

Software Requirement Specification

e-Record Union Sheba (e-RUS)

Version 1.1 Approved

Prepared by < Thinkers Group>

7th Oct, 2019

Group Name: Thinkers

171-35-1818 Soud Al Taibi

171-35-1847 Marufur Rahman

Table of Contents

Group Name	i
List of Figures.	ii, iii
1.Introduction.	1
1.1 Purpose.	1
1.2 Documentation Convention.	1
1.3 Product Scope.	1
1.4 Glossary.	2
1.5 Overview.	2
1.6 References	2
2. User Classes & Characteristics	2
2.1 Register	2
2.2 Upozila Chairman	3
2.3 Union Chairman	3
2.4 General User	3
3. Design & Implementation Constraints	3
3.1 Operating Environment	3
3.2 Software Language Used	3
3.3 Development Tools	3
3.4 Database Support	3
4. User Documentation	4
5. Assumptions & Dependencies	4
5.1 e-RUS Protocol	4
5.2 Data Entry	4
5.3 Hardware Dependencies	4
4 5.4 Browser Dependencies	4
6. Functional Requirements	5
6.1 User Management	5
6.2 Login & Retrieve Password	5
6.3 Collect Information	6

6.4 Voter Management	6
6.5 Tax Management	
6.6 Ration Card Management	
7. External Interface Requirements	
7.1 User Interface	
7.2 Hardware Interface	
7.3 Software Interface	
7.4 Communication Interface	
8. Requirement Engineering Process	
8.1 Feasibility Study	
8.1.1 Economic Feasibility	
8.1.2 Technical Feasibility	
8.1.3 Behavioral Feasibility	
8.2 Requirement Validation	
8.3 Use Case Diagrams	
8.4 Data Flow	
9. Non-Functional Requirements	
9.1 Performance Requirements	
9.2 Safety Requirements	13
9.3 Security Requirements	13
9.4 Maintainability Requirements	13
10. Activity Diagram	14
11. Sequence Diagram	15
12. Data Flow Diagram	16
12.1 Context Diagram	16
12.2 First Level DFD	17
12.2 Second Level DFD	18
13. Class Diagram	19
14. ER Diagram	20
15. Screencorts	21-27
16. Git Link	27
17 Canalysian	27

1. Introduction

1.1 Purpose

The purpose of this document is to describe all the requirements for the targeted system e-Record Union Sheba(e-RUS). The intended audience includes all stakeholders in the potential system. These include, but are not necessarily limited to, the following: Register, Upozila Chairman, Union Chairman, and General User.

Developers should consult this document and its revisions as the only source of requirements for the project. They should not consider any requirements statements, written or verbal as valid until they appear in this document or its revision.

Register, Upozila Chairman, Union Chairman, and General User should use this document and its revisions as the primary means to communicate confirmed requirements to the development team. The development team expects many face-to-face conversations that will undoubtedly be about requirements and ideas for requirements. Please note that only the requirements that appear in this document or a future revision, however, will be used to define the scope of the system.

1.2 Documentation Conventions

This SRS is divided up into sections detailing an overall description, the external interface requirements, system features, and other non-functional requirements. As this is the final draft, any future modifications of this document would involve adapting the product to changing systems and uses. We hope to have the product evolve to changing times as to ensure continued use and success. The Document and Specification team have prepared the overall information in this document to the best of their ability. Once read, it is evident that each section is important to the overall SRS and significant to the project in its own right.

1.3 Product Scope

The proposed software product is e-Record Union Sheba(e-RUS). It will be used to maintain and collect information from local area and provide to internet word. This system is also use to maintain all union parishad in Bangladesh.

The register will collect information from local area and submit that information in system. Upozila and union chairman can supervise the whole system. General people can view the system and get information from there.

1.4 Glossary

Here there are some clarifications of the terms uses in this document and also some explanation related to e-Record Union Sheba(e-RUS).

Terms	Definition
Collect Information	A set of data collect from local area in a fixed guideline.
Data Entry	The collected information will be entered into a register in the system.
Check Voter Information	The system will check the voters based on the data collected.
Check Tax Information	The system will check the tax information based on the data collected and also based on voter information
Ration Management	Based on the information system ration management will work out who gets rationed or who can't get it can be printed out here.

1.5 Overview

This Software Requirements Specification (SRS) specifies all the requirements for e-RUS. Various techniques such as interviews, brain storming and idea reduction, use cases and prototyping were used to elicit the requirements and we have identified the needs analyzed and refined them. The objective of this document therefore is to formally describe the systems high level requirements including functional requirements, non-functional requirements and constraints. The detail structure of this document is organized as follows:

1.6 References

IEEE. IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications. IEEE Computer Society, 1998.

2. User Classes & Characteristics

2.1 Register

In the e-RUS the major and sensitive role is played by the admin, in union this role is played by the system administrator. The admin will define all the process of system purpose while a new data entered in the system. Register can modify data for further update. Register save that information into the system database.

