

Software Requirement Specification (SRS) For Development of Training Database Platform

Version 1

Submitted to



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The Training Database Platform SRS Approval Letter

I understand that this SRS contains all the Software Requirement Analysis that has been precisely documented for understanding how The Training Database Platform will operate in the real world. I also understand that by approving this SRS, I will not be able to add further requirements to the Training Database Platform. I am hereby providing my authorization for SoftBD Ltd. to proceed with the design and development phase.

Name:

Designation:

Signature:

Date:

Contents

| | |
|--|----|
| The Training Database Platform SRS Approval Letter | 2 |
| Document Revision History..... | 4 |
| 1 Executive Summary | 5 |
| 2 Introduction | 6 |
| 2.1 Purpose | 6 |
| 2.2 Document Conventions | 6 |
| 2.3 Intended Audience and Reading Suggestions..... | 7 |
| 2.4 Scope of Work..... | 8 |
| 2.4.1 Technology Specification | 10 |
| Definition, Acronyms & Abbreviation | 10 |
| Audience | 11 |
| User Interface | 11 |
| Hardware Interface..... | 11 |
| Software Interface | 11 |
| 3. Specific Requirements..... | 12 |
| 3.1. Development Technology:..... | 13 |
| 3.2 Functional Requirement | 14 |
| Detail understanding of Component | 14 |
| 4. Non Functional Requirements/ Software Attributes..... | 16 |
| 5. Monitoring Strategy | 17 |
| 6. Risk Management | 18 |
| 7. Change Management Process..... | 19 |

Document Revision History

| Version No. | Date of Release | Prepared By | Reviewed By | Activity |
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| V0.1 | | S.M. Saiful Shaukat Shamee | Tanvir Hossain | Initial Draft |
| V0.2 | | S.M. Saiful Shaukat Shamee | Tanvir Hossain | Added Executive Summary & Introduction |
| V0.3 | | S.M. Saiful Shaukat Shamee | Tanvir Hossain | Added Purpose, Document Conventions |
| V0.4 | | S.M. Saiful Shaukat Shamee | Tanvir Hossain | Added Intended Audience Reading Suggestions |
| V0.1 | | S.M. Saiful Shaukat Shamee | Tanvir Hossain | Added Scope of Work, Added Definition, Acronyms Abbreviation |

1 Executive Summary

The development of The Training Database Platform and provide Support & Maintenance, has to conduct all necessary requirement analysis, planning, development, testing, operational activities for country wide rollout and arrangements prior to implementation at full swing.

To initiate the project, we have conducted few inception meetings. The project deliverables demand a comprehensive System Requirement Specification (SRS) to clearly understand, how we are going to develop the software. This SRS fully describes what the software will do and how it will be expected to perform.

This software requirements specification document enlists all necessary requirements that are required for the project development. To derive the requirements, we need to have clear and thorough understanding of the products to be developed. This SRS has been prepared after detailed communications with the Project Implementation Unit (PIU) and all other stakeholders.

This SRS will minimize the time and effort required by SoftBD Ltd. to achieve desired goals and also minimize the development cost. This SRS defines how the application will interact with system hardware, other programs and human users in a wide variety of real-world situations. Parameters such as operating speed, response time, availability, portability, maintainability, scalability, extensibility, security and speed of recovery from adverse events.

This SRS details the activities undertaken and the achievement that needs to be obtained during the different phase of the project life cycle. This is a self-contained document and once approved, it will guide the project personnel to understand the project and management structure more clearly. The processes and strategies one has to adopt in order for achieving certain results, tracking the progress and maintaining the quality. It also describes the impending risks and challenges the project has to overcome to maintain the work schedule.

2 Introduction

This document describes in substantial detail, the software requirements of Training Database Platform application. This document will describe the functional requirements and non-functional requirements of the proposed system. This document is intended for the stakeholders of the application, to assist in the development process of TDP as well as to serve a reference to clarify any future issues that the stakeholders may run into.

