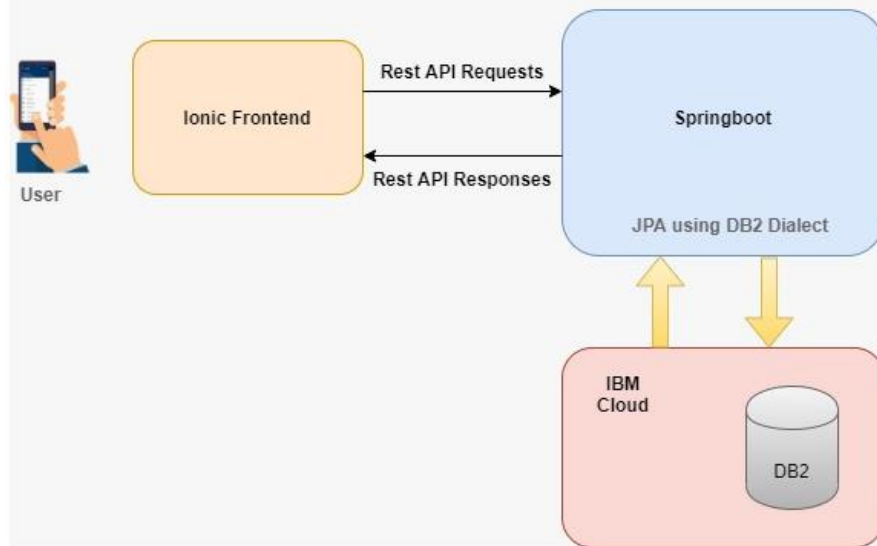
The launching of the application requires to have the application on boarded on the app stores (Play Store, App Store).

## **EQUIPMENT AND SOFTWARE**

### **Equipment**

The working of the application requires the user to have Smartphone and internet connectivity on the device. Besides, no other equipment is required for the application to function.

### **Software Architecture**



---

## Appendix B

### Screenshots of the Application



How can we help you?

**User : Agriculture**

**Age :** 22 years  
**Rating :** 0 ★  
**Number of services provided :** 0  
**With us since :** 2020  
**Years of experience :** 0

**Bramha Patil : Agriculture**

**Age :** 47 years  
**Rating :** 0 ★  
**Number of services provided :** 0  
**With us since :** 2020  
**Years of experience :** 0

**Suresh Kamalakar : Painters**

**Age :** 41 years  
**Rating :** 0 ★  
**Number of services provided :** 0  
**With us since :** 2020  
**Years of experience :** 0

**Mukesh Lal : Sewage Issues**

**Age :** 31 years  
**Rating :** 0 ★  
**Number of services provided :** 0  
**With us since :** 2020

My Profile   Home   Requirement   Notification

**नए रोज़गार के अवसर**

**एप्लीकेशन आई डी : 47**

**क्षेत्र :** कृषि  
**आवश्यक लोगों की संख्या :** 10  
**अब तक चयनित लोगों की संख्या :** 0  
**साइट का पता :** Jhelum Nursery  
**शहर :** Pune  
**ठेकेदार की आई.डी. :** Bilal Khan

**आवेदन करें**

**एप्लीकेशन आई डी : 48**

**क्षेत्र :** कृषि  
**आवश्यक लोगों की संख्या :** 10  
**अब तक चयनित लोगों की संख्या :** 0  
**साइट का पता :** Wagholi  
**शहर :** Pune  
**ठेकेदार की आई.डी. :** Anna Braganza

**आवेदन करें**

**एप्लीकेशन आई डी : 51**

**क्षेत्र :** कृषि  
**आवश्यक लोगों की संख्या :** 20  
**अब तक चयनित लोगों की संख्या :** 0  
**साइट का पता :** Nimblak  
**शहर :** Ahmednagar  
**ठेकेदार की आई.डी. :** Kabir Rajput

**आवेदन करें**

रोजगार   होम   चयन



 सूचना

आज की सूचनाएं ^

 Bhairav Singh

एप्लीकेशन आई डी : 56

आपके इस आवेदन के लिए अप्लाई किया है : " Workers required to all construction related work. "

प्रोफाइल में जाएँ →

पुरानी सूचनाएं ^

 प्रोफाइल

 होम

 अद्यतन बनाई

 सूचना

 सूचना

आज की सूचनाएं ( 1 ) ^

 Workers required to all construction related work.



आवेदन : 56

स्थिति : स्वीकृत

ठेकेदार आवश्यकता आई.डी. : 50

पुरानी सूचनाएं ^

 प्रोफाइल

 होम

 सूचना