2.2 Upozila Chairman

We know that there is one upozila chairman, in each upozila in system there will be a portal for the upozila chairman where he will able to monitor his voters and union information through this system.

2.3 Union Chairman

We know that there is one union chairman, in each union in system there will be a portal for the union chairman where he will able to monitor his voters and union information through this system.

2.4 General User

Through our system the general people can get an idea of his village or his union and get the information he needs from here.

3. Design & Implementation Constraints

3.1 Operating Environment:

The e-RUS will be web-based system. This anyone having a browser can hit the specific link and can get access to it. It will ensure its best usage and will ease the means of getting access to the system. It will remove the complexities of running the system in multiple platforms as it will be deployed in a web server.

3.2 Software Language Used:

The application will be developed using **PHP Laravel Framework**. The used language will be PHP and the front end will be developed using HTML, Bootstrap, JS. Besides for eye soothing user interface experience CSS will also be used.

3.3 Development Tools:

For the development purpose Atom or php-storm Professional edition will be used. For handling different database operations MySQL Server Management latest version will be used.

3.4 Database Support:

The database that will be used is MySQL Server latest version. Entity framework will be used from the applications end to insert, update and delete the data.

4. User Documentation

According to the schedule, after six months of the start of the project, the **Thinkers Group** team will hand-over the complete **e-Record Union Sheba** project to upozila authority. At the same time, the project team will also provide a user manual, where all the manual will be put together. The team is also responsible to conduct training sessions for the Administrative task, where they will provide tutorials, notes along with the training. On the other hand, the project should be launched as a pilot project for about 6 months to get more feedback from the end-users and responsible to change with newbie requirements.

5. Assumptions & Dependencies

5.1 e-RUS Protocol

In this system there is an option to access from the Internet along with Intranet and Ethernet. Here, only the register can entry data, modify data and delete data and maintain the system but upozila and union chairman can supervise the system and also general people can see and get information.

5.2 Data Entry

Though the data entry operation is out of the scope of this project, but for giving it a standard look our team has added some meaningful data to check the compatibility of the system. To include, this information has collected from the requirement elicitation process from the authority of upozila. It is assumed that upozila authority will make arrangement to enter all the previous information related to the system to the database. Supply of correct information is possible only when valid data is entered in the database. Since the data entry is a separate task and will be performed by the upozila authority, the authority will be responsible for the validity of the information to be provided to the user through e-RUS.

5.3 Hardware Dependencies

To operate the system the following hardware dependencies are needed:

- Runs on any x86-64 machine.
- Depending on the number of users in server, it'll need a reasonably powerful machine to perform its tasks. The actual requirements will be profiled at a later phase.
- Every user must have internet connectivity devices to use the system.

5.4 Browser Dependencies

The system is based on web, so no custom-tailored client is required to access it. However, e-RUS will be compatible with any JavaScript enabled open standard browsers, and it will also support Internet Explorer (IE), Mozilla Firefox (any latest version) and other compatible browsers.

6. Functional Requirements

Before identification of the requirements we needed the comprehensive engagement and lighting quick coordination with the stakeholders. This accelerates the entire requirements management process by orchestrating the flow of information and processes across different team members and stakeholders. This is combined with hybrid agile and waterfall development methodologies and tools. Flexible workflows and automatic notifications streamline communication, review, and approval of requirements across stakeholders, while common metrics and dashboards ensure everyone is on the same page. So, the listed requirements go with all the previous processes.

6.1 User Management:

User management is the task of admin where the key roles is to give input the user ids and approves the users.

Requirement	Requirement
UM-001	Add user with username, password, user-type and email id.
UM-002	Password should be given twice to match.
UM-003	Username and password should be mailed to the respective
	email id by the system.
UM-004	Password should be in md5 format.
UM-005	Approve a users' information.
UM-006	Freeze the editing option of users' information by the users.

6.2 Login & Retrieve Password:

Here, the requirements are based on the task of login system and password retrieval by the users including teachers, students and coordinators.

Requirement No.	Requirement
LP-001	While login match the username with user type.
LP-002	User will get the functionalities of his/her type.
LP-003	Login time should be stored in the log file
LP-004	While retrieving the password (if forgot) user should
	provide the username and email id.
LP-005	System will mail a link to that user containing the
	password.
LP-006	With the new password link user will give his/her favorable
	password.
LP-007	Update the new reset password with the log file.

6.3 Collect Information:

Here how a program is managed and the pre-requisite factors are described concisely.

Requirement No.	Requirement
CI-001	Define people.
CI-002	Define year.
CI-003	Assign years to entry form.
CI-004	Classify all manual form.
CI-005	Attach a photo with a form.
CI-006	Admin will check information valid or not.
CI-007	Attach a seal in survey form after entry the data.

6.4 Voter Management:

The most important part is the Voter Management where there is a dependency of admin and coordinator.