TDP aims at providing a seamlessly integrated, web based, mobile messaging application, that manages Trainings, Trainers, Trainees and certifications.

2.1 Purpose

The purpose of this Software Requirement Specification (SRS) is:

- To gain agreement with stakeholders and Project Implementation Unit (PIU).
- To describe what the development of The Training Database Platform will look like for a business perspective and IT perspective. This document will also describe how the system will work and how each functionality will behave.
- To provide IT specialist the information needed to develop the Training Database Platform for system designing and developing the application.

2.2 Document Conventions

When writing this SRS for The Training Database Platform, the following terminologies are used:

- Software Requirement Specification (SRS): A software requirements specification (SRS) is a description of a software system to be developed. It lays out functional and non-functional requirements, and may include a set of use cases that describe user interactions that the software must provide.

Project Implementation Unit (PIU): Project Implementation Unit (PIU) team is a team whose members usually belong to different groups, functions and are assigned to activities for the same project. A team can be divided into sub-teams according to need. Usually project teams are only used for a defined period of time. They are disbanded after the project is deemed complete. Due to the nature of the specific formation and disbandment, PIU are usually in organizations.

- Terms of Reference (ToR): Terms of reference (ToR) defines the purpose and structures of a project, committee, meeting, negotiation, or any similar collection of people who have agreed to work together to accomplish a shared goal.

2.3 Intended Audience and Reading Suggestions

This document is to be read by the development team, the project managers, QA Engineers, supporting staff, testers, documentation writers, and all other stakeholders of The Procurement of Goods Training Database Platform. The SRS has been organized approximately in order of increasing user specificity requirements. The developers and project managers need to become intimately familiar with the SRS.

2.4 Scope of Work

Functional Requirements

a) Basic Information Registration System of Trainee

This feature will facilitate the authorized user to register the basic information of the trainee i.e. Name, Sex, Designation, Organization name, Mobile_no, E-mail address, NID etc.

b) Training Course Information Registration

This feature will facilitate the Super admin user to create training course. The course information contains course title, course description, course duration etc.

a) Basic Information Registration System of Trainer

This feature will facilitate the authorized user to register the basic information of the trainer i.e. Name, Sex, Designation, Organization name, Subject specialization, Mobile_no, E-mail address, NID etc.

b) Course Enrollment System

This feature will facilitate the authorized user to entry course Enrollment information.

c) Dashboard Developments

This feature will facilitate the authorized user to view summarized information and ongoing status

d) User Management

Admin user will be able to create user for head office, district and upazilla office of department of ICT. They user will be able to work as per assigned user roles.

e) Email Notification

Trainee will get email notification when nominated for training and update information through email.

f) Report Generation

This feature will facilitate the authorized user to generate trainee list, trainer list, attendance sheet as well as other necessary customized report.

Support & Maintenance:

- a. The vendor needs to provide support & maintenance services of the developed system (if needed) after the implementation phase. It includes (but not limited to) the following, as part of the SLA:
 - 24x7 online technical support.
 - Response, Restoration and Remedy at the time of an incident.
 - Incident shall be categorized based on their severity level.
 - Problem Management Procedure.
 - Escalation Matrix.
- b. Support & Maintenance will cover fixing all bugs and system errors, as and when identified by the system users.
- c. Priority operations in Support & Maintenance to fix an error that result in the application not operating or performing other than as it should be.
- d. The vendor shall undertake timely backup of the entire database to meet the challenges of system recovery, in case of any disaster or missing data.
- e. The vendor needs to assign permanent support engineers who will work closely with the clients/designated officials to ensure proper delivery of any required services during the support and maintenance phase.
- f. The vendor company cannot assign programmers to other projects till the completion of the assignment, and will ensure the continuity of the scheduled work by other programmers in case of his/her absence.
- g. The hired and assigned IT personals for support & maintenance must be regular employees of the vendor company.
- h. The vendor needs to provide a monthly support & maintenance log report.