Requirement No.	Requirement
VM-001	System will define voters.
VM-002	System will define non-voters.
VM-003	Every voter must have a unique id number.
VM-004	Every voter can vote only his own union.
VM-005	Admin will assign one or more coordinator.

6.5 Tax Management:

Here, the program coordinator will review who are able to pay tax.

Requirement No.	Requirement
TM-001	Coordinator will review who are able to pay tax.
TM-002	Coordinator can send a message to voter.
TM-003	Time slot will be fixed for pay tax.
TM-004	Voter can pay tax using electronic payments system.

6.6 Ration Card Management:

The Ration Card can be seen by the chairman, register & also voter.

Requirement No.	Requirement
RCM-001	Register can see who are able to get ration
RCM-002	Voter can also see that he will able or not to get ration
RCM-003	Upozila & Union chairman can monitor the system
RCM-004	Register can print a ration card for voter from the system

7. External Interface Requirements

7.1 User Interface

The user interface is a key to application usability. The application should include content presentation, application navigation, and user assistance. In the e-RUS there should be different portal for each type of users. To illustrate, the admin has a lot of functionalities to be done. So, the functionalities are grouped and thus used in the navigation bar. The user: admin can expand or shrink the navigation bar. Next, there will be almost same functionalities between register and coordinator as a coordinator must be a register. So, while a register is assigned as a coordinator s/he will see an extra tab regarding the functionalities of a coordinator. Last, the UI for general user should be very simple where there is only option to see the information.

7.2 Hardware Interface

In the current version of the software, it will have no special hardware interface with other external systems. It will run in a general-purpose computer system with general-purpose hardware and software. The assumption of the hardware is already given to the upper section 5.3 in page 7.

7.3 Software Interface

To the end-user there is no need of any extra software to be installed. It is to be mentioned that, the user need JavaScript enabled browsers to run the system. For OS, there has no boundary or strict rules, can run smoothly in any OS. However, through the channel the cryptography should be maintained through the whole system as the user can access it through internet also.

7.4 Communication Interface

All sorts of communications between server and client programs will be using Hyper Text Transmission Protocol (HTTP) and the messaging will be done by XML format. As a result, any user using standard communication protocols can communicate with the e-RUS without any protocol conversion or any other hassles.

8. Requirement Engineering Process

8.1 Feasibility Study

In this document of e-RUS we are also providing some feasibility which will support the system and also give more litheness. For these we gave emphasize on the following topics.

8.1.1 Economic Feasibility

Economic analysis is most frequently used for evaluation of the effectiveness of the system. More commonly known as cost/benefit analysis the procedure is to determine the benefit and saving that are expected from a system and compare them with costs, decisions is made to design and implement the system.

This part of feasibility study gives the top management the economic justification for the e-RUS. This is an important input to the Upozila authority because very often the top management does not like to get confounded by the various technicalities that bound to be associated with a project of this kind. A simple economic analysis that gives the actual comparison of costs and benefits is much more meaningful in such cases.

In the system, the authority is most satisfied by economic feasibility. Because, just only with the initial server settlement, it need not require any additional hardware resources as well as it will be saving lot of time. Again, the total system is going to develop step by step by the e-RUS developer group, so other external costs can be cut off.

8.1.2 Technical Feasibility

Technical feasibility centers on the existing manual system of the test management process and to what extent it can support the system. According to feasibility analysis procedure the technical feasibility of the system is analyzed and the technical requirements such as software facilities, procedure, inputs are identified. It is also one of the important phases of the system development activities. The system offers greater levels of user friendliness combined with greater processing speed. Therefore, the cost of maintenance can be reduced. Since, processing speed is very high and the work is reduced in the maintenance point of view management convince that the project is operationally feasible. In addition, we are promised to give an understandable user manual which will help the admin, teachers and coordinator as well as the students to cope up with the system effortlessly.

8.1.3 Behavioral Feasibility

People are inherently resistant to change and computer has been known to facilitate changes. An estimate should be made of how strong the user is likely to move towards the development of computerized system. These are various levels of users in order to ensure proper authentication and authorization and security of sensitive data of e-RUS.

8.2 Requirement Validation

Through the all process of Software Requirement Elicitation we endure different type and level of requirements. From these huge requirements we have already thrashed out the functional requirements. But there are some validations of these requirements like in the registration process of the user in the system. However, all these are not accepted and for that we have ensured these with the stakeholders throughout the elicitation process.

As, the requirements validation is critical to successful system product development and implementation. Requirements are validated when it is certain that the subject set of requirements describes the input requirements and objectives such that the resulting system products can satisfy the requirements and objectives.

The Requirements Validation Process helps ensure that the requirements are necessary and sufficient for creating design solutions appropriate to meeting the exit criteria of the applicable engineering life cycle phase and of the enterprise-based life cycle phase in which the reengineering efforts occur.

Key activities of requirements validation are:

- Conduct requirements reviews to validate that requirements are correct, unambiguous, complete, consistent, ranked for
 importance, verifiable (testable), modifiable, and traceable. Review teams should include end user representatives and
 customer representatives, in addition to the developer participants. Use quality checklists as an aid to the review process.
- Use prototyping to validate requirements. Prototypes demonstrate assumptions and actual understandings and can alert the team to mismatches between the written requirement and the interpretation carried forward in the prototype.
- Validate the conceptual models developed during analysis.
- Plan how each requirement will be verified establish acceptance tests.

Perform the validation of any requirements document provided by the acquirer at the time of contract award we can ensure that our requirements specifications have the following characteristics:

- Lack of ambiguity
- Conciseness Minimal number of words used and presented in a distinct visual form
- Completeness The specification contains all requirements known to date
- Consistency There are no conflicting requirements

Traces to origins – The source/origin of each requirement are identified. It may have evolved from a more general requirement, result from a conversation with a user, result from adoption of a standard, or adhering to a new regulation.

8.3 Use Case Diagrams

8.3.1 User Use Case

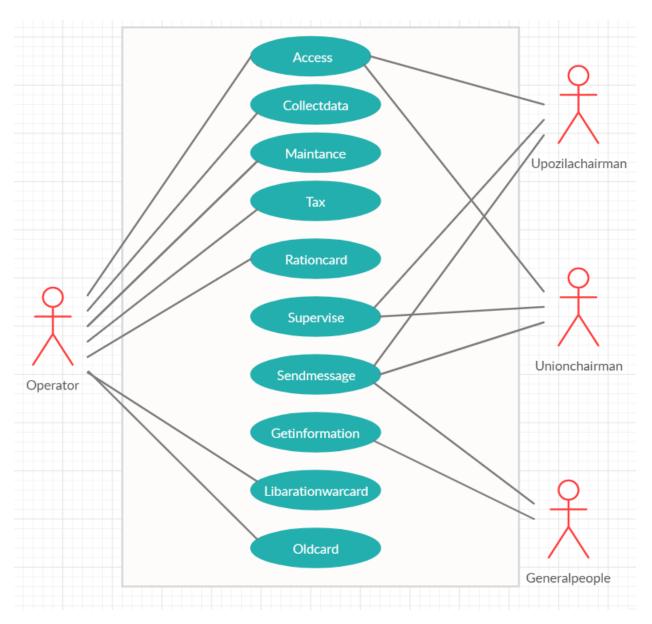


Fig: Use case diagram

Figure 1: Use Cases – Register

Actor	Register
Description	A person who maintenance the system and collect & process
	data from rural area. Then all data insert the system. He also
	can edit, Update & delete. He also needs to find out who has
	to pay tax and who are eligible for ration card.
Precondition	At first collect data from rural area.
Trigger	Crud.
Post Condition	Store data in database.

Figure 1: Use Cases — Upozila Chairman

Actor	Upozila Chairman.
Description	A person who supervised whole system.
Precondition	At first need to log in.
Trigger	View & moderate.
Post Condition	Get knowledge about upozila.

Figure 1: Use Cases – Union Chairman

Actor	Union Chairman		
Description	A person who supervised the data of his union in the system.		
Precondition	At first need to log in.		
Trigger	View.		
Post Condition	Get knowledge about union.		

Figure 1: Use Cases – General User

Actor	General User
Description	They get all kind of information from this system.
Precondition	At first need to visit the system provided website.
Trigger	Browse the system URL.
Post Condition	Get and use information from system.

8.4 Data Flow

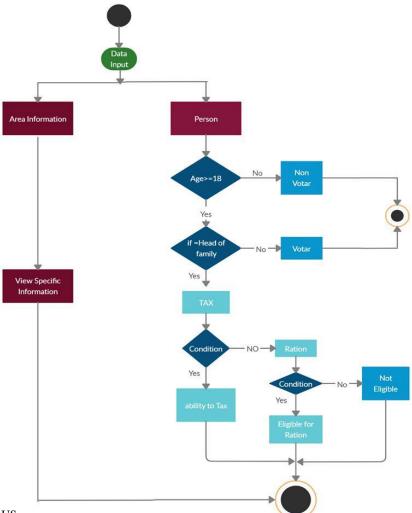


Fig: Data flow for e-RUS

9. Non-Functional Requirements

9.1 Performance Requirements

Server software does not require any special hardware other than the minimum hardware required for running enterprise OS. Extra disk storage will be required for archives and electronic documents. Increases of memory enables efficient query processing, which is required for quick bibliographic search. Two server grade processors with clock speed 3.0 Ghz, at least 8GB RAM and 300 GB hard disk is recommended for the server. Client machine with recommended hardware required for desktop operating system and web browser (with open JavaScript enable)

9.2 Safety Requirements

As per e-RUS work place safety rules and the e-RUS server room where the server is supposed to be placed and the monitoring people.