2.4.1 Technology Specification

1. Need to use Open Source Development Platform.
2. PHP based platform with tool architecture like Bootstrap, framework like Cake PHP/Laravel/codeigniter and MySQL database can be used.
3. Future technology Change, iterative prototyping and agility in product design are the generic expectation.
4. Technology and all related design/data will be open to ICT Division.
5. Need to work with ICT Tech Team.

2.4.2 System Testing:

Vendor Company will ensure system to be tested at module integration and load level. All necessary security at application level architecture needs to be followed.

Definition, Acronyms & Abbreviation

| Acronyms | Abbreviations |
|----------|--------------------------------------|
| API | Application Program Interface |
| CSV | Comma Separated Values |
| DCP | Dhaka Metropolitan Police |
| IM | Instance Message |
| ToR | Terms of Reference |
| GUI | Graphical User Interface |
| SRS | Software Requirement Specification |
| SLA | Service Level Agreement |
| PIU | Project Implementation Unit |
| PHP | Hypertext Pre-Processor |
| HTML 5 | Hypertext Markup Language |
| CSS 3 | Cascading Style Sheet |
| IDE | Integrated Development Environment |
| XML | Extensible Markup Language |
| XHTML | Extensible Hypertext Markup Language |

Audience

The audience for this document includes anyone seeking an understanding for how the applications works to support the business needs within the context of the technological framework supported by the Bangladesh Government.

User Interface

This section describes the logical characteristics of each interface between the intended software product and the users. For user interface design, common GUI standards will be followed along with the presence of keyboard shortcuts, error message display standards etc., and standard buttons, uniform color combination in all UI, uniform font and font size and functions (i.e. help) will appear on every screen or whenever needed. Details of the user interface design are documented in the Use case Section of this document.

Hardware Interface

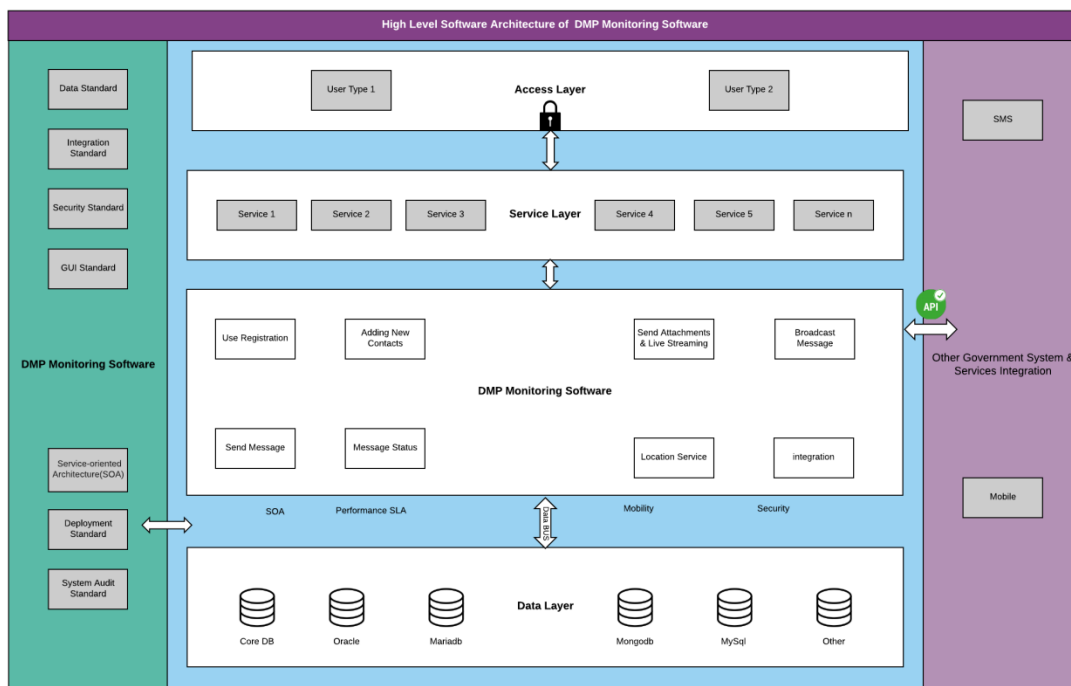
Since the application must run over the internet, all the hardware shall require to connect internet will be hardware interface for the proposed system. As for e.g. Modem, WAN – LAN, Ethernet Cross-Cable. The system will be compatible with all well-known browsers of Desktop, Laptop, and smart devices.