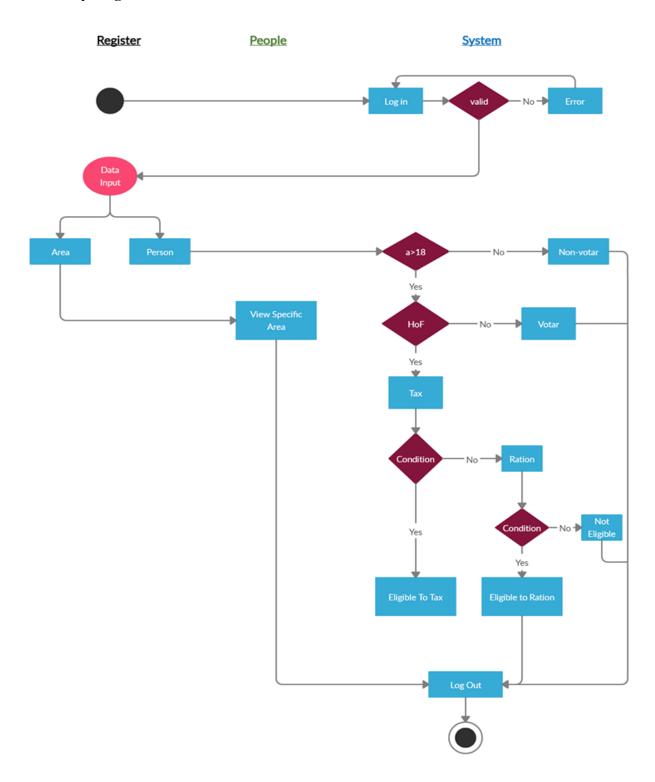
9.3 Security Requirements

Each time there is a security violation, the log file will be updated with the login, date, and time. Again, high level cryptography and checking should be kept to make it more secured. However, while email or request from any unwanted client the request should drop and let that user know about the fault.

9.4 Maintainability Requirements

At least one backup server with same configuration as in main server is also recommended for fault tolerance and better performance. Separate storage (with backup) for database, electronic document, and manuscript is also recommended. Multiple computing nodes with the storage are required for high availability and to enhance the performance of the application. Again, after a certain period the preliminary manuscript files and other files related with that can be deleted manually from the database to increase the performance.

10. Activity Diagram



11. Sequence Diagram

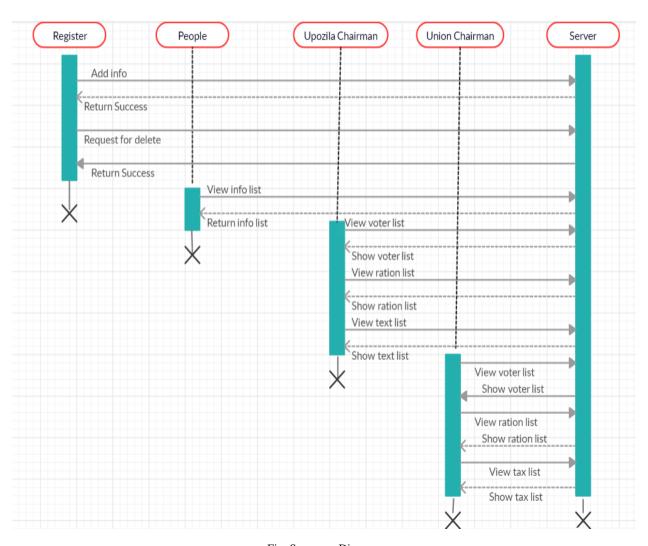


Fig: Sequence Diagram

12. Data Flow Diagram

12.1 Context Diagram

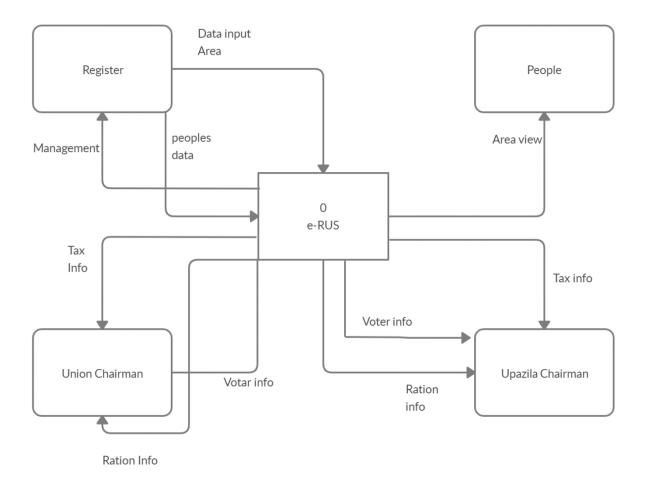


Fig: Context Diagram

12.2 First Level DFD

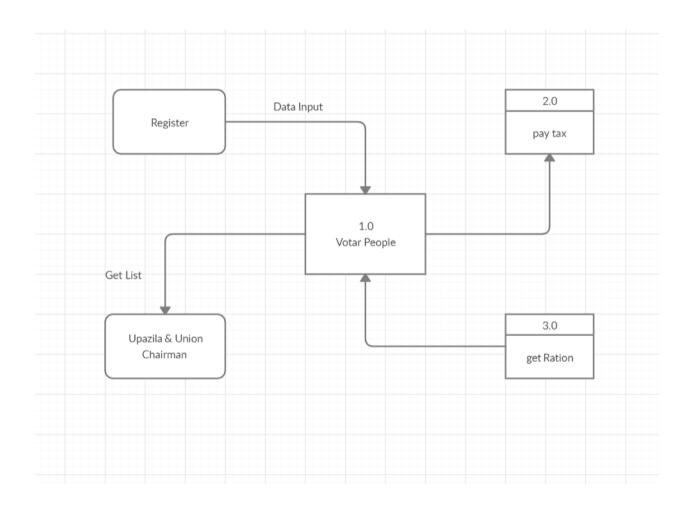


Fig: First Level DFD

12.3 Second Level DFD

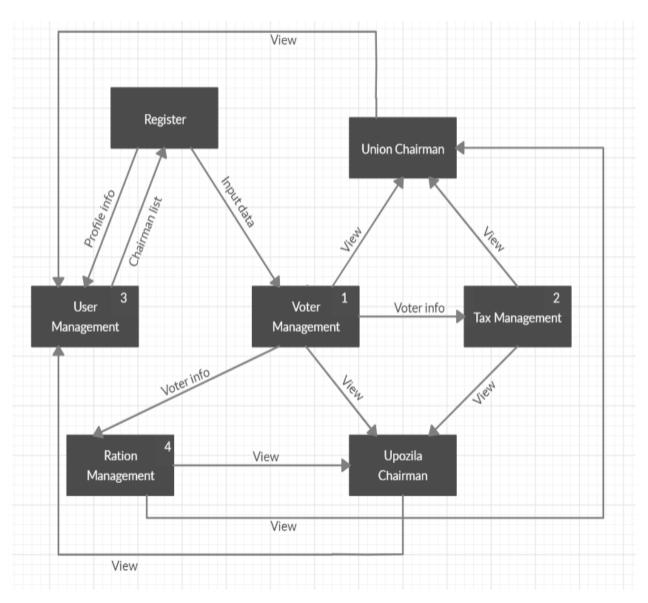


Fig: Second Level DFD

13. Class Diagram

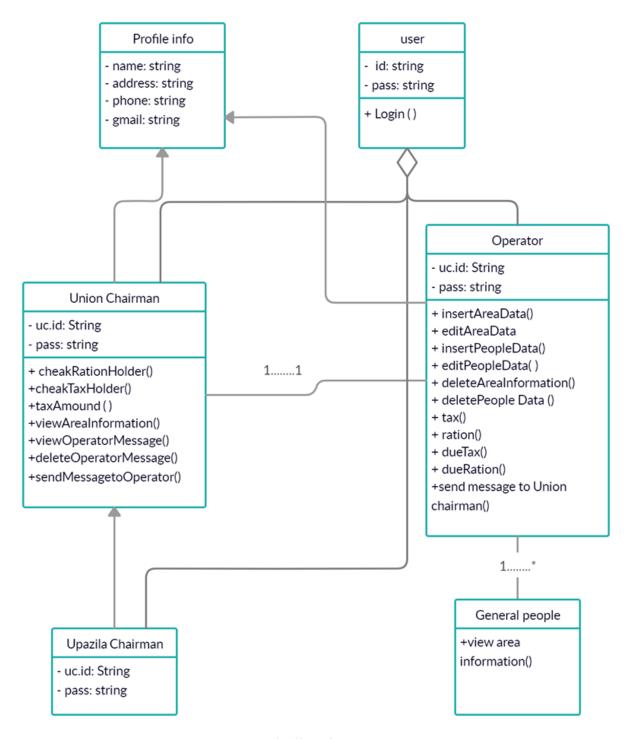


Fig: Class Diagram

14. ER Diagram

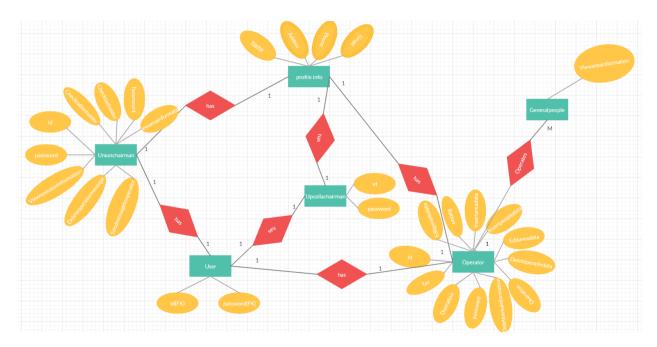
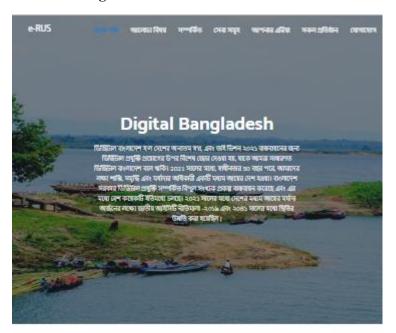