Software Interface

The provision here is the keep the external software commination interface as seamless as possible. User experience is the most priority concern in this regards when the Procurement of Goods Training Database Platform is interfacing with other 3rd party software such as 3rd party services that will be integrated into the system, payment gateway, database management system, server OS, web services etc. In particular the system will be interfacing/communication with the following external system:

3. Specific Requirements

The Training Database Platform Architecture Overview



We are fully complied with the objectives of the assignment and scope of work described in the Technical Specification. In accordance to our understanding we have proposed a high level application architecture design strategy in the image above which explains the software architecture of THE TRAINING DATABASE PLATFORM.

We will adopt the microservice architecture approach while designing the systems. Microservice architecture is a method of developing software applications as a suite of independently deployable, small, modular services in which each service runs a unique process and communicates through a well-defined, lightweight mechanism to serve a business goal.

We will use Microservice Architecture for the following reasons:

- Enables the continuous delivery and deployment of large, complex applications.
 - Better testability - services are smaller and faster to test
 - Better deploy ability - services can be deployed independently
 - It enables you to organize the development effort around multiple, auto teams. It enables you to organize the development effort around multiple teams. Each (two pizza)

team is owns and is responsible for one or more single service. Each team can develop, deploy and scale their services independently of all of the other teams.

- Each microservice is relatively small.
 - Easier for a developer to understand.
 - The IDE is faster making developers more productive.
 - The application starts faster, which makes developers more productive, and speeds up deployments.
- Improved fault isolation. For example, if there is a memory leak in one service then only that service will be affected. The other services will continue to handle requests. In comparison, one misbehaving component of a monolithic architecture can bring down the entire system.
- Eliminates any long-term commitment to a technology stack. When developing a new service you can pick a new technology stack. Similarly, when making major changes to an existing service you can rewrite it using a new technology stack.

3.1. Development Technology:

Development technology was defined to save time and making the architecture robust in respective of front-end and back-end. The selection of right technology, tools and platform is very important and challenging especially in case of large enterprise application or platform. In fact, depending on the nature, size and business practices of the enterprises the technology tools and platform may varies from application to application. Even tools may vary within the same application for different interfaces. For this project of The Procurement of Goods Training Database Platform considering the size, security requirement, nature of business practices, volume of data and frequency of transaction, we can obviously consider it as a large-scale enterprise application. As per your requirements see the description of the technology to be used for development in the below section:

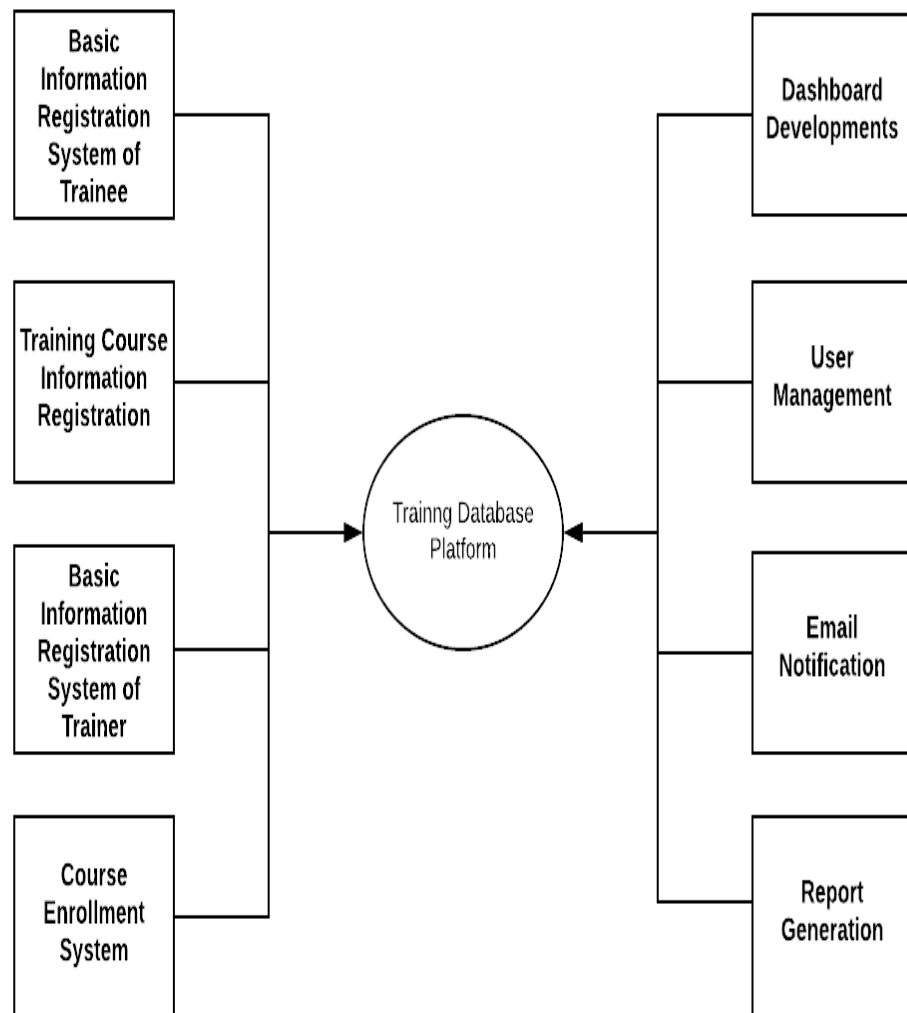
- | | |
|--------------------------|---|
| • Server OS | : Linux |
| • Workstation | : Windows |
| • Front End Tools | : Android Studio |
| • Language | : PHP, HTML5, JavaScript, CSS3, JS, JQuery, ArgoUML. JAVA |
| • Architectural Pattern | : MVC |
| • Framework | : Cake PHP 3, Bootstrap, AngularJS |
| • Database Engine | : MySQL |
| • Diagram Application | : MS Visio |
| • Source Code Management | : Gitlab |

3.2 Functional Requirement

Detail understanding of Component

As per our understand and previous experience in working with similar project below is the proposed component diagram of THE TRAINING DATABASE PLATFORM

Component Diagram of Training Database Platform



Core Component for THE TRAINING DATABASE PLATFORM:

1. Basic Information Registration System of Trainee
2. Training Course Information Registration
3. Basic Information Registration System of Trainer
4. Course Enrollment System
5. Dashboard Developments
6. User Management
7. Email Notification
8. Report Generation

1. Non-Functional Requirements/ Software Attributes

1. Ensure access control, application level security.
2. Design and develop Role-wise credential system incorporation for better user role management.
3. System shall provide the ability to encrypt user IDs and passwords and impose minimum password lengths along with ability to reset passwords following a standard password strategy.
4. There will be a Dashboard presenting dynamic data in reports in table and graphic presentations.
5. The system should have provision for periodical & instant Data Backup & Auto Archiving System.
6. The platform should be cross browser compatible, responsive and graphically attractive.
7. The developed system must support Bengali UNICODE enable font so that Bengali content can be viewed properly from any machine, which support Unicode. The proposed system must facilitate for showing the content both in English and Bengali Language.
8. Ensure system to be tested at module integration and load level. All necessary security test at application level architecture needs to be followed.