Fig: ER Diagram

15. Screenshots

15.1 Home Page







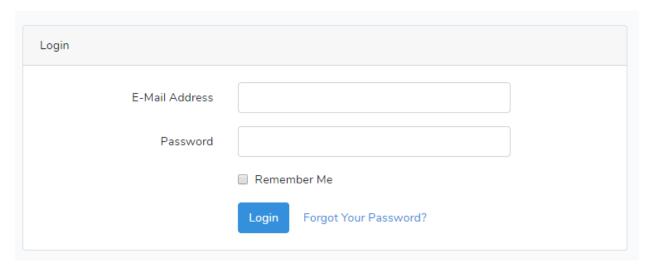
15.2 Search Area Information

আপনার মূল্যবান তথ্যটি যথাযথ ভাবে পেতে নিচের সার্চ বক্স এর মাধ্যমে আপনার ওয়ার্ড, গ্রাম এবং প্রতিষ্ঠান নির্বাচন করুন Select Word Select Villege Select Organization SEARCH		স্পর্কিত তথ্য নিন	মাপনার এরিয়া সং	7	
Select Word ▼ Select Villege ▼ Select Organization ▼	৪য়ার্ড, গ্রাম	চর সার্চ বক্স এর মাধ্যমে আপনার ও	থ্যটি যথাযথ ভাবে পেতে নি		
SEARCH		Select Organization •	Select Villege ▼	Select Word ▼	
	SEARCH	Select Organization •	Select Villege 🔻	Select Word 🔻	

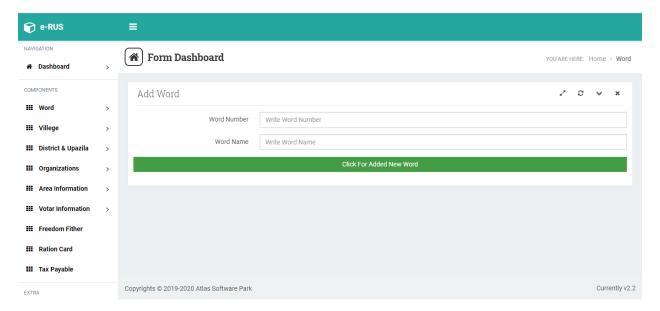
15.3 Search Information

আপনার এারয়া সম্পাকত তথ্য ানন আপনার মূল্যবান তথ্যটি যথাযথ ভাবে পেতে নিচের সার্চ বক্স এর মাধ্যমে আপনার ওয়ার্ড, গ্রাম এবং প্রতিষ্ঠান নির্বাচন করুন Word Villege Organization Organization Details Name Name Type Name Chargas N I dlkjdsaydsaudsad dlsjsfusfsfsf fdjsfudsfyudsf fjdsfdsfiusf dsjfhsfdsfdsiufudsf Savar Chondropur School B High $fdsjfudsfiofifdsf\ dsfjdsfhdsfhdskf\ fudsyfudsyfdsfusyf\ sdjfiudsfuydsufydsuf$ School Chondropur School Chargas N I ATN News ATN News Limited Hasan Plaza, 53 Kazi Nazrul Islam Avenue, Karwan Savar B High Bazar, (8th Floor), Dhaka-1215 Tel: +880-2-8189214 -7 E-mail: School atnnews24@gmail.com Fax: +880-2-8189219 www.atnnewstv.com

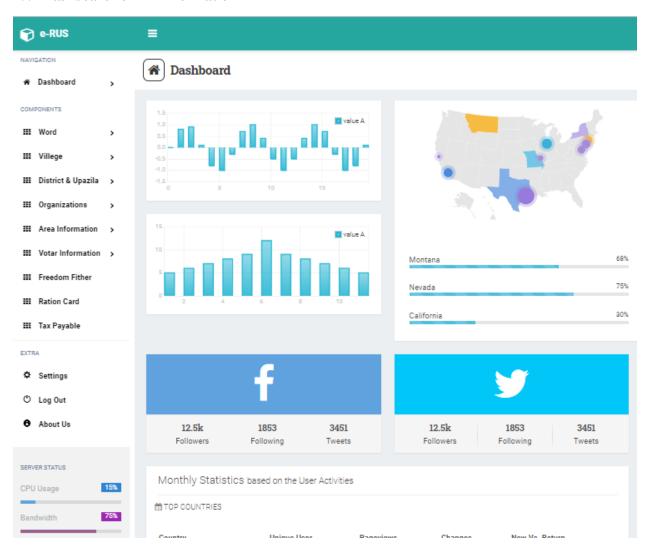
15.4 Log in For Admin



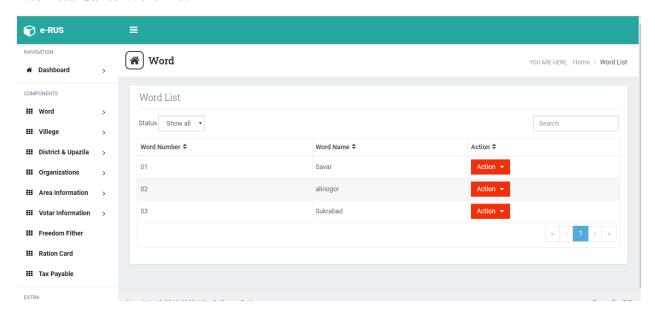
15.6 Add Ward Information



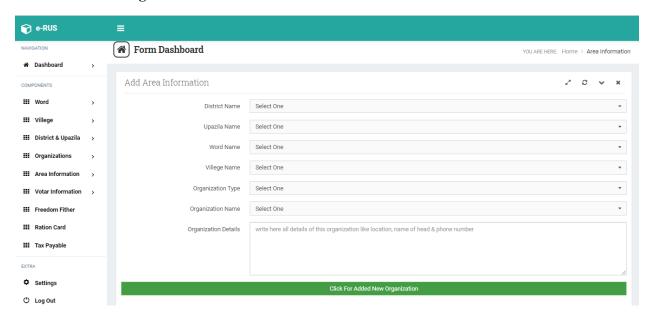
15.7 Dashboard for All Information



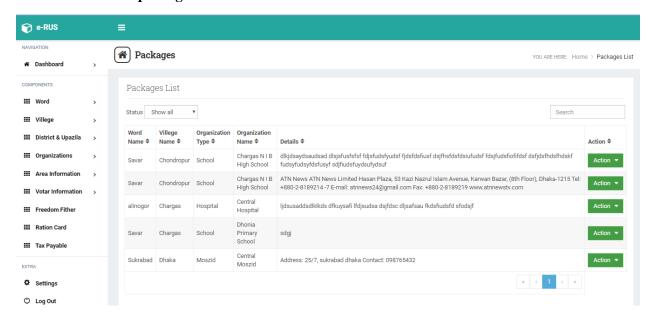
15.8 Total Saved Word List



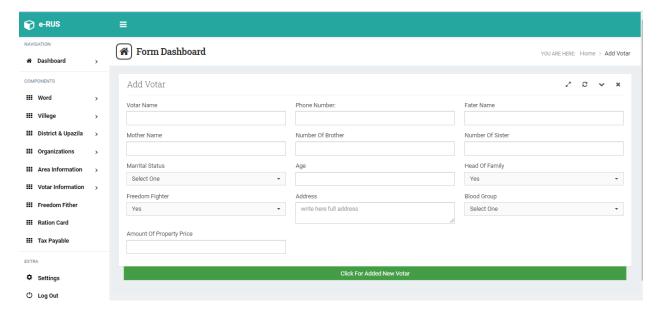
15.9 Added New Organization



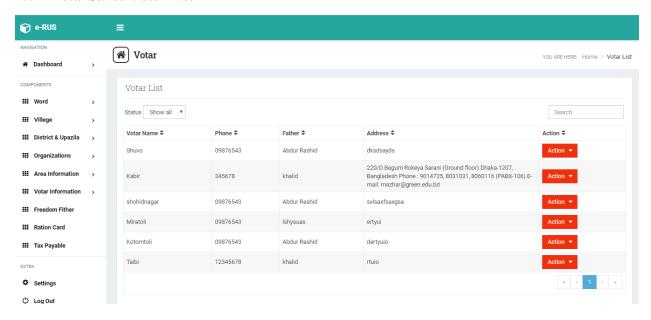
15.10 List of Saved packages Data



15.11 Voter Added Form



15.12 Total Saved Voter List



16. Git Link

https://github.com/ahshuvogithub/e-RUS

git@github.com: ahshuvogithub/e-RUS.git

17. Conclusion

The e-Record Union Sheba System which is capable of recording all kinds of information in union. Any person can get his/her require information from the system. Upozila and union chairman can get information for taking any diction.

The system can be easily able find that who are eligible for pay tax and provide vote.

This system is supposed to run as a pilot project here in IIT for 5-6 months to get the user acceptance and more feasibility. After the feedback and requirements, the system will go for fine tuning and hope within 3-4 months it will run smoothly in IIT while the upozila, union chairman and general user will be the prime beneficiaries of this project.