5. Monitoring Strategy

Project coordinator will update the Project Manager and all other Stakeholder through schedule meeting and emails on starting and ending of each phase mentioned in the work schedule.

To ensure the implementation of project in time with quality, the Project Manager will monitor all activities of the projects closely so that all the module/tasks of the project are completed properly in time. We will prepare an extensive project monitoring and evaluation plan and distribute the monitoring responsibility to designated person with a predefined schedule so that monitoring and evaluation processes are accomplished without any fail.

6 Risk Management

Risk management describes strategies and methods used to identify and avoid risks throughout the life cycle of the project. All kinds of risks are identified here, most common risk factors that has been the main cause of a project failure are mentioned below:

- Personnel shortfalls
- Unrealistic schedules
- Developing the wrong functions and properties
- Developing the wrong user interface
- Gold plating (adding more functionality/features than is unnecessary)
- Continuing stream of requirements changes
- Shortfalls in externally furnished components
- Shortfalls in externally performed tasks
- Real-time performance shortfalls

These are the major risk factor that is associated with the nature of the work done or the client and the target environment, risks within the project and the team environment and finally technical risks involved with the system or other aspects of the technology of the software. To prevent this type of common risks we have been monitoring all our projects very closely.

7 Change Management Process

Requirement change management process defines the set of activities that need to be performed when there are some new requirements or changes to existing requirements (we will call both of these as changes in the requirements). Requirement changes can occur at any point during the project execution stage. The basic goal of requirement change management process is to control requirement changes and minimize the impact of changes on the project. This involves understanding the full impact of a requirement change request, as well as the cumulative impact of changes, on the project. It also requires making the customer fully aware of the impact of the changes on the project so that changes in the negotiated terms can be done amicably. The requirements change management process, in a sense, tries to ensure that a project succeeds despite requirement changes.

There will be two aspects to requirements change management – agreement with the customer about how the changes will be dealt with, and the process of actually making the changes. The overall approach for handling changes will be agreed by DMP and SoftBD Ltd, and is frequently a part of the proposal as well as the project management plan. Generally, this specifies how the change requests will be made, when formal approvals are needed, building a buffer in the estimates for handling changes etc. In the context of the overall approach, when a request for a requirement change comes in, the requirements change management process has to be executed. The project team leader/manager is primarily responsible for executing the process to incorporate the change in the project. However, DMP and the business manager to whom the project leader reports, and the development team will also participate in this process. The entry criterion for this process is that a change request has been received, and the inputs are the change request and the work products that have already been produced in the project. The main outputs are the impact analysis report for the change request, revised project plan, and changed work products, and the exit criterion is that the change has been incorporated.

The major steps in the process are:

1. Log changes
2. Perform impact analysis on the work products
3. Estimate effort needed for this change requests
4. Re-estimate delivery schedule
5. Perform cumulative cost impact analysis
6. Review impact with senior management, if thresholds are exceeded
7. Obtain customer sign off
8. Rework work products

A change request log will be maintained to keep track of the change requests. Each entry in the log contains a change request number, a brief description of the change, the impact of the change, the status of the change request and key dates. The effect of a change request is assessed by performing impact analysis. Impact analysis involves identifying work products that need to be changed, and evaluating the quantum of change to each; reassessing the project's risks by revisiting the risk management plan; and evaluating the overall impact of the changes on the effort and schedule estimates. The outcome of the analysis is reviewed and approved by the project leader and DMP. The change request itself is incorporated in the requirement specification document, usually as appendices. Sometimes the relevant portions of the document may also be modified to reflect the changes. Monitoring of approved change requests and ensuring proper implementation of change request is handled by the configuration management process.

We will keep note of the change management during the entire project phase and update the SRS as and when necessary. We will assure delivery of the project in timeliness by tracking the change management and monitoring the project closely and prepare further work schedule whenever there is a change.